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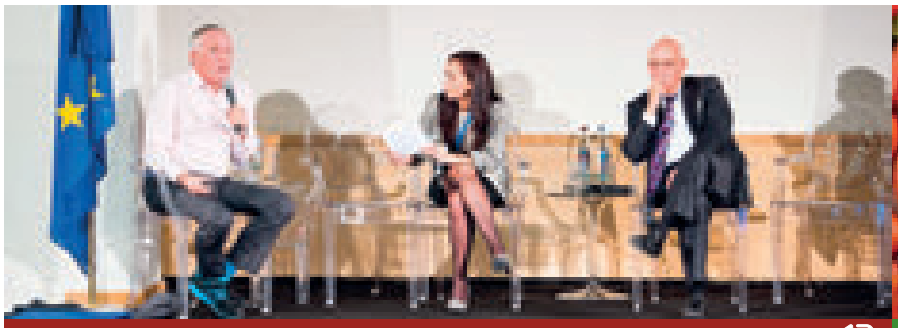

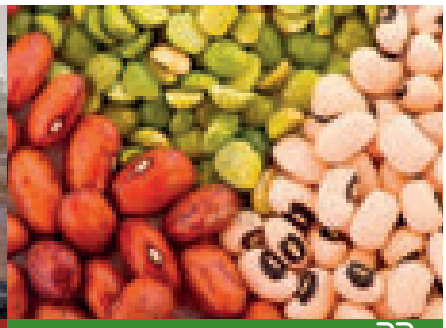

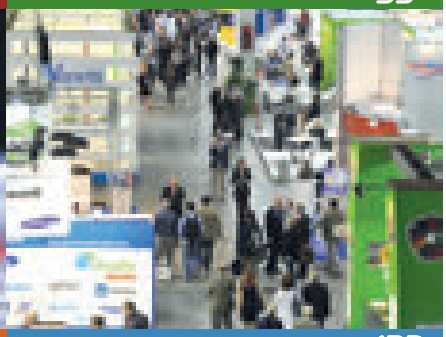

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RICCARDO AMPOLLINI

BEYOND 3D PRINTING

In Europe, we are only just beginning to glimpse the implications of 3D printing technology, yet researchers are already talking about "4D printing".

It was less than a year ago when 3D printer manufacturers announced the first printers capable of making multi-coloured and multi-media objects, and polymer producers launched fibre-reinforced materials on the market with the capability to be processed using new 3D technology (FDM, SLS, DLP and so on). Not to mention the first fully 3D printed, large objects: cars, boats and event entire home modules.

Now from the University of Oxford - Saint Antony's College, to be precise - the Honorary Fellow Nayef Al-Rodhan has announced that researchers are proposing an update to 3D printing that introduces a fourth dimension: time. The work, in fact, is based on printing objects which are programmed to change their characteristics as minutes, hours or days go by.

While 3D printed objects are static and require human control, 4D ones can react to the surrounding environment, transforming, assembling or even repairing themselves. Advances in this strange realm will rely more on materials themselves than printing technology, although the latter is evolving at rather rapid rates.

At MIT (Massachusetts Institute of Technology), the architect Skylar Tibbits used a 3D printer with a novel combination of materials to create a wirelike object that when dropped in water changes its shape to form the letters MIT. It was the pairing of a water-absorbing polymer material with a basic plastic that made the effect possible.

Moreover, consider underground pipe systems, long troubled by leakage caused by ground conditions and, therefore, costly maintenance. With programmable materials, individual pipes could adapt to shifting conditions, expanding or contracting to adjust capacity and flow rates. They might even repair themselves when damaged!

On a different front - one that warrants mention - the United States army has already started using 3D printing in Afghanistan, to develop new gear on the frontlines for immediate use. And in an effort to create better camouflage - its own invisibility cloak - the army has funded research into so-called meta-materials, composites that refract light waves off camouflage textiles, obscuring a covered object from view. To be sure, the potential applications for new 4D printing appear endless. And they could prove especially significant on larger scales.

This is surely one of the topics of discussion at 3D Plast, the fair dedicated to 3D printing held as part of the international trade fair Plast 2015 (May 5-9, Milan fairgrounds, Rho-Pero), together with the satellite exhibitions Start Plast - the incubator for start-ups - and Rubber - dedicated to the rubber and thermoplastic elastomer industry.

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A DEBATE BETWEEN TWO OPINION LEADERS

RIFKIN, WOUDHUYSEN AND THE ECONOMY OF THE FUTURE

THE VIEWS, OFTEN CONTRASTING, OF AMERICAN ECONOMIST AND FUTUROLOGIST JEREMY RIFKIN AND ENGLISH PROFESSOR JAMES WOUDHUYSEN ON THE INDUSTRIAL MODELS AND TECHNOLOGIES THAT WE WILL SEE APPLIED IN THE COMING YEARS

BY **RICCARDO AMPOLLINI**

Among the dozens of presentations given during the course of the latest PolyTalk conference, organised by PlasticsEurope and held last November in Brussels, those of Jeremy Rifkin and James Woudhuysen aroused particular interest among the 300 or so participants, all coming from the worlds of politics, industry, science or academia, prompting discussion on how the plastics industry has the capacity to support the economy as a whole and to help increase Europe's GDP from its currently level of 15.3% to 20% by 2020.

THE ECONOMY OF THE FUTURE ACCORDING TO RIFKIN

Polytalk opened with an enthusiastic presentation by the renowned economist and futurologist Jeremy Rifkin, who illustrated, through several examples, his theory of a "zero marginal cost society" (this is also the title of his new book).

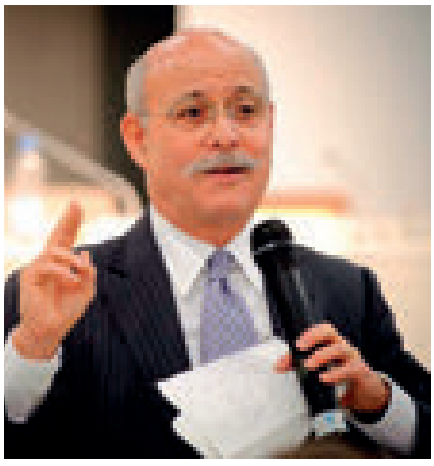
A new economic system is emerging globally, based on what Rifkin has defined collaborative commons. It is the first of its kind to evolve since the dawn of capitalism and socialism, in the early nineteenth century, and it is already transforming everyday economic life. And the "zero marginal cost" concept is, in fact, the basis of the mechanism that is driving this new economic model.

"Those studying economics are taught that it is necessary to reduce marginal costs to a minimum to ensure maximum gain. But in today's competition-driven markets, costs are being cut to such a degree that numerous goods and services are becoming almost cost free, plentiful and no longer subject to market forces", Rifkin said.

The "zero marginal cost" phenomenon has already created chaos in different informa-

tion goods sectors (the music industry, entertainment and publishing: books, magazines, newspapers), given that, since 1999 (when the trend was launched by Napster), millions of consumers have turned into "prosumers" (a term that combines the words producers and consumers) and have started to produce and share, at zero cost, their own music, videos, news and e-books, bypassing the traditional capitalist market. And the same phenomenon is now beginning to reshape models existing in other sectors, too: energy, manufacturing industry and education. For example, even though solar and wind technologies have quite substantial and sustained fixed costs, if we disregard these, the cost for "capturing" each unit of energy is actually low. Furthermore, thousands of amateurs are already using 3D printing technologies, free and open-source software and recycled plastic as a raw material in order to produce their own products, in so doing reducing the marginal costs to almost zero. At the same time, high-level online courses of unprecedented scope are being followed, free of charge, by upwards of 6 million students. All these are examples of almost zero-cost production, which however could potentially result in significant returns were these services to be sold at attractive rates.

As a result, we are now in a situation in which the "zero marginal cost" phenomenon is invading the real world of physical goods and services, where it will be guided, in the context of a veritable "third industrial revolution", by the new means of communication, transport and energy, and above all by the Internet of Things (IoT), which has the capacity to connect all three of these areas. "The IoT will allow millions of people to produce and share their own green electrical energy, 3D printed products, and many other physical goods at zero cost, exactly as we have seen with information goods. The collaborative commons are the new economic paradigm that will accompany the IoT infrastructure and, with the transition of the younger generations from the concept of property to that of access, we could well witness a shift from the "exchange value" that typifies capitalist society to the "shareable value" of the collaborative commons", Rifkin explained.



Over the past ten years, American economist and futurologist Jeremy Rifkin has been an advisor to the EU and to many leading statesmen and women such as Nicolas Sarkozy, Angela Merkel and Luis Rodriguez Zapatero

From the left: James Woudhuysen, Hanane Taidi (communications director of PlasticsEurope) and Jeremy Rifkin during the debate at PolyTalk

Today, there are more than 11 million sensors applied to natural resources, production lines, electrical networks, logistics networks and recycling processes, and implanted in homes, offices, shops and vehicles. It is predicted that by 2020 at least 50 billion sensors will be connected to the IoT, inputting immense amounts of data.

In the United States, 37 million buildings are already equipped with meters and sensors connected to the IoT, which provide real-time information on the use of electricity and on changes in electricity prices. In the future this will allow the people who live or work in them to program software that will exclude them from the grid when prices reach their highest levels, and allow these buildings to be powered exclusively with their own green energy (solar or wind) and to share any surplus with their neighbours.

A study conducted by General Electric has estimated that by 2025 advances in productivity guaranteed by the IoT could be impacting on half of the global economy.

But how, once millions of people are able to produce and distribute goods and services at almost zero cost, will this sharing economy actually work? The answer can be found in civil society, which is also made up of non-profit organisations. The earnings of these organisations grew by a hefty 41% from 2000 to 2010: more than twice the US GDP growth recorded in the same period.

As already mentioned, 3D printing is also moving in the direction of lower production costs, and a practical example of this is provided by "Strati", which, designed by an Italian engineer and produced by Local Motors (Arizona, Usa), is the first almost entirely 3D-printed car.

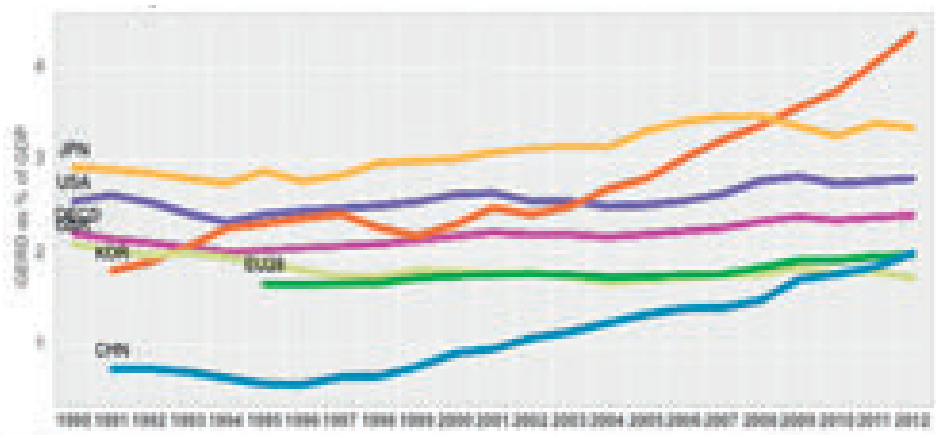
Another fascinating prediction by Rifkin in relation to the sharing economy is the following: in 25 years' time, car sharing will be the norm and it will be unusual to own one's own car. Indeed, millions of people already use social media websites, redistribution networks, rental services and co-operatives to share not only cars, but also houses, clothes, equipment, toys and other items at low or almost zero marginal cost, thereby further squeezing the already tight profit margins of businesses operating in the real economy. The sharing economy can be estimated to record annual profits of 3.5 billion dollars.

The greatest impact of the zero marginal cost phenomenon is felt in the labour market where factories and offices requiring very little human labour, online sales services and automated logistics and transport networks are growing in number by the day. It is hardly surprising, therefore, that the new employment opportunities of today are increasingly appearing in areas tending to fa-

vour a no-profit mentality and greater social cohesion.
"We are witnessing the birth of a new, hybrid economy - part capitalist and part based on the collaborative commons - which, in the coming years, will transform economic life as we know it", Rifkin underlined. "It is likely that the capitalist system will remain with us for some considerable time to come, but it will relegated to more limited role, primarily as an aggregator of services for networks".

JAMES WOUDHUYSEN AND THE FEAR OF INNOVATING

However, Rifkin's futuristic vision was, to an extent, criticised during the following presentation "The Future of Innovation in the European Union" given by James Woudhuysen, professor of Forecasting and Innovation at De Montfort University in Leicester (UK). Woudhuysen began by remarking that "people continue to repeat the mantra that resources are running out, even though new ones are being discovered every day (e.g. shale gas and shale oil, editor's note). All we need to do is find the most innovative uses for these resources. And this is one of the things that the plastics industry does very well; therefore it is only right that it should be talked about".
"People see salvation in a circular economy, whereas the current trends are pointing towards a vertical, stagnant and financialised economy", professor Woudhuysen continued. "Technology today seems to have been reduced to IT and environmentally sustainable innovation. Progress in the fields of materials, textiles, pipeline technology, transportation, energy and construction is slower than it need be. Robots are not being produced in the quantities that we should be seeing, while genetic engineering is still only in its infancy. The funds that companies and countries allocate to R&D are often still too scarce, as are those for Europe's new "carbon infrastructure". In order to overcome the post-2008 stagnation, bureaucrats need to start seeing carbon as an opportunity (and as a raw material, editor's note) and not as a problem (emissions). In short, what we are faced with, as already declared by Màire Geoghegan-Quinn (EU Commissioner for Research, Science and Innovation) in 2010, is a serious "innovation emergency" within the EU.
In terms of "intensity of R&D", China has already overtaken us and Korea invests even more than China (see **figure 1**). It is possible to identify a certain number of European companies that are currently world leaders in terms of "intensity of R&D", but if we look specifically at the situation as regards the chemical industry, Europe can be seen to lag far behind the US and Japan. And if we analyse investments in research by banks, telecommunications companies, food manufacturers and, in particular, producers of gas and oil, it can be seen that in Europe, companies like Shell and BP are investing, in their own future, only 3 dollars out of every 1000 earned (**table 1**)".
But Europe also has another problem: more and more investments are being channeled to banks and holdings (more or less the same thing happens in the US). Therefore, rather than putting money into laboratories, we are putting it into the banks!
"My view, however, is that the greatest barrier to innovation in Europe does not come from finance, laws and regulations", remarked professor Woudhuysen, "but rather from the culture of fear, from a cultural preference for prohibition, which seems to be having an even greater impact than legislation in tending to slow down the pace of technological change. Thus, in Europe (and this is what I have found to be the case within the European Commission too), there seems to be a perceived need to put a stop to absolutely everything, in order to think of the planet. I am thinking, for example, of plastic bags, nanotechnology, artificial intelligence, fossil fuels, high-speed trains etc. In the UK, we build only eight miles per year of major new roads, yet there are people who think that even this small amount can harm the planet! Yes, of course, we should not be drilling and fracking everywhere in order to extract shale gas and shale oil. But to go to completely the other extreme and say that we should not be doing it all is retrograde!"
James Woudhuysen went on to underline that wherever utilities are to be built (pipes, connections, insulation etc.) for roads and other infrastructures, the plastics industry is always involved. The same goes for the construction industry, where home insulation for greater energy efficiency is really important to the plastics industry. He said that this was exactly what was seen in China (**figure 2**), where, in 2008, after the Sichuan



GERD = Gross Domestic Expenditure on R&D
GDP = Gross Domestic Product

Fig. 1 – The intensity of R&D in the OECD countries (34 members) and in other economies

TAB. 1 – MAIN SECTORS FOR INTENSITY OF R&D IN 2000 (%)

SECTOR	UE (527)	USA (658)	JAPAN (353)	WORLD
Banks	1.8	-	-	2.0
Telecommunications	1.5	1.1	2.5	1.7
Food products	1.5	0.9	1.5	1.3
Oil & gas producers	0.3	0.3	0.2	0.3
Total of 40 industries	**2.6**	**4.9**	**3.5**	**3.2**

Source: European Commission (The 2013 EU Industrial R&D Investment Scoreboard)

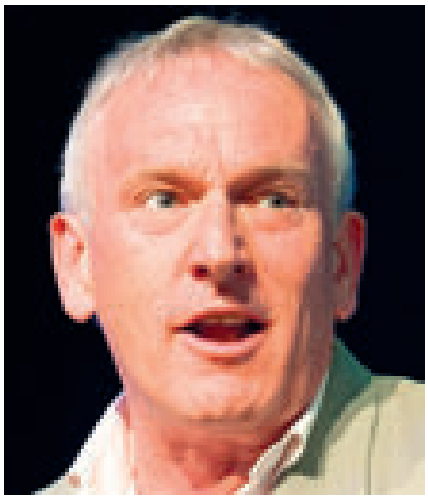
earthquake, over 1 million high-energy-saving prefabricated buildings (insulated with polystyrene), with the necessary hospitals and schools, were connected up with pipes for water, gas and electricity in the space of just 6 weeks. And in just a fortnight, thanks to the efforts of 200 workers, a 30-floor hotel (a Broad Sustainable Building, BSB) was erected in another place.

"In Europe, too, there is a need for housing and hotels of this kind – modular, insulated and with integrated photovoltaic panels", Woudhuysen continued. "It perhaps would not be my choice to live in such a building, but the fact is that this is the direction being followed in different parts of the world, where they are even designing mega apartment blocks that grow verticially, like the Sky City One in China (again a BSB), which is over 800 m high. And there is already talk of building skyscrapers of this kind up to 2 km high!

We therefore need to adopt a new mindset when it comes to innovation. What we need is what the Germans call a "kulturkampf" for innovation".

Woudhuysen then set out his forecasts regarding the development of manufacturing in Europe. In contrast to Jeremy Rifkin, he said "A vital rule that the plastics industry (and not only that) would do well to remember is this: technology and innovation are not restricted to information technology and the Internet".

He cited, as examples, the enormous development – already under way – of the robotics industry and the production of drones (often using 3D printers), which are becoming ever smaller and ever smarter, and are already applied in a great many fields that were inconceivable until a few years ago. In 2013 approximately 180,000 industrial robots were sold worldwide and the figure for 2014 is expected to show a rise to 200 thousand units/year (Source: IFR). We are not witnessing the revolution that was feared to lead to considerable job losses and it is a fact that automation is increasingly present in every area of industry.



James Woudhuysen is a professor of Forecasting and Innovation at De Montfort University in Leicester (UK)

Fig. 2 - In 2008, in Sichuan (China), more than 1 million green prefabricated buildings were connected up with pipes for water, gas and electricity in the space of just 6 weeks

In China, Amazon has begun delivering books and other parcels by drone and it is expected that this will have a significant impact on customer service. In the United States, however, the use of drones is, in some cases, illegal, while zealous environmentalists are opposed to the use of drones that run on fossil fuel (indeed, not all drones are yet equipped with batteries powerful enough to allow them to run on electricity). There therefore exist obstacles, both legal and cultural, that prevent the development of these technologies, in the US at least.

Something similar is happening with driverless cars: Google and Toyota are already well on the way to introducing these onto the market in large quantities, but for a long time they will be just "an extra" option and will not replace the traditional kind. This is mainly because they meet with strong opposition from some quarters within insurance companies and within groups opposed to automotive mobility generally.

In these examples, therefore, the internet and IT are not so crucial to technological development, even though they are, for example, in the development of virtual reality and in so-called immersive visualisation, which is expected to be widely applied in the future, e.g. in the cockpits of various vehicles. Still on the subject of manufacturing production, an incredible revolution is now under way, driven by highly innovative materials, such as:

1. self-cleaning fabrics (thanks to nanotechnology), already used on the Airbus A350
2. composites reinforced with carbon fibres (present, for example, in the body of the new BMW i3)
3. 3D printed medical components for implantology (in PEEK and other engineering plastics)
4. carbon nanotubes (CNT), e.g. for flexible electrical circuits ("Here we have a case in which IT can contribute to the development of the plastics industry")
5. durable, rigid and conductive graphene
6. the automated overmoulding of almost all materials on any other type of material
7. functional surfaces ("Even though some elites are even wary of 3D printing")
8. the capturing and storage of carbon and CO_2
9. biorefineries
10. new biofuels, combined with intensive agriculture (for example: treatment of lignin waste to produce "bio-based" chemical products and biomaterials).

"I would therefore like to see chemical and plastics industry professionals talking mainly about the incredible potential and applications of these innovative materials", concluded professor Woudhuysen. "And seeing as the projects mentioned are already moving millions of dollars, while we are perhaps not talking about a new "carbon economy" (that would be an exaggeration), we are undoubtedly talking about a new "carbon-based infrastructure", which should not be viewed as a problem, but rather as an opportunity, as already mentioned. All these sectors could turn out to be highly dynamic, were we to finally start questioning the official objections and political dogmas and adopting a better take on scientific and technological data". ■

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EXECUTIVE DIRECTOR OF PLASTICSEUROPE, KARL-H. FOERSTER CAN BOAST A THIRTY YEARS EXPERIENCE IN CHEMICAL AND PLASTICS INDUSTRIES. THE EDITORIAL STAFF OF MACPLAS MET HIM AT THE SUMMIT POLYTALK AND ASKED SOME QUESTIONS ABOUT THE ASSOCIATION AND THE INDUSTRY THAT REPRESENTS

BY **RICCARDO AMPOLLINI**

AN INTERVIEW WITH KARL-H. FOERSTER

CREATING "CHEMICAL BONDS" ALONG THE ENTIRE VALUE CHAIN

YOU BECAME THE EXECUTIVE DIRECTOR OF PLASTICSEUROPE ON OCTOBER 1, 2013. WHAT ARE THE MAIN PILLARS OF YOUR STRATEGY FOR THE ASSOCIATION IN THE NEXT YEARS?

Karl-H. Foerster: : Our first pillar is our unique structure. Hence, we are going to build on our performance as the only pan-European trade association with a wide European network that enables us to implement many programmes and deliver aligned messages (regarding increasing the "plastics culture", note of the editor) across Europe. This is definitely a major advantage.

A second pillar of the strategy is an ongoing dialogue with our key stakeholders. In other words, a European-wide stakeholder engagement programme addressing policy makers, media and other stakeholders. We will continue to liaise with European and national institutions to secure that decisions are based on accurate information. Effective communications towards all stakeholders will provide society with the necessary information to help raise awareness and correct misconceptions.

Our third pillar is the strength of our membership. As you may realise, PlasticsEurope's authority also takes its roots in its membership. We are a strong organisation because we represent and are supported by most plastics manufacturers in Europe which are members of the association. This strong membership gives us the relevant support to implement programmes and initiatives that are necessary for our industry.

HOW WOULD YOU DESCRIBE YOUR COOPERATION WITH EUPC?

KF: We have already established at national levels across Europe a wide variety of partnerships with converters. Clearly, the public and politicians see us as "the plastics industry". They do not want to distinguish amongst producers, converters and recyclers. For them, there is only one plastics industry and that is also correct.

Delivering messages with one voice also makes our communications more effective and powerful. This has also been mentioned in one PolyTalk sessions: the industry is often too fragmented when it comes to communicating on small issues that nobody can understand.

So, we definitely want to amplify that fruitful cooperation, also at pan-European level. One good example is the joint press conference we held at the opening of PolyTalk 2014 to launch the "Manifesto for the Competitiveness of the European Plastics Industry" (see the official press release in the box on page 19, note of the editor).

ARE YOU PROGRAMMING SIMILAR ACTIVITIES WITH THE MACHINERY MANUFACTURERS ASSOCIATIONS?

KF: Cooperation is ongoing with the machinery sector as well in a timely and relevant fashion in the different regions in Europe. A perfect example is the long standing tradition of the joint stand "Messe Special Exhibition" we host at the K Fair together with the German converters and machinery association.

We also regularly work together on view papers, press statement or studies. (This was the case, for instance, with the recent The Europe-

Foerster answers to the questions asked by the participants at PolyTalk 2014

an-House Ambrosetti's study commissioned by different associations like PlasticsEurope, Federchimica and Assocomaplast, note of the editor). Such partnerships clearly confirm our "chemical bonds" with various organisations in the full value chain. So, if we position the plastics industry as a whole, we can identify many common objectives seen on a broader scale. This perspective is very important for the companies operating in the plastics sector, and for the industry itself, also with regard to our relations to politicians, media and the public.

ON APRIL 28-29, 2015, IN ROME, PLASTICSEUROPE HAS JUST ORGANISED ITS 12TH EDITION OF IDENTIPLAST, THE INTERNATIONAL CONFERENCE ON THE RECYCLING AND RECOVERY OF PLASTICS. DO THE POLYMERS PRODUCERS REALLY BELIEVE IN RECYCLING? RECYCLING MORE, PROBABLY MEANS SELLING LESS VIRGIN POLYMERS...

KF: It's not a commercial question. This topic is related to the future. Recycling is inevitably a key element in a resource efficient Europe. It is an integrated part of the plastics industry and is instrumental in order to ensure the wide acceptance of the industry and its products in the long term. Business models evolve, new product arrive on the market, so more recycling doesn't necessarily means a threat to the plastics industry. On the contrary, when recycling makes sense at environmental and economic level, it should remain the preferred option for plastics waste management.

REACH AND OTHER EUROPEAN LAWS ARE IMPLEMENTED TO AVOID ENVIRONMENTAL AND HEALTH DAMAGES. THESE REGULATIONS ARE OFTEN VERY EXPENSIVE AND MAY NOT BE ECONOMICALLY SUSTAINABLE FOR SOME CHEMICAL COMPANIES. IN PRACTICE, IS IT BETTER TO LOSE JOBS OR TO HAVE LESS STRINGENT REGULATIONS?

KF: We are committed to expand the role of the industry by contributing to increasing the industrial GDP to 20%. This means more investment and more jobs. But, in order to do that, certain conditions have to be created.
The European plastics products are currently at the forefront of sustainability which is measured by the Life Cycle Assessment methodology, increasingly referred to as an important tool to investigate the environment impact of products. In this regard, we support the regulation itself as it is an important tool to achieve a level playing field. What we need is a consistent and predictable regulatory framework that provides a safe

Before becoming executive director of PlasticsEurope, Karl-H. Foerster has been the CEO of Neochimiki Group (Athens) and vice president at PolymerLatex. Furthermore, he held various executive management positions during his 20 years at Basf

environment for investment. This aspect is unfortunately lacking in Europe for the time being and we urge policy makers to pay close attention to this matter. Our main objective is to make sure that the European industry gets the same level playing field as the competition.
In fact, we know that the products that are needed on the market, if manufactured in Europe, are most likely produced with the highest resource efficiency standards and with less greenhouse gas emissions. If these productions move to other parts of the world, we have to ensure that the same high environmental, health & safety and ethical standards are met.

HOW DID PLASTICSEUROPE PROGRESS WITH THE "ZERO PLASTICS TO LANDFILL" INITIATIVE?

KF: We are satisfied with the positive trends that we have witnessed over the recent years. Every year, less and less plastics waste is sent to landfills in Europe. However, there is still much to be done to reach our target. Today, 9.6 million tons of plastics waste are still going to landfills in Europe every year. This is equivalent to approximately 8 billion euro/year for EU-28+Norway and Switzerland, if we consider the fossil fuel value contained in these plastics. This, not only create environmental problems but is a waste of valuable resources. So, our target is to ban landfill in all European countries by 2020. Now it seems that this is not going to happen as regulators call for 2025 to integrate additional member states which will need more time to apply proper and necessary investments. The European plastics industry will however continue its efforts towards the "Zero Plastics to Landfill" initiative. To achieve this goal we must be in total alignment with the European Commission.

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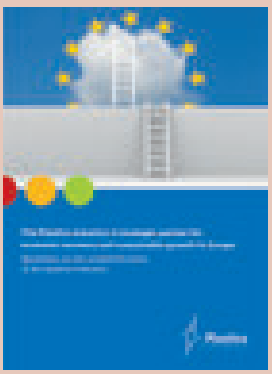
A "manifesto" for the competitiveness in Europe

Acting together for a sustainable growth

PlasticsEurope together with EuPC, the association of European Plastics Converters, launched a "Manifesto on the competitiveness of the plastics industry in Europe" at a press conference held in Brussels on November 4, 2014, calling on EU policy makers to join the industry in its efforts to keep a strong plastics sector in Europe. The plastics industry is a key economic player in the European Union accounting for a positive trade balance of 18 billion euro. It also forms part of the top five most innovative sectors in the EU, representing 1 in 25 patents being submitted by the industry between 2003 and 2012. This industry is also a strategic pillar of Europe's manufacturing sector, having a knock-on effect on other key areas of the economy. A recent study by The European-House Ambrosetti, analysed the potential impact of a strengthened plastics supply chain for Italy and Europe. Results show a multiplier effect of almost 2.4, i.e. 100 euro GDP in the Italian plastics supply chain generates 238 euro of GDP in the national economy and for every job created in the plastics sector almost 3 additional jobs are created in the wider economy. "The plastics industry is an important part of the solution for a circular economy and for a resource efficient Europe. We need a long term strategy for Europe's re-industrialisation that encompasses the plastics sector as a key strategic partner driving innovation and securing transition towards a resource efficient and low carbon economy", said Patrick Thomas, president of PlasticsEurope and CEO of Bayer MaterialScience Michael Kundel, president of EuPC and CEO of Renolit added: "The European plastics industry employs more than 1.4 million people in the European Union in some 62,000 companies and creates a turnover in excess of 300 billion euro per year. The support of European policy makers is critical to help us drive economic growth, create high quality employment opportunities and optimise our contribution to European welfare". The press event took place prior to the industry summit PolyTalk 2014 "An Industrial Renaissance in Europe... Let's make it happen", a two-day conference, which brings together high-level figures from the political, industry, science and academia spheres to address how the plastics industry can support and contribute to raise the industrial share of Europe's GDP from its current 15.3% to 20% by 2020.



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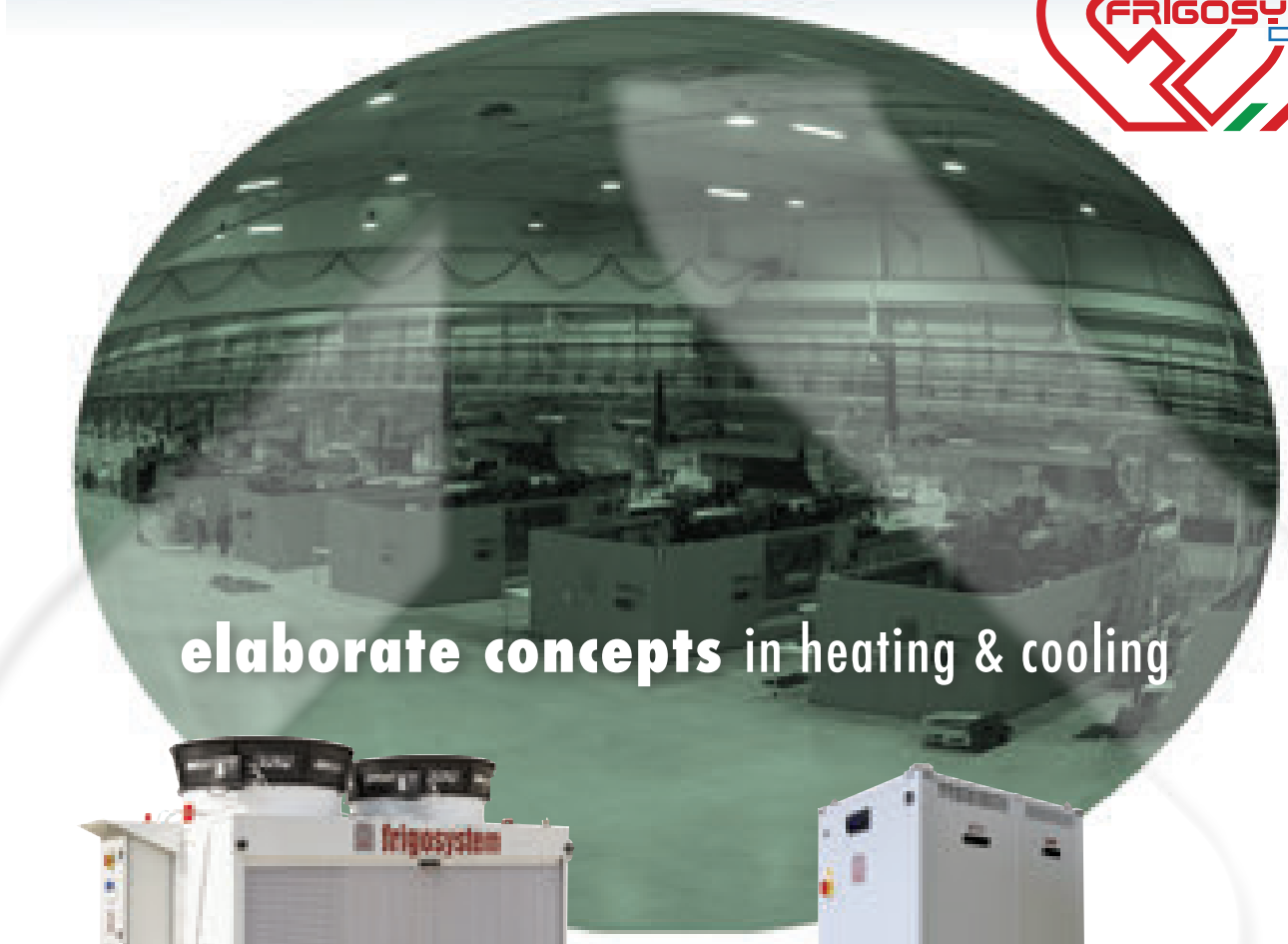

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COMPOSITES EUROPE 2014

COMPOSITES MARKET SURVEY

A POSITIVE CLIMATE FOR THE COMPOSITES MARKET

DESPITE THE PREDICTIONS FOR A SLIGHT DECLINE, THE ASSESSMENT OF THE CURRENT ECONOMIC ENVIRONMENT IS POSITIVE AND THE CLIMATE IS FAVOURABLE FOR INVESTMENTS. THE AUTOMOTIVE INDUSTRY AND CARBON-FIBRE REINFORCED PLASTICS (CFP) ARE DRIVING THE COMPOSITES SECTOR

BY **COMPOSITES GERMANY*** AND **AVK****

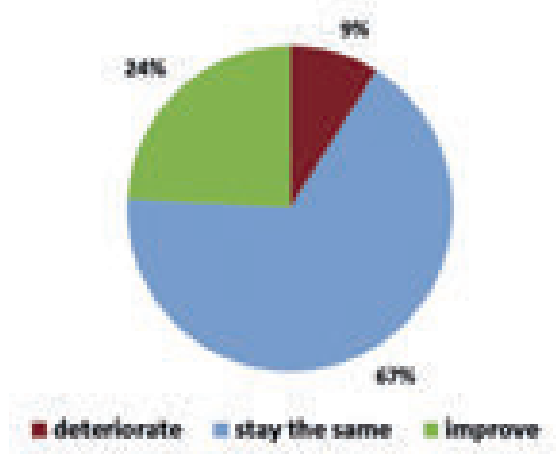
Fibre-reinforced plastics/composites are considered to be materials with enormous potential, including considerable potential for development in a wide variety of applications. They can be used, for instance, in the automotive industry, in construction, in aviation and in electronics. Many sectors of industry and areas of application are developing ever new uses for these versatile, young materials. Since 2013 the trade association Composites Germany has been gathering indicators on current and future developments in composites, based on a six-monthly member survey conducted by AVK, CFK Valley, CCeV and VDMA. The results of the fourth survey were published in the beginning of 2015. Summarizing, they indicate:

- positive assessment of the current economic situation;
- friendly investment climate;
- growth drivers in the automotive industry and CFP;
- slight dip in future expectations.

CURRENT ECONOMIC SITUATION – POSITIVE DESPITE SLIGHT DIP

Following trends in previous surveys, the current economic situation is seen as positive by the respondents. However, whereas in the last survey nearly 90% viewed the economic situation as “quite positive” or “very positive”, this share has gone down

Fig. 1 - Expected change in the economic climate around the world



to just over two thirds of all respondents. The downturn was to be expected after the very high level in previous surveys. Once again, the situation is seen as particularly critical in Europe, whereas it is generally rated as better for Germany and on a global scale.
In the same context it is encouraging to see that assessments of the future economic situation are continuing to be so positive. About 90% of respondents believe that the economic situation will be the same or even better in the relevant regions (i.e. Germany, Europe and worldwide) over the next six months (see **figure 1**).

POSITIVE INVESTMENT CLIMATE

The positive assessment of the general economic situation and the good future prospects are underpinned by several further factors. Nearly 30% of respondents are planning to recruit new staff in 2015, compared with only 10% who are planning to downsize their workforce. An equally good picture emerges for planned investments, as nearly two third of respondents are hoping to make investments this year.
Likewise, a strong commitment to the composites market continues to be seen as worthwhile. Nearly half of all correspondents say they are hoping to step up their commitment to composites (**figure 2**).

CFP AND AUTOMOTIVE INDUSTRY AS GROWTH DRIVERS

As before, the main impetus for growth in this survey is believed to come from CFP (carbon-fibre reinforced plastics). When asked which future growth drivers they perceived on the material side, nearly half of all respondents specified CFP (**figure 3**). The regional drivers in this segment are seen to be Germany and Asia.

Fig. 2 - Future commitment to composites

Fig. 3 - Growth drivers in composites

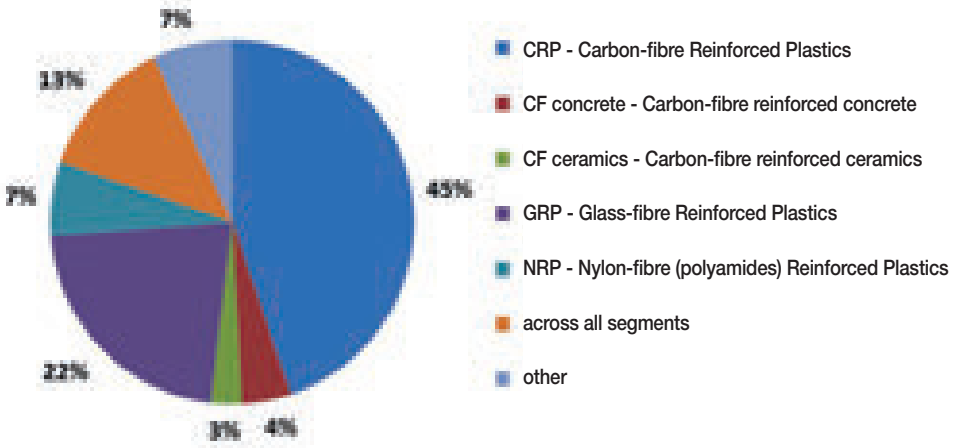
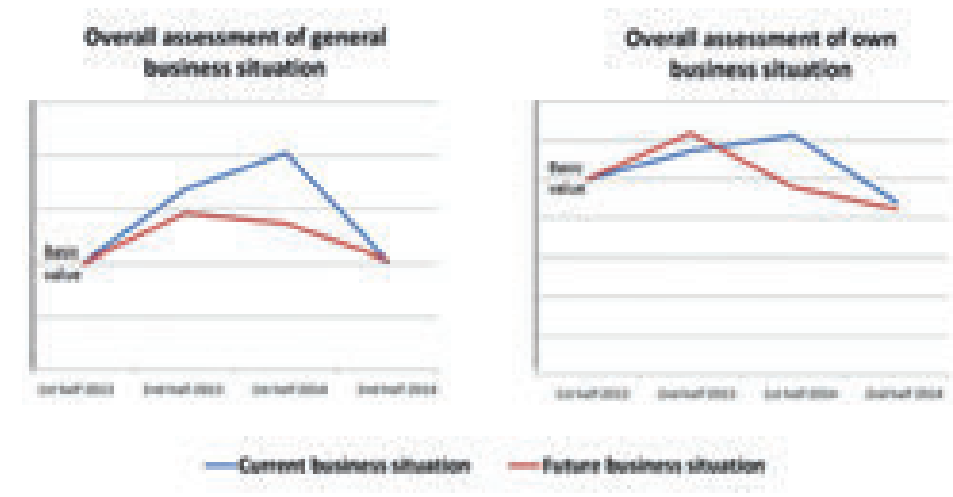


Fig. 4 - Composites Index "Business Situation"



For the first time the survey also covered the respondents' assessment concerning future developments in different areas of application. The automotive and aviation industries are apparently expected by the composites industry to display the most positive development, followed by wind energy.

COMPOSITES DEVELOPMENT INDEX – A DOWNWARD TREND, BUT STILL POSITIVE

Both the general economic situation and the companies' own business situations are seen by respondents as somewhat more negative than in previous surveys (**figure 4**). However, it must be emphasised in this context that levels were extremely high in previous surveys. Yet despite this slight downturn, the assessment of the economic situation generally continues to be positive (as seen above).
The next issue of the "Composites Market Survey" will be published in July 2015.

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NEWS

Italian machinery manufacturers

Only positive signs in 2014

The year 2014 balance sheet for the sector - completed by Assocomaplast (the Italian trade association belonging to Confindustria, which groups together over 160 makers of machinery, moulds and equipment for plastics and rubber) incorporating Istat foreign trade data - shows that progress in exports maintained a constant pace to the end of the year, sustaining Italian machinery manufacturers in a period where the domestic market showed only timid signs of recovery in the very recent months. In effect, although there was a noticeable increase in purchases from abroad - on the order of 8 percentage points over the entire year, in statistical terms - the propensity towards investment by converters remained limited into the final quarter of 2014.

The association (stand B 62, hall 22, at Plast 2015), according to surveys among its members, estimated a value of production that again touched the threshold of 4 billion euros. The trade balance has further increased in a positive direction, going well beyond the 2-billion-euro threshold, with the domestic market just under that level (see **table 1**).

The most recent survey by the association also highlighted a generally optimistic outlook among approximately one third of the interviewed companies, who expect further increases in orders and turnover in the current half year. A similar percentage also expects the export share to increase.

Regarding the destinations for foreign sales of Italian machinery (see **table 2**), a clear and progressive increase is noted for European countries - within the EU, while the total trade with extra-EU countries has fallen off, dragged down by the negative performance in Russia (-11.9%), partially as a result of the sanctions applied in response to the Ukraine crisis and the collapse of the ruble - and Nafta, thanks to increases in exports to the United States.

The lacklustre trend in sales to Brazil (-11% with respect to 2013) conditioned the overall performance in South America, while an upswing in supplies to Chinese converters (as well as to Vietnamese, Indonesian and Indian, just to mention some of the most significant cases) compensated a slow-down to South Korea, Japan and Thailand.

Thanks to the above-mentioned positive trend in imports from Italy, the United States (+21.5%) took second place from France (-10.4%, now in third place) among destination markets, while Germany, in keeping with established tradition, remained in first place by a wide margin (albeit somewhat decreased).

A look at the main types of machines again shows positive performance for blow-moulding machines and flexographic printing machines (+11.6% and +11.1%, respectively). The export value of extruders remained essentially stable with respect to the previous year, while injection moulding machines showed a clear downturn (-16%). Moulds continued to perform well (especially types for injection), representing over 28% of total exports for the sector.

A major date for the Italian plastics and rubber processing industry is the 17th edition of the international fair Plast (May 5-9, Fiera Milano fairgrounds, in Rho-Pero). Exhibitors are about 1500 and advance visitor registration figures are very encouraging, more than double those recorded by the organizational office for the same period in 2012. Expectations are thus high for the tri-annual event, which will give operators a chance to get updated on the latest technologies developed by Italian machinery and equipment manufacturers and by their main international competitors.

www.assocomaplast.org

TABLE 1 - ITALIAN MARKET OF MACHINERY, EQUIPMENT AND MOULDS FOR PLASTICS AND RUBBER (MILLION EUROS)

	2013	2014	Δ% 2014/2013
Production	3900	4000	2.6
Exports	2555	2680	4.9
Imports	590	640	8.5
Domestic market	1935	1960	1.3
Trade balance (active)	**1965**	**2040**	**3.8**

TABLE 2 - DESTINATION AREAS OF THE ITALIAN PLASTICS AND RUBBER MACHINERY, EQUIPMENT AND MOULDS EXPORTS (%)

	2013	2014
Europe (EU)	58.8 (46.4)	60.0 (48.5)
North America/Nafta	9.8	10.9
Central/South America	9.0	7.3
Africa	5.8	5.1
Asia/Oceania	16.6	16.7
Total	**100.0**	**100.0**

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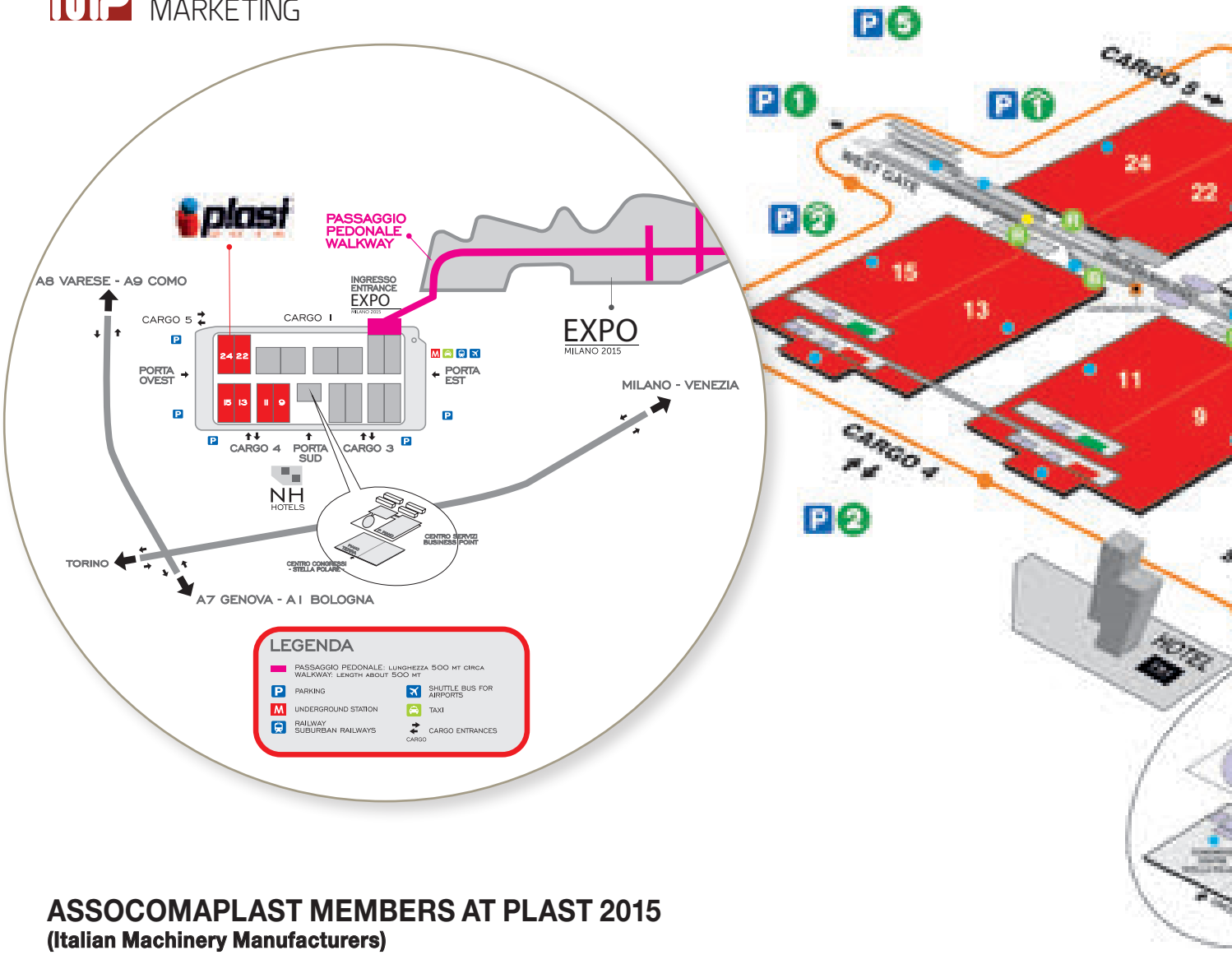


ASSOCOMAPLAST MEMBERS AT PLAST 2015

(Italian Machinery Manufacturers)

	HALL	STAND
ADLER	22	A 21
AMUT	13	B/C 71/72
AMUT DOLCI BIELLONI	15	D 65
AMUTEC	15	C/D 61/62
ARVOR	15	B 172
BANDERA	15	A/B 101/102
BARUFFALDI	13	B 111
BAUSANO & FIGLI	13	B/C 41/42
BD PLAST	15	B 61
BFM	15	A 121
FRATELLI BIANCHI	22	D 126
BIESSE	11	A/B 81/82
BINOVA	15	B/C 41/42
BMB	22	A/B 101/102
BORGHI	13	D 52
B-TEC	13	A 102
CACCIA	22	B 111
CAMPETELLA	22	A 31
CANTONI	22	C 22
CATTORINI	15	B 141
CIBRA NOVA	15	B 35
CMG SPA	22	B 11
CMG SRL	15	A/B 31/32
CMS	13	D 08
COFIT	15	D 71
COLINES	15	A/B 01/02
COLMEC	11	B 12
COMAC	13	B 112
COMERIO ERCOLE	11	A 61
COMERIO RODOLFO	11	C 42
COMI	13	B/C 71/72
COSTARELLI	15	D 82
CRIZAF	24	C/D 111/112

	HALL	STAND
DEGA	24	D 32
DELIA	11	C 33
DOTECO	15	C/D 91/92
ELBA	15	C 121
ELECTRONIC SYSTEMS	15	B/C 111/112
ENGIN PLAST	15	C 22
ERGOMEC	13	B/C 137/136
ERHARDT + LEIMER	15	B 31
EUROCHILLER	15	C 71
	22	B 101
EUROVITI	15	A 175
EXACT	15	A 61
FESTO	22	B 21
FILTEC	15	A 21
FOLCIERI	15	B 72
FRIGOSYSTEM	15	B 82
FRIUL FILIERE	13	C 22
GAMMA MECCANICA	15	B 21
GAP	15	B 155
GAVO MECCANICA	15	B/C 71/72
GEAF	13	B 65
GEFIT	24	B 61
GEFRAN	24	C 22
GREEN BOX	13	B 102
	24	B 82
HELIOS ITALQUARTZ	13	C 157
HF MIXING GROUP	11	B 71
ICMA SAN GIORGIO	13	C/D 71/72
IMG	11	A/B 41/42
	24	C/D 41/42
IMS DELTAMATIC	24	C 172
INDUSTRIAL FRIGO	13	C 36
	24	D 12

ASSOCOMAPLAST MEMBERS AT PLAST 2015

	HALL	STAND
IPM	13	C/D 61/62
ITIB MACHINERY	13	D 122
MACCHI	15	B/C 81/82
MAGIC MP	22	A/B 41/42
MAICOPRESSE	24	C/D 21/22
MARIS	13	C/D 21/22
MATEX VARESE	13	C 51
MB CONVEYORS	24	D 52
MECA TECNO	15	B 22
MECCANICA GENERALE	24	C 71
MECCANOPLASTICA	22	B 61
MOBERT	15	C/D 101/102
MORETTO	22	A/B 81/82
MOSS	22	B 52
NEGRI BOSSI	24	C/D 121/122
NORD	24	B 141
NOSELAB ATS	11	A 153
OLMAS	13	C 81
OMG	13	B 92
OMIPA	13	C 122
OMMP-MOULDS	22	C 02
OMS	24	C 101
OMS GROUP	11	B 92
OMSO	22	A 51
OMV MACHINERY	13	D 92
PERSICO	22	A 71
PIOVAN	24	B/C 71/72
PLAS MEC	13	C/D 41/42
PLASTIBLOW	22	A/B 01/02
PLASTIC SYSTEMS	24	B/C 31/32
PLAXTECH	22	C 111
POLIVINIL ROTOMACHINERY	22	C 71
PRESMA	22	B 21

	HALL	STAND
PREVIERO	15	A 51
PROFILE DIES	13	C 101
PROMIXON	13	D 132
QS GROUP	13	B 21
RAIMA	22	B 31
RIPRESS	24	B 01
RIVI MAGNETICS	11	B 45
	24	B 106
ROMPLAST	13	B 76
SALDOFLEX	15	A/B 41/42
SANDRETTO	22	C/D 41/42
	24	B 26
SCAE EUROPE	15	B/C 11/12
SGS ITALIA	15	C 81
SICA	13	D 102
SPM	11	A 91
ST SOFFIAGGIO TECNICA	22	B 122
STAR AUTOMATION	24	C/D 81/82
SYNCRO	15	A 81
T2	13	C 152
TECHNO PLASTIC	13	D 52
TECNODINAMICA	11	C 122
TECNOMATIC	13	C/D 111/112
TECNOVA	15	B/C 41/42
TECOM	15	A 71
TEKNOMAST	13	C 142
TERMOSTAMPI	13	A 71
THERMOPLAY	24	D 102
TORNINOVA	15	B 62
TOSH	22	B 91
TRIA	22	A 61
UNILOY MILACRON	22	C 141
UNION	13	B 01

NEWS

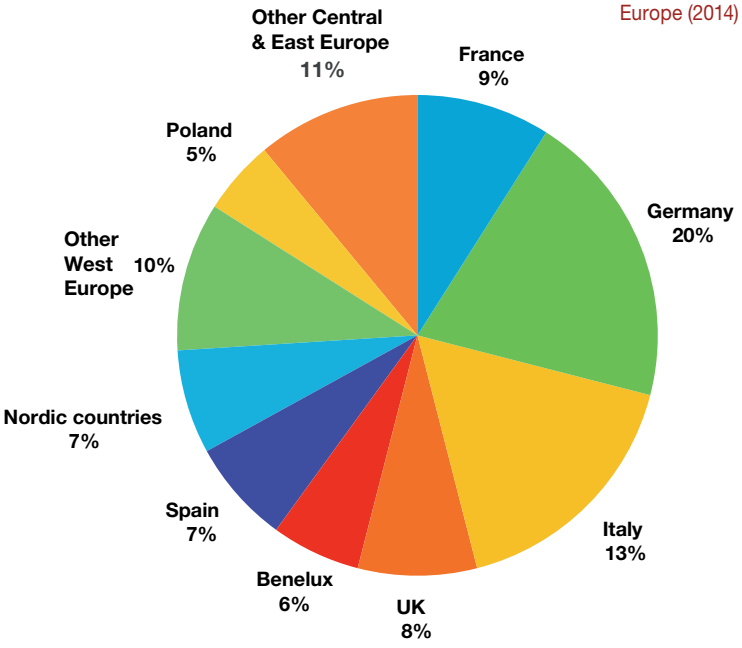
Impact of recession

Europe's pipe industry smaller... but surviving

The plastics pipe sector in Europe was severely affected by the Great Recession and the ensuing eurozone economic crisis. The extent to which the industry has changed and restructured because of the events of the past five years are well documented in two new reports from industry consultants, Applied Market Information (AMI). The first one, "Directory of plastic pipe extruders", is a comprehensive listing of Europe's 480 plus pipe extrusion sites across Europe. The extent of the attrition that has occurred in Europe is illustrated by the fact that in 2008 the same report listed 559 sites and in 2001 there were 625 manufacturing sites in operation. The worst affected markets have been Spain, Italy, France and the UK, which accounted for 60-70% of the site reduction in Europe. The most common reason for plant closures has been either group rationalisation within a country or the transfer of production abroad, although there have also been many bankruptcies and acquisitions resulting from liquidation.

The crisis accelerated the trend for the merger of production sites, which had begun earlier as a result of a slowdown in construction in the period 2001-2005, largely caused by the depressed state of the German building market at that time. That said, Germany is still the largest producer of plastic pipes accounting for 20% of production in 2014. Its share of production has in fact increased over recent years as it is the only West European country which has seen output recover to 2007 levels of demand. Overall European production of plastics pipes in 2014 is still 20% below that of 2007.

Distribution of plastic pipe production in Europe (2014)



Source: Applied Market Information

The impact of the recession and eurozone crisis on the structure of Europe's leading pipe producing groups is further explored in AMI's "Corporate performance and ownership among Europe's leading plastic pipe extruders". This report profiles the 50 largest pipe producers in Greater Europe (including Russia and Turkey).

The largest producer, both in volume and turnover in Europe, is Wavin. In 2012 it was acquired by Mexichem and is now part of a group which is the largest pipe producer in the world. Following the takeover eight facilities have been closed, including plants in Belgium and Norway, with manufacturing moved to more competitive locations including Latin America. Corporate strategy is to continue restructuring the business to further improve its competitive position and profitability.

Pipelife is Europe's second largest producer and, like Wavin, it saw a change of ownership in 2012, when Solvay sold its share in the business to its joint venture partner Wienerberger. Despite the downturn, Pipelife has continued to make acquisitions including the Swedish sewage, soil, water and cable protection pipe maker Westpipe in 2010 and Alphacan's PVC pipe plant in Gaillon, France during 2011.

Likely to be challenging Wavin and Pipelife for the position as Europe's largest pipes producer in the future is Russia's Polyplastic Group, currently the third largest producer in volume terms. Since it was founded in 1991 it has expanded rapidly through investing in new plants and acquiring other sites. In 2013 it entered the West European market through its acquisition of Radius Systems in the UK, which had previously been part of Uponor. It went on in April 2014 to acquire Evopipes in Latvia and create a joint venture with KE Kelit, in Austria, for supplying piping systems for district heating. The group's strategy is to achieve production output of 500,000 tons/year by 2020.

The new multylayer pipe "Fiber Basalt Plus", made of PP-RCT (polypropylene reinforced with basalt fibres) and produced by Wavin

Pipe production in Europe is quite consolidated with the top 10 companies accounting for 40% of production by volume. An analysis of the financial performance of the 50 companies listed in this report reveals an industry worth approximately 7.5 billion euros. Interestingly despite the impact of the crisis in the eurozone, weak investment and low economic growth, profitability for the sector has been remarkably consistent over the past five years averaging around 5-6%.

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NEWS

World demand for flame retardants

On the rise to reach 2.8 million tons

As populations in developed and developing countries alike become more concentrated in urban centers, it will be increasingly important to strictly enforce building codes to reduce incidences of fire, bolstering flame retardant sales in such products as foamed plastic insulation and vinyl flooring. This will stimulate demand in related markets as well, increasing utilization in furniture, home electronics, and wire and cable.

Global demand for flame retardants is projected to expand 4.6 percent per year through 2018 to 2.8 million tons, valued at 7.0 billion dollars. Gains will be stimulated by an acceleration in electronic product, motor vehicle, and wire and cable production, particularly in the United States, Western Europe and Japan, as they recover from the recession-impacted 2008-2013 period. In industrializing countries, the stricter enforcement of building codes will increase the market penetration for flame retardants in building materials, fueling sales increases. Alumina trihydrate (ATH) was the most widely used flame retardant in 2013, accounting for nearly one-third of global demand, and is expected to retain its dominance in the product mix. These and other trends are presented in "World Flame Retardants", a new study from The Freedonia Group, a Cleveland-based industry market research firm.

China will post the fastest growth in demand of any major national market and retain its position as the largest, accounting for nearly one-third of 2018 global flame retardant consumption. India and Thailand will also post strong demand gains. According to analyst Zoe Biller: "Rising urbanization, along with climbing personal incomes in these nations, will stimulate a heightened awareness of fire safety and more strictly enforced building codes". Central and South America and the Africa/Mideast regions will also record above average sales increases for flame retardants. Demand in North America will rise at a faster pace than other developed areas due to a rebound in the US construction market, but will remain below the global average. Flame retardant markets in Western Europe and Japan, while returning to growth after 2008-2013 declines, will nevertheless trail the world pace of advance by considerable margins.

Sales of flame retardants utilized in construction applications will record the strongest growth of any major market through 2018. The construction market will also account for the largest share of demand with 28 percent of the global total. A sizable rebound in US construction spending and rising flame retardant utilization rates in developing countries will spur demand.

www.freedoniagroup.com

WORLD FLAME RETARDANT DEMAND (THOUSAND TONS)

	2008	2013	2018	Annual growth (%) 2008-2013	Annual growth (%) 2013-2018
North America	529.0	486.0	579.0	-1.7	3.6
Western Europe	482.9	414.0	459.0	-3.0	2.1
Asia/Pacific	793.4	1110.2	1485.0	7.0	6.0
Other regions	188.7	209.8	262.0	2.1	4.5
Flame retardant total demand	**1994.0**	**2220.0**	**2785.0**	**2.2**	**4.6**

Source: The Freedonia Group, 2015

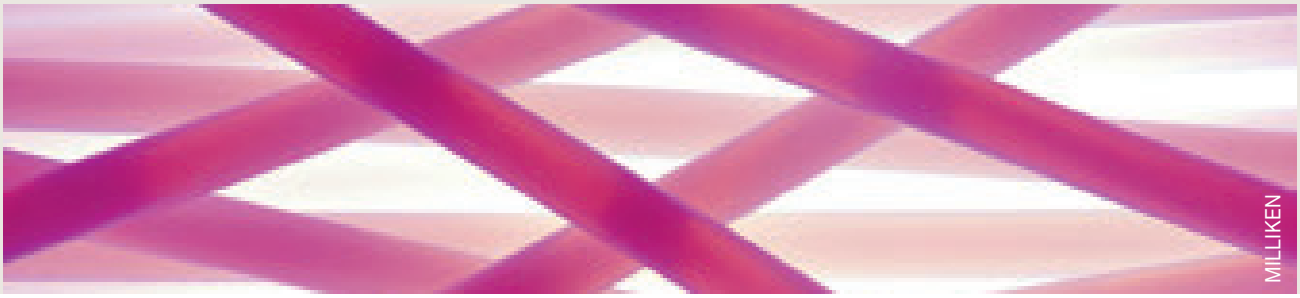
High temperature elastomers market

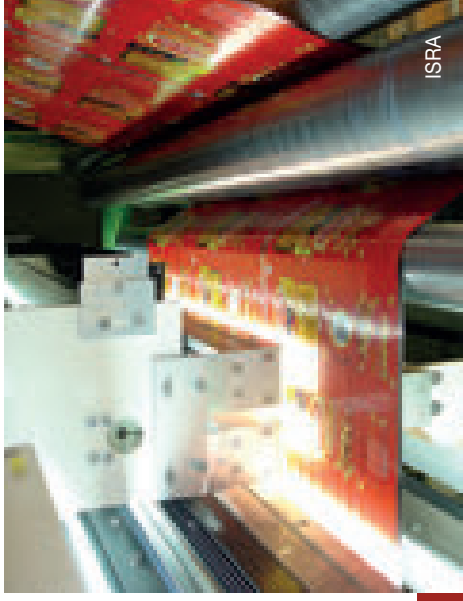
Asia-Pacific, the largest consumer

"The High Temperature Elastomers Market" research report by Markets&Markets categorizes the global market for high temperature elastomers (HTE) on the basis of type, application and region along with forecasting market size in terms of value, and analyzing trends in each of the regions. The HTE market is projected to grow from more than 7 billion dollars in 2014 to north of 11 billion dollars by 2019, with a CAGR of 8.0% between 2014 and 2019. Silicone elastomers are estimated to be the largest segment, both in terms of value as well as volume, in 2014 with a market share of more than 90% of the total high temperature elastomers market. Silicone elastomers are also projected to be the largest segment throughout the projection year till 2019. The growth in silicone elastomer market is expected to be well above the growth rate of high temperature elastomer market. Asia-Pacific is the largest consumer of HTEs globally, holding more than 40% share of the global high temperature elastomers market in 2014 and is projected to grow at a CAGR well above the global average. The high temperature elastomers market is segmented into five major application segments: transportation, electrical & electronics, healthcare, consumer goods, industrial machinery, and others. The demand for transportation application segment accounted for the largest share in 2014. Asia-Pacific is estimated to be the largest region for transportation application segment in 2014. Leading companies such as Dow Corning Corporation (US), Wacker Chemie (Germany), Momentive Performance Materials (US), Solvay (Belgium), and DuPont (US) are focusing on development of new HTEs products through research and innovation, in order to expand their customer base.

Silicone elastomers is the largest segment

www.marketsandmarkets.com




ISRA

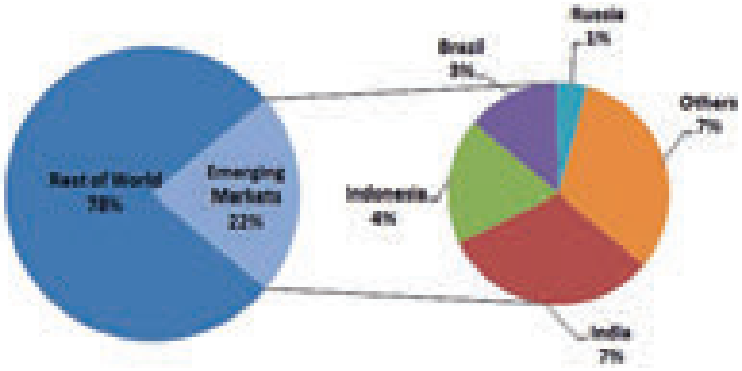
Flexible packaging

15 emerging markets account for over 20% of global demand

In the new study "Opportunities in Emerging Flexible Packaging Markets to 2019", PCI Films Consulting analyses fifteen emerging flexible packaging markets, which currently account for over 20% of global demand and concluded that collectively in the last five years they had grown twice as fast as the world average: Poland, Russia, Turkey, Argentina, Brazil, Chile, Colombia, India, Indonesia, Kazakhstan, Myanmar, Pakistan, Thailand, Vietnam, and Nigeria. Many companies have successfully gained from this market growth and have identified many new opportunities for growth in the coming years.

One of the key findings of the report is that although a number of these emerging markets, especially Russia and Brazil have recently been adversely affected by falling commodity prices and a slowing global economy, overall flexible packaging demand is still growing by nearly 10% per annum over the past five years. This is double the rate of the global flexible packaging market as a whole.

Emerging market demand for flexible packaging in 2014



Major drivers in flexible packaging demand identified include inward direct investment by multinational brand owners and converters, improving living standards, high population growth, liberalisation in a number of markets, changing consumer lifestyles and the development of mass retailing.

Commenting on the publication, study author Paul Gaster says: "Over 60% of total current demand in the markets reviewed is concentrated in seven South East Asian countries and this is where nearly 90% of our forecast growth will be generated over the next five years. These markets in particular will present investment and penetration opportunities for all those involved across the flexible packaging supply chain".

However, average growth over the period in the South American and European countries reviewed is expected to be 5% or less. Demand in Russia is forecast to fall to less than 2% per annum, where a faltering economy, collapsing oil revenues and western sanctions are heavily impacting demand.

Three European flexible packaging markets have been identified by PCI consultants as "emerging" and worth profiling in some detail. Poland remains amongst the strongest and most resilient in Europe with an increasingly important export focus. Russia's flexible packaging market has grown rapidly to become the fifth largest in Europe; despite serious economic and political headwinds which have sharply slowed current demand for flexible packaging, long term growth prospects remain favourable. Turkey has Europe's fifth largest converted flexible packaging industry, with sustained long term growth potential; approaching 50% of production is exported. ■

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INNOVATIVE AND SUSTAINABLE EUROPEAN PROJECTS

PARTNERS FROM DIFFERENT EUROPEAN COUNTRIES WORK TOGETHER TO DEVELOP NEW SUSTAINABLE PROCESSES FOR THE PRODUCTION OF CHEMICAL COMPOUNDS FROM RENEWABLE RESOURCES, FOR LOW-FRICTION SEALS AND FOR NEW PROCESSING AND DRYING TECHNOLOGIES WITH LOWER ENERGY CONSUMPTION

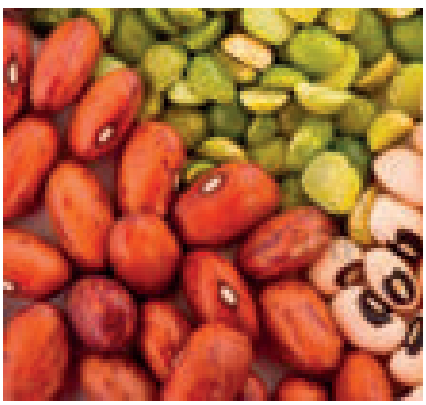
BY **GIROLAMO DAGOSTINO**

Launched on late 2013, the research project Leguval aims at recovering and valorising legume by-products for packaging applications based on biodegradable films.

Many things changed from the first kick off meeting, held in Barcelona on December 11, 2013, at Iris (already partner in similar project such as Olipha, Wheylayer e Bioboard, related with waste valorisation for packaging applications) and now Leguval is to more than half of its study period.

After the extraction of the protein fraction from processed legumes production, the aim of Leguval project is to develop new protein films and coatings by wet and dry processes, which will allow improving barrier properties in packaging when applied as a layer on biodegradable plastic films while maintaining biodegradability of the final package. Whilst the leftover biomass of protein extraction will be used as a filler inside of polymer matrix to improve the properties of plastic materials and as a source of biogas by anaerobic digestion.

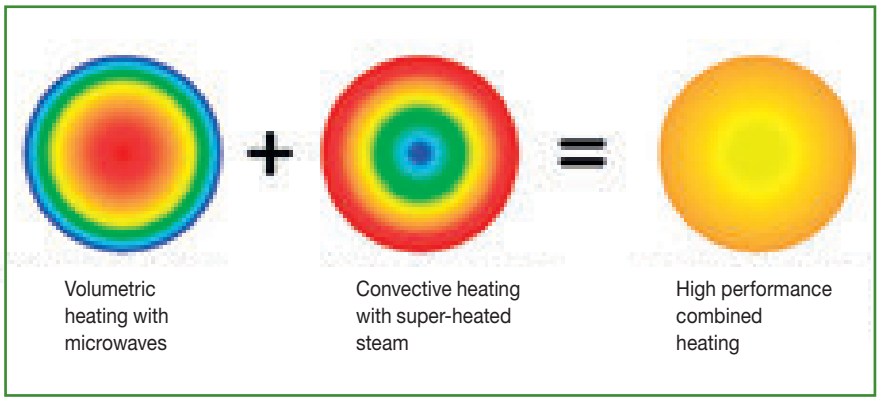
Tons of legumes by-products produced annually in Europe are discarded and the disposal of this part is costly for the food industry and damaging to the environment. Furthermore, the need to comply with the current environmental legislation has led to great market demand for environmental friendly materials and new alternative energy sources.



The main goal of Leguval project is the valorisation of legume co-products and by-products for package applications (biodegradable films) and energy production

This three-years research project, funded by the Seventh Framework Programme from the EU, is handled by a consortium which combines the expertise of four European R&D centres (CNR-IPCF UOS, SSICA, Tecnalia and Polieko) who will provide contract research services to three industry associations (Consebro, PCS, Assocomaplast) and four companies (Iris, Thenos, RDX, Tuba) related with the food and plastics industry. Iris will coordinate the project on behalf of the participant associations.

Leguval will finalize the industrialisation steps prior to the commercialization of the developed vegetal protein coating for plastic films that could replace currently used expensive synthetic oxygen barrier layers. Moreover, using biomass in composites and for gas production can provide, respectively, new biodegradables polymers with improved properties



Working principle of combined drying MW-SHS (microwave and super-heated steam) for hygroscopic polymers

and new alternative energy sources. These strategies would add new value to legume co-products and by-products, greatly improve the packaging sustainability and help to reduce petrol use for energy generation.
www.leguval.eu

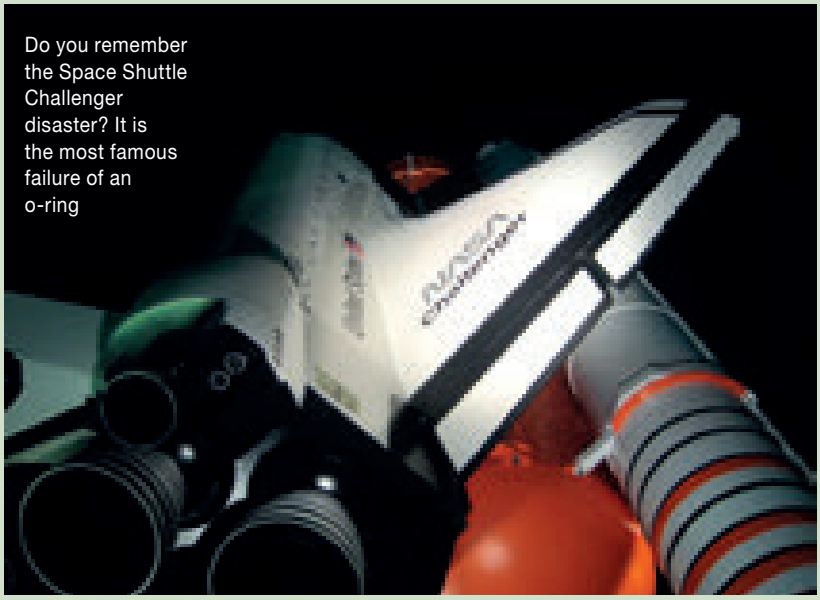
AN EFFICIENT DRYING TECHNOLOGY THANKS TO MICROWAVES AND STEAM

Within the HiPerDry project, a consortium of twelve partners from industry and research is developing a new drying technology for hygroscopic plastics. The new approach combining microwave heating with superheated steam convective drying will not only lead to significant savings in energy costs, but also allow time efficient drying of thermo-sensitive bioplastics. The principal objective of the HiPerDry project is to create a significant advance over the State of the Art in hygroscopic plastics drying technology. The three year development programme will culminate in the testing and demonstration of a pilot plant. The new technology will combine microwave heating and super-heated steam drying and is expected to lead to a reduction in process energy costs of up to 50% as well as a decrease in drying time and an increase in resulting product quality. Moreover, it will allow to efficiently dry heat-sensitive hygroscopic plastics, especially bioplastics, without the risk of material degradation. The partners in this project are among Europe's leading plastics industry associations: Anaip (the Spanish Plastics Industry Association), Assocomaplast (Italian Plastics and Rubber Processing Machinery and Moulds Manufacturers' Association), BPF (British Plastics Federation), Plastipolis (France) and GKV (the German Association of Plastics Converters), represented by TecPart (Germany). The consortium is furthermore joined and supported by technology providers Bierther (Germany), a manufacturer of drying systems, and Faperin (Spain), a producer of plastic parts for automotive and electrical applications. Heckmann Maschinenbau und Verfahrenstechnik (Germany) completes the consortium as machinery and system integrator. These associations and enterprises from five different European countries form a strong transnational partnership to exploit and disseminate the foreground intellectual property developed in the project for the benefit of hygroscopic plastics-processing companies right across Europe. Together they commissioned the Fraunhofer Institute for Interfacial Engineering and Biotechnology (Germany), the Asociación de Investigación de Materiales Plásticos y Conexas (Aimplas, Spain), the Institut für Kunststofftechnik (IKT) at the University of Stuttgart Germany) and the Stichting Dienst Landbouwkundig Onderzoek at Wageningen University (The Netherlands) with the research and development of the new drying system and an integrated sustainability impact assessment. The research receives funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under Grant agreement number 606425.
www.hiperdry.eu

TDM-Seals

Very low-friction seals

The three-year project TDM-Seals is about to come to its conclusion. The project started in October 2012 with the participation of Assocomaplast along with 10 partners from all over Europe. The researchers working on the TDM-Seals project have studied an innovative microdimple pattern for low-friction rubber seals (o-ring) with relative texturing process and new mould coatings that improves demoulding operations (this specific technology has been conceived to be applied to other polymers too).
The results - kept confidential till the conclusion of the project (next October) - show a sizeable reduction in friction thanks to the surface texturing of the samples used in the tests, as well as a substantial decrease in the force necessary to demould the piece thanks to the coating applied to the mould's internal surfaces. The TDM-Seals project participates at Plast 2015 (Fiera Milano, Rho-Pero exhibition centre, from May 5 to 9), in hall 11, with its own stand where visitors will be able to find out more details on the research.
www.tdm-seals.eu


Do you remember the Space Shuttle Challenger disaster? It is the most famous failure of an o-ring

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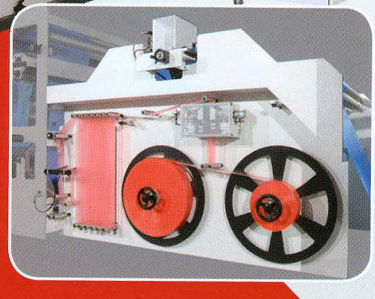

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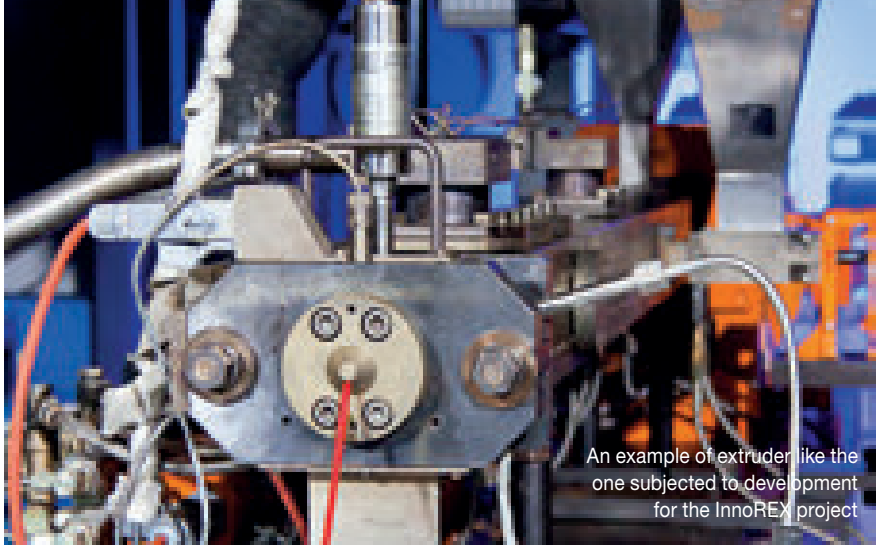


An example of extruder like the one subjected to development for the InnoREX project

ALTERNATIVE ENERGIES FOR PLA PRODUCTION

Assocomaplast (stand B62, hall 22, at the fair Plast 2015) also participates at the European project InnoREX - funded by the European Commission under its Seventh Framework Programme (Grant Agreement number 309802) - which enables the continuous, highly precise production of bioplastics using alternative energies and metal free catalysts for reactive extrusion, thanks to the broad collective competence of the consortium involved in the project. These bioplastics are then destined to applications in the monolayer packaging segment.

The ambitious InnoREX project seeks to develop a new technology for the production of PLA (polylactic acid or polylactide). Among other benefits, the new process aims to improve the homogeneity of production and to replace the use of metallic catalysts with organic ones. Up to now, metal-containing catalysts (typically: tin (II) 2-ethylhexanoate) have been used to improve the polymerization rate of lactones, posing, however, a potential hazard to health and environment. InnoREX novel reactor concept using alternative energy sources and replacing metal-containing catalysts by organic ones will make both process and product safer for consumers and for the environment.

To ensure short market entry times for the InnoREX technology, commercially well-established co-rotating twin-screw extruders will be used as reaction vessels. However, the use of an extruder as a reaction vessel to produce bioplastics made from polylactic acid is only one of the innovations in InnoREX. An online viscometer and spectral analytics using NIR technology will be applied to the production line.

The low-intensity but highly-targeted input of alternative energies in the reaction volume will increase catalyst activity and ensure a high molecular weight polymerization within the limited residence time of a co-rotating twin-screw extruder.

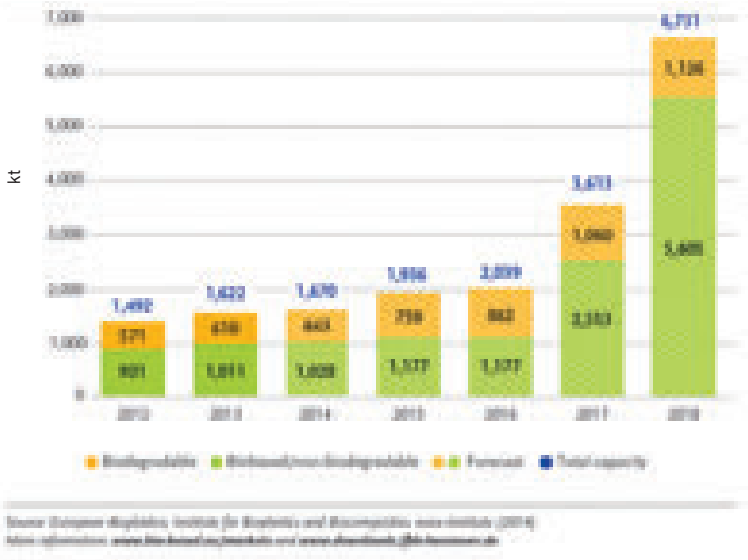
The reason of why commercial polymerization has not been carried out so far in twin-screw extruders is the short residence time and the static energy input of the extruder, which allows no dynamic control of the reaction. These obstacles will be overcome in InnoREX. The project will utilise the rapid response time of microwaves, ultrasound and laser light during the polymerization process. This adjustable input of alternative energies will make it possible to achieve a precise dynamic control of the polymerization and of the molecular structure (branching, crystallinity, molecular weight etc.) of the resulting polymer.

www.InnoREX.eu

NEWS

All bioplastic materials increase

EU in need of a clear framework



Global production capacities of bioplastics (2012-2018)

The results of last European Bioplastics' annual market data update confirm the positive growth trend of the global bioplastics production capacities. "The market is predicted to grow by more than 400 percent in the mid-term", stated François de Bie, chairman of the association representing the interests of the European industry along the complete bioplastics' value chain.

The data compiled in cooperation with its respected scientific partners - Institute for Bioplastics and Biocomposites (IfBB, University of Applied Sciences and Arts Hannover, Germany) and the nova-Institute (Hürth, Germany) - shows that bioplastics production capacity is set to increase from around 1.6 million tons in 2013 to approximately 6.7 million tons by 2018. Biobased, non-biodegradable plastics, such as biobased PE and biobased PET, are gaining the most. PLA is a major growth driver in the field of biobased and biodegradable plastics. Furthermore, renewable and compostable plastics produced locally are likely to benefit from the new EU directive on the reduction of shopping bags.

Flexible and rigid packaging remains by far the leading application field for bioplastics. "Besides this, a decisive growth can be observed in textiles and automotive applications. From functional sports garments with enhanced breathability to fuel lines - bioplastics are constantly spreading into new markets", explained de Bie.

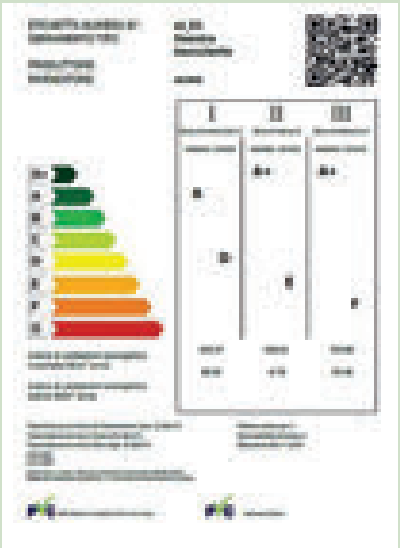
With a view to regional capacity development, Asia will expand its role as major production hub. Most of the currently planned projects are being implemented in Thailand, India and China. About 75 percent of bioplastics will be produced in Asia by 2018. In comparison: Europe at the forefront of research and development will be left with only roughly 8 percent of the production capacities. Additionally, other regions of the world, such as the US and Asia, invest into measures "closer to market introduction", which results in a faster market development than in Europe.

"We urge the EU legislators to consider and make efficient use of the immense environmental, economic growth and job creation potential of our industry. In this context, the Circular Economy Package should remain in the Commission's 2015 Work Programme and the Waste Target Review should proceed as planned", concluded de Bie.

www.european-bioplastic.org

From the PVC world

These are the features of the new energy label



PVC Forum Italia officially presented the PVC windows energy label last March 31 in Verona at the conference "Well - Windows Energy Label" followed with great interest by many producers, dealers, installers and designers

Many everyday products have already equipped with energy label that is gradually changing the consumer choices. In recent years, also windows are approaching the energy label because they produce, like other goods, "an impact on the energy use". France, Germany, England and Switzerland have already launched a series of different standards but all based on two constant references: European Directive n. 30 and ISO 18292. Starting from the same references, the PVC Forum Italia (Italian association which represents the entire PVC value chain - stand B 85, hall 9, at Plast 2015) has created its energy label for PVC windows available only for the associated companies.

Whilst indicative, the simple thermal transmittance value is not sufficient to properly assess the energy impact of the window. This is why the new label issued by PVC Forum also takes into account the characteristics of the glass, solar energy transmittance and the air leakage class in two seasons and three different climatic zones in Italy. The energy label is completed with the reference to the CE marking, assembly, installation and environmental impact (GER and GWP based on LCA methodology which assesses the environmental impact in terms of energy consumption and CO_2 potential emissions during the entire life cycle of the window). It also lists the associative brand name "SIPVC" and the details of the window manufacturer. The label is easily traced by users thanks to QR code readable via tablets and smartphones. A specific cloud system to allow manufacturers to manage it in the production phase was also implemented.

www.pvcforum.it

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NEWS

Innovation drives sustainability

After the espresso is ready, the capsule goes into the compost

On March 3, in Milan (Italy), Novamont (stand D 82, hall 9, at Plast 2015) and Lavazza unveiled the first 100% compostable Italian espresso capsule. The outcome of five years of research and development, the capsule will be ready for production in late 2015 and on the shelves in 2016. Compatible with Minù coffee machines, the capsules will be made of Mater-Bi 3G and available in two choices of 100% arabica blends. The third generation of Mater-Bi is characterized by a higher content of renewable raw materials, and with this capsule Lavazza is focusing on the end of its lifecycle. According to today's linear model of production-consumption-disposal, the product is transformed into waste and then sent to a landfill or incinerator. However, by applying the zero-waste paradigm behind the circular economy - according to which nothing is waste but everything goes back to being a resource - with great benefits for the environment, the new capsule can be thrown in with the compost after being used and sent off into the industrial composting processes along with the coffee grounds. "We are now introducing much more than a technical solution to improve the environmental sustainability of a product. Through the first compostable espresso capsule developed jointly with Lavazza using third-generation Mater-Bi, we give a concrete demonstration of the potential of the bio-economy, understood as regeneration of our local areas and economies and not simply the use of renewable resources. The model we have conceived and that we have been putting into practice for many years is that of localized integrated bio-refinement of products with high added value, such as organic plastics and chemical products", explains Catia Bastioli, Novamont managing director. The third-generation Mater-Bi that will be used for the Lavazza espresso capsules is produced through a production chain involving three production sites in Italy: Terni, Patrica and Porto Torres. Thanks to the technology developed by Novamont research over the years, these sites, which were not longer competitive, have been redeveloped as innovative industrial facilities, generating employment, new products and new production chains, creating bridges between diverse sectors and transforming wastes into resources. The Matrìca bio-refinery just went into operation in Porto Torres (a Novamont-Versalis joint venture) using the new Novamont technology to produce azelaic acid on an industrial scale. Deriving from an integrated agricultural production chain, this is one of the principal ingredients in third-generation Mater-Bi.

Bastioli continues: "It is comforting to know that thanks to the new compostable Lavazza capsule, the small daily ritual and pleasure of having a cup of coffee can not only promote enhanced care of our environment but also present opportunities for development within the framework of an integrated locally based production chain and the conservation of biodiversity".

Marco Lavazza, vice president of Lavazza Group, adds: "It is a historical milestone for Lavazza. Coinciding with our 120th anniversary and the Italian Expo - where Lavazza is the official coffee for Padiglione Italia - the compostable capsule is a concrete example of the virtuous synthesis of innovation, sustainability, and quality". ■

www.novamont.com

From the left: Gunter Pauli (founder of Zeri Foundation and the so-called "Blue Economy"), Catia Bastioli (Novamont managing director) and Marco Lavazza (vice president of Lavazza Group), during the Italian presentation of compostable coffee capsules (above) made of third-generation Mater-Bi

Circular economy

Conai with Expo to promote a recycling culture

An agreement Protocol between Expo 2015 and the Italy's national packaging consortium Conai (Consorzio Nazionale Imballaggi) was presented in Milan on March 24, for the promotion of a circular economy programme for the Expo. The importance of this Expo Circular Economy Programme, of which Conai is the "official supporter", was highlighted by the general manager of the Sales & Entertainment division of Expo 2015, Piero Galli, and the general manager of Conai, Walter Facciotto.

It is estimated that 17,000 tons of urban waste and waste products will be generated in the Expo area, an average of 70-80 tons a day, with production peaks of 130 tons during the weekends. This is why, Conai has decided to act as a spokesman, together with Expo, on the importance of waste recycling, through separate collection, thereby involving both visitors and operators. It is estimated that at least 40% of the waste will be generated by the visitors while 60% will be produced within the exhibition and catering areas. In order to inform and educate those working in the expo and the tourists that visit it, to behave in an eco-friendly manner, Conai will be producing a series of info-boards, video clips and informative material, so that all the packaging and non-packaging waste, is separated in the correct manner for efficient recycling.

The separated waste collection target is to reach 70% of the total waste, to be sent for recycling through the consortiums of the sector; and for composting. While the actual separate collection system envisaged for Expo Milano 2015 will be the same as currently adopted in the city itself. The agreement also envisages the implementation of an "environmental meter", which has been designed in collaboration with Amsa-Group A2A, which will measure the environmental, economic and social benefits resulting from efficient waste management - separate waste collection at the Expo site and subsequent recycling. Using a series of parameters such as avoided carbon dioxide emissions, the amount of waste remove from the dump and sent for recycling per product category, the raw and secondary materials generated and the energy and water savings achieved.

To educate and inform younger children Conai has created an interactive game that can be played from 18 e-walls, as well as informative material distributed in the Children's Park area. Thirty benches will also be positioned within the Expo area, which have actually been made using recycled materials, providing a practical example of a circular economy that is both efficient and sustainable from an environmental and economic point of view.

Walter Facciotto comments as follows: "Sustainability for Conai, in fact does not only mean environmental protection and prevention, but also the potential for economic development and business opportunities. Sufficient to say that in the 15 years of activity of this Consortium system, it has generated no less than 15.2 billion euros in total benefits for the country and that currently no less than 37000 people are employed in the waste treatment and recycling industrial sector". In Italy in 2014, over 9 billion tons of packaging waste has been sent for total recovery (+3.3% compared to 2013). While the total recycling of steel, aluminium, paper, wood, plastic and glass packaging has risen by 0.5 % as compared to 2013.

www.conai.org
www.corepla.org

Thanks to the committment of Conai and the consortiums of the sector, recycling in Italy has drastically improved over the past 15 years. In 1998 only 33.2% of the packaging used was recycled, while now this figure has reached 77.5%, equivalent to 3 out of 4 packages

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FUTURE EXTRUSION (EDF)

THE ONLY WAY TO CORRECT THE WRONG EVOLUTION OF TRADITIONAL EXTRUSION

On January 2009 I suggested the technicians of a textile company the "working condition" to use on the extrusion complex (extruder-die) producing polyester filaments covered with PVC. They have had an "expensive problem" because the cloth they had produced, owing to PVC degradation, did not resist to the sun of the Adriatic beach for the five years guaranteed.
As the problem was due to the excessive consumption of the quite expensive stabiliser during the extrusion I suggested a "new working condition" to decrease the shear stress on the PVC to avoid melt degradation.
When I saw the results of my suggestions I was absolutely sure that I had discovered a very special know-how that could allow major energy savings per kilogram of profile produced.

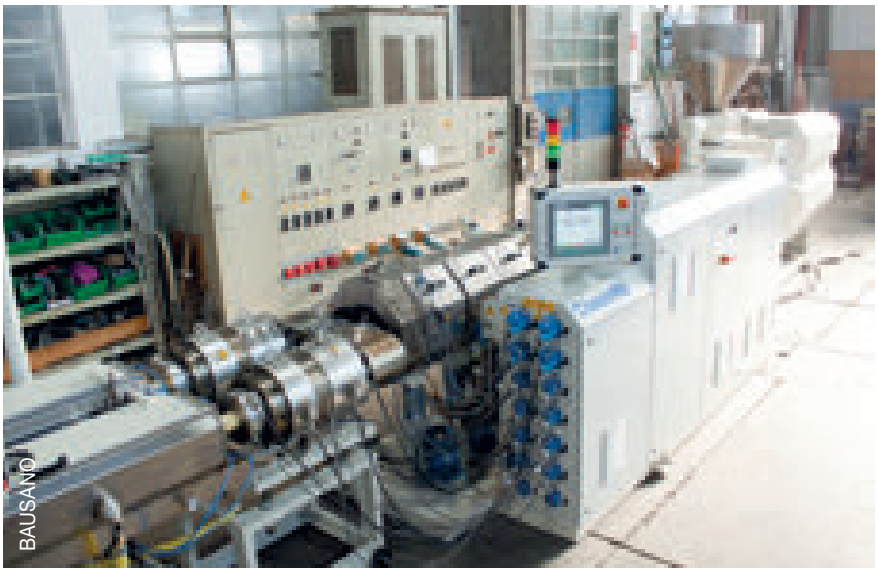
THE DISCOVERY OF FUTURE EXTRUSION (EDF)

In the following months I applied this new know-how to eight extrusion units producing 300-400 kg/h of blown film and I always obtained interesting energy savings (kWh) per kg.
As these blown film lines were running according to the traditional technique, that is the working conditions were not always steady, and neither the output nor the profile quality (aspect and physical-mechanical

EDF ("ESTRUSIONE DEL FUTURO" OR "FUTURE EXTRUSION") IS THE STRATEGY THAT MUST BE APPLIED TO THE PROFILE PRODUCTION LINES TO ELIMINATE ANY OUTPUT AND QUALITY INSTABILITY OF THE EXTRUDED POLYMER

BY **MARIO MIANI**

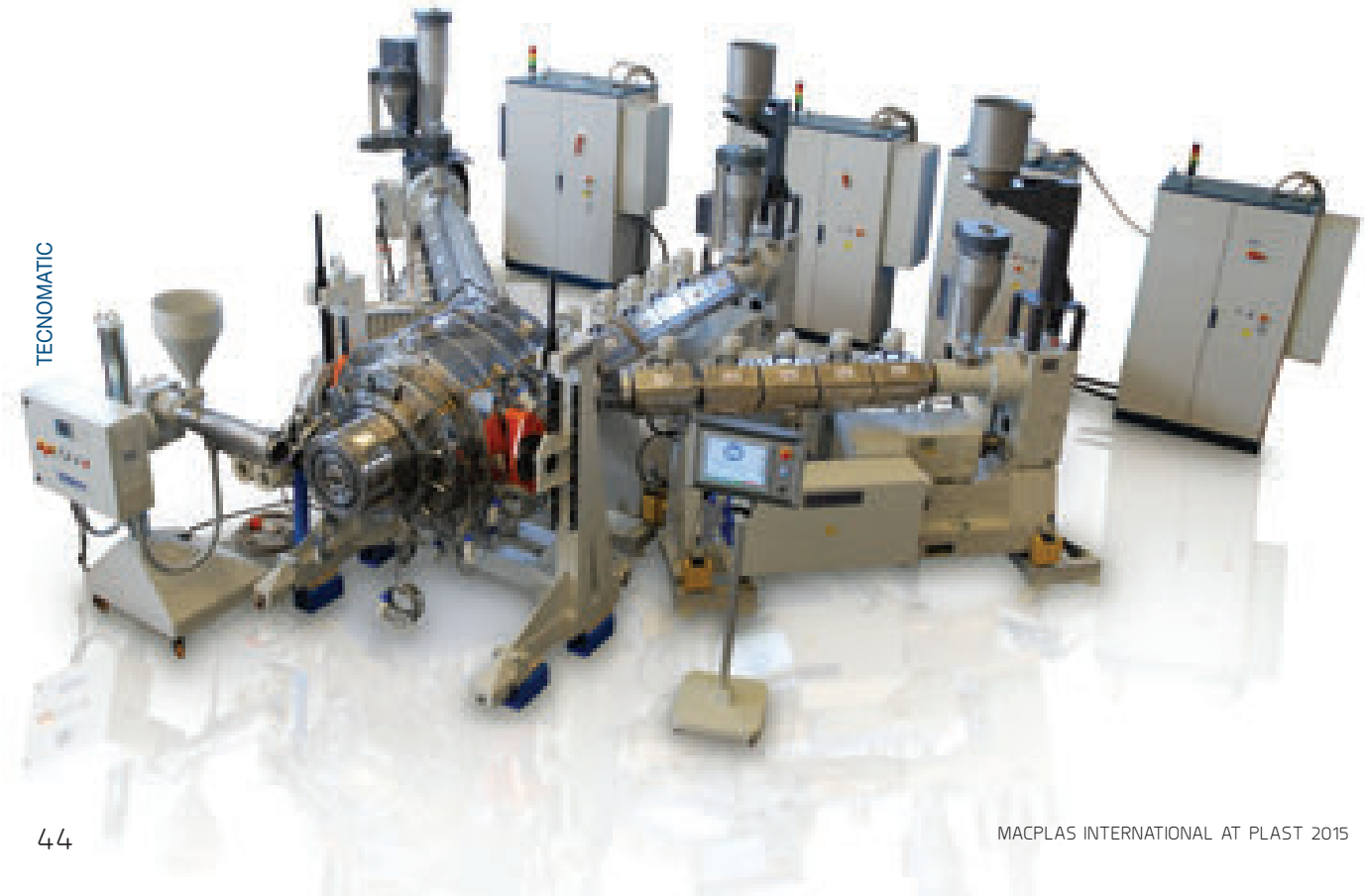
properties) were absolutely constant, I decided to study their blown film production profile and analysed the performances of the lines for 12 months.
Previously, until March 2009, I dedicated my studies exclusively to extrusion in order to understand what happens to the polymer that enters the screw as a solid and exits through the die as a melt.
My new studies allowed me to discover that profiles are not produced by extrusion (that is what people think), but I found that to produce a profile it is necessary, at the right and steady line velocity, to subject the polymer to two distinct processes one after the other:
- **the extrusion process**, that melts and extrudes the solid polymer producing a melt whose quality is the viscosity "η" of the melt at the temperature it exits the die;
- **the profile formation process**, that is, the cooling of the melted polymer that is concluded when the profile section is solid, that is, when the profile becomes a solid with constant section and indefinite length.
Therefore it is evident that the melted polymer exiting through the die at the desired steady temperature is the raw material used to produce the profile, whose quality, aspect, and physical-mechanical properties will depend by the melt quality, that is, the viscosity "η" of the melt at the extrusion temperature.
Having seen the preceding evidence it is obvious to deduce that if, at the stated line velocity, the raw material (melted polymer) is maintained at an absolutely constant temperature, the qualities of the profile will remain absolutely constant.


BAUSANO

Having done this deduction, being an expert of applied rheology eliminating malfunctions of extrusion lines since the 1960s, I had no doubt that I could eliminate any kind of instability.

THE LAWS OF EXTRUSION

Since 2011 I have stabilised the profile lines of my customers and optimised the productions using a strategy based on the deep knowledge of that law that I call "the second law of extrusion": **"It is the polymer that, at a stated screw rpm, chooses the viscosity (temperature) at which it wants to exit from the die"** (see manual "L'estrusione con parole mie", paragraph 5.3).
On the other hand, the first law of extrusion is: **"Extrusion is a steady process"**.
The strategy of the operator consists of regulating the working condition so that the polymer "chooses" to exit from the die exactly at the viscosity that the operator wants, even though for any "cause", ambient or technical, the temperature of the melt is higher or lower than wanted.


TECNOMATIC


TPV COMPOUND

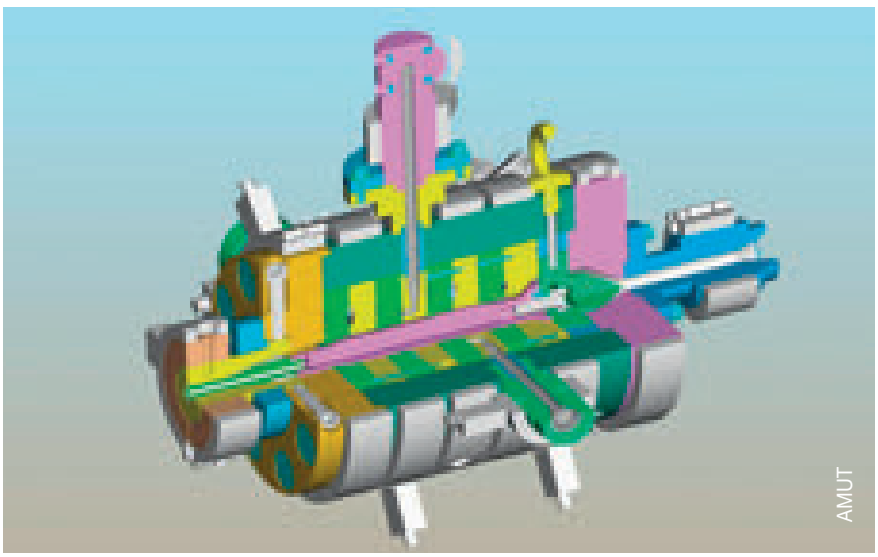
Therefore it is evident that, during the production process, the operator must always know the melt temperature T_M and the pressure (that depends on T_M) at the end of the screw.
These are the more important process parameters that, when they change, allow us to individuate the cause of instability.
I have always been very confident in individuating the cause of the extrusion process instability because since 1962 I studied the extrusion process and I recognised, via the physical and rheological laws, the series of events that happens into the extrusion complex, individuating the actions exerted by the screw on the polymer and how the polymer reacts to those actions.
When I retired in 1988 I continued to design extrusion heads and teach what happens in the extrusion unit at Cesap (Centre for the development of plastics applications; see also pages 117-121), in many industries, at the Palermo University and Milan Polytechnic.
In 2009 while, writing the preface of my manual of applied rheology "L'Estrusione con parole mie", I discovered the "Miani 2009" and "EdF" know-how.
EdF ("Estrusione del Futuro" or "Future Extrusion") is the strategy that must be applied to the profile production lines to eliminate any output instability and of profile quality.

THE EDF STRATEGY

On November 2014, having studied and taught for many years what is happening to the polymer that enters the screw as a solid and exits through the die as a melt, I decided to teach the EdF strategy that is the way to eliminate any output and quality instability of the extruded polymer.
The elimination of these two instabilities is guaranteed by the first law of extrusion: "Extrusion is an absolutely steady process", but overall this law teaches us that: **"When, while extruding, there is an instability (it happens) there is certainly a cause and all the causes can be eliminated** (that is guaranteed, precisely, by the stability law)".
The conclusion is that the output stabilisation is obtained applying the stability law.
Using the EdF strategy any extrusion factory can eliminate its production waste and guarantee the production of a profile having constant section and quality, from the beginning until the end of any production lot and guaranteeing the same result for the following lots.
On November 1, 2014, I have also decided to write a manual (to be entitled "L'Estrusione del Futuro", or Future Extrusion) to teach to line operators how the cause can be individuated and then eliminated. For this reason I will report in the manual on many examples of strategic solutions to make evident how much they can differ owing to the usual differences among the extrusion unit.
I am speaking of examples of strategies that have very evident theoretic solutions, but that can hardly be applied by people that doubt that the "theoretic" is the right solution.
Unfortunately the units are often designed by technicians that are able to extrude, but do not know what happens to the melted polymer. For this reason in the industries that have profile production lines, mainly the more modern, a constant extruder output cannot be guaranteed.
These profile lines cannot guarantee a constant output because the **"way to regulate" is itself the cause of the instability of the output.**
The industries selling profile extrusion lines, to satisfy the request of the customers are investing in always more sophisticated end expensive output regulation systems that are absolutely useless.
If you believe that extrusion is a steady process when the output is not steady must be found the cause and immediately eliminated. Absolutely avoid to research the solution inventing an "output regulation".

AND NOW... A VERY CLEAR EXAMPLE

An example that is valid for all the lines that use metering pumps is to have the output constant and the pressure control upstream to the pumps.
In all these complexes, to avoid output variations downstream the pumps, one should "try" to maintain the pressure as constant as possible. I said "try" because, to keep the pressure as steady as possible the screw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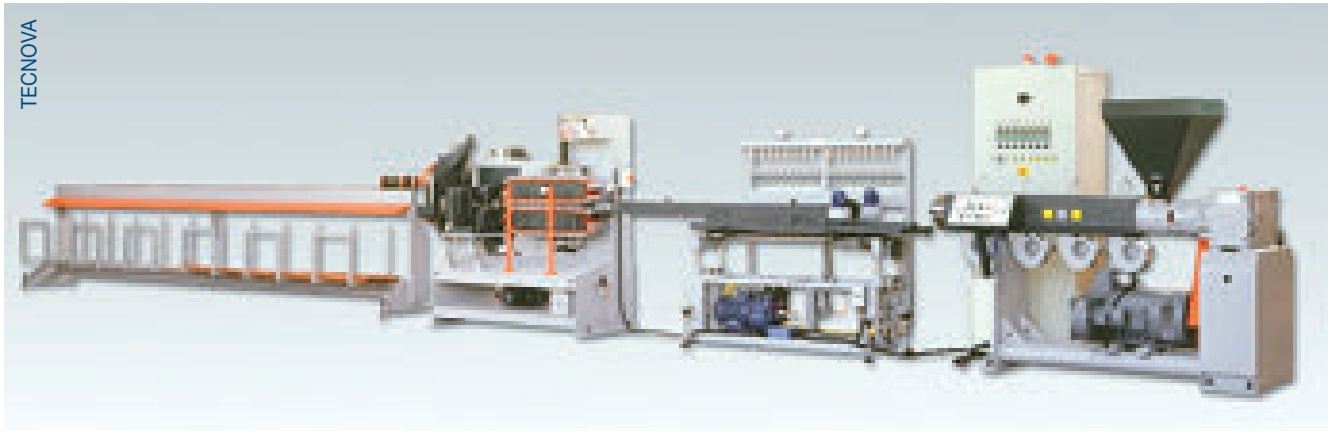
TECNOVA

revolutions are changed to maintain the "rpm" variation as low as possible (near the "set point"). This is the "regulation" normally used.
There will be a minimum "rpm" variation, but it is a variation, it is not a steady situation as it is prescribed by the Future Extrusion strategy (the EdF strategy).
A variation of which process parameter?
It seems incredible, but to maintain constant the output of the metering pumps the screw rpm are changed, nevertheless everybody knows that changing the screw revolution changes the output! This is an example but we must remember that regulation means variation!
Another example. To have the steady temperature of the extruder barrel I suggest to extrude with all the heater off!
The EdF strategy suggest (and I do) to extrude maintaining all the heaters and fans "off" during the extrusion of all the profile lots.
In any case I insist that to eliminate the cause of instabilities you must avoid to have screw "rpm" variation during profile production. It is so logic that I am ashamed to have repeated this rule so many times; this will be the very last. Never change the screw revolution, it is a great mistake!

WHY TO TEACH THIS KNOW-HOW?

The truth is because I did the following forecast when I have written the preface of my manual "L'Estrusione con parole mie": "Future Extrusion is just born and I forecast that it will be quite diffused in 2020…"
Four years have gone and very few people decided to innovate the way they produce profiles.
Is it ignorance? Incredulity? Laziness? Lack of confidence to innovation? I really don't know...
Now, having seen the situation, to increase the number of requests because I need more examples of different EdF strategies, different profiles, different polymers, different extrusion units, and so on, I decided to offer to the industries that really want to switch to Future Extrusion the opportunity to have the know-how at zero cost.
You must know that the knowledge of Edf strategy is the only way to have the know-how (KH) "Miani 2009", that is necessary to optimize the production and decrease the production cost (kWh/kg) of any profile.


MAST

Here are two examples of lines producing according to the traditional extrusion at the maximum output in comparison with my new know-how.
In the first example, the line was producing 11 kg/h of a special pipe. In 15 minutes, using my know-how, the output increased to 19 kg/h with exactly the same quality.
The second line instead was producing polyamide (nylon) blown film (3 layers, 80 microns). In two hours, using "KH 2009" know-how, the output increased from 328 kg/h to 410 kg/h producing for 4 days the same quality and meantime the energy consumption diminished from 0.28 to 0.255 kWh/kg nevertheless the clogging of the filters (3 extruders) was increasing.
KH 2009 is the one that none has been able to discover because they ignore the EdF, nevertheless during my lessons at Cesap I have told that the functioning principle is clearly described in my manual. It is evident that who reads my manual does not analyse my technical statements.
This know-how does not function properly when the line is conducted according to the traditional rules, but only when the EdF strategy is applied the best results are obtained.
It is a know-how to apply when the operator is producing the profile according to the factory working conditions and when the quality is the desired one.
While the line is running the process analysis must be done, the cause of malfunction is individuated and then eliminated, the undesired effect disappears, and the profile is checked to verify whether it has a constant section and the desired quality.
When all the process parameters are steady, the working conditions can be "properly" changed to obtain the best performances as we have been obtained in the preceding "examples". ■

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The new ***GUM FIFO HST*** is an hydraulic injection molding machine with electrical servo systems. It guarantees a remarkable cut down on oil consumption for the handling system, it prevents oil wear and its overheating, ensuring a considerable energy saving. It guarantees an improved movements accuracy, since they are directly or indirectly managed by servo motors with adjustment PID, optimized to the best performance.

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"THE ARBURG THINKING"

TRENDSETTING TECHNOLOGIES IN THE PLASTICS INDUSTRY

AT PLAST 2015 ARBURG (STAND C 81/D 82, HALL 22) EXHIBITS A BROAD RANGE OF EFFICIENT PLASTIC PART PRODUCTION APPLICATIONS. THE FREEFORMER IS PRESENTED FOR THE FIRST TIME IN ITALY, DEMONSTRATING HOW ONE-OFF PARTS AND SMALL, MULTIPLE-VARIANT BATCHES CAN BE PRODUCED FROM STANDARD GRANULATE WITHOUT A MOULD AND WITH AN ADDITIVE MANUFACTURING PROCESS. THE APPLICATIONS ON VIEW IN THE INJECTION MOULDING AREA INCLUDE MULTI-COMPONENT AND LSR PROCESSING, AS WELL AS APPLICATIONS FOR THE PACKAGING INDUSTRY AND THE MEDICAL TECHNOLOGY SECTOR

"The Plast in Milan is a must for the Italian plastics industry and the perfect platform in order to gain insight into where Italian market is moving and which new areas of activity we can open up for our subsidiary", explains Björn Noren, managing director of Arburg subsidiary in Italy. "Our strengths lie in technically sophisticated precision applications in the areas of medical technology, packaging and cosmetics in combination with complex automation. A special highlight this year is the Freeformer. This innovative system for the industrial additive manufacturing of one-off parts and multi-variant small-volume batches is close to be launched onto the Italian market".

FREEFORMER ADDITIVELY PROCESSES TWO COMPONENTS

With the Freeformer, fully functional plastic parts can be additively manufactured from standard granulate using the patented "Arburg Plastic Freeforming" process based on 3D CAD data, without the need for a mould. As with injection moulding, the granulate is first melted in a plasticising cylinder. Plastic droplets are applied layer-by-layer onto a moving part carrier via the nozzle of a stationary discharge unit, using high-frequency piezo technology at a specified duty cycle of 60 to 200 Hertz.

The second discharge unit can be used for an additional component - for example, to produce a part in different colours, with special tactile qualities, or as a hard/soft combination. At the Plast 2015, a Freeformer combines standard ABS material with a special support material to produce a key fob featuring a ball joint. The supporting structures are simply removed later in a water bath.

At Plast 2015 the Freeformer is presented for the first time in Italy

INNOVATIVE PACKAGING APPLICATIONS

In the area of injection moulding in Milan, Arburg presents a broad range of industrial applications and processes. These include multi-component injection moulding and liquid silicone rubber (LSR) processing, as well as high-performance machines for the medical technology sector and the packaging industry.

The company demonstrates a high-end application built around

a hybrid Allrounder 720 H in the “Packaging” (P) version as an example for the drinks industry. A 72-cavity mould from z-moulds is used to produce so-called PCO-1881 closures for carbonated soft drinks (CSD) in a cycle time of only around 3.5 seconds. A Motan system is used for the material feed. The material throughput is over 160 kilograms per hour. Downstream, the production system comprises a closure cooling unit made by Nova Frigo and an optical quality control system from Intravis.
An electric Allrounder 520 A with a clamping force of 1,500 kN and a size 400 injection unit demonstrates a thin-walled application. A 2-cavity mould from DZ Stampi is used to produce lids with a part weight of 5.3 g in a cycle time of around two seconds.

MULTI-COMPONENT AND LSR INJECTION MOULDING

The production of ballpoint pen caps from two components is demonstrated by a hydraulic Allrounder 520 S with a clamping force of 1,600 kN and size 400 and 100 injection units. An 8+8-cavity mould from Fila is used here. The main body is produced from PP in a cycle time of around 20 seconds, after which it is overmoulded with soft TPE-S.
An electric Allrounder 520 E, with a clamping force of 1500 kN and size 800 injection unit, demonstrates the cost-efficient production of a technical medical part made from PVC. An electric Allrounder 470 E with a clamping force of 1,000 kN and size 290 injection unit is configured for processing liquid silicone (LSR). iPhone covers weighing 21 grams are produced in a cycle time of around 20 seconds. The mould is from Prover, while the LSR dosing system comes from 2 KM. Handling is performed by a Multilift Select robotic system with a load weight of 6 kilograms.

A hybrid Allrounder 720 H in the “Packaging” (P) version equipped with a 72-cavity mould produces so-called PCO-1881 closures for carbonated soft drinks (CSD) in a cycle time of only around 3.5 seconds

COST-EFFECTIVE AUTOMATION SOLUTION

The Multilift Select is the entry-level model among the linear robot systems from Arburg. It features servo-electric drive axes and is fully integrated in the Selogica machine controller. For the operator, this means: only one data set, a familiar approach during programming and perfect synchronisation of robotic system and machine.
Moreover, the Multilift Select is extremely simple to program thanks to the teach-in function. The advantages of this strategy are evident. Programming times and conversion processes are efficiently shortened, handling sequences are more reliable overall and training expenses are much lower. ■

www.arburg.com

IMG FOR PLASTICS AND RUBBER

TWO-FRONT SOLUTIONS

IN TWO EXHIBITION STANDS (A 41/B 42, HALL 11, AND C 41/D 42, HALL 24), IMG EXHIBITS THE PRESSES BY HAITIAN AND ZHAFIR, OF WHICH THE BRESCIA-BASED FIRM IS OFFICIAL DISTRIBUTOR, AND THOSE FROM ITS OWN PRODUCTION. IN BOTH CASES THEY INCORPORATE INNOVATIVE TECHNOLOGIES AND SOLUTIONS THAT ARE DESIGNED TO IMPROVE PERFORMANCE WITH REDUCED ENVIRONMENTAL IMPACT

IMG's participation at Plast 2015 covers two product lines: plastics and rubber. Plastic processing is represented by the machines form Zhafir and Haitian, of which IMG is official distributor for Italy, while the GUM and GUM Fifo rubber machines come from its own production programme.

PLASTICS PROCESSING MACHINES

As for thermoplastics machines, IMG's stand accommodates the Jupiter II and Mars Eco of the second generation by Haitian and the electric presses Venus II and Zeres by Zhafir. Let's start with the Jupiter II 550-ton press on the market since 2014, born from the experience among large tonnage machines. Jupiter II belongs to the two-platen, servo assisted machines range, with a clamping force from 450 to 6,000 tons, and a high energy efficiency. It is as fast as the toggle-joint injection moulding machines and still has reduced space requirements. The machine has a particular mould, coming from the car sector, for processing a polypropylene resin, and a Tecnomatic robot for the part collection.

The second machine is the Mars II ECO, a 120-ton press which belongs to the servo-assisted machines range, with clamping force from 60 to 530 tons. This new model main feature is the high energy efficiency, estimated to be about 60% less than other products of the same range. It has a mould for a polyamide technical part.

Let's now talk about the Zhafir electrical machines: the first one is the Venus II, 150 tons, with clamping force from 40 to 550 tons. Venus II belongs to the fully electrical machines range, designed and engineered in Germany, that establish new standards in terms of process accuracy and of costs-performance ratio. The machine has a mould for pump casing in polyamide, with EST visual dimensional control and Tecnomatic robot.

Coming out from Venus II, is the Zeres 190 and 90 tons. For the Zeres series, the clamping force goes from 40 to 230 tons and, unlike the Venus II, both the central ejector and

IMG is the Italian distributor of Zhafir and Haitian presses for plastics processing. In the picture: a 90-ton Mars II machine

A GUM Fifo rubber processing machine manufactured by IMG

the injection carriage work with a hydraulic system. The machine is also provided with hydraulic core pull integrated. It has a mould for cylindrical drip in HDPE with 24 holes.
The second Zeres press, from 90 tons, is placed at the Reco Tech stand (the Zhafir/ Haitian service centre for North Italy) and has similar features as his big sister: the same clamping force range (from 40 to 230 tons), the both hydraulic central ejector and the injection carriage. They also both have the hydraulic core pull integrated, while they differ in the technical part moulded, which is made of polycarbonate.

RUBBER PROCESSING MACHINES

GUM and GUM Fifo Injection moulding machines with HST (Hybrid Servo Technology) and ECO (Energy Saving Process) systems, hydraulic injection moulding machines with electric servo-systems: these are the new concept products IMG introduces at Plast 2015. These new systems allow a remarkable reduction in terms of oil consumes, wearing and overheating, and so determining a considerable energy saving. They also guarantee an increased movements precision, since they are directly or indirectly managed by servo-motors with adjustment PID, optimized at the best performance.
The new HST system philosophy is to leave the main master movements under hydraulic control, while all other movements - parallel to master movements - under electric control.
The hydraulic power pack is managed by a servo-pump, thanks to which it is possible a considerable reduction of the motor space requirements, a reduction of oil and, at the same time, its enhanced lifetime. This also means a highly increased moulding precision, a great production cycle repeatability thanks to loop speed drives, and an electric consumption decrease of more than 40%.
The ECO system also serves the energy saving purpose, by enabling the machine to consume less, without electric energy wasting, thanks also to the smoothing of voltage peaks (the main cause of high energy bills).

A NEW ENVIRONMENT-FRIENDLY POLICY

By adopting this innovative systems and philosophy, IMG endorses a new, comprehensive sustainability concept: electric energy saving, a 50% oil consumption cut down, less water for the cooling and a considerable noise reduction. The main goal in the future will be to provide machines with a regenerative system, through which the energy used by the machines could serve the company network: a sort of an “electric self-generator”. The machines are provided with VNC server, which can be interfaced with any client, on any platform (PC, tablet, smartphone), in remote or local control, after entering a password, in order to control all process data at any time and in any kind of situation.

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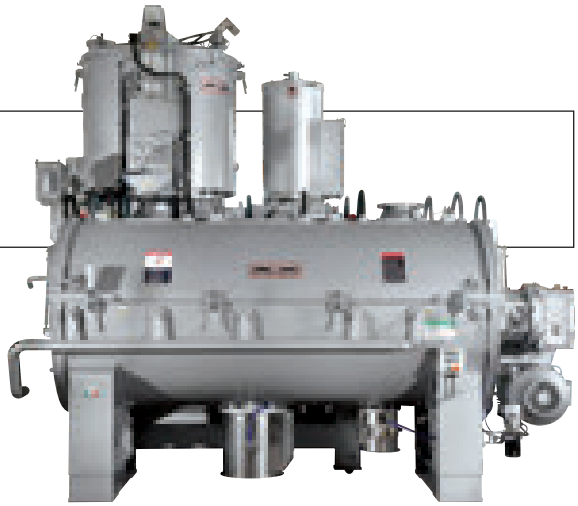

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WHEN IT CAME TIME TO PROCESSING METHACRYLATE SHEETS, UPM TURNED TO BIESSE GROUP, A LEADING COMPANY IN THE DESIGN AND SALE OF PROCESSING MACHINERY FOR WOOD, GLASS, STONE AND ADVANCED MATERIALS SUCH AS PLASTICS. TODAY THE MOST SOPHISTICATED APPLICATIONS REQUIRE STATE-OF-THE-ART TECHNOLOGY, AND COLLABORATION BETWEEN THE TWO COMPANIES REPRESENTS THE HAPPIEST MEDIUM BALANCING PRESSING DEMAND AND SUPPLY THAT DELIVERS A MORE EFFECTIVE RESPONSE

BY **LUCA MEI**

Established in Modena (Italy) in 1940, UPM (Unione Pubblicitari Modenesi) has been operating in the visual communication sector for more than seventy years. Its work has evolved from the production of advertising signs in use in the early days, to modern luminous signs. Over the years, it has followed a path of technological and application development that has led the company to be, among other things, one of the leading Italian processors of semi-finished methacrylate items used to make the most diverse products: display solutions, furnishing accessories for commercial settings, signs for shops. To name but a few.

UPM has transformed itself from a small enterprise into the solid firm it is today, expanding its operations to include large-format digital printing, with a contract unit to develop turnkey solutions for shops and trade fair stands in Italy and elsewhere. In other words, UPM offers customised solutions for all marketing needs, starting from the concept right through to the finished product, managing all aspects of the project in-house, including technical, bureaucratic and logistic aspects.

PROCESSING PMMA SHEETS

"Practically since the invention of methacrylate, processing of sheets has become one of the strengths of UPM's work. From the beginning, the semi-finished products have demonstrated their versatility in making visual communication

In Modena and in Pesaro

The two companies in brief

Matteo Gualdi (left), general manager of UPM, and Oriano Angeli, product area manager for Biesse

The UPM Modena group consists of 5 business units. UPM Modena Divisione Contractor handles turnkey solutions for administrative centres, offices, banks, megastores and brand stores. UPM Modena Visual Communication produces luminous signs and large-format digital prints, visual communication materials and display systems. 2art.it is an e-commerce website for the sale of custom marketing products (posters, banners, gadgets and so on). Diviflex sells and installs technical awnings and divider systems for hospitals, doctor's offices, clinics and so on. UPM Gestioni Immobiliari manages the group's property and carries out assessments for the contract division.

Biesse Group (exhibiting at Plast 2015 at booth A 81/B 82, Hall 11) is a multinational manufacturer of machinery for the processing of wood, glass, stone, plastic and metal. It designs, makes and distributes machinery, integrated systems and software for manufacturers of furnishings, doors and windows, and components for the construction, nautical and aerospace industry. On average, it invests 14 million euro a year into research and development, and it has filed more than 200 patents. It operates through 8 industrial facilities, 33 branches and agencies, 300 selected agents and resellers and it exports about 90% of its production. Its clients include the most prestigious names in Italian and international design. Today it employs 3000 people around the world. It was founded in Pesaro in 1969 by Giancarlo Selci, and it became a listed company in June 2001.

Some signs made by UPM using NC machining centres

products, from a simple display or container solution, leaflet and brochure holders, and so on, to more complex items like giant letters, displays or entire backlit signs", Matteo Gualdi, general manager of the Modena-based company, explains. The company processes methacrylate sheets in various thicknesses and colours, and the first operation in the cycle, which may appear elementary but in reality is not, is cutting. The desired sizes and outlines are cut from standard formats, which are then drilled, milled or slotted before being folded, glued and so on, depending on the end product being made. For this kind of processing, until now, machines which were to some extent considered niche were used, designed and manufactured by makers who accounted for the specifications of UPM's work and each of its individual applications. Starting from this base and from demand on a growing market, the potential of which should not be understated, the company decided to acquire a more technologically advanced machine with better performance compared to those it has used previously. These needs are met in the solution proposed by the Biesse Group, a company with headquarters in Pesaro (Italy) which, thanks to an organisation that only a large industrial group can offer, fully understood the needs and delivered a latest generation product, though starting from a completely different approach.

AN "AD HOC" SOLUTION

Biesse started up as a manufacturer of machining centres for "traditional" materials - wood, stone, glass and metals - and after having sold various machines over the years for processing specific semi-finished polymer items, adapted and modified to the needs of the sector, it decided to put its experience to good use and offer the market a dedicated range. The machine which caught the attention of UPM is a Rover A G FT 2243 CNC with a gantry structure and a lattice-type table.

The 5-axis spindle in action

Particular attention was given to the work table and the machine's "intelligent" vacuum, provided by two 250 m^3 pumps, with 20 independent areas that can be automatically selected by the NC control unit depending on the different sizes of the sheets that are being processed, without any manual setup of the work table itself. This configuration is reflected into significant savings in processing time, even when format changes are frequent, as in the case of UPM's production, as well as in energy consumption.

Particular care was given also to the design of the electrospindle, developed for this particular sector. HSD, the Biesse Group division specialising in production of the component, studied a 5-axis spindle for interpolating operation that is small in size, but delivers great power (13 kW), ideal for operating at high rpm rates, and fitted with a special patented solution, permitting continuous movement without interruptions or returns.

Even the bSolid Cad Cam software installed on the machine, developed and owned by Biesse, is dedicated to plastics processing. Thanks to an innovative, easy and powerful teach-in system, it also provides inexpert users access to sophisticated functions: once the piece geometry is set up, the product and all the operations needed to make it are displayed on the monitor. Other features of the machine are its quality metal frame and mechanical components, straightforward to configure and integrate on the machine with eventual automatic loading and unloading systems, and the evacuation system for removing process dust complete with hoods and automatic shutters.

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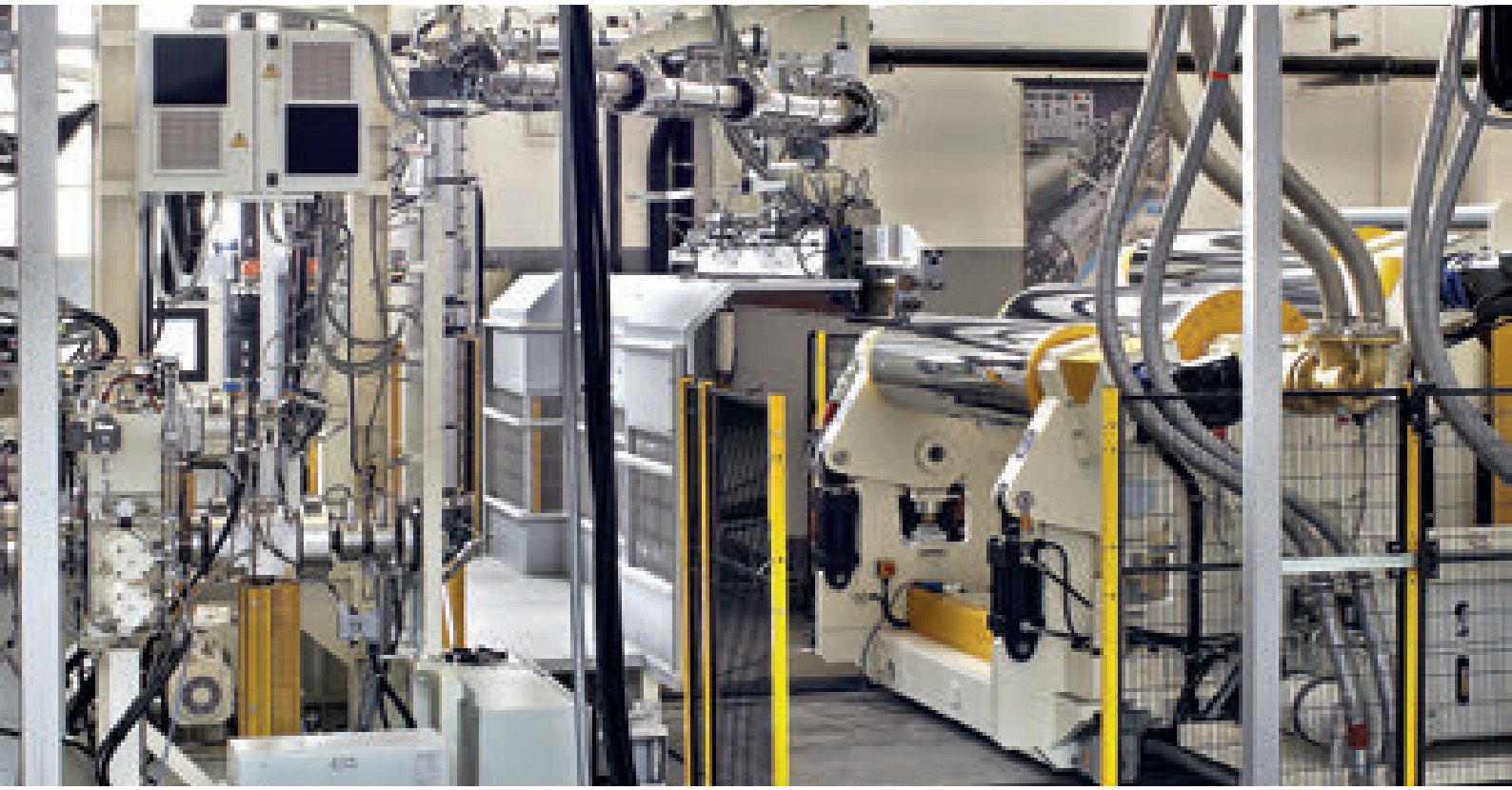


BANDERA IN FOURFOLD FORMAT

BLOWN AND FLAT DIE FILMS, AT THE FAIR AND INSIDE THE PRODUCTION SITE

A TOTAL OF FOUR LINES ARE EXHIBITED BY BANDERA DURING PLAST 2015: ONE AT THE FAIRGROUND AND THREE AT ITS NEW RESEARCH AND DEVELOPMENT CENTRE. THEY RANGE FROM THE 3-LAYER AND 7-LAYER BLOWN FILM LINES TO THE RIGID PET FLAT DIE FILM LINE. AN EFFORT AIMED TO SHOW ITS STRENGTH AS A MANUFACTURER

An innovative 3-layer blown film coextrusion line for the production of film for flexible technical packaging suitable for the extrusion of symmetrical structure film for lamination and flexible packaging, a 7-layer blown film coextrusion line and two innovative flat-die coextrusion lines, mainly designed to process PET/PP and PLA rigid film. These are Bandera exhibits for Plast 2015, one at the fairground (stand A 101/B 102, hall 15) and three displayed at its new research and development centre in Busto Arsizio (near Varese, Italy) from April 20 until the end of the fair.

3-LAYER BLOWN FILM COEXTRUSION LINE

The running 3-layer blown film coextrusion line exhibited during the Plast Exhibition in Milan features a batch-type double gravimetric dosing system up to 13 components fed with adequate material loading systems. The extrusion section has a single extruder TR 100 mm for the middle layer and two extruders TR 65 mm with energy saving AC motors, bimetallic barrel and temperature-controlled feeding zone. The coextrusion die-head features side feeding with spiral manifold, while the 300 mm die shows an innovative design for the internal ducts allowing optimum results in terms of flow rates at low pressures, as well as extremely fast material changes no matter if blend materials or masterbatches.

The advanced bubble cooling system (IBC) is

based on 8 sensors which analyse all parameters, weather conditions included, in order to adjust the proportional valve that controls the IBC system. As a result, total bubble stability is ensured for the production of perfectly wound reels even without the use of a trimming unit, avoiding scrap and guaranteeing the accurate control of film width.
The air cooling ring with a special geometry allows an ideally oriented air flow on the bubble. It can be adjusted in the height with a remote control and brings all the advantages typical of the double air ring design in terms of cooling power, ensuring however improved versatility and flexibility in format changes with short set up times.
Thickness measuring is achieved by means of a device with capacitive sensor without direct contact with the bubble, while the bubble guide cage is kept clean and efficient by a dedicated dust extraction system.
The main rotating take off has a flattening device made by carbon fibre rollers and 4 m long wood gusseting device. Additional cooling cylinders "S" wrap are also included for ensuring optimum cooling of both sides of the film. The cylinder temperature is controlled by 3-flow type units. All cylinders and parts in contact with the film have an anti-stick coating which is also resistant to wear for handling particularly thin or sticky films.
An additional take-off at the entry side of the winder guarantees the ideal film tension. The two-station winding centre with back to back bridge configuration incorporates different winding methods, according to the type of film to be produced: surface winding, axial winding with or without gap, and combined winding, in addition to the reverse winding mode.

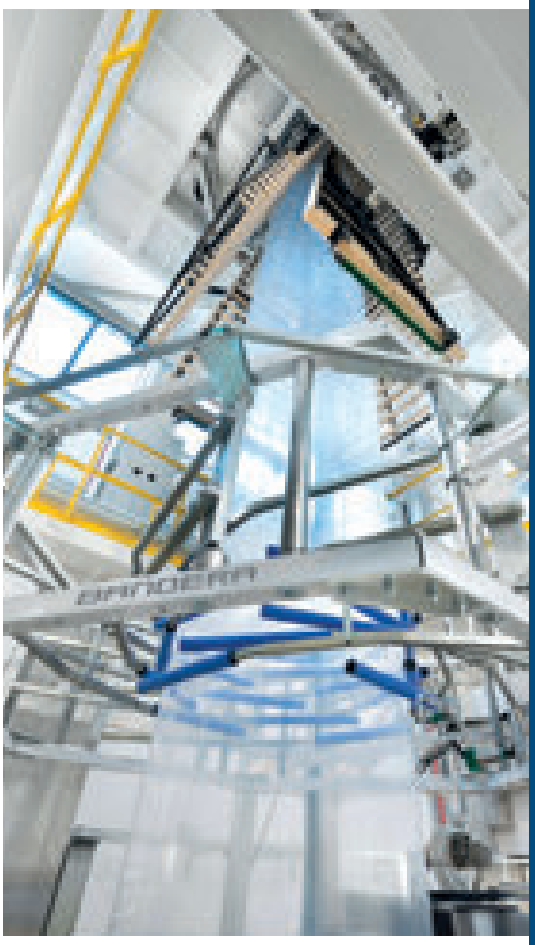
Bandera is exhibiting a blown film coextrusion line at Plast 2015 and another one at its research and development centre in Busto Arsizio

Tension control is achieved by means of highly sensitive load cells. Each winding station features a Safe Load core loading system for a totally safe operation of the machine. The line comes complete with electrostatic bars for eliminating all electrical charges, two pressure rollers for the film reels (one on each station) and a side extractor for trim scrap.

THE HOUSE OF EXTRUSION

This is the name of Bandera's new research and development centre where three other lines are on display besides the one exhibited at the fair. The 7-layer blown film coextrusion line is very similar to the one at Plast. The differences consist in the loss in weight gravimetric dosing system handling up to 18 components, the TR 50 extruder mm for the middle layer and the die with a diameter of 500 mm.
The two other lines displayed at the open-house event are equipped with a loss in weight gravimetric dosing system and incorporate a corotating twin screw extruder mod. HVTSE 2C 85mm, 52 L/D, for the direct extrusion of post-consumer PET flake (inner layer), with neither dehumidifier nor crystallizer needed, since the process is carried out through the efficient degassing system installed. The extrusion of virgin PET (outer layers) is achieved by means of a single-screw extruder.
A backflush superfiltration screen changer ensures continuous operation with self-cleaning system for the filters, while the pump provides a constant pressure and volume of the melt to the extrusion die, reducing scrap and improving the management of the whole process.
The three-manifold flat die with manual internal deckling systems ensures easy and quick adjustment of the rigid film width along with the relevant feed block. The cooling and polishing roll stack calender with horizontal configuration has drilled rolls and cross-axis system installed on the first calender nip roll to obtain the perfect profile in the process of ultra thin rigid film. The line also incorporates an in-line barrier film lamination system by rubber contact roll, and a thickness control system monitoring the thickness of rigid film throughout its width.
The haul off system is equipped with a longitudinal cutting system for edge trimming, while the semi-automatic, double station winding system features a winder equipped with an automatic transversal cutting device for rigid film. The semi-automatic trolley for reel discharge has a load cell and is equipped with double rack accumulator to slow down line speed during reel changing operations.
Both lines can reach output rates of 1.2-1.4 tons per hour with a net web width of 1,500 mm. Thickness ranges from 0.14 mm to 1.6 mm. These lines are equipped with systems capable of processing physically foamed PET, as well. ■

www.luigibandera.com



Besides the blown film coextrusion line exhibited at its research and development centre, the manufacturer from Busto Arsizio is displaying two flat die extrusion lines for the production of rigid PET film

AMUT DOLCI BIELLONI

A NEW ITALIAN GIANT IN RIGID AND FLEXIBLE PACKAGING

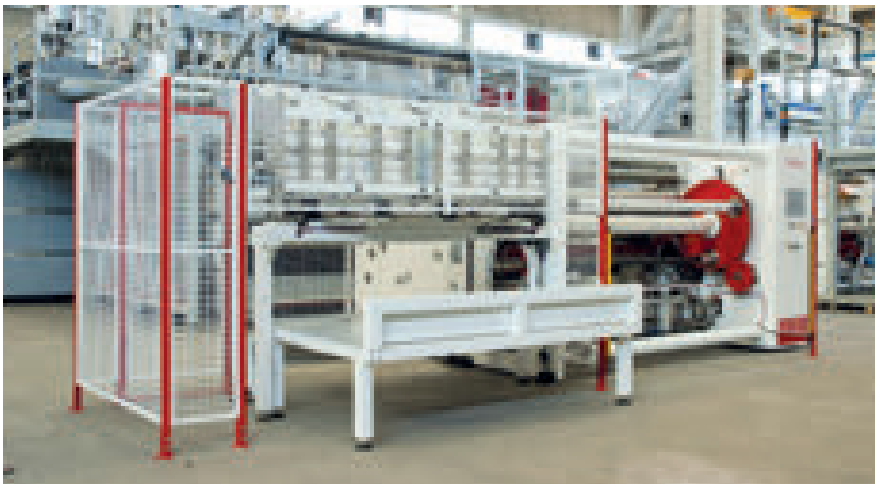
Riccardo Castello (left), general manager of Amut Dolci Bielloni, and Mauro Drappo, CEO of Amut Group, symbolically sanction the establishment of the new company with a handshake

AMUT DOLCI BIELLONI HAS BEEN ESTABLISHED TO JOIN THE EXPERIENCE OF AMUT IN MANUFACTURING EXTRUDERS AND MULTILAYER PLANTS FOR RIGID SHEET, PACKAGING AND THERMOFORMING, AND DOLCI BIELLONI IN PRODUCING LINES FOR FLEXIBLE FILMS AND CONVERTING

BY **RICCARDO AMPOLLINI** AND **LUCA MEI**

At a press conference held at the Fondo Italiano d'Investimento offices in Milan on February 12, 2015, Amut, the Italian Novara-based manufacturer of extruders, thermoforming machines and recycling equipment, officially announced an agreement to acquire the company Dolci Bielloni, based in Biassono (near Monza, Italy), a manufacturer of blown and flat head film extruders and coating and laminating lines. The transaction valued at six million euro means the complete acquisition of Dolci Bielloni, a process expected to be completed within a year.

According to Mauro Drappo, CEO of the Novara-based company, establishing the new company Amut Dolci Bielloni, with Riccardo Castello appointed as director, will boost the Amut group's 2015 revenues by approximately 20 million euro, to a total of 85 million. It is the most recent transaction in a strategy of global growth that began with the arrival of the Fondo Italiano di Investimento (which currently holds approximately 40% of Amut capital) in 2011. The strategy initially led to the establishment of Amut Ecotech, and later the incep-



A shuttle connects the Plast 2015 fairground with the Amut Dolci Bielloni headquarters, where an open house offers the possibility to see in function two cast lines for stretch film, one for manual and automatic reels (2000 mm, 7 layers), and the other for jumbo reels (1500 mm, 5 layers). In the picture: the winder for jumbo reels

tion of the joint ventures Amut-Comi and Amut-Wortex (in Brazil).
This new merger creates a series of collaborative projects delivering important competitive advantages: completion of the range of packaging systems, with the addition of blown and stretch film lines, in the flexible, thermoforming and rigid packaging segments; optimisation of production and sales activities, with the option, for example, of making use of the facilities in Novara to test and showcase the blown film extrusion lines, which require certain height allowances not available at the Biassono plant.

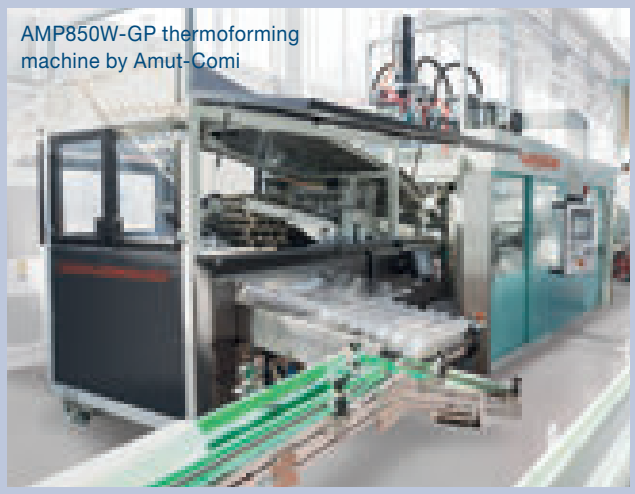
"UNITY IS... SYNERGY"

This is how Mauro Drappo, CEO of the Amut group, commented on the merger on February 9 (three days before the official debut) that now has Dolci Bielloni operating with the new company name Amut Dolci Bielloni. "Now two historical companies, Amut and Dolci Bielloni can create significant synergies together and become a major player on international markets", adds Drappo.
"We believe that this merger represents the completion of a process we began in 2011 with the entrance of Fondo Italiano di Investimento (an investment fund) into our shareholder structure to allow Amut to grow through external mergers and gain a more important

Extrusion, thermoforming and recycling

The group introduces itself at Plast 2015

Amut Group takes part at Plast, the triennial exhibition in Milan, with an impressive booth of more than 800 m² to officialise in the European scenario the new settled Amut Dolci Bielloni and to display the latest developments in the extrusion, recycling and thermoforming, also thanks to the companies Amut-Comi and Amut Ecotech.
All visitors can see the new AMP850W-GP thermoforming machine in operation. Equipped with a 50-cavity mould, it produces "aqua cups" in PP with a diameter of 73.5 mm, a weight of 3.2 g and a capacity of 240 ml. The output is around 110,000 cups/h. The concept of the machine complies with the highest rates of energy and material savings (low consumption and inline grinder for scraps). At the end of the line, a pick-up stacker counts the pieces.
The DLB 60 De-Labeller, with a capacity of PET bottles up to 6,000 kg/h, represents the recycling division. De-Labeller is a dry prewashing system for removing thermo-shrinkable labels from PET bottles. It is the best solution to value bottles intended to be disposed, because it peels the bottles and ensures their integrity, avoiding damages and preserving necks. The De-Labeller is suitable to be added at the beginning of a washing line.
The BA92 counter-rotating twin-screw extruder has been specifically developed for EasyWood, the special range of Amut lines for producing WPC by a direct extrusion system (output from 250 to 600 kg/h). WPCs consist in polymers (PE, PP, PVC) mixed with up to 80% of natural fibres and some additives. They look similar to wood and are mainly used in constructions and in exteriors and interiors of buildings. Compared to wood, WPCs require less maintenance, have a good ageing and heat resistance, are weather resistant, fungi free and flame retardant.



AMP850W-GP thermoforming machine by Amut-Comi

The AKV-ITF120 model of the Compact range for the in-line thermoforming produces sheets and features a single-screw extruder (EA130 model), a die (possible configuration up to 7 layers) and a calender. The Compact range fits every type of thermoforming machine. The EA130 extruder permits to produce a sheet with a width up to 1,200 mm and a thickness up to 2 mm, and to achieve a capacity of 800-1,200 kg/h. The rolls have a diameter of 600 mm. The processed materials are: PP, PS and PET.
Finally the TEAT 7 head for PVC pipes with a diameter up to 710 mm. The TEAT extrusion heads are also suitable to deliver pipes in r-PVC, granting the best performances and a perfect thickness uniformity.

stature. This process then continued with the Amut-Comi merger in the field of thermoforming, and Amut-Ecotech in recycling".
The new dimensions is clearly in evidence during Plast 2015 (Milan, 5-9 May 2015). "The Amut group is present at Plast with a major island, both in terms of dimensions (800 square metres) and technologies on display. Thus Amut presents itself officially and boldly to the representatives of the global market who are visiting the fair", continues the Group CEO. "On this occasion we display complete production lines, from flexible film extrusion to the extrusion and moulding of rigid products and thermoforming. But that's not all! An open house is organized at the historical Dolci Bielloni plant in Biassono (Monza-Brianza, Italy) during Plast 2015 - with shuttle bus service to and from the fairgrounds - to demonstrate two stretch film lines in operation".

AN OPEN HOUSE IN CONJUNCTION WITH PLAST 2015

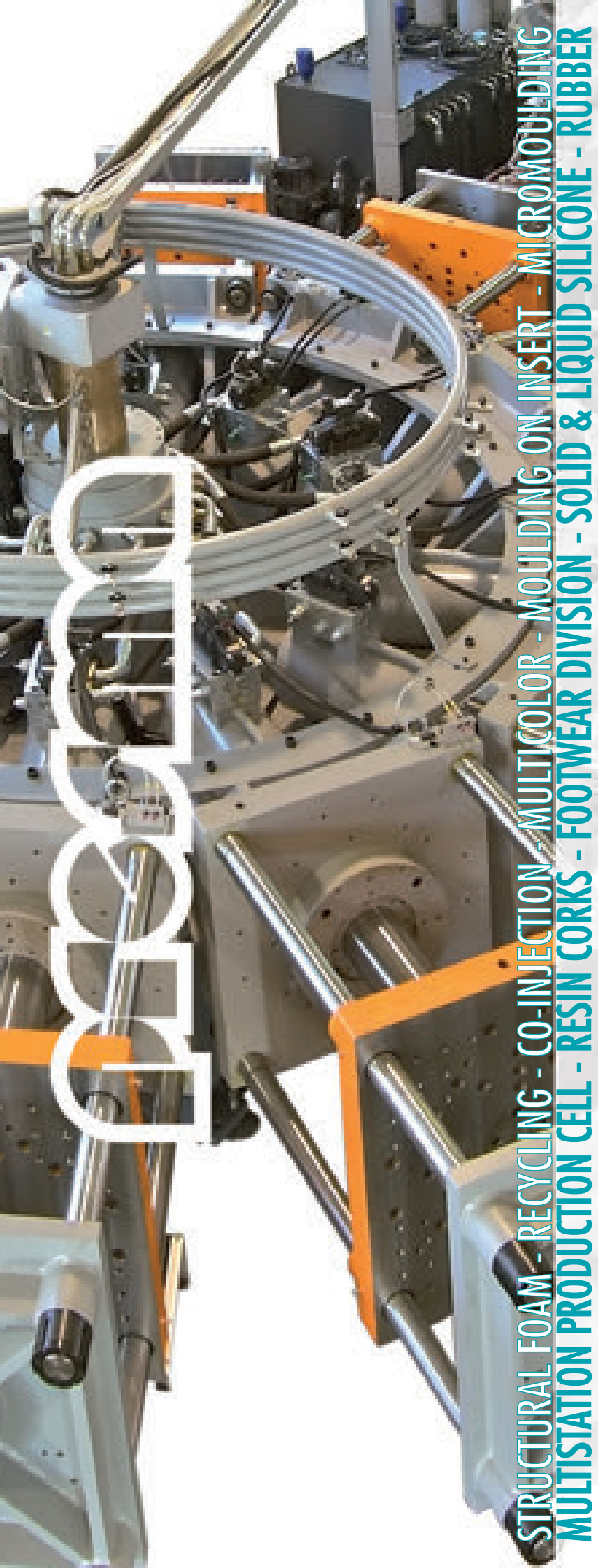
Riccardo Castello, now general manager of Amut Dolci Bielloni, goes into greater detail: "The first line, producing 7-layer stretch film 2000 mm wide, features an impressive 6 extruders to produce wound rolls manually or automatically. The second one, producing 1500-mm 5-layer stretch film, is dedicated to the production of jumbo rolls. They are two systems representing the top of the line in their respective fields of application".
"The 2000-mm film line, in particular, is absolutely innovative because it uses what we might call 'unusual' extruders for a 7-layer film line", continues Castello. "In spite of their small dimensions, they are able to deliver high production volumes and excellent energy savings. Furthermore, the plant was designed - using a technology recommended by a major international polymer producer - with the specific goal of obtaining an innovative roll chilling unit for 'super-power' stretch films, that is, films with high stretch capacity, over two and a half times greater than standard power stretch films. The main trend in the current stretch film market is to reduce thickness while at the same time increasing the strength of the film".

TRUE PRODUCTIVE AND COMMERCIAL SYNERGIES

The goal of Amut Dolci Bielloni is to build a robust productive and financial organization to establish a solid Italian hub to compete with major international players. The newco not only produce stretch film plants, but also continue the Bielloni tradition of flexographic printing machines, roller mills, laminators (wet or solventless), slitter-rewinders and, as Dolci Extrusion, it continues to develop, build and sell its own stretch lines and also lines for polypropylene, bubble wrap, extrusion coating and lamination. Lastly, with projects heralding interesting developments, it relaunches what has long been the showcase product line for Dolci: lines for agricultural film. ■

www.amut.it

The Amut De-Labeller, Recycling Division, can remove thermo-shrinkable labels from PET bottles



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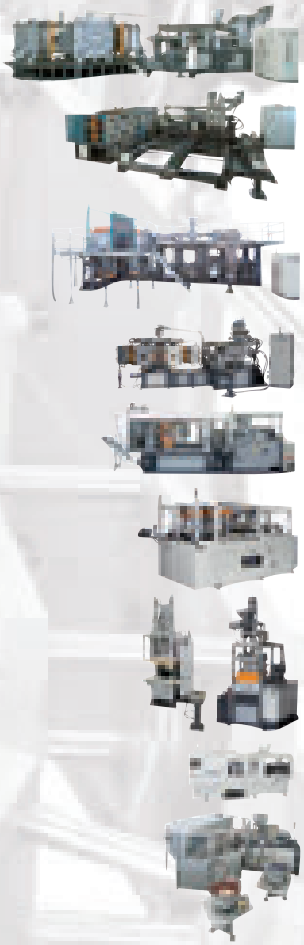

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RECENTLY, TECNOMATIC HAS LAUNCHED A NEW RANGE OF EXTRUDERS, THE EVOLUTION OF THE PREVIOUS MODELS ZEUS AND VEGA, WITH THE AIM OF SETTING NEW STANDARDS IN THE PRODUCTION OF PIPES. THE COMPANY OF AZZANO SAN PAOLO (NEAR BERGAMO, ITALY) HAS ALSO SIGNED A STRATEGIC PARTNERSHIP WITH PUMA PLASTICS SOLUTIONS TO MARKET ITS PRODUCTS IN THE US MARKET

NEW EXTRUDERS FROM TECNOMATIC

HIGHER PERFORMANCE AND ENERGY SAVINGS

Zephyr, the new extruder series (40 L/D) by Tecnomatic (stand C 111/D 112, hall 13, at Plast 2015) offers high performance at reduced power consumption for PE and PP pipe extrusion. These extruders are the evolution of the Zeus gearless extruders and Vega series (both with 37 L/D), to set new standards in the extrusion of pipes. More than a year on, from their presentation at K 2013 show in Düsseldorf, several extruders have been sold and tested in production process with excellent results.

INNOVATIVE SOLUTIONS

Designed by Tecnomatic engineers, the new extruder range offers a large number of innovative solutions that distinguish it and make it one of a kind in the market of pipe production. The key point and guideline of the new project was to increase the output rate at lower melt temperatures and power consumption. The result has been achieved thanks to the adoption of a spiral grooved feed bush and to further improvements in screw design. The new feed bush ensures minor friction, commonly generated by raw material transport, with subsequent increasing of the specific and total throughput. The further development in screw design, with optimisation and enhancement of torque and shearing elements, have improved the output but have also led to process the material at lower melt temperatures (for exam-

The Zephyr extruders (in the picture, model 60.40) represent the evolution of the gearless series Zeus and Vega and feature innovative solutions able to improve output rates while processing the material at lower melt temperatures, as a result reducing energy consumption

Tecnomatic and Puma Plastics Solutions

Partnership for the US market

Tecnomatic and the US company Puma Plastics Solutions (Texas), part of JDC Manufacturing, entered into a business partnership to pursue a common goal in the US market. This marks Tecnomatic official entrance into the American extrusion market, which is considered one of the most important in the world. Puma Plastics Solutions will provide manufacturing solutions from Tecnomatic to the US market. The scope is to make available to all pipe producers in the United States the Tecnomatic production with the exclusive support of a proven structure and US-based company. With intense focus on customer service, Puma Plastics Solutions will be with the pipe producers in every step of their way, from consultation and installation to maintenance and troubleshooting. One of the initial steps to the market has been the participation at the NPE exhibition (Orlando, March 23-27). In this occasion, customers had the opportunity to enter in touch with the two partners and to check latest innovation in extrusion as the extruder Zephyr 90 (L/D=40) for pipes production with a capacity up to 1,700 kg/h and the head Venus 400 with Pipe Air Cooling system, which will be on show. The US pipe market demand for pipes and pipelines is expected to grow by about 7% per annum to exceed 63 billion dollars in 2018. The increase in demand will be driven primarily by applications in the areas of gas natural and crude oil. The application will also be supported by a recovery in investment in the construction market and in particular for building renovations.

The Tecnomatic headquarters in Azzano San Paolo, near Bergamo (Italy)

ple, lower than 200°C for Zephyr 60.40 at 800 kg/h). To complete the configuration and to meet the requirements for production efficiency the machines are equipped with torque or water-cooled motors (in this case with one or two steps gearboxes) and compact water-cooled inverters. These solutions combined with the mechanical features ensure outstanding power consumption levels (e.g. lower than 170 Wh/kg for Zephyr 60.40 at 800 kg/h) but also low noise operation (less than 74 db), reduced workload for maintenance, higher efficiency within wide speed and load ranges, and faster dynamic response. The equipment also includes modules for a constant monitoring of power consumption and production cost calculation.

RESULTS AND TRENDS

The result on the ground shows the evolution trend for pipe extrusion, which is the reduction of the extruders size, with increased screw length and smaller motors, to assure same output with a better energy efficiency. A comparison between a gearless extruder in size 60.37 and new Zephyr 60.40 is clearly showing the advantages in the adoption of this last solution. The Zephyr extruders are available with four different screw diameters for maximum output rate of 1,700 kg/h.

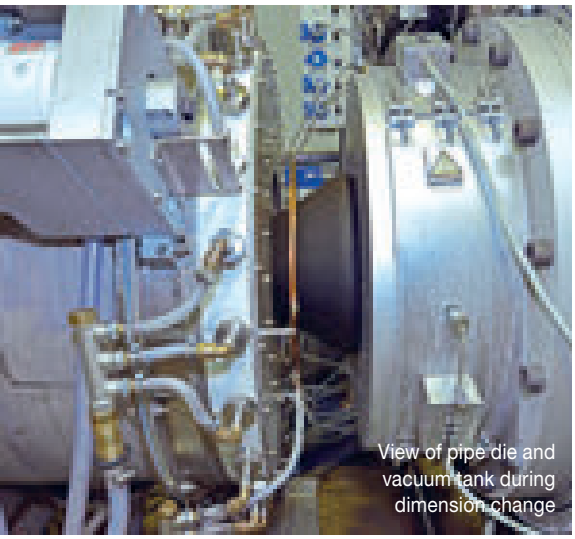
www.tecnomaticsrl.net

A WIDE RANGE OF SOLUTIONS

ALL FOR PIPE AND THERMOFORMING SHEET EXTRUSION APPLICATIONS

AT PLAST 2015, BATTENFELD-CINCINNATI (STAND A 01, HALL 13) PRESENTS A WIDE RANGE OF SOLUTIONS FOR PIPE EXTRUSION – FROM PVC FOAM CORE PIPE TO XPE PIPES AND THE FDC SYSTEM FOR AUTOMATIC DIMENSION CHANGE. IN ADDITION, THE COMPANY'S EQUIPMENT FOR WPC/NFC EXTRUSION, PELLETIZING AND THERMOFORMING SHEET PRODUCTION IS SHOWCASED

As an extrusion equipment specialist, battenfeld-cincinnati offers a portfolio of extruders with high performance, excellent homogenization and high energy efficiency. For pipe extrusion, the twinEX series of parallel twin screw and the solEX series of single screw extruders are available, with output rates of up to 2,500 kg/h and 2,200 kg/h respectively. The bestselling plug and play alpha single screw extruder is the perfect solution for standard applications, small pipes and technical profiles.



View of pipe die and vacuum tank during dimension change

Battenfeld-cincinnati also offers tailor-made, complete systems for WPC/NFC extrusion that are rounded off by wear-optimized metallurgical solutions. Recently, the cost-efficient fiberEX 93-34D extruder for medium outputs (up to 400 kg/h) was introduced. It is able to process a great variety of different formulations with just one plasticizing unit.

POWERFUL, FLEXIBLE, QUICKLY ADJUSTABLE AND COST-EFFICIENT

With the company's newest equipment in FDC (Fast Dimension Change) technology, it is possible to produce pipes of different diameters without stopping the line and thus save change-over standstill time and material costs. The FDC system is adjustable within a wide range of dimensions from 140 to 800 mm. The helix VSI-T+ pipe head with EAC internal pipe cooling ensures smooth pipe surfaces, optimal wall thickness distribution and roundness. Together with the active melt cooling system inside the die, the EAC system minimizes sagging. The other line components are also laid out for maximum flexibility and cost efficiency.

MULTI-LAYER DIES FOR FLEXIBLE PVC FOAM CORE PIPE

Many pipe manufacturers replace their feedblock-pipe combinations with new multilay-

er pipe dies for easier equipment handling in foam core pipe production. Battenfeld-cincinnati recently introduced two spider 200-3 and spider 400-3 die models for this application. The dies are suitable for dimensions from 32 to 200 mm, or from 110 to 400 mm respectively, and permit throughputs from 350 to 1,200 kg/h. The spider pipe dies offer high performance, optimal layer thickness distribution with narrow tolerances and short dwell times thanks to short flow paths and a compact design. In addition, they are able to process a wide range of different materials and can also be converted easily for 2-layer applications.

POWERFUL, COST-EFFICIENT XPEa PIPE EXTRUSION

At an open house in February 2015, battenfeld-cincinnati introduced a complete line tailored for XPEa processing. With an output of up to 150 kg/h, it can reach substantially higher throughput rates than conventional lines or RAM extruders with the added advantage of an extremely short, low-maintenance cross-linking station.The counter-rotating parallel extruder model twinEX 93-28 XPEa and the RK32PEX pipe head were designed especially for this application. Via an elbow adapter, the pipes pass directly from the pipe head into a vertical infrared oven with eight IR heating elements for a high cross-linking rate at line speeds of up to 30 m/min.

The RK32PEX pipe die is also specially laid out for XPEa extrusion

EXTRUDER AND ROLL STACK COMBINATIONS FOR THERMOFORMING

In battenfeld-cincinnati's multilayer sheet extrusion lines, the main layers are plasticised by 75 mm high-speed single extruders, while 45 mm extruders produce the functional layers such as bonding adhesives and barrier materials, but also surface covers and high-gloss finish. A feedblock-die combination ensures an even distribution of all layers, which is indispensable for a reliable barrier effect. The feedblock and die also feature an edge-encapsulating system for resource-saving processing of all materials.

A variety of roll stacks are available from battenfeld-cincinnati, of which the newest is the Multi-Touch roll stack. A unique roll configuration ensures consistent, uniform cooling on both sides of the sheet, even at maximum line speeds. This results in significantly improved sheet tolerances and stress-free sheet with optimal transparency, excellent flatness and a uniform thickness profile.

"EMS" TECHNOLOGY FOR PELLETIZING

Battenfeld-cincinnati also offers a range of counter-rotating twin screw extruders for flexible processing of PVC materials. The highlight of these machines is the "EMS" technology: it enables stepless adjustment of the back pressure gap and exact control of melt attributes at any time during production. This offers a wide processing window at optimal conditions, which results in excellent product quality. In addition, the barrel adjustment allows for processing of both soft and rigid PVC with one pair of screws with outputs of up to 1,800 kg/h. This saves energy and investment costs.

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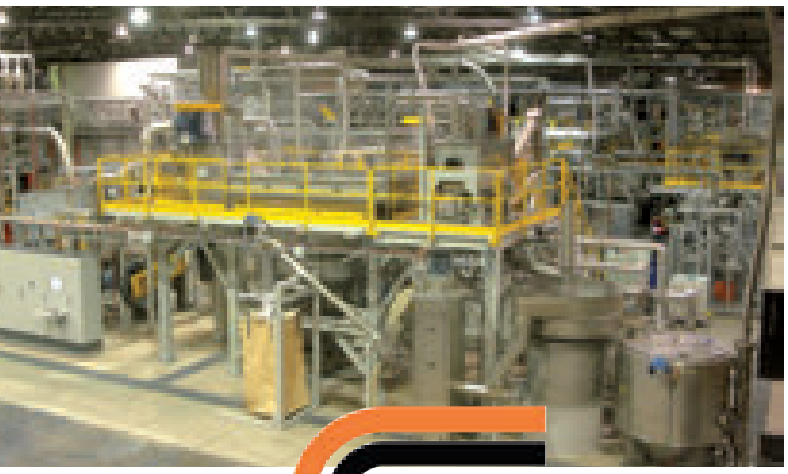

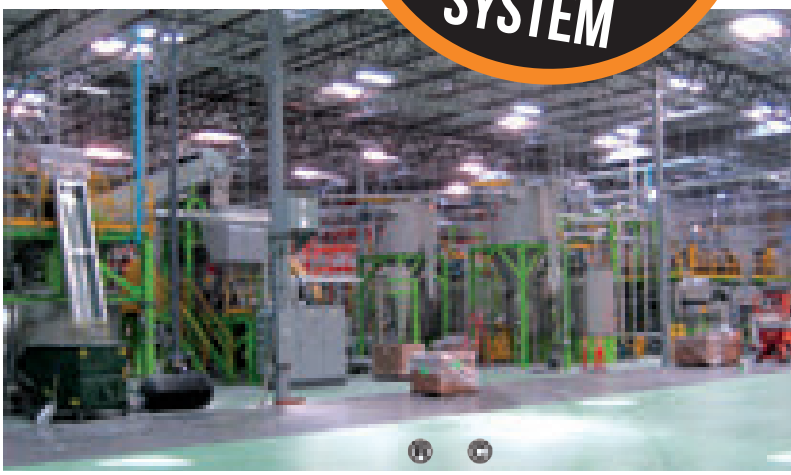

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ROTOMOULDING AND MIXING

THE INNOVATIVE TECHNOLOGY ALSO BECOMES INTUITIVE

The experience gained by Caccia Engineering (stand B 111, hall 22, at Plast 2015) in half century of planning and manufacture of rotomoulding and mixing equipment for thermoplastic powders, has allowed the company to reach a high level of know-how, so that all customer requests find the proper solution. All machines are characterized by a high level of reliability and innovative and intuitive technology, as well as an extraordinary abundance in configuration choices, software flexibility and technological elements for a high level of personalization.

LAST GENERATION ROTATIONAL MOULDING

An example is the new rotational moulding machine type RT3000H with Smart Cooling System. This machine has 3 or 4 independent carriages and 6 working positions and has been equipped with best technology in order to meet the high needs in terms of productivity, flexibility and energy saving. The machine is the ideal solution for all moulders of PE, XPE, PP, PA, PC and PE-PA mixes.

The main points of the RT3000H machine are:

- oven structure in steel, lined with insulating panels with a 0,043 W/(mK) thermal conductivity and a enveloping drawing;
- independent doors with a folding movement and independent electro-pneumatic gate for the automatic closing/opening of the cleft for arms passage;
- Turbo Fan System (TFS) on the combustion chamber fan, in order to automatically control hot air ca-

TWO BUSINESS AREAS WHERE CACCIA ENGINEERING IS ABLE TO DEVELOP MACHINES IN LINE WITH THE LATEST APPLICATION DEVELOPMENTS. THIS IS THANKS TO IN-DEPTH KNOW-HOW, THE RESULT OF DECADES OF EXPERIENCE, THAT TODAY ALLOWS THE COMPANY TO LEAVE NOTHING TO CHANCE AND TO PROPOSE SOLUTIONS WITH A HIGH DEGREE OF CUSTOMIZATION

Turbomixer for the preparation of compounds based on virgin or recycled thermoplastic and vegetable materials

pacity and pressure entered in the oven;
- Exhaust Gas Modulating System (EGM) that changes the quantity of fumes extracted by the stack according to the combustion air inflow;
- digital burner with an internal gas recirculation mixing head;
- cooling chamber with a Smart Cooling System that includes 4 fans and 2 extractors paired in two sections. The two suction pipes and the extraction one in each section are canalized with metallic ducts and air streams are choked and/or mixed, in order to always have an inlet air temperature in the chamber fixed and programmable in the proprietary supervisor system. Besides, there are different atomizer nozzles that may be programmed in the recipe;
- PID logic for the oven and cooling chamber temperature control, in order to have a high degree of stability and precision;
- new functions of the Easydrive supervisor on the fanless/diskless industrial PC with the possibility of using recipes at different levels and change parameters "on the fly" during the process and new parameters for the dropbox use;
- automatic axes positioning that may be programmed and used in the different phases of cooking, cooling and discharge;
- internal temperature control of moulds in order to reduce cooking and cooling times;
- possibility of having double or triple air in the arms;
- computerized gravimetric system (Gravicode) for double colour/material for a direct dosing in the moulds with a bar-code wireless reading;
- automatic mobile platform that interact with the machine and the gravimetric system.

WOOD COMPOUND MIXING

Caccia Engineering have recently conceived specific equipment for the mixing of compounds consisting of thermoplastic components (virgin or recycled) as well as vegetable materials. Such eco-materials called wood compounds or biopolymers (WPVC, WPP e WPE) are widely used as a valid alternative to wood. In fact, biopolymers are particularly appreciated due to their durability over the time and their endurance against atmospheric agents, due to their resistance against corrosion and mildew as well as due to their capability to keep their mechanic properties even after long exposures to the outdoor.

The equipment available for the preparation of these products ranges from 200 to 1500 litre capacity and consist of turbomixers series WCP, vacuum units for the extraction of humidity out of the compound by means of a vacuum pump and a separating filter and coolers series AC or AG with the possibility to be coupled with a flexible screw conveyor. Such particular equipment are purposely designed and modified to achieve the best quality on compounds that have a vegetable charge.

Due to the high percentage of humidity present inside biopolymers compounds, the vacuum unit is constantly maintained operational for the whole phase of compound vortication and heating by friction inside the turbo mixer. Then, a short time before the unloading phase, the atmospheric pressure is restored inside the turbomixer and the compound is poured into the cooler. For the above said reason, all contact surfaces are made of stainless steel or aluminium whereas the multi-stage mixing tool has a wear-resistant coating treatment (WC).

The typical heating temperature for these compounds can reach 175°C in order that the thermoplastic molecules melt around the vegetable ones. Then the cooler brings temperature back to about 70°C in order that the batch can be conveyed easily without any agglomerates. Lastly, a flexible screw conveyor, that also has the function of breaking lumps, conveys the compound of biopolymer directly to an extruder or a storage container.

All machines by Caccia Engineering are equipped with sensorless vector inverters with energy saving function to get the highest energy efficiency as well as with an industrial PC with remote connection for remote assistance.

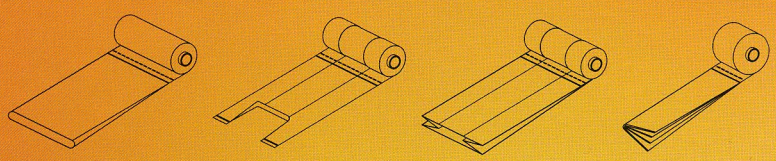
www.cacciaeng.it

Detail of a rotational moulding plant

TSA-SHA

PATENT PENDING

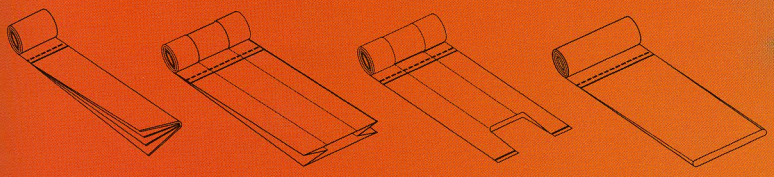
Produzione fino a 4 piste
Cadenza fino a 300 colpi/min
Tramoggia alimentazione anime ad alta capacità (fino a 60 cambi)



TSA-SHO

PATENT PENDING

Produzione fino a 3 piste
Velocità lineare fino a 210 m/min
Fino a 28 cambi/minuto coreless



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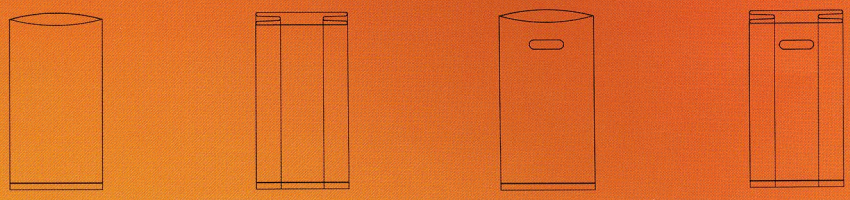
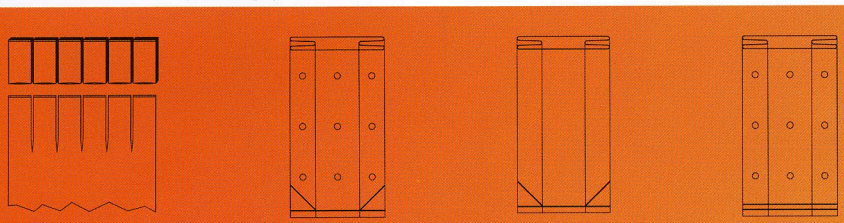


BPA-S
PATENTED

Sacchi grande capacità fino a 4 m di lunghezza
Spessori fino a 4 x 250 µm
Tavolo di raccolta con piegatore automatico in 2 / 3 / 4 / 8 volte la lunghezza del sacco

Taglia e salda longitudinale fino a 8 piste
Spessori fino a 120 µm
Sistema impilamento sacchi con doppio pressino (senza ausilio di aghi)

BPA-MP
PATENTED



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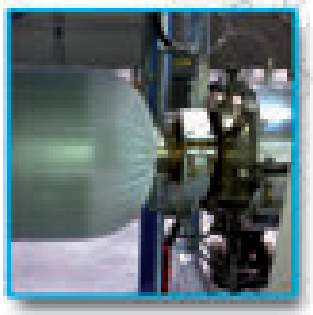
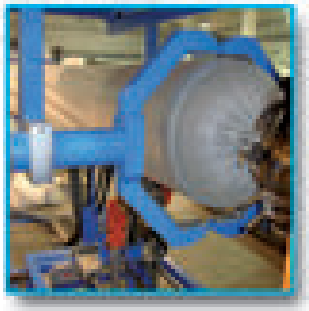


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PRODUCTION OF INSULATING PANELS

COMPARING TWO TECHNOLOGIES

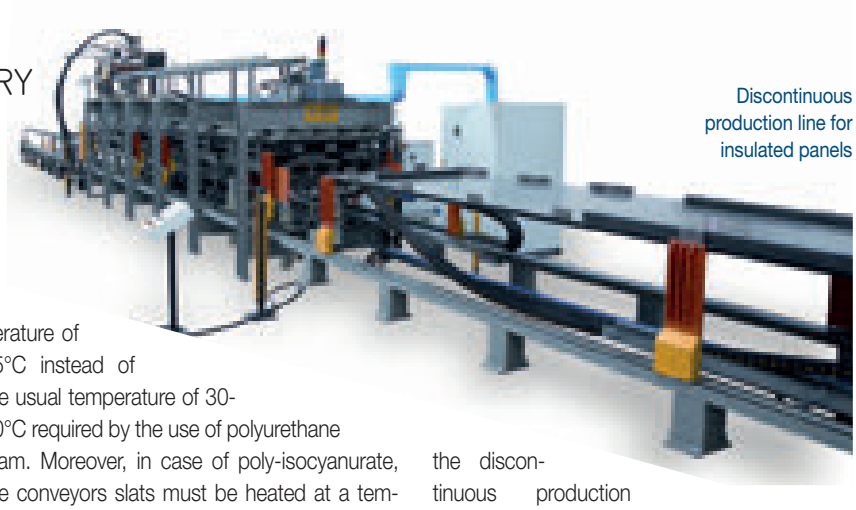
CONTINUOUS OR DISCONTINUOUS? THE DIFFERENCES AND ADVANTAGES BETWEEN ONE METHOD AND THE OTHER IN ORDER TO CHOOSE THE BEST SUITED TO ONE'S NEEDS. SAIP EXPLAINS ALL THIS IN THE FOLLOWING ARTICLE. BOTH METHODS ARE AVAILABLE FROM THE CEDEPA CENTRE IN TUDELA, SPAIN, DEVELOPED AND OPERATED BY SAIP IN COLLABORATION WITH DOW CHEMICAL

The insulated panels are nowadays used in several areas: erection of civil and industrial prefabricated buildings and partition walls, manufacturing of refrigerated industrial storerooms for foodstuffs, of refrigerated or non-refrigerated containers etc. Their structure consists in two external facings and an insulating core. The external facings can be either rigid or flexible or composite facings that is a combination of rigid and flexible facings. The insulating core can be made of polyurethane (PUR), poly-isocyanurate (PIR), phenolic resin, rock wool, polystyrene. The insulated panels are manufactured either with continuous or with discontinuous method according to the panels facings typology. Each method has its own peculiarities and advantages. The continuous method is the most dominating technology in the market, being economically advantageous in case of mass production and it is used for the production of rigid, flexible or composite facings panels. In the continuous production process the reactive mixture is laid down between two rigid or flexible facings within a continuously moving double press conveyor. The discontinuous process is suitable for special design rigid facings panels and for low production volumes. In the discontinuous production process the reactive mixture is poured or injected into the cavity between two rigid facings within the platens of a standing press.

THE CONTINUOUS METHOD

The process involves the components transfer from the storage system to the foam dispensing machine which provides the components accurate conditioning, metering and mixing as well as the reactive mixture pouring. The reactive mixture laying down is provided by a mixing and pouring head assembled on a manipulator which ensures a homogeneous distribution on the continuously moving facing. The reaction and hardening of the reactive mixture takes place inside a moving double press conveyor which defines the panel thickness and contributes to the adhesion of the reactive mixture to the facings. A cross cutter is placed immediately after the double press conveyor in order to cut the foamed panels to the required length. After the panels have been on-line cut, they are unloaded into a stacking position where the panels bundle is formed. The corrugated panels are alternatively tipped over while the high thickness panels are turned in a vertical position on a cooling rack for more than one hour, and depending by the thickness, before reaching the stacking position. The panels bundle is then shifted to the packing machine and packed by a transparent film for easy handling and storage. In the continuous production a special designed foaming machine is used to simultaneously process several components such as polyol, isocyanate, catalysts, additives and blowing agent. According to the required blowing agent, different metering and mixing methods are used. One method is the mixing of polyol with catalysts, additives and blowing agent through a

The line at the CeDePa centre is at the disposal of operators for production tests and research projects aimed to specific market needs



Discontinuous production line for insulated panels

dynamic mixer in the machine polyol low pressure circuit. Another method is the mixing of polyol with catalyst, additive and blowing agent through a static mixer. The accurate metering of the resulting polyol mixture and of the isocyanate to the high pressure mixing and pouring head is provided by means of dedicated high pressure axial piston pumps. In the mixing head the mixing process with the isocyanate is achieved before the reactive mixture laying down on the continuously moving facing.
The production of continuous panels is based on the use of polyurethane foam (PUR) or poly-isocyanurate foam (PIR). Both of them can vary in order to comply with different requirements in terms of blowing agent, foam density and fire behaviour.
Tests developed in CeDePa showed that the fire resistance is increased by adding to the polyurethane foam fillers such as expanded graphite, melamine or alumina. The fillers are added in the mixing head as a third component simultaneously to the mixing and laying down phase of the reactive mixture.
The poly-isocyanurate foam is characterised by the use of isocyanurate which, combined to specific catalysts and flame-retardants and mixed with different kinds of polyols in specific ratios, increases the fire resistance. The poly-isocyanurate reactive mixture processing is very peculiar and implies a pre-heating of the facings at a temperature of 45°C instead of the usual temperature of 30-40°C required by the use of polyurethane foam. Moreover, in case of poly-isocyanurate, the conveyors slats must be heated at a temperature of about 60° C in order to allow the perfect adhesion of the foam to the facings.

THE DISCONTINUOUS METHOD

In the discontinuous method, the polyurethane mixture is metered by a two components low or high pressure foam press. The reaction and hardening of the polyurethane mixture takes place inside a standing press which defines, in this case also, the panel thickness and contributes to the adhesion of the polyurethane mixture to the facings. The standing press consists of a heavy duty metal structure equipped with a suitable number of platens. The upper platen is fixed to the structure while the lower platen is assembled on hydraulic cylinders which allow its vertical movement to the selected panel thickness. The standing press is normally equipped with panel edge formers. In the discontinuous process too, in order to produce a panel with optimal mechanical and physical characteristics, the facings must be kept at a constant and preset temperature while the polyurethane mixture polymerises inside the standing press. For this reason the standing press platens are equipped with a temperature conditioning system, mainly consisting in hot water circulation into the press platens provided by a water heater. In the discontinuous process different foaming methods are used in order to achieve the best results in terms of foam distribution within the two facings. The foaming methods are the multi-shots pouring at closed press, the single shot pouring at closed press, the lance withdrawal pouring at closed press and the open pouring at open press. The choice of the suitable system is mainly related to the product design and to the required technological results. The lance withdrawal pouring at closed press and the open pouring at open press are the proper foaming methods for the discontinuous process and allow a better foam distribution on the whole surface and consequently a homogeneous density. Anyway, they cause some limitations in the production process and require a considerable capital investment. The discontinuous production process mainly implies the use of polyurethane foams which can vary in order to comply with different requirements in terms of blowing agents. Differently from the continuous process, the discontinuous production process foresees the use of polyol already blended with additives and blowing agent.

DIFFERENCES AND CONCLUSIONS

The main difference between the continuous and the discontinuous process consists in the production method, more in detail in the reactive mixture pouring and distribution system on the facings. In the continuous process the polyurethane metering and mixing are effected by means of a high pressure foaming machine using several components. Since these components are separately metered, during the continuous production process it is possible to act on the reactive mixture catalysis by varying the cream time and the gel time as well as on the foam density by changing the blowing agent quantity. In the discontinuous process the foaming machine only foresees two components, polyol mixture and isocyanate. In this case, since the polyol is pre-blended with the catalysts and the blowing agent, it is not possible to vary the reactive mixture catalysis nor the foam density.
In the continuous process, the polyurethane reactive mixture distribution is made on a continuously moving facing and it is then homogeneous and uniform. On the contrary, in the discontinuous method the reactive mixture distribution is made by pouring or injection in a cavity between two facings positioned inside a standing press. In this case the reactive mixture will not be uniformly distributed on all the surface, thus avoiding a homogeneous density and cellular structure. Another inconvenience of the discontinuous method is represented by the foam overlapping in case of multi-shots pouring.
The advantages of the continuous technology are then clear since this method allows a uniform distribution of the reactive mixture on the facing, a homogeneous density and a foam cellular structure having suitable physical and mechanical characteristics. Moreover the continuous process allows to vary the reactive mixture catalysis and the blowing agent quantity. On the other side the discontinuous technology allows a production flexibility suitable for the manufacturing of special design panels and for low production volumes with an affordable capital investment. ■

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ROTOMACHINERY GROUP STEADILY INVESTS IN RESEARCH AND DEVELOPMENT WITH THE AIM OF DEVELOPING TECHNOLOGIES TO REDUCE THE PRODUCTION COSTS OF THE ROTOMOULDING PROCESS. MAJOR RESULTS WERE RECENTLY ACHIEVED IN THIS CONTEXT

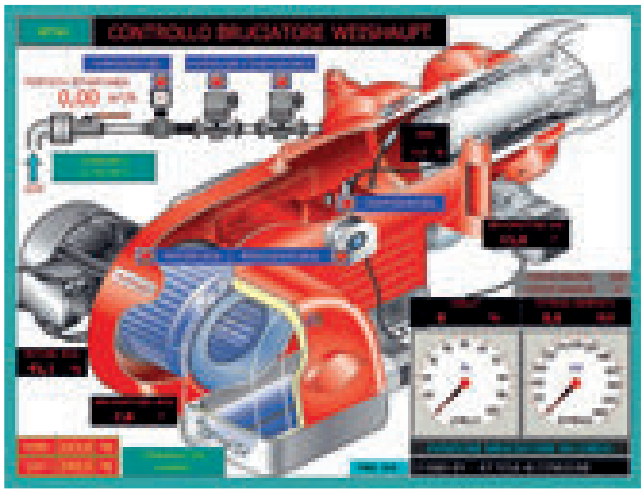
ADVANCED ROTATIONAL MOULDING

SOLUTIONS FOR REDUCING PRODUCTION COSTS

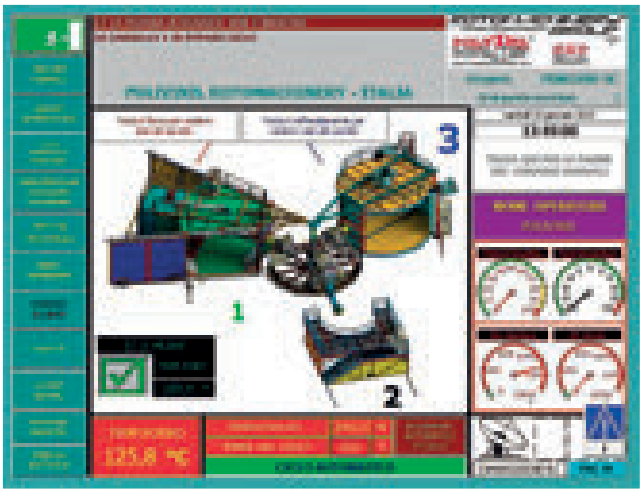
As everyone knows, over the past few years we have experienced a quite difficult market, one where the general market is very slow and we haven't yet seen the expected growth in Europe or in other areas of the world where manufacturers are technologically advanced and sensitive to innovation. However, even in more advanced markets, we are seeing new competitors who are offering low-technology and low-quality equipment utilizing a "reduced price" as their principal marketing instrument. Even in this difficult situation, Rotomachinery Group (stand C 71, hall 22 at Plast 2015) has continued to invest in research and development because, especially in the industry's more advanced markets, there is a need to reduce production costs and improve product quality. Apart from raw materials, the elements that affect production costs are manpower (about 55% of the total), energy (22%) and technical obsolescence (19%).

CUTTING ON MANPOWER COSTS

Through Rotomachinery Group's investment in research and development, good results have been achieved in all areas of intervention. The reduction of manpower costs means cutting the number of working hours for each machine, however this requires increased attention to the construction of the machine in order to ensure the resources necessary for producing professional, high-quality products. The company is not only providing rotomoulding machines, but also personal solutions to make production more efficient in terms of working with the moulds; drawing of the production site; solutions to move and use raw materials; and ensuring the production of high-quality finished rotomoulded products.



In combination with the Ecomode system, the burner stops when the doors of the oven are opened and the extractor of exhaust fumes works at the minimum power



Software system controls the production process duration and sequence by monitoring the internal temperature of the moulds during the heating and cooling phase

Recently, a new software system resident has been deployed on the company's servers that considers the weight of the parts and easy comprehension of mould positioning on the spiders of straight arms and on the flange of offset arms to keep the weight balanced. Using a PC in the office, the head of production can move the moulds with a click of the mouse and the program will show in real time any unbalanced point and propose the positioning and placement of the weight. All of this takes place without interfering with production. This technology includes high advantages in terms of mechanical stresses and life of the components.
The user can remotely check the production using a PC, tablet, or smartphone and see on the screen the same pages of the touch panel on the machine. As a result one person can control multiple machines without being present.

SAVING ENERGY

As regards energy savings, Rotomachinery Group offers machines allowing, for the same cycle time, a reduction in consumption of 20% through the quality of the insulation and the shape of the cooking chamber, considering the speed and the pressure of the airflow of the hot air on the moulds. Such significant reduction in cycle times are achieved with the same consumption rates.
Moving a further step ahead, the company has now developed the UFD (Upper Fan Duct) system, which directs some of the hot air onto the moulds. This is an extra hot air pipe that uses the same heat source without increasing consumption. Rotomachinery Group has introduced the new hot air blowing fans composed of two turbines that reach the optimal rotation in rapid time and also in fast time they reduce the speed, reducing the loss of hot air during the opening and closing of the oven doors. This provides maximum advantage in combination with the Eco-mode system where the burner stops when the doors of the oven are opened and the extractor of exhaust fumes works at the minimum power.
Another innovation, Regen utilizes energy lost from the machine and uses it again for the machine or for other external needs. With Regen, moulders are able to re-use the energy lost from the inverters every time the motors reduce the speed and make reverse rotations. The company is also studying special heat exchangers, air-air and/or air-water, to enable moving hot air coming from the exhaust fumes and to use it to heat the factory.

INTEGRATED SOFTWARE

All these functions are controlled through a software system that monitors the internal temperature of the moulds during the heating and cooling phase. It will direct the exit of the arm from the oven when the part is perfectly processed and it will stop the cooling cycle when the part reaches the desired temperature. These innovations are important in the event of material changes, changes in product weights, testing of new moulds, or for the initial startup of production each morning because cycle changes are affected by different conditions.
The reduction of the cycle times depends on a better cooling phase. This goal was reached by using new types of cooling fans, which are more powerful (28.000 up to 40.000 m^3/h each), less noisy (-10 dB), and cut electrical consumption by half. The savings achieved are real and processors can look at this in real time on the touch screen of the machine. The electrical and gas consumption can be set for each working cycle, cubic metres, weight of the products, and with a certain time frame.

www.rotomachinerygroup.com

RUBBER MOULDING

Accessories for safety and productivity

At Plast 2015 Delia (stand C 33, hall 11) proposes some fittings which, through their automatism, integrate the various rubber moulding process steps, from the press to the final product, and so are essential for a safer and higher productivity of rubber processing.
One is the robotized island that, by means of precise, fully automatic electrical and pneumatic movements, draws, trims and tits up also the injection peduncles of car bellows obtained by a rubber injection press equipped with a Delia multi-nozzle thermo-regulated block injection mould.
A further proposal is the double thermoregulated block: a device that makes it possible to work simultaneously with two moulds on the same injection press: one on the fixed platen side and the other one on the mobile platen side. The compound is injected into the central point of the block, from which it flows into the various internal injection runners and then, through proper nozzles, flows into the corresponding mould cavities. A third fitting is the robotized island for rubber/plastics caps production for the automotive cooling circuit. Also in this case the mechanical hand is used to draw, trim and fit up 64 rubber caps on the corresponding plastics inserts simultaneously and automatically.
Finally, a fourth proposal is the ring fitting machine, used for the automatic fitting of plastics or metal rings into a rubber packing ring.
www.deliasrl.it

The various solutions offered by Delia are aimed at integrating rubber moulding equipment with safety and productivity features

Two machine ranges from Presma

Presses for foams and rubber

The new Presmall R12 model unveiled by Presma at Plast 2015

At Plast 2015, Presma's stand (B 21, hall 22) is dedicated to two different machine ranges, foamed thermoplastic and the thermosetting rubber injection process. The first is a special rotary machine range: Roto T2/48 Elettra, full electric, specifically for the production of corks made in foamed thermoplastic resins. This model is equipped with 48 double cavity mouldholders and two injection groups which allow the moulding of 4 different cork types, that can be manufactured in two different materials/colours. The "transfer" injection groups are driven by electric motor controlled by an inverter for the plasticising screw, and by a brushless motor for the punch. The full electric operation gives the average consumption of 6,5 kW/h, while producing 3000 corks/h, keeping consistent quality, superior to the corks moulded with the previous hybrid models. The Roto Logic control, developed by Presma, enables to set 2 different dosages on each injection group for 1 or more single cavity moulds to sample corks that are different in shape and weight, within the same production cycle. Using the touch screen interface unit, it is possible to manage all moulding parameters through different sensors that check the machines automatic functions, its alarms and its cycle reset, in case of jamming. The machine is offered with remote assistance and is adapted for the possibility of adding insert loaders for automatically loading the mould (i.e. wooden or plastic heads for T-corks).
The second machine Presmall R12 represents a novelty in the rubber moulding field. It is an evolution of the fully electric Mini model, specific for rubber and silicone moulding; during Plast it will be possible to see the machine running, equipped with a 2-cavity mould and a specific extruder for solid silicone.
Its main feature, which diversifies this machine from its "little sisters", with and without tie-bars for thermoplastics, is the 120 kN clamping unit with 4 tie-bars; the Mitsubishi control board has been kept, as it can drive up to 16 axis, 3 of them as standard equipment for the injection process. Thanks to the use of a high speed optical fibre net and a high resolution encoder, the control unit checks and promptly adjusts the position of any actuator by 0,44 milliseconds, thus granting the precise positioning with an accuracy within tenths of a micron. The absolute encoders are equipped with a back-up battery, allowing them to skip the zero-set usually necessary for the start of electrical machines.
www.presma.it

A response to the new trends

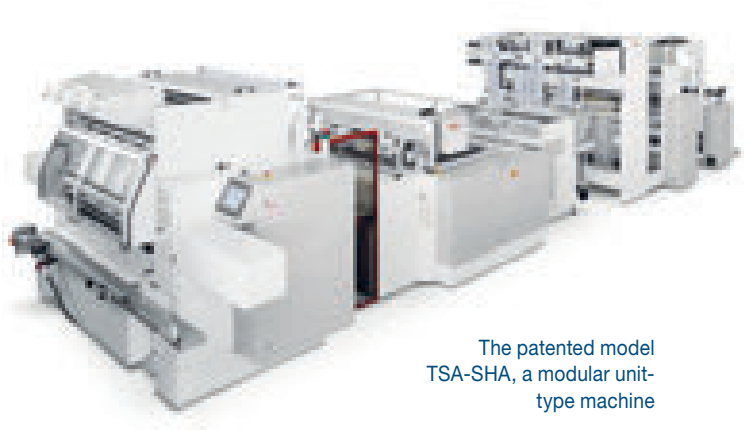
Modular bag-making machines

With the introduction of new legislation aimed at reducing the environmental impact and the request for use of materials suitable for packaging of fruits and vegetables, and food in general, the application of bags with handles dedicated to this use has increased considerably, and with it the need to produce high-performance and production bag-makers capable of transforming biodegradable material or not, with more and more reduced thicknesses. In addition, the ban placed on bags with handles typically offered at cashiers drive the need for an increased production of reusable and/or recyclable garbage bags.

In response to this new scenario, Amutec developed two innovative machines that will be exhibited running at Plast 2015 (stand C 61/D 62, hall 15). The TSA-SHA is a modular machine to produce 2, 3 or 4 tracks of bags with handles (shopper-type), for star-bottom bags or flat bags with bottom seal up to 6 tracks, with thicknesses up to 6 microns, wound on plastic or cardboard cores. The main features are the high production speed, with typical values of 250 cycles/minute (1000 bags/minute); the innovative combination of welding, cutting and waste recovery (patented system); high capacity feeding hopper with an autonomy up to 60 changes; conveyor belt which automatically downloads the finished rolls without operator intervention.

The TSA-SHO is a modular machine to produce 2, 3 or 4 tracks of bags with bottom seal, star-bottom and/or with handles flat or with a C-fold, wound coreless and labelled with adhesive paper. The main characteristics are the linear speed up to 210 metres per minute and up to 400 strokes/minute; automatic labelling unit for 28 changes per minute; automatic discharge of finished rolls.

www.amutecsrl.com



The patented model TSA-SHA, a modular unit-type machine

NEWS

Solutions for profiles

From extruders to calibrators

A B-Tec Tecno System line carrying the TPV Mechanical Division brand

A company with more than 40 years of experience in PVC profile extrusion of all kinds, B-Tec (stand A 102, hall 13) is a leader in the development of extrusion heads, dies and calibrators for these applications. The particular strength of B-Tec's development and manufacturing team is the result of the synergy of many years experience and creativity.
All B-Tec components are designed, manufactured and tested in the company's factory in Italy. European standards and the highest quality criteria are always applied. For dies and calibrators B-Tec uses exclusively the best stainless steel. The extrusion heads guarantee the maximum performance and production, optimum product quality, convenient handling and ease of service in combination with high cost efficiency. Products and services are offered to customers in the whole world, meeting their demands, specialising in productions such as window profiles, window sills, cable ducts, rain gutters, sidings and many others.
The subsidiary, Tecno System, is a company producing polymer profile extrusion lines, automatic machines for the machining of profiles made of PVC, aluminium or steel, special solutions on request and turnkey systems. The great experience in punching systems has allowed the company to develop integrated solutions for punching aluminium roller shutters, extruded PVC section and stainless steel. The product is tailored to the customer's need and is an element with high added value for the industry. Tecno System also produces energy saving extruders and extrusion lines as well as innovative cutting units with radial heated blade under the TPV Meccanica brand. The range of extruders with various production capacities allows the company to meet most of the processors' needs.
Recently, Tecno System took over the Mechanical Division branch of TPV, a leading supplier of complete lines for thermoplastic extrusion strengthening its position and acquiring an important know-how. B-Tec and Tecno System range of products includes: extruders (single screw, conical double screw and co-extruders) for rigid and soft PVC and other thermoplastic materials; dies and calibrators; energy saving extrusion lines, a variety of calibration benches (made of stainless steel, with an electronically guided energy saving vacuum system), haul-off and trimming equipment (radial heated blade, free from dust and with low noise level), granting more than 60% energy savings in respect to the old generation lines.

www.btecsrl.com

PE foam extrusion

Technology and know-how

The recent extrusion lines developed and built by FAP in the last years have brought important innovations regarding the production of film using expanded PE. As a matter of fact there is a significant presence of the products based on FAP technology on the European market. In comparison to the machines created by other competitors, the newly developed lines by FAP manage to produce materials of higher quality and better density, allowing the processor to take its expanded PE products to a higher level.

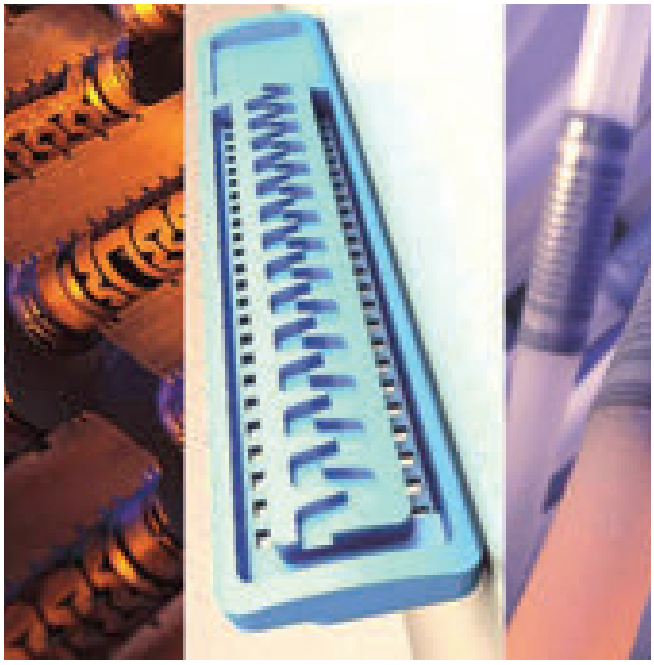
The extrusion lines recently developed by FAP are aimed at innovating the way PE foam films are produced

FAP has enlarged its range of technical solutions, so that currently it can design and build machines starting from 50 up to 1500 kg/h, obtaining very low density such as under 16kg/m^3. FAP's range is complemented by a perfect understanding of the expanded PE production and transformation process, which allows customers to benefit from expertise gained in years of experience directly at production sites.
FAP has confronted permanent challenges from the low-cost machine builders from Eastern Europe on the international market while focusing on the achievement of high technology, efficiency and best quality of its machines. During technical research and development of the screws and extrusion heads FAP has successfully optimised various materials regarding density and homogeneity, thus being a manufacturer able to offer excellent quality at a competitive price.
The improvement of the mixing process of PE with gas on one hand, and the use of the economical and efficient lines on the other hand have led to a saving up to 30% of the costs, showing important figures for kW/kg of product. All these improvements and innovations generate considerable advantages for FAP customers, first by saving electrical power during the manufacturing process and second by achieving best quality of the final product.

www.fapitaly.com

Pipe extrusion

All for irrigation



Profile Dies specialises in the development of extrusion lines for the production of drip irrigation pipes that can insert up to 800 drippers per minute

In the plastics extrusion sector for more than twenty years, Profile Dies (stand C 101, hall 13) is specialised in the design and production of special equipment and complete systems for drip irrigation pipes, films, flat sheets, hollow profiles and sheets and equipment tailored to customers' specific requirements. The company also manufactures extrusion lines for the production of furniture trim in PVC, PP or ABS with thickness from 0.4 to 3 mm, PE/PP/PC/PMMA hollow sheets and profiles with thickness from 2 to 60 mm (up to 9 layers), and extrusion lines for the production of flat sheets with thickness from 0.2 to 15 mm.

In the last two years the company has developed new automated extrusion lines for the production of drip irrigation pipes with flat drippers, which reach a maximum output speed of 150 m per minute and can insert up to 800 drippers per minute, and extrusion lines for the production of round drip irrigation pipes with a production speed between 80 and 100 m per minute and inserting capacity up to 400 drippers per minute, to produce pipes with diameter from 16 up to 20 mm.

Still with a view to develop solutions for the irrigation field, Profile Dies has recently presented to the market a new extrusion line for the production of drip-tape. This irrigation system is extremely cheap and is suitable for both crops in open fields and gardens. It is easy to install and to remove after use, thanks to the low thickness of the pipe.

The new line features maximum output speed of up to 200 m per minute, spacing (distance between holes) between 10 and 15 cm and minimum wall thickness of 5-6 mm.

www.profiledies.com

Maris technological centre

A structure geared to create competitiveness

In an always more competitive world having high technological standards, there is the need to develop new materials and at the same time to rationalise the production equipment. In this market situation inside the technological laboratory of Maris (stand C 21/D 22, hall 13, at Plast 2015) it is possible to carry out trials - starting from a merely laboratory scale up to a typical production line - aimed to increase the production, to reduce the costs and optimise the formulations.

All this is realised thanks to four extrusion lines installed permanently inside the technological centre. It is possible to join a lot of ancillary devices to such lines in order to simulate each production equipment type. Putting in the same productive conditions of the customers, it is possible to understand which are the limits of their processes helping them to improve the same.

Maris Technological Centre carries out innovative and improving analysis of each production process which involves corotating twin screw extruders. Among the primary activities of the technological centre are those for the processes optimisation in the study of new productive applications for Maris extruders. The centre collaborates with public and private corporations, national and foreign, for the development of important research projects among which - in addition to those connected to the compounding of plastic materials - those for the use of corotating twin screw extruders for the production of vulcanising rubber, for the development of a rubber de-vulcanising process, for the continuous production of solvent base adhesive, and for polymerisation processes.

www.mariscorp.com

The technological centre was established by Maris with the aim of increasing the competitiveness of the company and its customers through trials starting from a merely laboratory scale up to a typical production line

NEWS

8-colour flexographic printing

Details make the difference

Celebrating its first 40 years in the business at Plast 2015, BFM (stand A 121 hall 15) presents the 8-colour central drum gearless flexographic printing press model Marte. During the fair, the company is showing some important accessories of the Marte machine, such as the automatic revolver-type re-winder, and a Stimount 150 Isint 20 HD automatic plate mounting machine. Marte has been designed with the support of the strong experience of Bosch Rexroth, who's the world leader in the automation in the printing and converting; with the use of this technology BFM developed - few years back - the fully electronic printing machines that, provided with the most modern accessories, fulfill the high demanding requests of precision and flexibility coming from the packaging market. Each automatic printing group is managed through 7 brushless motors; it is provided with a ceramic anilox roller - with sleeve system and with a doctor blade, closed chamber - Teflon coated, that, fed by a pneumatic pump, allows ink circulation and its homogeneous distribution along the anilox surface - so on all printing width. The doctor blade has an Easy-Hand system for blade and gasket change in the machine. The sleeve system for quick change, for both plates and anilox, nowadays a must in the market, has a pneumatic ejection to make it even easier. It is also possible the ejection of the plate sleeve in printing position, for the cliché cleaning.

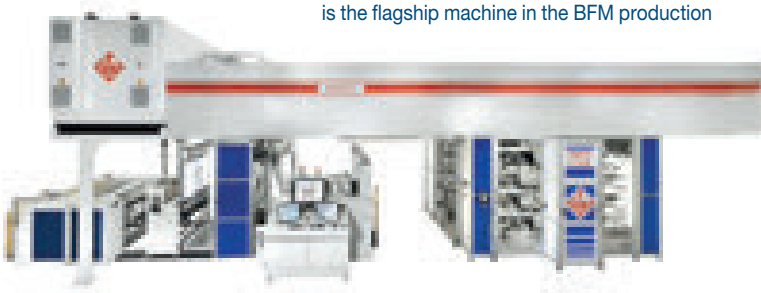
The central drum - chromed, ground and finishing polished - has a very good dimensional stability, continuous monitored, thanks to the double wall chamber and to a cooling system with dedicated chiller. The pumps system is computerised, for inking (with an automatic system to keep the pre-set viscosity) and automatic washing, with pressure adjustment.

The unwinder and rewinder are both turret-type, with flying splice and "nonstop" automatic reel change. The printing inspection system has 2 cameras, one moving and one fixed 100% full web - with 2 monitors, a 19-inch touch-screen and a 30 inches. A software system is also included for register settings.

Painstaking attention to detail is very well shown by the drying system: drying tunnel with pneumatic opening and additional windows for checking and nozzle maintenance; tunnel rollers provided with independent motors; drying fans with speed dependent on the main line speed; intercolour blowers by stainless steel, removable for cleaning and maintenance. The machine is managed through a central control unit with 19-inch touch-screen monitor and specific software for the process parameters control and setting; it is provided also with a flying hand control, positioned in the printing groups area. The Marte printing press is available in different printing widths; standard repeat length from 350 mm up to 800 mm (or 1200 mm Plus Model); the maximum production speed is 400 metres per minute.

www.bfm.it

The 8-colour Marte with grearless central drum is the flagship machine in the BFM production



Between the fair and the factory

Comerio Ercole unveils four novelties

Four new products are to be unveiled by Comerio Ercole between its stand at Plast and the factory in Busto Arsizio

Four technical innovations recently developed and patented by Comerio Ercole (stand A 61, hall 11) are to be launched at Plast 2015. First of all a new mixing mill series MGX called Expo 66, which incorporates innovative features than the traditional range on the market. This mixing mill is aimed at setting new standards for end-users.

The new Hydroplus control system ensures the control not only of the hydraulic positioning for movable rolls in a calender but also the pressure control and namely the laminating force between the rolls. A new embossing and coupling plant with roll face 1500 mm for PP-PE-PET-PVC film for triple support with hot-melt unit has an innovative and special preheating unit avoiding film deformation.

The new Alveoplast is a plant for PP sheet extrusion with inert material from recovery of artifacts with double alveolar structure to be used mostly in furniture, construction, packaging sectors etc. It has been developed as part of a new R&D project conducted with the support of a team of leading industry partners and two universities: the Politecnico in Milan and Università degli Studi in Ferrara. For the vision of this installation, equipped with a new 6-roll calender with face length of 1,500 mm, there is a shuttle bus from the fair to the factory of Comerio Ercole in Busto Arsizio (near Varese).

www.comercole.it

Extruders, tufting machines and moulds

All for brushes and brooms

Star R32 is an automatic turret style filling machine with two tools and 3 carriages for the production of all kinds of brooms and brushes

The public debut of Borghi and Boucherie takes place at Plast 2015 exactly one year after the establishment of the joint venture company Boucherie Borghi Group for the manufacturing of brushes and brooms and the joint development of technology aimed to these products. The two companies present themeselves together with Techno Plastic at the stand D 52 in hall 13.

Operating in the brush industry for over sixty-five years, Borghi is globally known for the technology for the production of brushes. From semiautomatic solutions to those completely robotized, the Borghi range is complete and offers solutions from the household sector to the personal care, from the highly-skilled technical field to the wider industrial use.

Borghi displays his machine model Star R32, an automatic turret style filling machine with two tools and 3 stations (loading/unloading, drilling, tufting) operating simultaneously to produce two pieces at the same time. The 5 axes of movement run by brushless servomotors allow this machine to have a versatility level never reached before.

Star R32 can produce a wide range of models with different filling angles, such as radial tufted, parallel tufted and radial/parallel tufted brushes. The high degree of freedom in filling allows to realize all the different types of brooms and brushes for household industry, including toilet brushes and Swedish type dishwashing brushes.

Boucherie is a pioneer in the development of new technologies for the brush industry, in particular for the industry of toothbrushes and brushes for personal care. Boucherie's experience in precision, highspeed brush manufacturing equipment is second to none, as they are in especially high regard for their innovation. The company is also recognized as a global technology leader in the development, design and construction of complex, single- and multicomponent injection moulds.

At Plast Boucherie displays its new concept in the field of multi-component injection moulding with the delivery of its first Flexi-Cube 24 cavity mould delivered for a 3 component handle in layout. This particular mould is a 5-station mould: injection of the first component; cooling; injection of the second component; injection of the third component; product ejection or removal during an active moulding cycle. The overall cycle time is only 15 seconds.

Techno Plastic exhibits two machines: a rope layer and a strap winder, a full electronic winder machine for plastic strapping band designed to wrap all kinds of plastic strapping band made of PET and PP starting from 4 mm up to 32 mm in width. It allows a simply perfect quality in winding on spools of any size on the market, thanks to its capacity of absorbing the winding temporary phases and a linear winding process due to the uncoupling of the speed ramping in the packaging area.

www.borghi.com

NEWS

Exact extends its range

Hot recovery

Through the new E-15 extruder, Exact (stand A 61, hall 15) has extended its range of product introducing a system for hot recovery. The new extruder is suitable for both closed loop in-line recycling (trimmings of thermoplastic films such as LDPE, LLDPE, mLLDPE, HDPE and EVA as well as barrier films containing COPA and EVOH) and off-line recycling (scrap film reels), and is equipped with a conveyor and a feeding unit for the trimmings with a haul-off equipped with two motorised rollers positioned above the extruder mouth, a solution which avoids the implementation of expensive and noisy Venturi devices. The granule thus obtained is air-cooled through a spiral conveyor of about 10 linear metres, is homogeneous and has an apparent specific weight similar to that of the virgin granule which can be easily modified by varying the cutting speed. The design of the screw has been specifically developed to turn the trimmings into granules without generating excessive heat. In fact, the screw reaches the melting temperature in a gradual manner, thus avoiding product degradation over the heating cycle. The output of this extruder amounts from 5 to 75 kg/h at a maximum throughput speed of 200 m/min.

The new E-15 extruder is suitable for both closed loop in-line and off-line recycling

The main components of the system include a haul-off unit equipped with high-strength nip rollers, capable of compacting the trimmings and eliminating the screw pulses. Moreover, the machine features a speed follower provided with a roll which balances the speed difference between the line and the haul-off unit up to a maximum of 10%, so as to keep always in tension the trimmings coming from the winder. A sensor detects possible lack of material and stops the extruder screw, allowing it to restart only when the trimmings feeding unit resumes its normal operation. The conveyor grants consistent material flow for the screw, and the trimmings are introduced from above through guide pulleys. The line has three temperature control zones, two of which enable a double function (heating and cooling). The high-strength nitrided extrusion screw can process a wide range of materials thanks to its innovative profile. The fluidity of the material is actually controlled by a pressure transducer. A rupture disc positioned at the end of the screw protects the die from any overpressure that could damage it, while the die-face cutter can be configured with two or four rotating knives. High quality components, including Omron drives and touchscreens, Siemens electric motors, screw and spindles supplied by leading manufactures in their respective fields round off the extruder's equipment. ■

www.exact.it

Single-station blow moulding machine

Electric drive for sustainable development

The PB10E/SXL model, exhibited at Plast 2015 by Plastiblow (stand A 01/B 02, hall 22) is an all-electric blow moulding machine. This consolidated technology in the blow moulding sector offers many benefits with respect to traditional hydraulic machines: reduced environmental impact of the machinery on the working floor, lower energy consumption, cycle repeatability, increased productivity, and lower maintenance costs. This model is a single station machine equipped with a triple head (centre distance 240 mm) to produce 5-litre jerrycans with a view stripe in triple cavity. The machine components are easily accessible and production changeovers can be carried out rapidly without problems.

The fieldbus architecture for the connection of the various electronic components at distributed intelligence, allows a digital transmission of signals with maximum reliability and speed, a precise synchronisation of the servo-driven movements and an accurate diagnostics and supervision of the system in real time. The machine is also equipped with a module that enables the recovery of the kinetic energy of the carriages during deceleration, converting it into electrical energy that is returned to the line.

The technical solutions adopted to achieve the servo-driven movements are patented and are a distinguishing feature of the Plastiblow machines. Today Plastiblow can state that with the surprisingly low energy consumption measured on its machines, at comparable working conditions, the company is one of the leaders in this field in the blow moulding industry. The extrusion head design guarantees an excellent control of the extruded parison and it is optimized to achieve quick colour changes. The machine is also equipped with an integrated bottle leak tester for detecting eventual defective products. ■

www.plastiblow.it

Plastiblow blow moulding machines are among those with the lowest energy consumption at the same output rates

Automatic sealing machines

Two new developments for bags

At the international exhibition Plast 2015, Saldoflex, active since 1961 in the sector of bag-making machines and (through the Flexo Division Filippini & Paganini, which is part of the company) flexoprinting presses, is unveiling two completely new machines. These machines, which are exhibited in operation at the company's stand (A 41/B 42, hall 15), bear witness to the company's ongoing commitment to meet the new demands constantly presented by the market, thus extending the already wide range of solutions it offers.

Roll-Shopper SH2 is offered as a solution for the production, on two lanes, of precut taped shopping bags in rolls, with or without a cardboard core, from a single jumbo roll of tubular film. An important feature of this new machine is the magnetic rotary die-cutting system which, if necessary, can be bypassed, thus also allowing the production, again on two lanes and in rolls, of bottom-seal bags for fruit and vegetables or gusseted garbage bags.

Roll-Flex Draw-Tape DT2, on the other hand, is designed for the production, on two lanes (instead of the single lane that has characterised all the machines manufactured until now), of precut draw-tape garbage bags, wound into rolls and taped starting from two demi-rolls of film. This machine, boasting extremely high capacity thanks to the two-lane production system, features a double unwinder for the two starting demi-rolls, two double draw-tape unwinders with automatic reel change on the fly, and a new rewinder working on two completely independent lanes, each lane managed by dedicated brushless servomotors.

Highly regarded thanks to their ease of use, reliability and customisability to specific needs, Saldoflex bag-making and flexographic printing machines (which now number over 2500 installations worldwide) are entirely designed and manufactured in Italy using modern technology and the best Italian and European components.

www.saldoflex.com

The Roll-Flex Draw-Tape DT2 servo-driven automatic sealing machine for the production, on two lanes, of draw-tape garbage bags

NEWS

Vertical block moulding machines

Waterless vacuum


A large block moulding machine during construction

The market standard being around 1.2-1.3 metres, Nuova Idropress (stand C 92, hall 11) makes vertical block moulding machines for the manufacture of blocks more than two metres deep. The use of proportional valves with electronic control helps to optimise vaporisation, an aspect of primary importance in the production of blocks, which has reduced the vapour consumption (at rate the block mould with vacuum does not consume more than 7-8 kg of steam /m^3), the residual humidity in the blocks (max 3-4%) and the dimensions of the vacuum plant ensuring a more rational energy balance. The minimal density variation inside the block and the lower consumption of steam and vacuum, besides assuring a lower energy cost of management, allow the manufacture of blocks with lower internal stress which remarkably reduces the seasoning time of the blocks before cutting them into sheets while preventing any flatness problems.

The acceleration of mechanical and hydraulic movements (of the filling valves, the door, the backwall, the block ejectors and the mobile floor) of the machine has increased productivity by up to 25 blocks/hour in the case of medium-low densities. Density automatic control allows the manufacture of blocks with the required dimension and density. The system automatically calculates the density of the material coming into the machine during every cycle, then it carries out the correction before moulding the block. This ensures the possibility of producing series of blocks which always have the same density, compensating the possible differences present in the pre-foamed material or due to stratification that can occur in the storage silo.

In order to optimise the production of blocks sized to specifications, reduce waste and boost flexibility, a "double adjustment" type of machine has been developed, on which it is possible to vary (from the PC) both the depth and the height of the mould continuously (millimetre by millimetre) and virtually without steps (only 2 mm at the base of the block) on all the faces of the block.

The dry vacuum permits the block moulding machine to work with a system that does not consume water. It was developed by completely redesigning the main function of the vacuum in the machine, it continues to use standard liquid ring pumps for which the heated water is cooled on a closed circuit with an air heat exchanger that does not require replenishing water; but most importantly replaces the conventional water condenser with a dry condenser in which hot gasses are cooled and condensed by means of forced ventilation.

All this eliminates the need for a cooling tower and for replenishing the circuit with fresh water. Moreover, the plant is simplified, the cost of evaporated water and chemical solvents needed to keep the water circuit clean are eliminated, high vacuum levels in the block moulding machine - up to -0.80 bar - can be achieved without having to "oversize" the cooling plant, and during the winter, hot air produced by the exchangers can be used to heat the work space or silo zone. The high vacuum also allows the manufacture of more stabilised blocks reducing the seasoning time in storage; the absence of a water condenser notably lowers residual humidity in the blocks, increasing the cutting speed. ■

www.nuova-idropress.com

EPS processing

Cooling cutting wires

The Italian company Tecnodinamica (stand C 122, hall 11) has developed a new wire cooling system that extends the life and cutting speed of the wires used in processing EPS blocks, and replaces traditional fans with high-performance blowers of ultra compact design. It has redesigned the entire air distribution system with the aim of increasing the wire temperature inside the block as much as possible.

In order to achieve the highest temperature possible, the part of the wire outside the block is subjected to a powerful and homogenous air flow, which cools each wire uniformly and with the same intensity, reducing the electric resistance of the part of the wire outside the block. At the same time, stress on the wire is reduced, allowing for longer operation time.

The air flow of each blower can be set independently and directly from the PC, in order to provide ideal cooling for each specific cut. The result is a powerful and at the same time flexible cooling system, that can also be integrated with more personalised solutions to boost cutting speed by up to 15%.

All the cutting machines built by Tecnodinamica are now equipped with this cooling system. In parallel, it has developed a new multitasking station, specifically designed to process graphite-enhanced EPS.

The station works with oscillating wires mounted on interpolated axes. This means that the cutting station can be used both as a contour cutter and as a horizontal cutting station, with the possibility of using oscillating wires in both processes. ■

www.tecnodinamica.it


The new wire cooling system developed by Tecnodinamica is fitted with a high-performance blower with extremely compact design in place of traditional fans

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plast 2015

HALL 22
STAND B-111

NEWS

Present on the market for over 50 years

Exhibiting with renewed energy

Invigorated by a market that is showing clear signs of economic recovery, Omipa (stand C 122, hall 13) is participating at Plast 2015 with renewed energy. A world leader for over 50 years in the design and construction of complete lines for the production of flat and corrugated sheets, foils, films and hollow profiles in various thermoplastic materials, Omipa is still a family business, led by the Cazzani family, whose name is synonymous with reliability and solidity. This is one of the reasons why this company receives plenty of inputs from new and old customers wanting to develop, together, products with innovative features destined for the most varied applications, and is thus able to cover market shares that were once the exclusive prerogative of traditional materials.

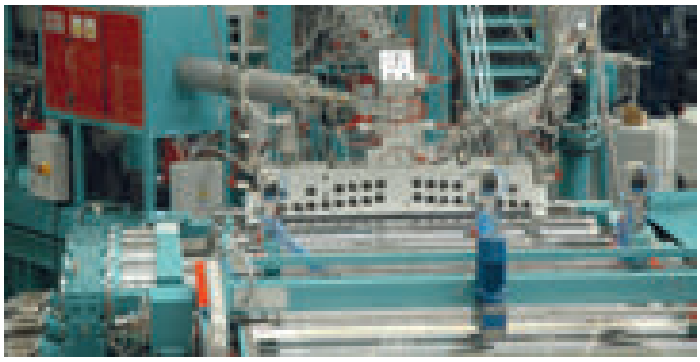
Therefore, building on the considerable technological expertise it has accumulated in its 50 years in the sector of machinery for the extrusion of thermoplastic materials, Omipa has intensified its efforts in research and development activities in order to find new solutions and break new ground in partnership with processors. Its technology is applied in numerous fields: the construction industry, the manufacture of industrial and civil coverings, lighting, the automotive industry, the production of electronic components, as well as industrial and food packaging, and the health and sanitary sector and food industry are just some that spring to mind.

As confirmed by its customers, which include some well-known industrial groups, including the leading producers of plastic raw materials, Omipa's main strengths as regards the design of its machines are:

- the full automation of the extrusion lines, which allows easy line management by fewer operators and makes it easy to repeat product batches thanks to the storage and retrieval of the process control data;
- the reduction of waste material, which - if present - is totally reused in the production process;
- the low energy consumption, thanks to the use of high-tech components.

Among Omipa's recent achievements, we can count - in addition to several lines for the production of hollow profiles in PP and PC, including lines for special cogging profiles and joint profiles - installations for the production of transparent sheets in PC and PMMA, as well as for the production of sheet to be thermoformed using a lamination system.

www.omipa.it



Omipa is still a family business, led by the Cazzani family, whose name is synonymous with reliability and solidity

For PET preforms

100% electric injection stretch blow moulding machine

After having been out of the injection stretch blow moulding market for over 10 years, Magic MP (stand B 41, hall 22) is back with the new PET processing machine mod. BME, its first single-stage 100% electric machine. A load of customer-focused technology, which brings many benefits, ranging from energy savings to equipment savings. Just think, for example, that a conventional stretch blow-moulding machine consumes, on average, approximately 25-30 kW (injector excluded), whereas Magic MP full electric machine will consume for pre-

After having been out of the injection stretch blow moulding market for over 10 years, Magic MP is back with the new PET processing BME model, a single-stage 100% electric machine

form closing, mould platen closing (26-30 bar blowing) and carriage movements about 3 kW. Equipment savings will mean one more major plus; the costs of moulds in a single-stage machine are well known to have a significant impact on the cost of the machine and its amortisation in production. The BME machine will rely on the new system complete with movable mould carrier to allow the cavities of the blowing mould to be reduced by 50%. Indeed, the technology of the movable mould carrying system makes it possible to blow the preforms in two stages, thereby saving on the cost of the mould and the energy required for this movement. In other words: to blow 6 preforms, traditional technology would require 6 blowing cavities, with a clamping force of approximately 30-35 tons; whereas with Magic MP machine we only have 3 blowing cavities, and the required clamping force is reduced by 40%. Versatility is another quality feature of the new machine: the technical layout is such that the conditioning system is excluded for a certain number of forms of containers. However, if in the future, any customer should require conditioning for the production, for example, of extremely flat or elliptical bottles, this can be easily added by inserting a module between the injection unit and the blowing unit. Finally, specially designed for processors which need production in limited amounts, the company's machine will allow them to simultaneously blow two differently shaped bottles, with an apparently similar preform and different necks.

www.magicmp.it

Recycling

The importance of management training

With 40 years of experience, Sorema (stand B 52, hall 15, at Plast 2015) has become a worldwide leader in the design, construction and installation of plastics recycling plants. This activity covers all main steps of the turnkey project, from engineering, procurement and machine construction to the complete installation and plant startup. In many cases these projects need the creation of new companies to be put in place "from grass". In that instance, customers (and investor) need also to train managers who will manage the plant. According to the company's experience, this phase of production start up and management training is particularly complex. Probably one of the reasons is the absence of universities with specific training courses focused on the mechanical recycling of plastics. The importance of having an expert management who has the knowledge of the complexity for managing a production plant is essential and is a necessary condition for the success of a new company.

SAM USA is a new branch of Sorema, a business unit of Previero, established with the "mission" of training and support the management for running the newly formed company up to the creation of a solid development leadership. This activity can be done in two ways; the sole difference is the financial impact. The first one is through a target contract, while the second one is through the shareholding of the company, held to a selling option after the results achievement. The coordination of these activities is done by Frederic Blanchard that for over 25 years has been a production manager in one of the most important recycling plant of PET bottles up to the moulding of preforms. This new activity allows to offer a complete service to customers who want to invest in the "circular economy" and are looking for partners who are able to offer complete solutions that go beyond the traditional turnkey concept and guarantee the achievement of production and financial targets fixed in planning form.

A Sorema recycling plant

www.previero.it

MORETTO TECHNOLOGY AT PLAST 2015

THE CHALLENGE GOES ON

On May 5 the new edition of Plast exhibition opens its doors. Moretto is exposing the most representative machines of its production range in a 400 sqm stand (A 81/B 82, hall 22). Moreover, visitors also have the opportunity to enjoy Moretto exclusive solutions in its travelling boutique: a 82 sqm exhibition area on 10 big wheels, a flame red motor home. At the Moretto stand, visitors can find the following auxiliary systems for processing plastics of all types.

EUREKA DEHUMIDIFICATION SYSTEM

Eureka is actually the most evolved dehumidification system on the market. Its technology has finally closed the loop of a perfect dehumidification system aiming at unequalled energy efficiency (see the opening picture).

The X Max, a modular low-consumption dryer based on zeolites, reaches unimaginable performance level thanks to its X Technology patent. The latest X Max generation carries an absolute innovation: a turbocharger, an unprecedented solution dedicated to dehumidification systems as well as heavy applications, such as PET dehumidification on a large scale. At Plast it will be possible to experience these exceptional machines first-hand, such as three X Max 918 which can operate with 1,800 m^3/h and just a 13.2 kWh consumption. Besides the dryer, four large OTX hoppers together with Flowmatik realize a thorough example of Eureka potential.

The hopper, also known as OTX (Original Thermal Exchanger), ensure a steady material and air flow thanks to its particular geometry and fluid dynamics, reducing the treatment time by 40% for each material and performing an almost 66% energy efficiency. Flowmatik intervenes to distribute the correct air amount generated by X MAX on all active hoppers: a perfect close loop. It enables to use only the necessary air amount and the operator has to set two parameters only: material type and throughput. All the rest is automatic!

AT PLAST 2015, MORETTO IS EXHIBITING (IN HALL 22, BUT ALSO OUTSIDE THANKS TO ITS MOTOR HOME) ITS WELL-KNOWN EUREKA DEHUMIDIFICATION SYSTEM AS WELL AS AUXILIARY SYSTEMS REPRESENTING THE VERY BEST OF ITS WIDE RANGE OF PRODUCTS

MPK is a complete, sturdy, accurate and fully-equipped machine designed to solve all typical criticalities in the crystallization of PET

MORETTO PET KRYSTALLIZER

MPK is the new crystallizer by Moretto, designed to solve all typical criticalities in the process of crystallization of amorphous materials. Its geometrical configuration and particular mixing enable production starts without issues, with a full hopper and directly by using amorphous material, thanks to the process control.

Mixing is obtained through the wing-shaped blades, which execute an efficient movement especially in the crystallization area. All blades are removable and adaptable even in later times.

MPK includes a dust remover which separates the fine dust up to 20 micron and collects it in a special tank, in order to prevent these particles from turning yellow during

the crystallization process and damaging the quality of the material under treatment.
The quick cone opening gives access to the lower part of the hopper, simplifying the cleaning operations of MPK at production changes. This operation was given a particular attention, respecting the operator's safety in compliance with the international regulations.
It is possible to create a dedicated treatment profile for every single material type through working ramps and specific temperatures, performing excellent results.

ONE WIRE 6, KASKO AND KRUISE KONTROL

In order to manage the conveying and feeding phases in a plant Moretto proposes an integrated solution consisting of One Wire 6, Kasko and Kruise Kontrol which make it possible to focus the attention on the quality of the finished product only.
According to Moretto, OW6 Krono is the first self-adaptive transport system on the market, based on the plant's effective needs considering the distance from the receivers, the feeding time and the line cleaning time. One Wire 6 is completely automatic: it recognizes the new conditions and adapts automatically. No risk of obstructions and no parameters to set: One Wire does not require any cycle or line cleaning settings and the highest efficiency in every single moment is guaranteed.
Moretto proposes the new Kasko receivers for the connection with the new server One Wire 6, whose electronics can recognize the working parameters (such as suction and line cleaning time) by self-learning, avoiding any other settings. This innovative project features a more compact design and a productivity increased by 30%, fitting different transport requirements with all kinds of materials. The control electronics was integrated in the machine through a metal profile to be protected against shocks and dust.
Finally, KK (KruiseKontrol) is an exclusive system for plastic granule conveying, aiming at the optimization of transport parameters. It manages the granule speed inside the piping, where it is suctioned for being transported from the storage area to the processing machine. KruiseKontrol sets the granule conveying speed. We will just need to choose the material type and KK will attentively take care of the engineering plastic. KruiseKontrol increases productivity and eliminates speed peaks, as a result creating the most suitable parameter profile for every material, regardless of the distance or height of the conveying pipes.
The features of this system lead to a great advantage: the total absence of dust, a lower pipe wear and the complete elimination of the "angel hair" phenomenon, which is normally very frequent in conveying pipes. KruiseKontrol can manage different areas of a conveying system through a single vacuum generator.

The Moretto Objects Windows Integrated Supervisor (Mowis) is a supervision platform which monitors each single system operation, records all anomalies and creates a chronology in order to set and modify parameters and to generate real-time process reports.

MOWIS

The Moretto Objects Windows Integrated Su-

The three components that make up the self-adaptive transport system solution by Moretto: One Wire 6 conveying system, Kasko receivers and Kruise Kontrol granule speed control system

Four models in the vast range of Te-Ko temperature controllers

pervisor (Mowis) is a supervision platform which conjoins the whole installation in a single point, enabling an efficient control of the systems in use. It monitors each single system operation, it records all anomalies and creates a chronology, enabling to set and modify parameters and to generate real-time process reports.
Mowis' modular structure enables the final customer to set it according to his needs, including future extensions.
Depending on the features of the plant, Mowis platform includes: the database of stocked materials, the database of products to be produced, the database of processing machines and the database of moulds, also with barcode technology, developing mould control, Silcontrol and Item-go applications.
The Silcontrol system allows to synchronize materials and silos avoiding human errors categorically, while the Barcode Control function manages the univocal plastic material identification, associating it automatically with the destination silo.
Moreover, Mowis can monitor and manage the machine-mould-material connection through the RFID technology. With this application, the connection between man and machine is guaranteed by a touch display which can be applied on the machine and which graphically communicates the system status: the correct mould code with the machine combination, the article to be produced and the material in use.
Every mould is equipped with a Rfid sensor. Each time a mould is placed on the moulding machine, it is recognized by the system which configures all parameters automatically and avoids human errors.
Mould Control performs its highest advantages with the automatic mould change. Once the mould change is launched, the whole automation aligns automatically.
Finally, the full plant vision includes the prearranged maintenance module which makes the operator completely autonomous at controlling and maintaining his plant.

At Plast 2015, the Moretto range of gravimetric dosing systems is represented by the small model DGM 100 and the large DGM 2000, both ensuring maximum accuracy levels

DGM 2000 AND DGM 100

The DGM Gravix dosing series developed by Moretto ensures incomparable precision levels: it boasts of an absolute precision with a 0.001% variance thanks to the use of digital technology and to the complete immunity against vibrations. The weighing hopper is free from mechanical constraints and from generated disturbance.
Through this range of products Moretto offers the smallest 6-components dosing unit on the market as well as the biggest available on the market, specifically developed for productions up to 5,500 kg. The range includes more than 1,000 models fitting productions from 30 to 12,000 kg/h with the possibility to dose up to 12 materials.
The Vibration Immunity System (VIS) weighing algorithm assures a perfect dosing even with strong vibrations and in case of installations on a blowing machine. The exclusive double-eyelid mechanism guarantees an unequalled reaction speed, 50 times higher than a common dosing unit, nevertheless guaranteeing an absolute precision.
Batches up to a minimum of 0.08 g can be managed by the Rotopulse system. The wide range of available hoppers and their different finishing make Gravix versatile and suitable for the broadest uses. Hoppers are easy to remove without any additional tool and completely inspectable. The double-effect mixer guarantees an homogeneous blend and the digital technology assures precision and speed in the weighing cycles. 8 sizes, 6 components on all sizes, 10 hoppers on each size, 1180 models for every demand. Gravix is a patented system.

LOSS IN WEIGHT SYSTEMS - THE LATEST MORETTO JEWEL

Film extrusion requires an accurate quality and payload control. The loss in weight system is a continuous dosing system which self-adapts to the production exigencies of the plant and generates remarkable saving in the extrusion process. The system controls the film weight and thickness with the extruder feedback and adapts the production to the line speed. The finely compensated load cell, the simple mechanical conception and the advanced electronics form a control fitting the most complex situations.
The system can interface with extruders performing a hourly throughput from 120 to 1,500 kg/h and integrates the loading system management simultaneously with the process. The simple process start-up phase allows to reach the desired tolerances in very short times, minimizing the waste and time at production start. The system is compatible with Mowis supervising system.

THERMO ZONE

The whole Te-Ko temperature controllers range is displayed at Plast. All versions are available: water, oil and pressurized, covering all production demands, from micro-injection to big moulds and extruders.
Te-Ko is a fully-equipped temperature controller, with armored resistors and with a bronze pumping body.
This machine features a super tank though maintaining compact dimensions.
Te-Ko are completely built in stainless steel and equipped with a super filter besides 4 inlets and 4 outlets, a sound alarm and a flow and pressure control. Here are the main Te-Ko models:
- water (95°C)
- water - indirect (95°C)
- water - direct mixing (125°C)
- water - pressurized (125°C)
- water - pressurized (160°C)
- oil - indirect (200°C)
- oil - pressurized (250°C).

www.moretto.com

SPECIALIZED IN

FASHION

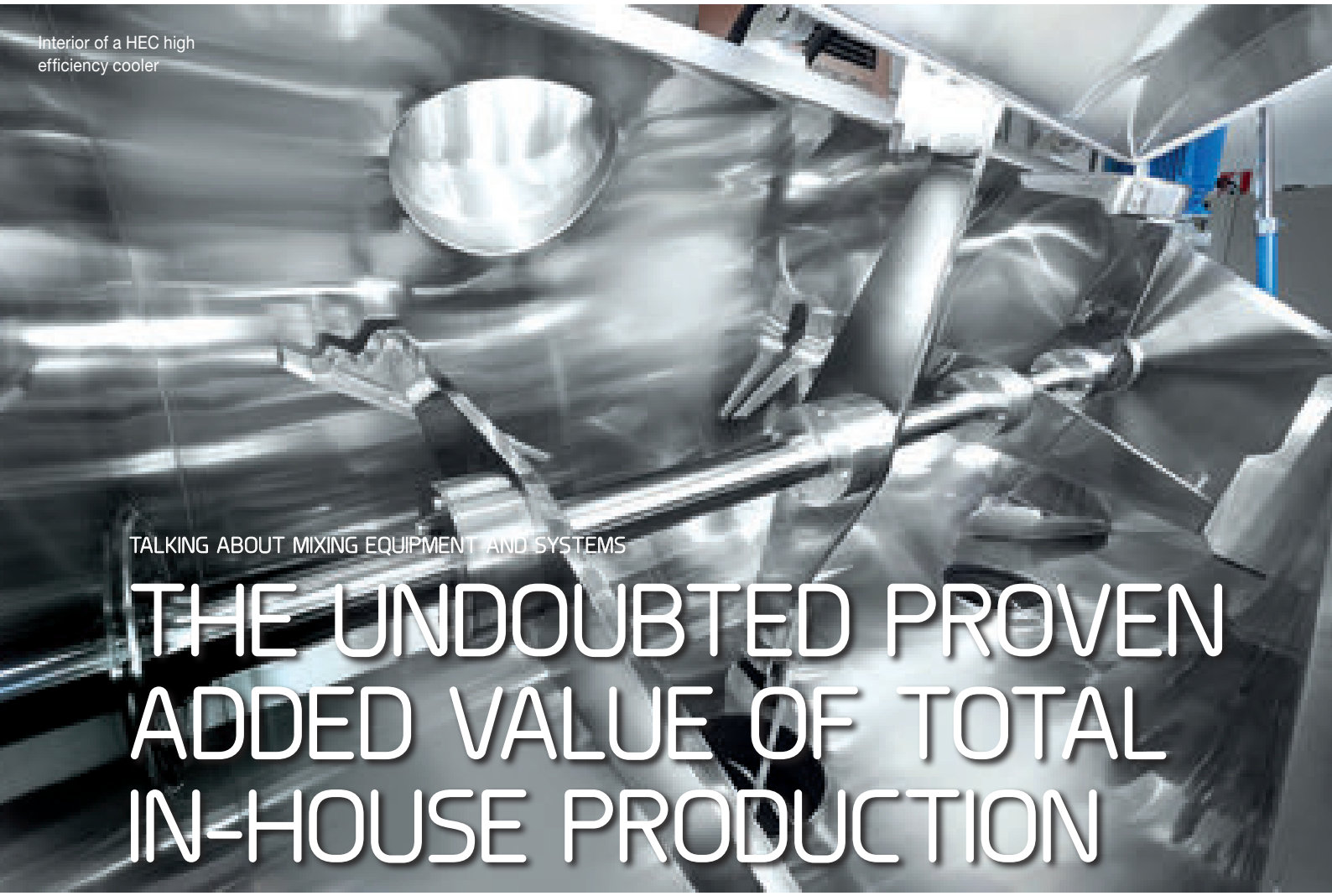
PIPE EXTRUSION LINES

TECNOMATIC

TECHNOLOGIES FOR PLASTIC MATERIALS PROCESSING

Its wish to achieve perfection and continuous improvement has led Tecnomatic to chose maximum specialization and to concentrate its efforts on the development of extrusion lines for the production of polyolefin tubes with diameter of 2600 mm. Technical knowledge, constant research and a great passion have made it possible for Tecnomatic to offer high-performance solutions fulfilling all possible customer requirements since 1977.

Tecnomatic Srl | Bergamo | Italy | tel. +39 035 310375 | **www.tecnomaticsrl.net**



Interior of a HEC high efficiency cooler

TALKING ABOUT MIXING EQUIPMENT AND SYSTEMS

THE UNDOUBTED PROVEN ADDED VALUE OF TOTAL IN-HOUSE PRODUCTION

A LEADING ITALIAN MANUFACTURER OF MACHINERY FOR THE MIXING OF DRY-BLEND PVC, ELASTOMERS, MASTERBATCHES, POWDERED PAINTS, WPC AND POWDERED ADDITIVES, PLAS MEC ACTUALLY DEVELOPS AND PRODUCES MOST OF THE COMPONENTS FOR ITS MIXERS IN-HOUSE AND EXPORTS NO LESS THAN 85% OF ITS TOTAL PRODUCTION OUTPUT

BY **ANGELO GRASSI** AND **RICCARDO AMPOLLINI**

Massimo Grigolon is the current managing director of Plas Mec

"Here we try to achieve the best results on everything that provides guaranteed quality. I want to begin by pointing out that the structural heart of all our machines comes from within our production departments, using our own skilled workforce. Which is something neither banal, or to be taken for granted".

These are the opening words of the managing director Massimo Grigolon who welcomes us to the company Plas Mec of Lonate Pozzolo, in the province of Varese. Citing the famous quotation of Shakespeare in Hamlet: "to be, or not to be?" - we can paraphrase it using another quotation "make or buy?"... which is here to be interpreted as the choice faced by a company of whether to "make" a particular production component or service in-house, or to "buy" or outsource it.

THE PROS AND CONS OF "MAKE OR BUY"

Literature relating to production organization or market positioning affirms that the choice of whether to "make or buy" is a strategic corporate management decision, because affects the level of integration of the operations - before and after the making - and determines the cost structure, company organization and market positioning in relation to the competition. The choice of options is based in a comparison of the total costs involved in both cases, also taking into account, the out-

Combimix system for thermoplastic elastomers

sourcing features, and therefore any potential critical aspects, as well as considering the available in-house resources.
In general the "make" option, primarily has the advantage of assuring control on the activities, on the supplies, and the quality of the product/service itself. It also makes it possible to protect any possible industrial secrets. While the "buy" option has the advantage of involving few fixed costs, thereby translating into a reduced fixed capital.
It is usually the case that externalization increases with the maturity of the industrial sector involved "In Plas Mec we have no doubts: the heart of all our machines is "in-house", Grigolon proudly points out.

PROFILE OF PLAS MEC AND ITS MACHINES

The decision to keep all key-skill operations in-house is not the only strategy pursued by this Italian company. Continuing the interview, Massimo Grigolon also outlined other unique management features of Plas Mec, such as its investments in design and R&D, its assistance services, the attention given to detail, its internationalization policy… and this is not all.
Before considering these features in more detail, let us take an in-depth look at what this Lombard company does.
"Plas Mec is an Italian producer that operates on a global scale, designing and constructing specific machinery and equipment for the mixing of PVC based dry-blends, the mixing of thermoplastic elastomers, and of powder paints such as masterbatches and additives, as well as pigments and composite plastics such as WPC. I also feel that I must point out, that Plas Mec distinguishes itself as compared to its foreign competitors thanks, to an intrinsically Italian trait, of having the capacity to often develop and provide highly personalized mixing solutions", points out Massimo Grigolon.
Plas Mec has a specific business philosophy that it has been pursuing for no less than the past forty-eight years. In fact the company dates back to 1967 when Filadelfo Marinello first founded a small production company manufacturing conveyance systems for granules initially, and of screw mixers, soon after. All geared to the domestic, if not the regional, market.
What then happened was that the technical quality of the machines - despite the serious recession that hit the Italian industrial sector in the mid 70's - permitted the Marinello based company to extend its horizons to new markets in 1975.
The decision immediately proved to be a good one, and internationalization led the company to undertake varied and periodic corporate reorganization steps, and in fact in 2005 it obtained ISO 9001-2008 certification; while the year 2013 heralded a change in the corporate management structure.
This brings us to the present day company which with a small-medium sized business dimension (by virtue of its over 80 employees) exports a good 85% of its mixing machinery: which in terms of figures is the equivalent of about 6000 machines sold worldwide, to over 1700 clients.
"Now entering into the details of our machines, firstly I wish to announce that in May we shall be exhibiting at the Plast 2015 Fair of Milan (stand C 41/D 42, hall 13) what currently represents the state of the art of Plas Mec, both in the field of turbomixers and PVC coolers (Combimix) and in the field of container mixers (TRR) for additives and pigments", explains Massimo Grigolon, who then continues: "In terms of application these turbomixers combined with the coolers (as in the case of the Plas Mec Combimix HC system, which consists of a TRM turbomixer TRM and a high-efficiency cooler HEC), provide the ideal solution for an industrial processor in which the thermoplastic materials need to be mixed with a high hourly production rate. This typically concerns mixing processes of rigid or plasticised, and dry blends obtained by suspension, emulsion or compound polymers.
In terms of application it is therefore also important to highlight the fact that our mixers, whether they be of standard or customized version, are capable of processing various kinds of plastic materials (PVC, PE, PP, ABS etc.), as well as more technical polymers (PA, PC, PET, PBT etc.), as well as special materials (EPC, PTFE etc.), resins for powder coating and metallic bonding, WPC (wood-plastic composites)... not to mention: additives, pigments, masterbatch, carbon black etc., without forgetting the thermoplastic and thermosetting elastomers".

THE PARTICULAR MANAGEMENT FEATURES OF PLAS MEC

As regards the Plast trade fair, Massimo Grigolon has given us a sneek preview by telling us that the mixing system for the production of Combimix dry-blend, which is on show, has a 3G cooling circuit specifically conceived by Plas Mec in order to work at high pressure and developed to greatly improve the cooling efficiency.
At this same C 41/D 42 stand, in hall 13, a TRR two-engine configured container mixer is also on show; a machine that is capable of providing

Plas Mec factory: view of the assembly department

TRR
container mixer

one of the greatest degree of mixing flexibility currently available on the market. The machines also boast a high degree of internal finishing quality.

"For those mixing operations that require several colour changes or in general several production changes, frequent cleaning cycles are essential. So that obviously the fact of being able to depend on an internal surface area with a very low rust level is very helpful for the operators: both in terms of reduction of cleaning cycle times and in terms of cleaning efficiency itself", continues Grigolon.

In relation to this, in Plas Mec, next to the steel structural work department - where the steel sheeting which all comes from European steelworks, is skillfully prepared and welded by highly qualified personnel, there are also two automated systems with robotic arm mechanism. These robotic stations undertake the polishing cycle; the first for the inside of containers and cooling vats, the second for the mixing blade. The mirror finish of a medium sized mixer, requires between 15-16 hours work, which the robot is capable of carrying out independently. But there is always the need for a subsequent human intervention, in order to reach certain areas that are physiologically impossible for the robot to reach, the operations are undertaken by operators with the help of special instruments, patience and great skill. So that the polishing operations in Plas Mec is the result of an impeccable blend of automation and manual skill.

Amongst the areas in which the company has invested heavily is the "service" department, staffed by highly experience technical staff. "It has been organized in order to assure efficient and rapid help in solving any technical problems and for the supply of spares to its extensive customer base, and today, more than ever before, I consider it to be a true strong point", says Grigolon, "thanks also to the use of technology, and the application of a remote-assistance service for almost every machine, using documental software geared to service optimization".

There is also another department which greatly enhances the quality of the company: its testing department, equipped with both laboratory and industrial scale mixers.

"We are frequently commissioned to undertake testing by our clients who deliver their materials to our testing department and on which we undertake customized mixing tests. These exacting laboratory trials are requested when a client is about to start up a new production, which require detailed studies and/or delicate calibration. Plas Mec is at hand for these operations as well!", concludes Massimo Grigolon.

At the end of the interview we also had the opportunity to visit the company testing department; which at this current time, with a view to ongoing quality improvement, is involved in significant investments and innovations in order to expand the range and scope of its mixing tests, using new, and ever-more versatile machines.

www.plasmec.it

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A NEW MILESTONE FOR PLASTIC SYSTEMS

A CENTRALISED DRYING AND CONVEYING SYSTEM FOR THE ELECTRIC FIELD

WITH THIS SYSTEM, DESIGNED TO FEED 31 INJECTION MOULDING MACHINES, MATERIAL CONVEYING AND DISTRIBUTION IS ENHANCED BY THE PRESENCE OF TWO AUTOMATIC MATERIAL MANIFOLDS, EACH CONSISTING OF 3 MODULES/20 INLETS. THE SYSTEM'S USER LOOKS AFTER SOLID KNOW-HOW IN ELECTRIFICATION, AUTOMATION AND DIGITAL TECHNOLOGIES, SUPPLYING WORLDWIDE ADVANCED TECHNOLOGIES APPLIED WITH AN EFFICIENT USE OF ENERGY

An international company active in the design and manufacturing of auxiliaries and systems for injection moulding, extrusion and blow moulding machines, Plastic Systems (stand B 31/C 32, hall 24) has recently built a complete centralised drying and pneumatic feeding system, designed to feed 31 injection moulding machines, in which the material conveying and distribution are enhanced by the presence of two automatic material manifolds, each consisting of 3 modules/20 inlets. The end user, where the system has been installed, was looking after solid know-how in electrification, automation and digital technologies, supplying worldwide advanced technologies applied with an efficient use of energy.

The added value of the automatic material manifold is enhanced by the high precision of the mechanical parts and by the PLC control, both features that allow the system to offer high-level customization and absolute reliability. Design, modularity and the possibility of extending the system through the addition of more modules at a later date, make this a must-have product in the injection moulding field. Another feature worth highlighting is the high level of safety displayed by the system as a whole, which was a specific requirement of the customer, who has always been particularly safety conscious.

HIGH-PRECISION DEHUMIDIFICATION

The technical design is such that the solution guarantees a high-precision dehumidification process - an objective reached thanks to the choice of a DWC dehumidification system, i.e. the installation of 25 DWC dehumidifiers set in-line at the processor's plant.

DWCompact is the perfect solution for all the different dehumidification fields, including the most specific ones, such as the electronic, optical and medical ones. It uses rotor technology with capacities from 20 to 280 m^3/h and allows the operator to manage the loading of the hopper and the processing machine. A sophisticated microprocessor control, together with a loss-in-weight system guarantee an ideal pro-

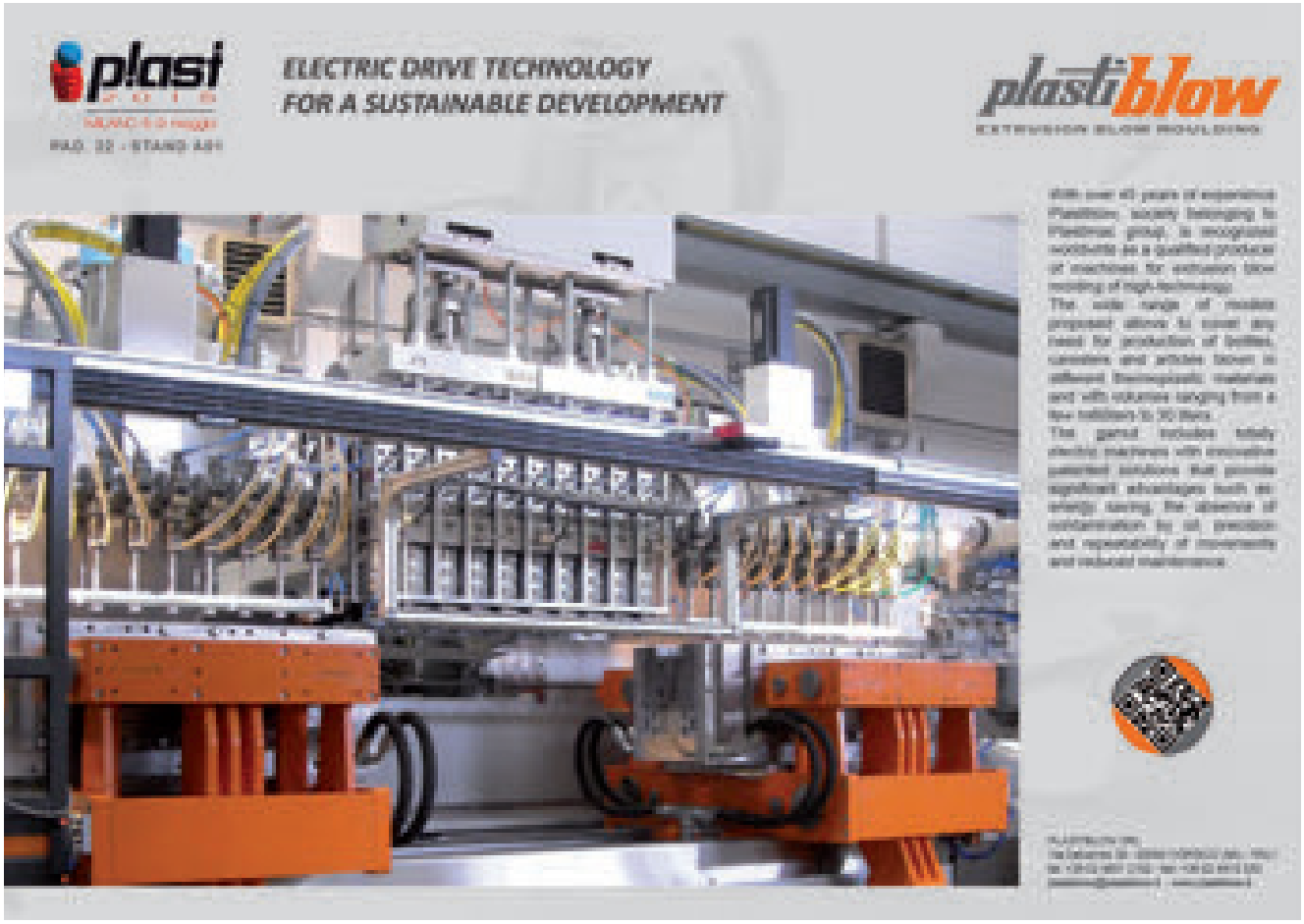
cess, while a colour touch-screen offers an easy operator interface.
The technical solution represented by the DWC, integrated in a high-performance centralised system, has proved to be a key element in achieving and guaranteeing the end user maximum efficiency.
Plastic Systems has completed the project by supplying a supervision system, which makes it possible to set and control all the machine/material matches, to track production lots, to control raw material handling and obtain better constant monitoring, avoiding human error and allowing recorded production history analysis.

THREE KEY CONCEPTS

To meet the today's customers' demands for higher and higher standards, Plastic Systems offers a functional, innovative and complete solution, allowing the customer to obtain increased plant efficiency.
In this context, the added value of this systems can be summed up in three key concepts. Optimization, both of the design (machine engineering) and control (supervision) aspects: the system enhances the constant monitoring of performance, reporting actual consumption values during the working process.
Smart adjustment: the DWC, combined with the centralised feeding system, detects the IMM (Injection Moulding Machine) consumption and automatically adapts the throughput of processing machines. The operator simply selects, from a database, the material to be processed, and the rest is completely automatic.
Energy efficiency: energy consumption is the main cost in the life cycle of a machine; for this reason the choice of the DWC dryer, equipped with inverter and dedicated control, ensures a return on investment and a higher profit margin on the finished product.

www.plasticsystems.it

The complete centralised drying and pneumatic feeding system is designed to feed 31 IMMs. The material conveying and distribution is enhanced by the presence of two automatic material manifolds, each consisting of three modules/20 inlets



THE NEW ERA

DOUBLE FILTERING IN A SINGLE MACHINE

THE RANGE OF PRODUCTS FROM FIMIC, THE ITALIAN COMPANY SPECIALIZED IN THE FILTRATION OF CONTAMINATED PLASTIC MATERIALS, IS GROWING

Some filtration systms by Fimic

Thanks to the continuous research aimed to improve its key products, Fimic (stand C 152, hall 15) has recently added a new equipment targeting the needs of a specific customer, the recycler. In the last few years, the increase in the contamination of the plastics waste has caused a consistent growth in the demand of automatic self-cleaning filters that are replacing the manual types that need an operator continuously engaged in their operation. The automatic filters have to be easy to operate, low cost and easy to manage. On the other hand, the price decrease for the recycled material has moved the interest of the recyclers toward materials that guarantee a higher quality, that comes for a higher level of filtration.

It is the material that determines the filtration level: polypropylene is easier to process than HDPE. The type and level of contamination can vary a lot. The MFI impacts on hourly throughput and on pressure. For all these reasons, many processors have adopted the double filtration, using the so called tandem, two extruders in line, one after the other. Obviously the cost of such a line is higher than a normal extrusion line,

but in fact there was no alternative if the customer wanted to process highly contaminated material and obtain high quality pellets.
In order to answer to this complex need, Fimic is presenting its new ERA at the Plast 2015 in Milan. The ERA is able to operate a double filtration with a single machine. Fimic range includes five different models and reaches a filtering area considerably high, keeping at the same time lower working pressures and avoiding any excess in the wear. Thanks to these conditions, Fimic includes two filtering chambers, two screens and two scraping filtrations. The first filtration chamber is dedicated to a first coarse filtration, for example 500 microns, while in the second chamber, thanks to the laser technology, it is possible to reach 150 microns, all in a single machine.
Fimic screens are considerably economical as they are made with punched stainless steel sheets. These sheets have a direct relation between holes diameter and thickness. The cost to the processor never exceeds 100 euro, for filtration from 300 up to 2,000 microns, and it is possible to work up to 14 days without interruption in the production.
For filtration needs below 300 microns, Fimic has added a new laser drilled screen, 1 mm thick. The company can now assure a higher filtration and the resulting material has higher quality. Fimic suggests its customers to purchase a burning oven to clean the screen, which is more expensive that the punched type, so that it can be reused a number of times. The filter does not need specialized personnel to change the screen and the downtime is very short. In 20-30 minutes a new screen is in, also thanks to the Fimic supplied air managed drill.
Another aspect to consider refers to the filtration: if in the manual filters a metal mesh screen is used, that tend to enlarge because of the pressure (which negatively impacts the quality of the pellets), the Fimic stainless steel screens remains the same until the screen is changed in order to ensure superior quality.

www.fimic.it

NEWS

Combined system for PVC

More efficient mixing

The innovative design of the mixer tool permits greater friction and mixing intensity, while new anti-wear coating guarantees longer life

A specialist in the construction of plastic and powder coating mixing solutions, Promixon (stand D132, hall 13) counts TMX turbomixers among its lead products. These turbomixers are single or combined with the CMX high performance horizontal coolers, and the TRX high speed containers mixer, for fast mixing of powders, additives, colours, masterbatches, polymers and engineering plastics.

The combination of TMX and CMX makes the Problend-TC system for the production of rigid and plasticized PVC-based dry blend and PVC/PP/PE WPCs (Wood Plastic Composites). The system was designed to solve problems encountered in these types of production, where excellent mixing quality - where possible with low cost operation - high hourly output rates and reduced wear and maintenance are vital. "We have acquired more than twenty years of experience in this field, and we do not want to settle for standards in use. Instead we constantly aim to propose new technical improvements to our customers' advantage. Everything we do is for their benefit and service", the Promixon general manager, Marco Marinello, said.

The Problend-TC system introduces numerous technological innovations. For the TMX turbomixers, the new tank and outlet geometries, fully redesigned and now bigger, speeds up the material unloading step, guaranteeing higher output and preventing deposits of material or residue at the end of the process and consequent contamination. The innovative design of the mixer tool permits greater friction and mixing intensity, while new anti-wear coating guarantees longer life.

The combination of TMX turbomixer and CMX horizontal cooler makes the Problend-TC system

In the CMX cooler, the new tank and mixer geometries intensify the material's contact with the exchange surface, notably improving cooling efficiency. The water distribution circuit inside the tank jacket, designed with an innovative wave configuration, has reduced cooling time by approximately 50%. The special mirror finish of the parts in contact with the material and adoption of some specific solutions simplifies and speeds cleaning and maintenance.

The control software and latest generation HMI Siemens operator panel manages and displays the mixing cycle information in real time, offering features such as data saving and special graphics for process analysis and optimisation. Remote assistance directly accesses the control system to resolve any problems that may arise and to modify process parameters in real time.

www.promixon.com

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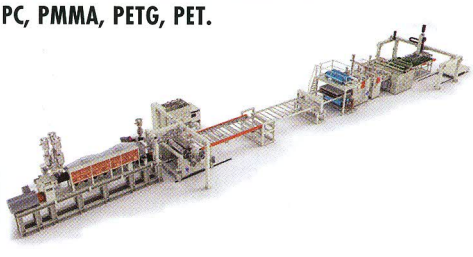

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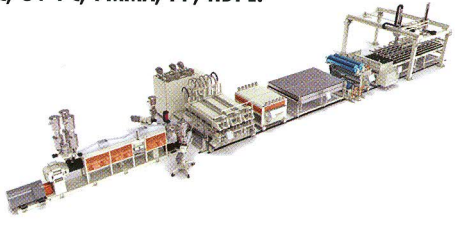
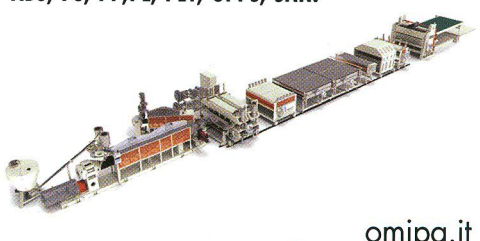


TECHNICAL SHEET AND FOIL IN ABS, PS, PP,PE, PET, GPPS, SAN.



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50 YEARS AT THE TOP OF THE EXTRUSION TECHNOLOGY

NEWS

Assembling

One hundred thousand pieces per hour

This result is not an obstinate research for the impossible; it is a reality, thanks to the latest application developed by Gefit (stand B 61, hall 24) in the assembly automation field. Thanks to its strong experience in the assembly of liner inside caps with different diameters, Gefit developed a new system able to carry out two operations at a time, so as to provide its customers with an instrument fit to achieve the incredible target of one hundred thousand pieces per hour.

Flexibility and reliability are the main features of an application that bodes to arouse a great interest in the worldwide market, particularly for all those companies whose main activity is linked to the dealing of caps with liner.

The best part, in this case, is that Gefit machine doesn't only assemble. But let's proceed step by step: the cell is equipped with caps special feeding units, which enter the machine in groups of eight on two different working platforms, both working on the same machine.

The liner is cut directly from a coil and at the same time is assembled inside the cap. The production process is then completed by induction welding, which is also made at the same time.

The system is operated by a full-electric platform that, thanks to its "Gefdrive" base, enables to reach incredibly fast and precise working cycles. In practice, it's the same platform used for the standard lining machine, already known and appreciated in the market. For this specific project the closures processed by the new assembly cell are used for the beverage industries, anyway Gefit system can fit very different caps, from the cosmetic to the pharmaceutical fields, besides a large range of food products.

www.gefit.com

The new Gefit machine makes it possible to assemble up to one hundred thousand caps with liner per hour

Technical moulding

Shutoff nozzles for fast cycles

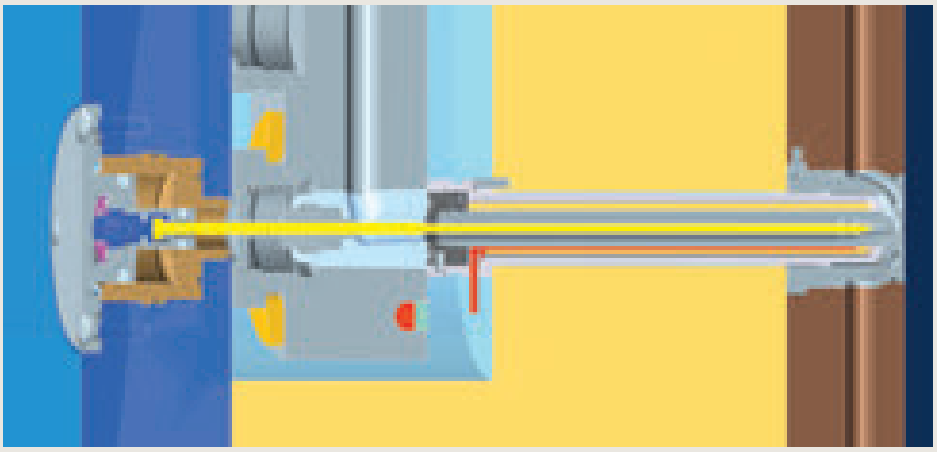
The product range of Thermoplay (stand D 102, hall 24, at the international exhibition Plast 2015) has been broadened by a new shutoff nozzle, suitable for moulding technical parts, where the injection speed and high pressure require high performance.

The sealing area between the nozzle head and manifold has been upgraded, in order to compensate the injection pressure increase during fast production cycles. To get an optimal injection rate, the melt channel inside the nozzle has been increased. In addition, the thermalexchange between pin and cavity plate has been improved to achieve a faste cooling of the gate area. Finally, the construction guarantees a mechanical clamping even when the system is not thermally expanded. This represents a safety solution especially when cold start up accidentally happens.

Typical applications of these special solutions are thin wall plastic parts which require high injection speed and fast cooling cycles.

The solution is available for the Thermoplay nozzles series FN and DN, diameters 22, 24, 30 and 32 mm. To improve the benefit of this solution a conformal cooling bushing is also recommended by the Thermoplay technicians.

www.thermoplay.com



The new shutoff nozzles by Thermoplay are suitable whenever the injection speed and high pressure require maximum performance

NEWS

Innovation made in Frigosystem

Industrial exchanger with adiabatic process

The new range ACE (Adiabatic Cooling Energy) of air/water exchangers has been developed by Frigosystem for the industrial process cooling

Developed by Frigosystem (stand B 82, hall 15) for industrial process cooling, ACE (Adiabatic Cooling Energy) is a new range of industrial air/water exchangers relying on the adiabatic principle. This cooling system relies on the physical principle by which the evaporation of water lowers the ambient air temperature. This principle allows the exchange of energy between water and air. The energy required to evaporate water is taken from the ambient air, as a result reducing its temperature.

The ACE adiabatic dry coolers use ambient air for process water cooling. Thanks to powerful fans controlled by an electronic unit, the ambient air is drawn through a PVC evaporator screen which is moistened uniformly by the patented "Showering" water distribution system with anti-scale and auto-clean functions. The air flow passing through the water-soaked cavities of the evaporator screen is cooled down, as a result releasing heat into the water, which in turn evaporates. In contrast with traditional dry coolers, this process ensures higher efficiency to ACE dry coolers whilst keeping the same water consumption and contamination requirements typical of a closed loop system.

This range of dry coolers offer, therefore, an effective, safe and technologically advanced solution for industrial processes that require cooling water supply at temperatures between +5°C and +35°C without using a compressor, but relying on ambient pressure instead.

Thanks to its modern design, the ACE systems represent highly eco-sustainable solutions that are able to guarantee energy savings and environmental protection. The fluid inside the cooler is always clean and free from external contaminants, therefore water treatments are not required other than the addition of the glycol solution in the quantity needed for anti-frost protection.

The benefits provided by the new dry coolers can be summarised as follows:

- lower environmental impact with regard to energy consumption and noise;
- water consumption reduced by up to 95% when compared to a traditional cooling tower;
- clean water and elimination of scale formation typical of traditional open cooling towers;
- operation for much of the year without consuming water, thanks to the adiabatic function which is started automatically whenever needed in relation to the ambient temperature, especially during warmer periods;
- easy and cost-effective maintenance;
- higher efficiency in the production process;
- PID electronic control;
- fan speed control for energy saving;
- possibility of interfacing with a Frigosystem chiller for optimal control of the whole cooling system. ■

www.frigosystem.it

Motors

Solutions for positioning systems and power applications

The plastics industry represents a major market for Magnetic (stand C 32, hall 13), a company of the Ferroli group, since the first applications realized with dc motors that are still produced up to 200 kW, through their technological evolution represented by ac vectorial motors up to over 500 kW and by the most recent torque motors for direct drive use.

Through the different experiences, Magnetic has developed specific options for plastic machines, as insulated bearings to avoid eddy currents problems, water cooling, thrust bearings, hollow shaft matched with dedicated encoders. Magnetic can also provide a wide range of chillers and heat pumps for water treatment.

The Italian company has been producing electric motors for variable speed applications since 1981. The current production program includes dc and ac motors, both for positioning systems (permanent magnet servomotors) and for power applications (dc or asynchronous vectorial motors) with a wide selection of sizes and options. Magnetic production has been appreciated during these years by both Italian and worldwide customers for high quality level, product reliability and flexible approach to tailor-made solutions.

Finally, the company's investment policy to develop a flexible and lean production, using the most advanced organisation techniques, and the collaboration with specialised suppliers, make it possible to satisfy the most demanding market requests in terms of lead time. Products' research and development, completely made internally by the qualified staff, makes Magnetic able to propose advanced technological solutions and to support customers while integrating products with their solutions. ■

Asynchronous vectorial motor model MA 160

www.magnetic.it

New design for Baruffaldi

Not just good looking machines

For more than 60 years Baruffaldi Plastic Technology has been synonymous with cutting-edge technology, attention to detail and high performance, not only in machinery design and manufacturing, but also through its participation in international events. At the plastics and rubber industry trade fair, Plast 2015 in Milan, the company (stand B 11, hall 13) is showcasing its new designs, already integrated into its most recent machines, which sets its plastic pipe and profile processing machines apart from others on the market.

The company has brought into being an image that emphasises the high quality and functionality of its products, common to all its leading edge technologies: a compact and at the same time robust design, which enhances the criteria of safety and ergonomics and improves usability by making the machine even more automatic. End users were first in mind when, for example, Baruffaldi designed the new opening system for the protection panels, which, along with the machinery as a whole, allows a net gain in terms of space-saving and easy access to the working area when starting the line and when carrying out maintenance and size changeovers. Or again, when it developed its additional protection system for moving mechanical parts, which are all now contained within the structure, thanks to the use of pneumatic devices working together in unison. Furthermore, an automatic machine is not efficient without a user-friendly console and an operating system that reflects production needs as far as possible.

All these aspects integrated into the modern TGG-HB and TG.G-CB, i.e. the Baruffaldi patented hot and cold blade guillotine, result in a "smart" product, with beautiful looks yes, but above all intelligent. Of course, the basic concepts enclosed in these cutting systems remain unchanged and highly appreciated: a cutting direction that is transversal to the extrusion axis; a clean cut with no burrs or production of dust and swarf and no deformation of the profile or pipe; noiseless operation performed in complete safety; height adjustments of the machine, which is easy to shift from one extrusion line to another, for greater flexibility.

The new design exhibited by Baruffaldi at Plast for pipe and profile machines is already visible on its most recent models

The road map towards innovation starts, despite what one may think, from an economy of scale: the company has not renounced the use of high-quality components in its plants and continues to offer its customers an increase in productivity at a lower cost, ensuring a return on investment. Good machines, not just good looks.

www.baruffaldi.eu

NEWS

Refrigerant-free grinding

Pulverizing at ambient temperature

The new PolyGrinder system, type PMM 300, presented by Pallman at Plast 2015 (stand C 151, hall 22) is used for the pulverization of thermoplastics for masterbatch and compounding operations under ambient temperature. The system is suited for processing large production amounts up to 650 kg/h as well as for the production of small charges. It is used for producing the best powder qualities from PVC and polyethylene as well as difficult and heat-sensitive materials such as EVA, polypropylene, polyamide, polyester, polycarbonate.

The product is pulverized at ambient temperature without the addition of cooling agent such as liquid nitrogen. Due to a new, almost maintenance-free drive concept, easy cleaning of the interior and the quick and precise adjustment of the grinding gap, the mill operates very economically. The produced powders have excellent mixing and flowability characteristics. Due to an installation without a base frame and thanks to the compact design, this mill can be simply integrated into existing production lines. The interior of the mill has very smooth surfaces without dead zones and corners, where material could stick and remain. Material is discharged from the side into a cyclone and collected in bags, containers or could even be conveyed to the next production step.

The PolyGrinder system


A modular PFV system

Furthermore Pallmann presents the newest generation of the PFV Plast-Agglomerator. With this unit, thermoplastic waste can be recycled and reintroduced into the production stream. The equipment is characterized by its relatively low acquisition cost in comparison with other technologies, as well as the low thermal stress it puts on materials, allowing them to maintain as many of their original characteristics as possible. The PFV Plast-Agglomerator can handle waste coming from production of film, fibres, foam, carpets or other mixed materials, from PP, PE, PVC, ABS, and XPS as well as compounded materials. It brings also many advantages when processing sensitive materials as for example PLA. In the Plast-Agglomerator, waste precut into 8-10 mm pieces is gently plasticised by means of frictional heat, pressed through a die and cut at the outer circumference by rotating knives. The agglomerated material is transported pneumatically to a downstream hot melt granulator, creating free-flowing granules with a high bulk density and a minimum of thermal degradation. This valuable raw material can then be reintroduced into the production process or used in other applications, as a filler for example. New technical characteristics make the Plast-Agglomerator even more attractive than before.

Pallmann can now deliver complete modular systems, premounted on a base frame, including wiring and water hookup, simplifying installation and decreasing assembly time. Even after assembly, the complete system can be quickly moved and so is easily adaptable to changing production conditions.

To facilitate processing of abrasive materials such as carpet waste, the die and the agglomerating vane are equipped with a specially developed wear resistant coating. The result is a considerably increased lifetime of the agglomerating elements as well a reduction in unproductive downtime that occurs during replacement of worn parts.

www.pallmann.eu

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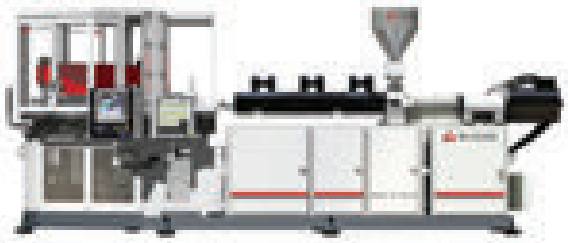

The new **Uniloy IB 199-3** offers precise shot to shot blow molding performance.

PLAST 2015 – HALL 22, C141 & C145

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NEWS

Automatic machines, palletisers and robots

Everything for pipe packaging

Rigid PVC, PP and PE pipes with diameters up to 160 mm and a length ranging from 1 to 6 m, normally need to be counted, compacted and tied up through heat-sealed plastic straps to form pipe bundles. This grants more solidity to pipe packets during displacements, and limit any bundle collapsing when some items are taken out for use. For this kind of process, IPM (stand C 61/D 62, hall 13, at Plast 2015) offers the IRT automatic machine, which can be additionally combined, for example, either with an IST machine, inserting the pipe bundles into heat-sealed plastic bags, or with an IAF machine, wrapping the pipes in self-adhesive film. In both cases, the pipe surface is protected against friction, impacts, sunlight action, dirt, dust, humidity and other unfavourable store conditions.
PVC and PE pipes with bigger diameters and lengths up to 12 m, instead, are usually packed on pallets fitted into special wooden frames.

IPM designs and manufactures customised end-of-line pipe packaging solutions complying with the specific requirements of the end user

In order to perform this kind of packaging in a completely automatic way the IPAL/G palletiser can be used, which allows the pallet geometry to be customised from the machine's control panel and performs the strapping of pre-set pipe layers inside the wooden frame before assembling the pallet as a whole, thus boosting the stability of the package and preventing it from collapsing when some pipes are taken out for use.
The company also developed the RMC, RMB and RMT robots, handling pipes of different lengths and performing several kinds of packaging. RMC is used to pack short pipes normally ranging from 150 to 500 mm into cardboard boxes, safeguarding the items from any scratching or damaging during transport or storing. The latest version of this system can not only fill already pre-formed cardboard boxes, but also form the carton itself, by folding cardboard foils automatically and securing its walls with adhesive tape.
The RMB robots, mainly destined to the North European converters who have always been at the forefront of researching and employing environment-friendly packaging solutions, make it possible to automatically stack PVC pipes up to diameter 200 mm and length 1 m into iron cages perfectly re-usable for many production cycles. A robotic arm with special pliable rotating pincers, provided with suction cups, guarantees a precise and safe grip on the pipes, since movements are so well-tuned to avoid any impact of the pipe against the cage edges.
The RMT units, designed for pipes with lengths ranging from 1 to 3 metres, normally consist of two packaging stations handling different pipe lengths at the same time, lifting and rotating them to alternate the position of the socketed end in each pallet layer, according to the preset program. Each pipe layer is automatically spaced out by special plastic supports that do not deform or ovalize the pipes, making pallets lighter and stable also when single pipes are taken out.

www.ipm-italy.it

Doss celebrates its anniversary

Twenty-five years looking to the future

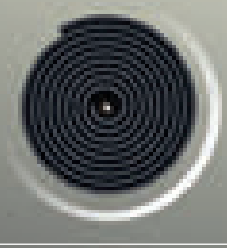
Plast 2015 provides Doss (stand A 21, hall 11) with the setting for celebrating its 25th anniversary. 1990-2015: two important dates for the Italian company leader in the design and production of visual inspection systems for the quality control. Twenty-five years in a flexible and demanding market, providing technological innovation as a reply to the high quality requirements of the final customers, and committing to its work and to a steady improvement of its structure and services.
At the fair in Milan Doss presents the brand new laboratory instruments: SDC, evolution and fulfilment of our ET6. A complete instrument for the measurement in 2D and 3D for parts up to a 200x200 mm framed field, with the possibility to check surface defects as well. BMIGG is the latest measurement system, without contact, for parts with a diameter from 250 to 600 mm, developed for the tyres market: an easy to use tool for a high accuracy and repeatability performances.
Many surprises for the visual inspection world are waiting for processors: completely automatic systems for the surface and dimensional check at high performances and for a vast range of products. Research & Development are the key words in the Doss philosophy and this year it is possible to view a brand new machine for the quality control. It is a simpler sorting machine, easy to access, that guarantees high performances and the possibility of a direct and intuitive parameters optimisation.

An internal department at Doss, which celebrates its 25th anniversary at Plast 2015

www.doss.it

FOUR
IS BETTER THAN ONE

Rubber compounds



Additives and pigments pastes

Termoplastic compounds

Pigments masterbatches

With the acquisition in late 2014 of Guzzetti Master (now MESGO Guzzetti Colors) and 3AMCom, following the acquisition back in 2013 of Iride Color (now MESGO Iride Colors), MESGO Group is now offering a wide range of products, including Thermoset Compounds (FKM, FVMQ, VMQ, ACM, HNBR, AEM, CSM, EPDM, NBR etc.), as well as Thermoplastic Compounds (PE, PP, PA, PVC, PS, etc.), Additives and Pigments Masterbatches for thermoplastics and rubber elastomers, Additives and Pigments Pastes for both silicone HCR/LSR. MESGO Group, a single purchasing point for most of your rubber and thermoplastic needs.

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NEWS

Ultrasonic welding + marking

Identification becomes increasingly important

Today, identifying components, selecting pre-set parameters, and saving weld process data are basic requirements for the control architecture and ultrasonic generator software. This data is provided to an overriding PLC via conventional fieldbus interfaces and in a database all information is allocated to the component. But not only documentation of weld process parameters is part of a complete traceability; single component marking and tagging is also crucial for identification.

Herrmann Ultraschall (stand C 135, hall 22, at Plast 2015) has made it their business to comply with requirements from various industries and to provide customised solutions. In future, expedited by the FDA (US), a Unique Device Identification (UDI) will be required for medical products. Depending on component design and the required durability, marking processes such as scratch embossing, laser, ink jet printing, and barcode labels are used. The customer can select the best suitable marking process, which is integrated as an auxiliary function into the overall concept of an ultrasonic welding machine. The company has recently demonstrated process interlinking of several production steps: a standard modular ultrasonic welder HiQ Dialog, in combination with a touch-sensitive small-scale robot, a camera, and a marking device. The robot made multi-axle handling of the possible applications. A camera checked the parts for their quality and completeness. After the weld process, all parts were individually marked, providing the current date and time and a unique application number.

In future, it will become easier to integrate other processes and auxiliary functions and thus supply supplementary functions from a single source. This not only applies to ultrasonic multi-head machines but also to manual work stations and ultrasonic welding systems. Customer demand is growing. This simplifies production monitoring and quality assurance processes. Herrmann Ultraschall is going the extra mile and implementing further development of existing products to prepare them for “industry 4.0”. ■

www.herrmannultraschall.com

Standard modular ultrasonic welder HiQ Dialog with small-scale robot: handling, testing, welding, and marking of a toy elephant

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NEWS

Innovating instruments

For a wide range of applications

At Plast 2015 the Instrument Division of Urai presents some innovating instruments from the product range of its principals at the stand B 65, hall 9.
Atlas Material Testing Solution showcases instruments that enable users to test their products realistically under accelerated conditions. UVTest Fluorescent UV Device is an economical fluorescent/UV weathering test instrument for product screening at lower operating costs. Xenotest Instruments consist in premium air-cooled accelerated weathering instruments that offer an array of options to meet global weathering and light fastness testing requirements: designed with state-of-the-art controls; on-rack radio-controlled sensor technology for superior monitoring of light and temperature; high water and power efficiency.
Suntest Instruments are bench top instruments that fit into every lab, while optional accessories - water spray, immersion, refrigeration - expand the testing capabilities and offer easy ways to customise it. They have a 1100 cm^2 exposure area, suiting multiple flat or 3D samples.
Brookfield Engineering Laboratories has long been considered the world standard in viscosity measurement and control. In recent years, Brookfield added texture analysis equipment and powder flow metres to his product range by excelling in these business segment too. DV2T Extra Touch Screen Viscometer provides all the features of the standard DV2T feature but with a more durable suspension system, EZ Lock Spindle Coupling, Quick Action Lab Stand, and RheocalcT for the ultimate user experience that also saves time and money. RST Controlled Stress Rheometer is a high end, touch screen rheometer that provides complete viscosity characterisation of materials at defined shear rates and shear stress. Built-in temperature control is also available.
As for CT3 Texture Analyzer, an extensive history and customer input have contributed to the development of one of the most powerful, low cost, stand alone texture analyser ever produced. With six test modes and a wide choice of accessories, no other texture analyser has ever done so much without a computer and software. Powder Flow Tester is proposed for evaluating powder discharge from storage containers and characterising new formulations for powder flowability. Powder Flow Tester provides quick and easy analysis of powder flow behaviour in industrial processing equipment such as hoppers/silos.
Rhopoint Instruments designs and manufactures a comprehensive range of quality control test equipment for the appearance testing and packaging industry sectors. Its products can be found in a variety of industries including: general paints and coatings, automotive coatings, yacht coatings, plastics, polished metals and furniture. DOI (Orange Peel), Gloss & Haze measures gloss levels of surfaces (matt, mirror gloss finishes), and quantifies effects such as haze and orange peel that are invisible to a standard glossmetre. Surface texture and defect analysis, the new Optimap marks a kind of revolution in the control of surface quality. For the first time subjective visual assessment can be replaced with reliable, representative measurement.
Finally Hauschield Engineering develops fast, efficient, bubble-free, low-noise, non-invasive mixing system focusing on mixing and/or dispersion problems in the areas of research and development as well as production. Speed Mixer FZK150 is the smaller laboratory mixing system for the rapid mixing, dispersal or pulverising of different substances and/or chemicals, while offering as a results a free air bubble sample. Reusable and one-way mixing cups can both be used for a cleaning free process. ■

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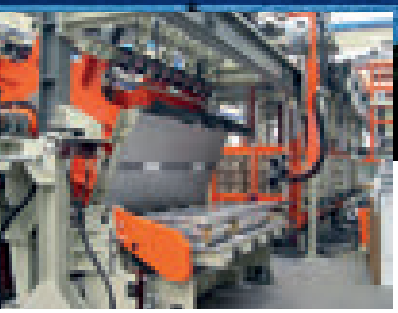
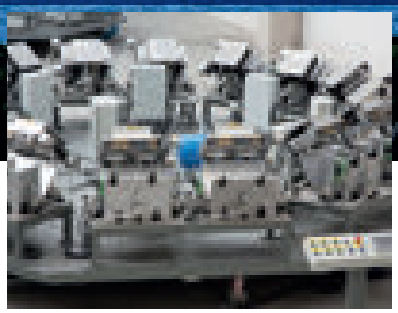
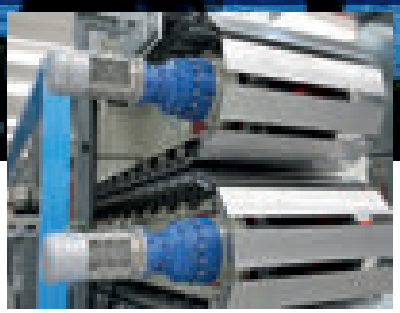


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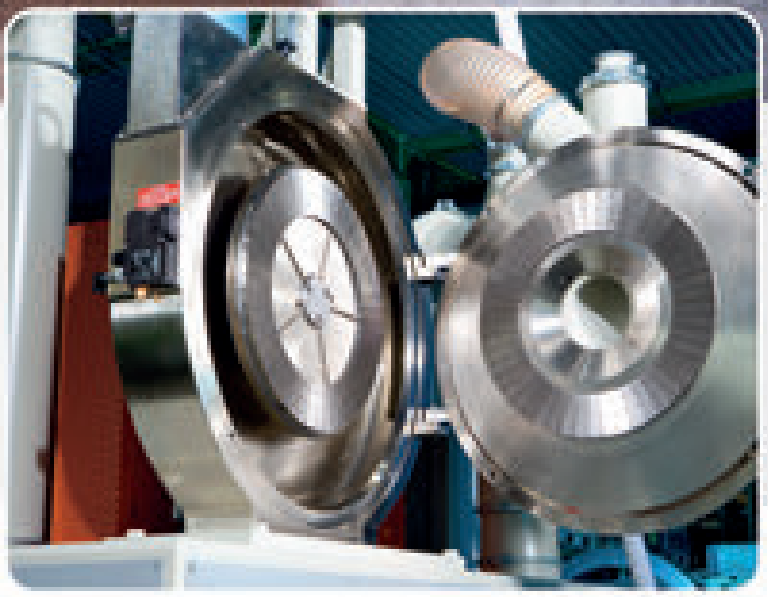

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WITH THIS ARTICLE WE ANALYSE THE MAIN CHARACTERISTICS OF SOME OF THE LESS COMMON ALIPHATIC POLYAMIDES, ALTHOUGH THEY ARE PRACTICALLY IRREPLACEABLE IN MANY APPLICATIONS. WE HERE LOOK, IN PARTICULAR, AT POLYAMIDES OBTAINED FROM MONOMERS DERIVED FROM RENEWABLE SOURCES

BY **CLAUDIO CELATA** AND **DAMIANO PIACENTINI (CESAP)**

KNOWING PLASTICS

ALIPHATIC POLYAMIDES FROM RENEWABLE SOURCES

Some producers, wanting to pursue a "green" strategy in the production of materials that, although non-biodegradable, nevertheless originate (partly or entirely) from renewable sources, have proposed different variants of aliphatic polyamides, which are here described in brief.

PA11 AND PA12

Production

Recognised as a biopolymer by the Japan Organics Recycling Association, polyamide 11 (PA11) is a polymer produced from renewable sources. The process of synthesising this polymer starts with the castor oil plant, whose seeds are used to obtain an oil that, when correctly processed, generates glycerol, ethyl alcohol, heptane acid, and also the monomer used to produce the polyamide.
Polyamide 12 (PA12), on the other hand, is a homopolymer that is derived from petroleum in a manner reminiscent of what is seen with PA6. Indeed, it is obtained from laurillactam by ring breaking caused by the hydrolytic polycondensation of laurillactam at 300-330°C in the presence of phosphoric acid. The system used by some producers to obtain 1.12-dodecanedioic acid (the basic reagent for the production of PA12) is hydrogenation of cyclododecatriene (CDT) to cyclododecane, which is then oxidised at a high temperature.

Advantages

Compared with the performances of the traditional polyamides PA6 and PA66, PA11 and PA12 show very low moisture absorption: 1.9%, and 1.6% respectively. Their melting temperature is lower too: around 175°C for PA12, and around 185°C for PA11. Given their low density (1.02 g/cm^3), PA11 and PA12 may, in some applications, be considered as replacements for PC (1.20 g/cm^3) and PES (1.37 g/cm^3).

Disadvantages

Compared with PA6 and PA66, PA11 and PA12 show lower heat resistance and load at break. This is due to a reduction of the distance between the amide groups, which are the ones that most influence these properties (the number of carbon atoms present in the starting monomer is increased). PA11 and PA12 are also more expensive than PA6 and PA66.

Applications

PA11 and PA12 are specifically and extensively used in the production of pipes for air systems installed in environments where the temperature can fall to several degrees below zero. In the automotive sector, PA12 is used for the pipes supplying direct-injection diesel engines, while in the food industry it is used for the transportation of beverages (beer). It is also used in some applications in the electrical/electronics sector, such as the production of electrically conductive magnets, which are produced by incorporating 80% barium and ferrite powder into the PA12 matrix.
In the medical sector, these polyamides, on account of their good mechanical properties, are used in the production of catheters. In the sports sector, some special grades of PA11 or PA12 film are used to decorate snow-

The seeds of the castor oil plant can be used to obtain an oil that, when correctly processed, generates glycerol, ethyl alcohol, heptane acid and also the monomer used for the production of some polyamides derived from renewable sources, such as the Radilon D 610 polyamide grades produced by the RadiciGroup

boards, tennis racquets, football boots and ski boots. Recently, new grades, offering a transparency superior to that of glass, have been developed for the production of eyewear: their transmittance is 91.5% (in compliance with ISO 13468, thickness: 2 mm, wavelength: 560 nm), which is an improvement on the values recorded for glass (90%) and polycarbonate (88%).

Processing technologies

Depending on the grade, PA11 can be extruded to produce films, sheets, foils, pipes and profiles; it can also be blown and injection-moulded or rotationally moulded. The processing temperatures are: 200-230°C for blow moulding grades, with a mould temperature of 70°C; 230-290°C for extrusion grades; and 210-250°C for grades used in injection moulding, where mould temperatures range from 40 to 80°C. PA12 for RIM is processed using a mould in which the monomer (having a low viscosity) is transferred and allowed to polymerise.

PA69, PA610 AND PA612

Production

The synthesis reaction differs from that of PA66 only in the diacid, which contains nine, ten or twelve carbon atoms respectively. The base monomers of PA69, 610 and 612 are, respectively: hexamethylenediamine and azelaic acid; hexamethylenediamine and sebacic acid; hexamethylenediamine and dodecanedioic acid.

Advantages

The increased ratio (compared with PA6 and PA66) between the CH_2 and CONH translates into a reduced capacity to absorb water and thus better dimensional stability, less moulding shrinkage and a lower density; there are also improvements in the characteristics at low temperatures and in the electrical properties.

Disadvantages

The reduced capacity to absorb water is accompanied by a reduction in the steam permeability that is a typical feature of polyamides; conversely, the permeability to gases (oxygen and aromatic components), which is usually low, is slightly increased. Compared with PA6 and PA66, the stiffness and mechanical strength of these polyamides is reduced, as are their thermal properties (Vicat and HDT).

Applications

These polyamides are used for applications, similar to those of PA66, having particular stability requirements, as in the case of the production of hinges, electrical insulation material, precision components, and air ducts, for example. Some grades of PA612 and PA69 are used for the extrusion of films destined to be used in the packaging of food products, in compliance with the strict American FDA regulations. Special grades, with the addition of glass fibre, are used for the moulding of windings and certain cookware parts. PA610 and PA612 are also used in the production of toothbrush bristles and dental floss.

Processing technologies

The processing technologies are the same as the ones used with PA66. In the presence of a water content greater than 0.1%, pretreatment in an air oven is needed, or better still, in a vacuum oven. For injection moulding, the mould temperature ranges from 30 to 100°C, while that of the melt, if it has a medium viscosity, can be between 230 and 270°C. At high viscosities, melt temperatures of between 250 and 305°C are used. The material can also be used to extrude film or profiles.

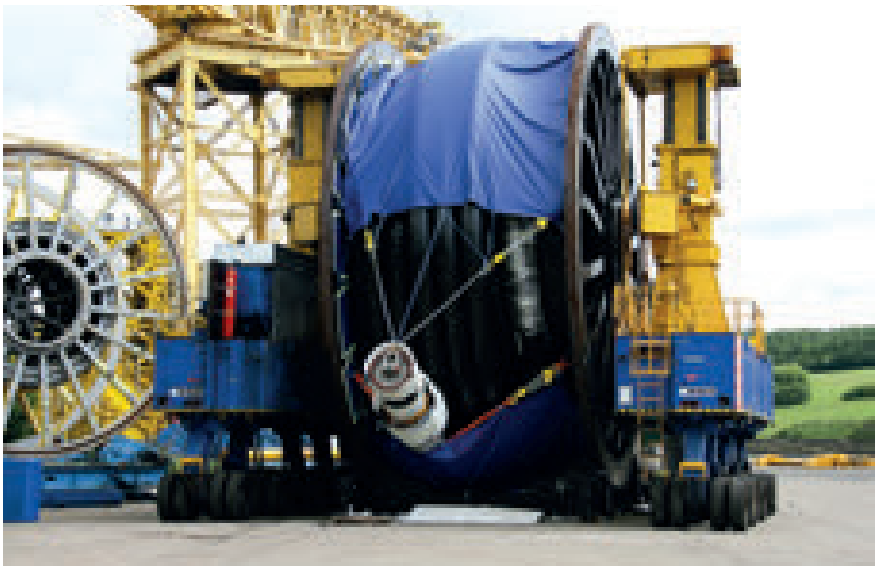
PA610

Production

In 2010 several producers launched a new polyamide produced partly from castor oil and partly (in a proportion of around 60%) from material coming from natural sources. PA610 derives from the polycondensation of 1.6-hexamethylenediamine and sebacic acid. The sebacic acid is extracted from castor oil seeds, and is therefore a raw material of natural origin that is not used for human consumption.

Advantages

PA610 shows high chemical resistance (comparable to that of PA11 and PA12) and high barrier properties. Its density and water absorption are lower than those of PA6 and



Giant flexible pipes made from the polyamide 12 Vestamid NRG by Evonik

PA66, therefore it offers better dimensional stability over time. Furthermore, still in comparison with PA6 and PA66, it shows better resistance to zinc and calcium chloride and to glycols. It has practically the same modulus of elasticity as PA11, PA12 and PA6 (in the order of 1100 MPa). It has a higher HDT deflection temperature under load than PA11 and PA12 do.
Compared with PA11, PA12 and PA6, it has a higher breaking strength. Its permeability to fuels (unleaded petrol at a temperature of 40°C) is far better than those of PA11 and PA12 and very similar to that of PA6: 0.1% after 35 days.

Disadvantages

PA610 compares unfavourably with PA11 and PA12 in terms of moisture absorption at the point of equilibrium, which is 1.4% for PA610 versus 0.8% for PA11 and 0.7% for PA12. Its impact strength, measured at -30°C, is 5 kJ/m^2, which is lower than the 11 kJ/m^2 recorded by PA11. Its impact strength at ambient temperature is also lower than those of PA11, PA6 and PA66. Its melting temperature is approximately 218°C, which is similar to that of PA6 (220°C) but much higher than those of PA11 (189°C) and PA12 (178°C). Its density is 1.07 g/cm3, which is higher than the density of PA11 and PA12. Finally, its modulus of elasticity (1100 MPa) is lower than that of PA66 (1700 MPa).

Applications

It is an ideal material when the following are required: high dimensional stability, excellent chemical resistance and a reduced environmental impact. In the automotive sector, for example, it is particularly useful for the production of spiral pipes, liquid fuel supply connections, tubes for depression air passage in braking systems, and clutch pipes. The production of cable ties is another very interesting application.

PA410

Production

This new polyamide entered the market in 2010. It is derived mainly (in a proportion of approximately 70%), from castor oil originating from the seeds of the tropical castor oil plant, which grows on relatively poor soil and is cultivated without entering into competition with the food chain. The production of PA410 has a very low environmental footprint; indeed, the CO_2 produced during the polymerisation process is totally balanced out by that absorbed during the development of the castor oil plant.
The material is obtained by polymerisation of the monomer tetramethylene diamine and sebacic acid. Grades reinforced with 30% glass fibre and mineral fillers are also produced.

Advantages

PA410 is characterised by a high degree of crystallinity, good mechanical characteristics, low moisture absorption, good resistance to hydrolysis, and good resistance to salts, such as calcium chloride and zinc. Its melting point is approximately 250°C; its deflection temperature under load 1.80 Mpa is 77°C; its density is 1.09 g/cm3. It shows good rigidity after absorption of water.

Applications

It is used in the automotive sector for the production of structural parts, engine covers and cooling systems. In the electrical sector, PA410 is used to produce connectors and switches.

Processing technologies

Injection moulding technology is the type usually used with PA410.

PA1010

Production

This is a polyamide obtained by polymerisation of the monomer 1.10-decamethylene diamine (D) and decanedioic carboxylic acid (sebacic acid S), both of which are derived from castor oil seeds. This material occupies an interesting position between the high-performance, long-chain polyamides, such as PA12 and PA1212, and the standard short-chain ones (e.g. PA6 and PA66).

Advantages

Its mechanical properties show little alteration when articles are exposed to changes in ambient humidity. Its water absorption at saturation is approximately 2%. PA1010 shows high dimensional stability, a high level of translucency, and, in the presence of thin walls, it offers good transparency. It has the typical properties of polyamides, with added advantages thanks to its superior resistance to high temperatures and its low permeability to gases and fuels. It shows good resistance to UV rays and chemicals. Its melting temperature is approximately 195°C. Its Vicat temperature, according to the B method (50 N), is 170°C and can even reach 196°C in the case of some 30% glass fibre reinforced grades. Its modulus of elasticity varies depending on the grade, ranging from 600 MPa for the simple polymer to 7400 MPa for the reinforced grades. Its density is 1.05 g/cm^3.

Items produced using Vestamid Terra, a range of polyamides developed from renewable sources by Evonik. The HS grade (PA610) is produced from polycondensation of 1.6-hexamethylenediamine (H) and 1.10- dodecanedioic diacid (sebacic acid S), which in turn is derived from castor oil, thus making it a polymer derived mainly (in a proportion of around 63%) from renewable sources. Vestamid Terra DS is instead based on a 1010 polyamide, obtained from the polycondensation of 1.10-decamethylene diamine (D) and sebacic acid S, both of which are derived from castor oil; this polymer is thus produced entirely from renewable sources. Finally, Evonik has also developed a grade (Terra DD) with an organic content of 45%, whose base is a 1012 polyamide obtained from 1.10-decamethylene diamine (D) and 1.12-dodecanedioic diacid (D)

Applications

Monofilament is particularly suitable for sanitary applications, for the production of toothbrush bristles and semi-rigid bandages. Remaining in the fibre spinning sector, other applications are the production of woven multifilament, which offers increased strength and is used in fabrics for hot air balloons and membranes generally. In the sports sector, PA1010 is used for making ski boot bindings, for example; in the electronics sector, it is used for telephone parts, including thin-walled ones. In powder form PA1010 is used as a protective material for metal parts (e.g. dishwasher baskets). An important application is the production of films for photovoltaic panels or barrier films for packaging foodstuffs. It is used the construction industry in extruded profiles for windows and in critical components that require high mechanical stability. Finally, in the automotive sector PA1010 is used to produce pipes for fluids and biodiesel.

Processing technologies

The most widely used technologies are spinning, pipe and profile extrusion and injection moulding. The material, before it can be processed, needs to be dried for 4-6 hours at 80°C, and the final residual moisture content should be below 0.05%.

PA1012

Production

This is a polyamide derived by means of polymerisation from the monomer C10 diamine and acid (sebacic acid S). Its properties are similar to those of the long-chain polyamides, such as PA12 and PA1212. This material is also marketed in grades containing glass fibre, natural fibres and additives (serving, in particular, to render it flame retardant).

Advantages

PA1012 has high dimensional stability and good heat resistance. It also shows very low water absorption. It has high impact strength, especially at low temperatures. Thanks to its semi-crystalline structure, it shows exceptional chemical resistance to acids, oils, fuels and hydraulic fluids. Compared with other semi-crystalline polyamides, PA1012 has a moisture absorption level of 1.6%. Its melting temperature is approximately 190°C, while its Vicat temperature, according to the B method (50N), is 154°C and can even reach 177°C in the case of some 30% glass fibre reinforced grades. Its modulus of elasticity ranges from 1600 MPa for the simple polymer to 6000 MPa for the reinforced version.

Applications

It is used in a range of different applications. In particular, it can be used for the production of film featuring good transparency and for the production of monofilament to be used for synthetic turf, and so on.

Processing technologies

The processing technologies used are the same as those indicated for PA1010.

PA1212

Production

Our review of these polymer materials ends with PA1212 which, derived from renewable sources, is polymerised from 1.12-dodecanedioic acid (DDA) and dodecanedioic amine (DMDA). Compared with PA612, this polyamide shows better moisture absorption and flexibility.

This fuel pipe, used with both diesel and biodiesel fuel, is produced by Hutchinson, in Rivoli (Turin), using Zytel RS PA1010 by DuPont, which is derived from renewable sources. It is installed on several Fiat vehicles featuring turbocharged or multijet engines, e.g. Fiat 500, Panda, Punto, Lancia Delta, Alfa Romeo MiTo, Giulietta

Applications

It is used in applications requiring high-performance engineering characteristics and in the production of monofilament for fishing lines.

Processing technologies

The processing technologies used are the ones typically used with the other polyamides.

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Technical questions

SPACE DEVOTED TO READERS' QUESTIONS ON ISSUES RELATING TO THE PROCESSING OF POLYMERS. THE ANSWERS ARE PROVIDED BY EXPERTS FROM CESAP (STAND B 62, HALL 22, AT PLAST 2015) IN VERDELLINO-ZINGONIA (BERGAMO, ITALY), A SUPPORT CENTRE FOR PLASTICS PROCESSORS AND USERS. READERS MAY SEND THEIR QUESTIONS DIRECTLY TO INFO@CESAP.COM OR TO OUR EDITORIAL OFFICE (MACPLAS@MACPLAS.IT)

EJECTION FORCE

In injection moulding, what factors influence the optimal ejection force value for moulded pieces?

First of all, it should be noted that in this type of processing, the extent of the ejection force is in relation to the shape and thickness of the piece. Moreover, it should be remembered that due to the shrinkage and adherence that occurs between the surfaces of the piece and the mould walls, zones have different resistances in opposition to the ejection force.

The adherence force of the piece derives from the residual pressure due to the compressibility of the plastic and expansion within the mould cavity, dependent on the strong pressure used to inject the material. This explains why it is difficult to balance an ejection force, especially in pieces that have no linear and symmetrical walls between them.

What is more, the position of the ejectors on the piece is determined by a number of points of resistance opposed by the latter at ejection, like very high walls with small stripping angle, ribbing and so on. By regulation, ejectors have small diameters and sections. This leads to the need to intervene using guide elements, not dependent on the shape of the piece, in order to be able to arrange diameters with robust sections as needed. Other aspects to take into consideration in the ejection stage are:

- pressure values, injection speed and temperature, which influence dimensional shrinkage;
- the type of polymer (amorphous or semi-crystalline structure), its modulus of elasticity and elongation at break, the values of which however have to be considered in function of cooling time and the temperature of the piece at the time of ejection;
- the coning effect of the vertical cavity walls;
- the degree of finishing (roughness) on the cavity surfaces;
- the surface of the piece in the ejection system;
- positioning of the ejectors;
- the speed of the ejection movement.

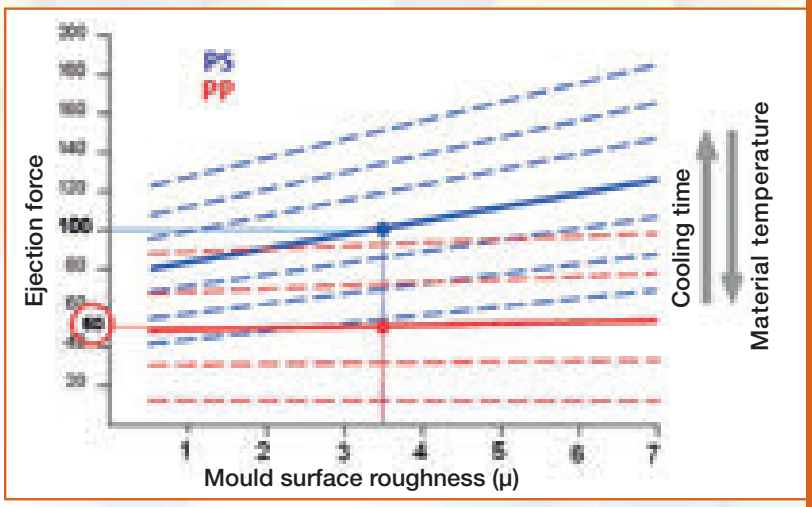

Fig. 1 - The ejection force vs the degree of surface finishing on the mould, both correlated with the temperature of the piece

Each of these factors, if set up incorrectly, can negatively influence the expulsion stage. It is therefore vital to accurately evaluate them, starting with the design of the mould, when the ejection mechanism has to be defined.

However, it should be noted in principle that the force needed to eject some materials is represented in the two diagrams in figures 1 and 2.

In figure 1, the ejection force is demonstrated in function of the degree of surface finishing on the mould, both correlated with the temperature of the piece. Two materials, very different from each other, are considered. One very fragile - crystal polystyrene - and one ductile: PP. With reference to a single object, with a certain degree of surface finish (medium roughness: 3.5 μ), the graph shows - with more marked whole lines - the ideal temperature conditions for performing the ejection. For both materials, a high temperature of the piece at ejection (quick cooling time), coincides with higher piece ejection force, but also poses the danger of distortion in the ejector zone.

In the opposite instance, with low temperature at ejection (long cooling time), breakage can occur near the ejectors in some fragile materials.

In diagram figure 2, on the other hand, the ejection force is considered in function of the stripping angle, both correlated with the temperature of the piece. Two materials are analysed, one with high modulus of elasticity (ABS) and one with low modulus (HDPE). It is noted that, stripping angles being equal, the material that has the highest modulus of elasticity requires greater and greater expulsion force as the piece temperature decreases (long cooling time). The difference in ejection force between ABS and HDPE decreases as the stripping angle and material temperature increase. ■

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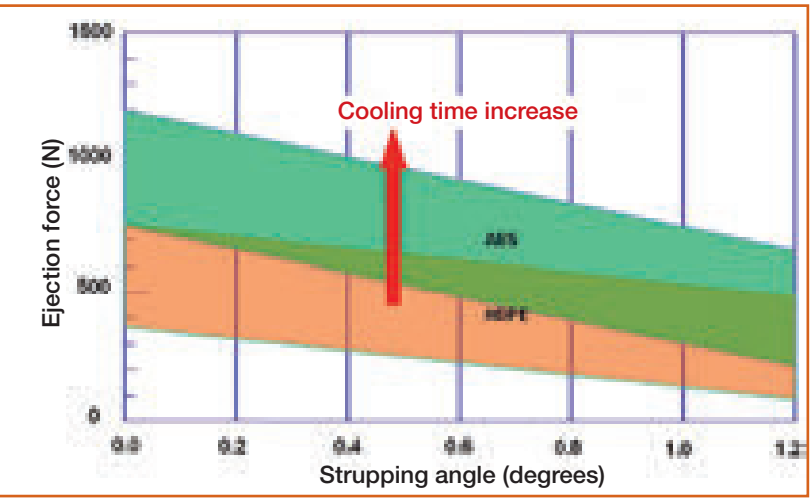

Fig. 2 - The ejection force vs the stripping angle, both correlated with the temperature of the piece

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AT THE INTERNATIONAL EXHIBITION PLAST 2015 (FIERAMILANO, MAY 5-9) THE ITALIAN RAW MATERIALS PRODUCER COIM PRESENTS IN PARTICULAR THE THERMOPLASTIC POLYURETHANES LARIPUR -18 AND -18B SERIES AND LARIPUR RS

TPU

STABILISED, RESISTANT AND SUSTAINABLE

Laripur -18 and -18B series are plasticized thermoplastic polyurethanes (TPU) developed by Coim (stand C 22, hall 9, at the exhibition Plast 2015) to supply the footwear industry with technically and aesthetically high quality materials.

These Laripur products contain plasticisers, which have not been classified as harmful and which lead to no migration in the final product. More precisely, the plasticisers used in the -18B series do not contain any phthalate.

The items produced using these TPUs show a remarkable natural glossiness, but it's also possible to obtain mat surfaces through satin finishing of the mould; moreover, being basically migration-free, the surface appearance is maintained over the time. The perfect replication of the smallest details of the inner mould surface is ensured by the optimal flowability during processing.

The Laripur -18 and -18B series stand out from classic TPUs because, besides exhibiting the well-known properties of polyurethanes (as very good abrasion and tear propagation resistance and the high flexibility in a wide temperature range), they are also stabilised against hydrolysis and against UV and thermal-yellowing. This ensures long lasting aesthetical appearance and technical performances.

The Laripur RS family includes sustainable products that can be used for a wide range of items: footwear (fashion shoes, free time and sport shoes etc.), ski boots, hoses, profiles, films and various technical items

The optimal bonding with the 2-components polyurethane systems (both compact and expanded) and in moulding with other TPUs allows the production of a wide range of items: sport shoes, single density and dual density army and safety shoes, fashion shoes and boots. Furthermore, through the addition of a special master available upon request, it's also possible to produce high-antistatic shoe soles, suitable for ESD safety shoes.

The Laripur -18 and -18B products are also designed for the production of expanded articles: for instance, with the addition of a proper master available upon request, it is possible to produce shoe soles up to 40-50% lighter than conventional TPUs, while maintaining at the same time the typical aesthetical features and processing performances of TPU. Lastly, an important advantage of these products is their extreme

versatility, which enables their usage with the same machineries traditionally used for plasticised PVC.

TPU FROM RENEWABLE SOURCES

Coim's products belonging to the Laripur RS family are eco-friendly thermoplastic polyurethanes produced starting from raw materials derived from renewable sources, thus reducing the exploitation of fossil reserves.
The amount of these raw materials is very high (up to more than 60% over the total polyurethane weight), thus ensuring a significant reduction of the environmental impact of these materials in comparison with classic TPU.
At the same time, Laripur RS can reach the same performance level of the classic products, keeping the optimal processability and the excellent physical-mechanical properties that are typical of polyurethane.
The Laripur RS family includes products that can be used for a wide range of items: footwear (fashion shoes, free time and sport shoes etc.), ski boots, hoses, profiles, films and various technical items.
The main feature of these eco-friendly TPUs consists in the fact that, even though they contain a high percentage of raw materials derived from renewable sources, they can be used exactly in the same conditions of the standard products, therefore with the same machinery, moulds and equipments and keeping the total recyclability and the possibility to add various masters (pigments, blowing agents, antistatics etc.). The use of Laripur RS ensures therefore the possibility to manufacture high performance items, while contributing to a significant reduction of the environmental impact.

The thermoplastic polyurethanes Laripur -18 and -18B are ideal for the production of expanded articles. Thanks to the addition of a proper masterbatch, it is possible to produce shoe soles up to 40-50% lighter than conventional TPUs

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NEWS

A patent of the Politecnico di Milano

A two-faced molecule for innovative polymers

Some inventors and researchers who worked on the project. From the left: Roberto Sebastiano, Vincenzina Barbera, Gabrielle Leonardi, Silvia Guerra, Maurizio Galimberti

The Politecnico di Milano patented a new molecule that can attach in a stable manner to various forms of carbon (such as carbon black, graphite, nanotubes and graphene) which provide increased mechanical strength and electrical and thermal conductivity. These types of carbon become soluble in polar solvents such as water, in addition to dissolving in low environmental impact solvents and in different kinds of polymers, without compromising traditional compatibility with non-polar matrices.

It is extremely simple to prepare the molecule, as no solvents or catalysers are required and the only by-product is water. The yield is very high (95% at least) and ensures atom efficiency above 80%. The starting compound is serinol, a naturally available derivative of glycerine.

The molecule's key feature is its two-faced nature, which allows it to be soluble in water and, at the same time, to interact stably with carbon-only based substances.

In this simple molecule there are functional groups that can polymerize in a number of ways. Innovative polymers can be obtained in this manner, such as polyurethanes, which are ideal binders for carbon fillers in composite materials with advanced properties.

The great advantage of the Politecnico's invention is that stable adducts with any of the forms of carbon mentioned above can be obtained by simply mixing. There is no need for the expensive (and sometimes dangerous) chemical reactions that are currently required and are performed with invasive chemical agents. In particular, it is easier in this way to use carbon nanofillers, nanotubes and graphene, the latest frontier of research in the field of high performing materials.

There are many applications for this invention. In dispersions for the treatment of surfaces, inks especially, it provides electrical conductivity to transparent layers, which could be invisible because of the small quantity of carbon substances. In thermoplastic and elastomeric polymer composites, mechanical properties, electric conductivity, resistance to heat and flame are greatly enhanced, thanks to improved dispersion and the intimate interaction of the carbon fillers with the matrix. It is important to underline that the adhesion of the fillers to the polymeric matrix allows the use of the composite material for challenging mechanical and dynamic applications such as mixtures for tyres.

The stable interaction of the nanofillers with the polymeric matrices is crucial for the prevention of dispersion into the environment, thus avoiding the related issues. This invention makes it possible to work not just on improving the performance of existing materials but on obtaining new generations of materials and levels of performance as well.

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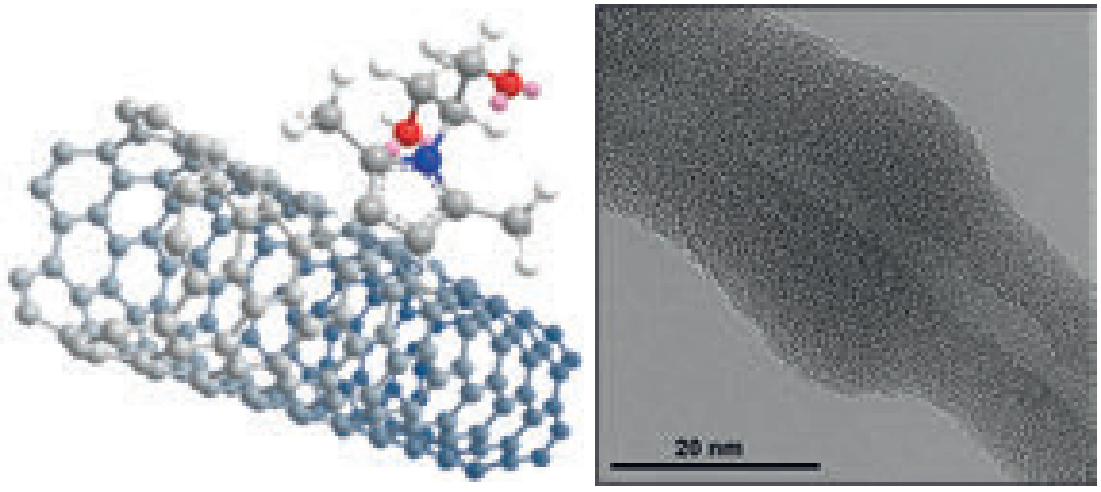

Structure and electronic microscope image of the new molecule patented by the Politecnico di Milano attached to a nanotube

Composites and plastics for a special electric scooter

A boost to sustainable urban mobility

The new lightweight and solar powered electric scooter developed by Floatility and Basf

The German company Floatility and Basf (stand B1, hall 9, with its distributor Ultrapolymers Italia) have partnered for the development of an ultra-lightweight and solar-powered electric scooter. Weighing less than 12 kilograms and consisting of more than 80% composite and plastic materials from Basf, the scooter will give commuters the sensation of floating and has been aptly named "e-floater". "This is a perfect example of how we cooperate with our partners to fully unfold the strengths of our innovative materials. The e-floater combines stability, durability and safety with an exciting, functional design", said Andy Postlethwaite, senior vice president, Performance Materials Asia Pacific, Basf. Basf will provide versatile plastic materials and support the project with its extensive development capabilities. Moulding multiple parts to create complex shapes with plastic materials enables design freedom and the streamlined construction of the "e-floater". Various grades of glass fibre reinforced Ultramid (polyamide) will be used for most of the e-floater's structure: while the mineral-filled Ultramid B3M6 is used for the parts where low warpage is crucial, the impact modified Ultramid B3ZG8 combines toughness and stiffness in a way that is favourable for structural parts that have to resist crash-loads. The surface-improved Ultramid B3G10 SI offers high surface quality to the parts despite its high fibre content. The reinforcement for front body and deck will be made with the new Ultracom composite materials to ensure stability. Together with Ultralaminate B3WG13, a thermoplastic laminate and the adapted overmoulding compound Ultramid B3WG12 COM, Basf also offers its processing and designing support for the development of continuous fibre reinforced parts. Tires and handlebars made with Basf's TPU Elastollan will provide a good grip and smooth floating. Oliver Risse, founder and CEO of Floatility added: "The cooperation with Basf enables us to develop a state-of-the-art short distance urban mobility solution to provide mobility-on-demand for the future. In this way the e-floater will play a key role in making short journeys more convenient, quick, affordable and sustainable". This bridges the gap on the last mile between home or city centre and the nearest public transport. To celebrate its 150th anniversary in 2015, Basf is rolling out a global co-creation program with partners on the topics of energy, food and urban living. In line with this program, the joint development project by Basf and Floatility aims to combine the materials and know-how of Basf with the innovative capabilities of Floatility to address a key challenge of urban environments: short distance journeys.

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TPEs at Plast 2015

From automotive to applications with drinking water

Parallel to the world exhibition Expo Milano 2015 the European plastics industry is coming together for the Plast 2015 trade fair in Milan (May 5-9). "Italy is one of Europe's most important markets for our special TPE solutions. That is why Plast is a permanent entry in our trade fair calendar. Our technically experienced sales team has been working intensively in the Italian market for years to establish long-lasting customer relations based on mutual trust", explains Michael Pollmann, director Sales & Marketing EMEA. Kraiburg TPE is represented at Plast, on the Fiera Milano fairgrounds, with an exhibit in hall 9, stand D 32, so that visitors can become better acquainted with the diverse applications for Kraiburg TPE compounds. The company offers a comprehensive customer- and market-oriented portfolio of products and services, in addition to custom material solutions for wide-ranging areas of application. The TPE specialist also supports the processors with technological know-how, from the product idea through material selection and tool design all the way to series production. Kraiburg TPE has acquired this expertise through many years of experience in the manufacture and processing of thermoplastic elastomers (TPE). Strategically planned production and marketing locations also give customers the benefit of an extensive international network. Since numerous OEMs and suppliers of the Italian automotive industry is represented at Plast 2015, the TPE specialist reinforces its close customer relations with the focus on thermoplastic elastomers for the automotive sector. With its highly temperature-resistant products Hipex and Thermolast V, the company offers TPEs for use under the hood. For interior and exterior applications, Kraiburg TPE has likewise developed a custom engineered portfolio to meet the special technical requirements for materials and surface quality. Another focus at the company's exhibit is on compounds for applications with drinking water contact. These compounds fulfill the most important European drinking water certifications, such as DVGW W270 with respect to their nature and colour, as well as the KTW certification from Germany and the British WRAS for cold and warm water. In addition, these thermoplastic elastomers fulfil the ACS certification from France.

An elegant extension outlet designed by the Swiss company Punkt demonstrates that everyday objects can be completely transformed by good design. The Italian development partner Rosa Micro contributed to the high quality of this designer product with a power button made of TPE Thermolast K

www.kraiburg-tpe.com

NEWS

Masterbatches, biodegradable and not

Quality and technologies at the service of the colour

Biodegradable polymers coloured with Biomasterbatches successfully meet all the requirements of the EN 13432 standard

Always focused on environmentally friendly products, the Italian company Vanetti has recently developed the Biomasterbatches (registered trademark). They were designed by analysing the molecular structure of biodegradable materials in the laboratory and verifying their specific chemical properties, in way to respect the environment while still enjoying attractive, natural colours. Furthermore, the company affirms that when biodegradable polymers are coloured with its Biomasterbatches, the finished product successfully meets all the requirements of the EN 13432 standard.

Since 1971 Vanetti has been producing masterbatches, biomasterbatches and additives to colour all types of thermoplastic resins for a diverse range of applications. Technologically advanced equipment and carefully selection of the finest quality raw materials guarantee outstanding performances of the masterbatches. The quality of the products is ensured by ISO 9001:2008 certification

Vanetti's laboratory technicians employ state-of-the-art analytic equipment to identify the best raw materials to use in production. Every masterbatch is supplied with an analytical report, datasheet, safety datasheet, and a certificate of suitability for use in a specific application, as well as the relevant spectrophotometric readings

Biomasterbatches with biodegradable "ingredients" are now used in a variety of different industries, from shopping bags to packaging and even for more technically demanding products.

In addition to masterbatches and biomasterbatches, Vanetti also offers customers a 360° service for the processing of plastic materials. Its additives, for instance, supplement the basic molecular aspects when added to plastic during the production of a finished product, thereby creating a new product with technical characteristics specifically designed to satisfy the processors' requirements.

Development of all these products (masterbatches, Biomasterbatches and additives) and perfecting new formulations represent one of the great strengths of Vanetti. The company exhibits at Plast 2015 (FieraMilano, May 5-9), the international plastics and rubber trade fair, showing its latest products on stand C 131 / D 132 in hall 9.

www.vanettimaster.com

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Automazioni Industriali

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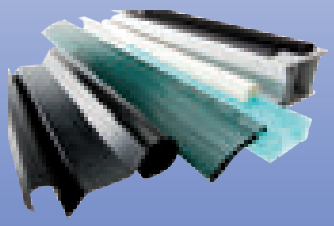

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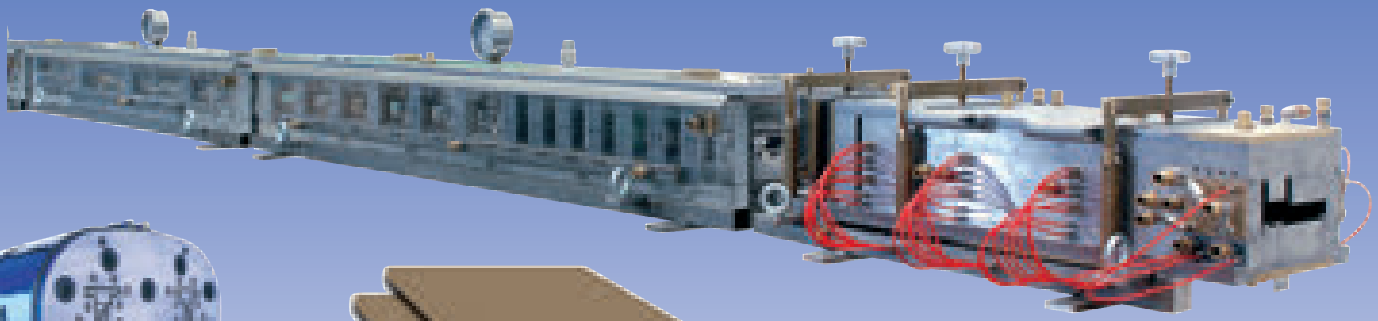
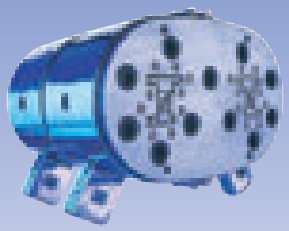
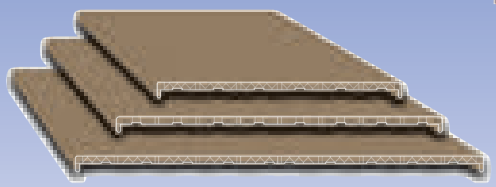






plast 2015 MILAN - May 5/9

Plast 2015
5-9 May 2015
Milan

Visit us: Hall. 13 stand A 102

NEWS

Helping processes

A brand new range of purging compounds

Figure 1 - Cover for loudspeaker; problem: colour and material change from PP GF30 black to ABS/PC blend beige (Source: www.multi-kunststoff.de)

In addition to the well-known and proven purging compounds by Ultra System (stand B 81, hall 22, at Plast 2015), for all kind of plastics and all plastic processing machines there are now available new grades, after months of tests in laboratory and on machines in production: PO-CS, POE-CS (both for polyolefins), High-CS (for all transparent materials, such as polycarbonate and PMMA), PET-CS (for PET) and HT-CS (for all types of polyamide, PEEK, APEC and Ultem).

All grades of the range Qualipurge CS are suitable for the cleaning of screw/barrel and hotrunner system and guarantee a much higher purging efficiency compared to standard products, thanks to a new formulation of the active part. The time for the cleaning of a medium sized IMM (Injection Moulding Machine with 600-tons clamping force, 90-mm screw diameter) can be reduced by 30% compared with the use of the former Ultra Plast products with less scraps; this means 90% of total cost reduction compared to the cleaning without any purging compound.

Furthermore, all grades are 100% recyclable which guarantees a high sustainability. Sustainability is important to making sure that we have and will continue to have water, materials, and resources to protect human health and our environment.

Another important new feature of the special grade HT-CS is that it can be used to clean materials up to 420°C without originating any kind of smoke, even if the processed material contains a high percentage of carbon black or special additives such as flame retardants.

All grades Qualipurge CS are certified FDA, apply to European food rules CE 10/2011 and can be used as well in white rooms for medical, cosmetic and pharmaceutical production.

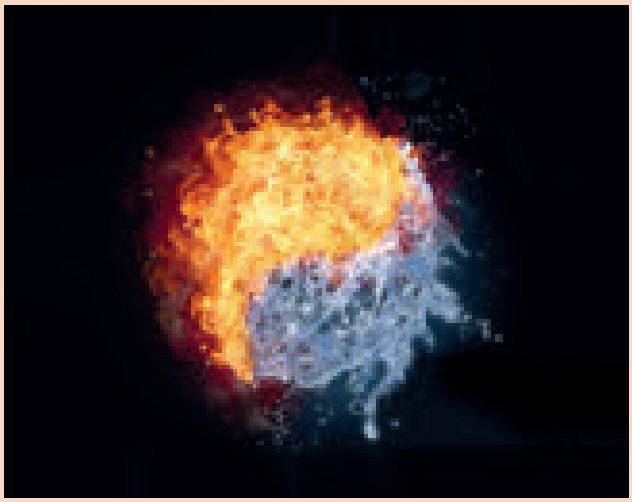
On figure 1 you can see the result of a colour change of an automotive part in PP with 30% glass fibre (from black to beige); the purging time, including cleaning of the hotrunners, was 16.5 minutes. With a "standard" purging compound this colour change took 45 minutes. In terms of shots there was one only shot before production with Qualipurge PO-CS compared to 15 shots with a standard purging compound and 40/50 shots without any purging compound. ■

www.ultrasystem.ch

Elastomeric compound

When rubber improves composites

Mass passenger transport systems require a very high degree of fire safety. With the entry into force of the new standardised European standard for rail vehicles EN 45545, the requirements have become substantially more stringent in comparison with DIN 5510. With respect to elastomers it is not easy to meet these higher standards. The company Gummiwerk Kraiburg (stand C 14, hall 11, at Plast 2015) has responded to the challenge by developing a Kraibon type that fulfills the requirements of the highest level. DB Systemtechnik Brandenburg tested this Kraibon elastomeric compound and awarded it the certificate for level R1HL3. Furthermore, Kraibon successfully certified in accordance with fire safety standard EN 45545.



In the automotive, aerospace and rail traffic sectors, Kraibon offers huge innovation potential for use in acoustics, impact and splintering protection

The Kraibon family of highly innovative elastomers has been developed for composite applications and as the basis for use in rail traffic and aerospace industry. The new compound can be used in fact to manufacture very lightweight and sound-absorbing components and linings. The life of components subject to impact is increased significantly. Especially with a view toward the ongoing heated debate on saving energy, this is an essential step in saving weight and therefore costs and energy.

Belonging to the Kraiburg Group, Gummiwerk Kraiburg currently employs about 400 people and achieved turnover of about 110 million euro in 2013. Its compounds are used in the automotive industry, mechanical engineering, food industry, oil and gas production, roller production and by numerous manufacturers of other moulded rubber parts. ■

www.kraiburg-rubber-compounds.com

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NEWS

Compound based on LDPE from renewable resources

It seems paper, but it is not

The Grafe Group is introducing at Plast 2015 (stand A 2, hall 9) an innovation in the field of bio-plastics: "Bio-Compalen-Paperlike" makes it possible to produce foils which can be torn in any given direction. The compound can also be used to produce HDPE and PP bottles. It has the additional benefit of being antistatic, which reduces the attraction of surface dust.

Up until now, security labels could only be torn in the direction of extrusion. With this compound, the Grafe Group makes it possible to produce foils with the same tearing properties lengthwise and crosswise. This feature provides a great advantage over other foils, particularly in the field of security labels. In addition, the foil displays paper-like haptics and excellent writability. It comes in white, like paper, but is available in other colours as well.

The LDPE bio-plastics compound can be made into flat or bubble-wrap films and requires relatively low processing temperatures which improve the overall ecological balance.

www.grafe.com

Aside from film and foil production, the compound Bio-Compalen-Paperlike can also be used in extrusion-blow moulding to produce HDPE and PP bottles

Rubber compounds

From thermoset compounding solutions to elastomer solutions provider

The Mesgo's headquarters in Gorlago, near Bergamo, Italy

Since 1996 the Italian independent compounder Mesgo has worked with all kinds of thermoset rubber and thermoplastic elastomers, such as silicones, fluoroelastomers, traditional rubber (EPDM, ACM, HNBR, ECO, NBR, AEM, NR etc.).

Despite the economic crisis (and precisely during that period, that affected most of industries at a global level in 2009) the management was able to conceive a new expansion strategy for the company. So, Mesgo started its growth based on geographic expansion, new products/markets and innovation through R&D.

After the establishment of Mesgo Polska, back in 2007, with the aim of gaining market shares in the Eastern European countries, the company has been looking at other emerging countries and its decision went toward Turkey, considered a very attractive place both in terms of geographic location and market size (young population, positive and constant GDP growth, political stability, nearby countries attractiveness in mid-long term). During the first half of 2014 Mesgo Asja was created, with an office in Istanbul and with a planned site to be operative in compounding thermoset elastomers during 2015.

As regards new products and new markets, back in 2013 Mesgo acquired the Italian company Iride Colors, creating the newco Mesgo Iride Colors, dealing in mass pigmentation both for solid and liquid silicone rubber (LSR), as well for traditional rubber, PVC and other thermoplastic elastomers.

Recently, at the very end of 2014, in order to expand its market share in the mass pigmentation and solutions for the thermoplastics industries, Mesgo acquired another Italian company, Mesgo Guzzetti Master, creating Mesgo Guzzetti Colors (MGC).

"During the acquisition process of MGC, we had the opportunity to evaluate another company, 3AMCom, linked with Guzzetti Master with a tolling contract, and we also decided to acquire the majority of 3AMCom, that will open to Mesgo the market of high volume pigment masterbatches for the plastics industry, as well as the capability to produce in a very effective and economic way additives, filled masterbatches and, selectively, thermoplastic and engineering polymer compounds", said the commercial director Giorgio Cabrini.

Related to this, a patent application has been made to protect an innovative technology that allows thermoplastic compounds to self-bond into general purpose liquid silicone rubber, without primers, and avoiding the annoying issues related to the expensive self-bonding LSR available on the market today.

So, welcome to the new Mesgo r-Evolution (stand C 55, hall 11, at Plast 2015), which recorded sales of approximately 62 million euro in 2014, employing about 150 people in 6 facilities.

www.mesgo.it

Filaments for 3D printing

From soluble materials to powerful engineering polymers

TreeD Filaments' product line comprises a number of unconventional filaments, from flexible TPUs to more resistant BioMyde, supported by more common PLA and ABS

The company TreeD Filaments produces all the formulations of the filaments, and leverages its experience as a spinoff of a large plastic manufacturing company called SA2P Xtrusionplastics (stand B 22, hall 24, at Plast 2015).

The result is a vast range of materials that includes: a full-color PLA, a smokeless ABS, a clean HIPS. This particular filament is soluble in lemonene, so it becomes perfect for support structures. Another technical material they produce is BioMyde, a powerful PA they designed to have high mechanical characteristics while maintaining a very low hygroscopic of 0.8% and less, making it ideal for 3D printing.

But TreeD Filaments' philosophy is to involve other application fields into 3D printing process: "We wanted to establish new application fields in 3D printing, focusing on more technical polymers: we therefore designed filaments for functional industrial applications, design, architecture, and arts", they explained. "Our philosophy is to produce filaments of the highest possible quality and we combine every formulation with certified polymers, in order to guarantee the uncompromising repeatability of the final result". To achieve this result TreeD Filaments created a line of filaments combining polymers with minerals. Starting with Monumental, that is obtained by mixing marble particles to the polymers to give the appearance of the white stone to the printed object. Similar results can be obtained with other filaments: Caementum gives the appearance of the concrete, Heritage Brick for the clay and Sandy, Darkstone to conclude a range that will grow for sure. Last but not least, TreeD Filaments also offers a whole range of TPU and TPE-based flexible filaments. Including materials from 70 shore A to 90 shore A, to achieve the best result for every purpose.

Their commitment goes beyond filaments: "We pay close attention to energy, water, and materials we consume. Even if it takes twice as long to roll, we chose recycled cardboard for our spools because we think that our future depends on these choices, too. Now, both the box and the reel are 100% recyclable. We value environmental respect, and we look for it in our suppliers. All the raw materials we use come from eco-friendly producers".

www.treedfilaments.com

Rubber, 3D Plast and Start Plast

Three satellite pavilions at Plast 2015

In the wake of the good result recorded in 2012, the fair dedicated to the rubber industry - Rubber (hall 11) - returns to Plast 2015 (Fiera Milano, May 5-9). After an absence of twenty years, this "exhibition within the exhibition" was already a great success at the last Plast fair in 2012, which saw its return and today the space booked for this event confirm that this success has not only been repeated but already hugely superseded. Rubber is an extremely valuable presence within Plast because it shows the diversity and specificity of the rubber industry, both in terms of technology and in terms of target markets. The fair represents, at a time of general (not sector-specific) crisis, a meeting place to discuss and exchange knowledge and technologies, also with a view to internationalisation.

"Rubber 2015 is a showcase for the entire rubber industry, from raw materials to blends and finished products, as well as machines of course, and laboratory equipment and instrumentation, which will certainly be a particular draw. Places and reservations at the 2015 Rubber fair were organised, for the first time, directly by Assogomma, through its service company, Sviluppo Servizi Gomma, and with the support of Promaplast, the company organising Plast 2015: a valuable sector collaboration that will benefit companies", remarked Fabio Bertolotti, director of Assogomma.

Rubber, an initiative dedicated to the rubber world, is one of the new and various activities that the sector Italian association Assogomma has, over the past two years, undertaken to introduce, its aim being to constitute an increasingly important reference point for sector operators.

3D printing introduces itself at Plast

For the first time at Plast 2015, 3D Plast is debuting in hall 24: it is a thematic section dedicated to additive manufacturing of polymeric products, rapid prototyping, modelling software, 3D printing and similar technologies. A wide exhibition area has been reserved in hall 24, according to the several reservations and expressions of interest collected from many companies operating in such sector, in order to exhibit in this new area. Technological developments in this field are of high interest for the plastics and rubber industry and, during the exhibition, several events and technical seminars will be also held, in order to promote the visibility on the latest innovations and the spreading of information on the great application potentialities of this fast-growing sector.

Start Plast - An Engine for SMEs

Always in hall 11, the satellite show Start Plast was founded on the idea of creating a space dedicated to new and innovative SMEs (Small Medium Enterprises), paralleling the main fair populated by established, historical firms. Start Plast has the objective of providing a seedbed for new projects in a venue where all the players necessary for launching a start up can be found and a very positive message can be sent out: it is still possible to do business in Italy.

The fair Plast 2015 is taking place at a particularly important moment for Italy, and especially for Milan - just after the inauguration of Expo 2015 (May 1 - October 31), which is within walking distance of Plast at the Fiera Milano fairgrounds in Rho

Fabio Bertolotti, director of Assogomma

Together with the technology incubator Comonext, the organiser Promaplast selected about 50 start ups working in the field of plastics. Not just manufacturers, but also converters, creators of machine and process management software etc. The selected companies have the advantage of exhibiting their projects free of charge in a clearly recognisable dedicated area under the logo Start Plast. Since capital is also necessary, in additional to ideas, in creating a company, the other important partner in this project is AIFI, the Italian private equity and venture capital association.

Research centres and universities - that have played and continue to play a role at Plast - are also present, for example by organising the Plastic Technologies Award 2015. This is an international design competition produced by Poli.design, a consortium from the Milan Polytechnic, focusing on the development of original and innovative concepts for rapid consumption that exploit the potentials of specific plastics production and conversion technologies. Interviews, video and previews about these three special exhibitions will be also spread before, during and after the exhibition, also in cooperation with MacPlas and MacPlas Daily News, Plast 2015 official magazines.

www.plastonline.org

2015

May 5-9 - Plast 2015 (Milan, Italy)
May 13-16 - Plastic Expo (Tunis, Tunisia)
May 19-21 - Plast-Ex (Toronto, Canada)
May 19-23 - Ipack-Ima (Milan, Italy)
May 20-22 - Afriplast Expo (Johannesburg, South Africa)
May 20-23 - Chinaplas (Guangzhou, China)
May 23-25 - PPP Expo Tanzania (Dar Es Salaam, Tanzania)
May 26-29 - Plastpol (Kielce, Poland)
June 3-6 - Plast Expo (Casablanca, Morocco)
June 16-18 - Plast-Ex (Toronto, Canada)
June 29 - July 2 - DKT (Nürnberg, Germany)
July 9-12 - Interplas Thailand (Bangkok, Thailand)
July 23-25 - Plastics Vietnam (Ho Chi Minh City, Vietnam)
July 30 - August 2 - M'sia-Plas (Kuala Lumpur, Malaysia)
July 30 - August 2 - Me Plast (Cairo, Egypt)
August 26-28 - Vietnam Manufacturing Expo (Hanoi, Vietnam)
August 26-29 - T-Plas, ex Tiprex (Bangkok, Thailand)
August 31 - September 2 - PU China (Guangzhou, China)
September 1-3 - Plasti&Pack Pakistan (Karachi, Pakistan)
September 8-10 - Gulf Plastics & Polymers Show (Abu Dhabi, United Arab Emirates)
September 8-11 - Expoplast (Bucharest, Romania)
September 16-19 - Vietnam Plas (Ho Chi Minh City, Vietnam)
September 22-24 - Composites Europe (Stuttgart, Germany)
September 22-25 - Euromold (Düsseldorf, Germany)
October 13-17 - Fakuma (Friedrichshafen, Germany)
October 21-22 - Made from Plastic (Valencia, Spain)
November 3-6 - Ecomondo (Rimini, Italy)
November 4-6 - Fullplast (Santiago, Chile)
November 18-21 - Plastics & Rubber Indonesia (Jakarta, Indonesia)
November 24-27 - Formnext (Frankfurt, Germany)
November 27-30 - Indplas (Kolkata, India)
December 2-5 - Nile Plast (Khartoum, Sudan)

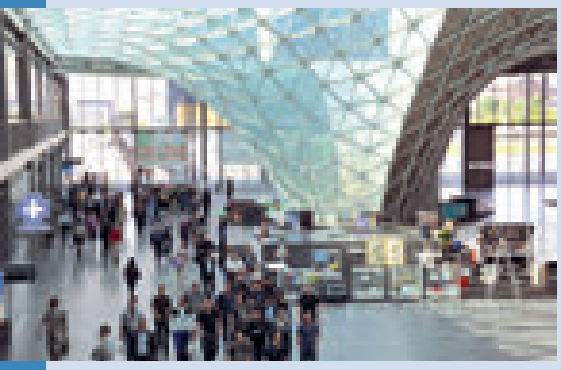
2016

January 14-17 - Plastex (Cairo, Egypt)
January 18-21 - Saudi Plastics & Petrochem (Riyadh, Saudi Arabia)
January 26-29 - Interplastica (Moscow, Russia)
February 22-25 - Plastivision Arabia (Sharja, Saudi Arabia)
March 1-3 - Plastics & Rubber Vietnam (Ho Chi Minh City, Vietnam)
March 8-11 - Plastimagen (Mexico City, Mexico)
June 10-12 - Kenya Plast (Nairobi, Kenya)
October 19-26 - K 2016 (Düsseldorf, Germany)

PLASTIC TECHNOLOGIES AWARD

THE WINNERS AT PLAST 2015

Innovative, original concepts for quick-consumption or disposable products that exploit the potentials of specific plastics production and conversion technologies: these are the pillars of the second edition of the Plastic Technologies Award, the international competition launched by Promaplast, the organizer of Plast 2015 (May 5-9, Fiera Milano-Rho) in collaboration with POLI.design, a consortium of the Milan Polytechnic. The names of the projects making it into the finals were released several days ago: Eat&Play - Ice cream pack; Palingenesi - Recyclable container; Asap: As Sustainable As Possible - Compostable cup; Yin&Gnam - Disposable flatware; Bi-



The prize ceremony of the Plastic Technologies Award takes place on May 5, during the Plast 2015 inauguration

one Pack - Sugar packet and spoon.

The 2015 Plastic Technologies Award focuses on the disposal and recycling of products, components and packaging characterized by rapid obsolescence, temporary use or disposability, such as household utensils and the packaging of quick-consumption products.

The competition addresses an issue of great current relevance, reflecting on the effects of the unstoppable growth of quick consumption products for daily use in Western cultures. Many of the products, packaging and disposable or temporary components characterizing the new consumption paradigms are designed without considering issues relating to the disposal, which is also inevitably quick, of materials or complexes of materials that are often non-separable or non-recyclable and thus not conducive to proper disposal.

Major Italian and foreign companies exhibiting at Plast 2015 are constantly seeking to develop concrete solutions to the issues of disposal and recycling. One example is Novamont (stand D 82, hall 9), which recently introduced the first completely compostable Italian-made espresso capsule, in collaboration with Lavazza (see page 40). And Novamont is not alone: in collaboration with its partners, API (stand C 41, hall 9) has created a new 100% compostable and biodegradable mono-use capsule for hot beverages using a compression technology starting from a formulation of API Apinat Bio thermoplastic compounds.

"The new challenge posed by the Plastic Technologies Award 2015 to designers from all over the world", stated Mario Maggiani, managing director of Promaplast, organiser of Plast 2015, "is that of conceiving projects that lower disposal impact, exploiting the potentials of production and materials technologies, introducing smart features into the product itself that meet with the needs of prospective consumers. Thus projects that can redevelop the entire sector of products subject to rapid obsolescence or temporary use in a more sustainable way".

The winning projects will be judged by a jury of experts:

- Francesco Trabucco, professor of Industrial Design at the Milan Polytechnic School of Design and director of the course "Design for Plastics" (Poli.design);
- Luciano Galimberti, president of ADI (Associazione per il Disegno Industriale);
- Matteo Ingaramo, director of the Poli.design consortium;
- Mario Maggiani, managing director of Promaplast;
- Claudio Celata, managing director of Cesap.

The winning projects will share the overall prize money of 8,000 euros. The initiative is sponsored by the companies Amut and Negri Bossi, both participating in Plast 2015, and by the trade associations PlasticsEurope Italia and Assocomaplast.

www.assocomaplast.org
www.plastonline.org

Belgium

June 24 - Brussels: EU Investing in its Future - Plastics Construction Solutions (www.plasticseurope.org)

Germany

May 18-20 - Hamburg: Polymer Sourcing & Distribution - AMI (www.amiplastics-na.com)
June 9-11 - Berlin: Plastic Closure Innovations - AMI (www.amiplastics-na.com)
June 9-11 - Cologne: Masterbatch 2015 - AMI (www.amiplastics-na.com)
June 21-26 - Dresden: EPF 2015 - European Polymer Congress (www.epf2015.org - www.aim.it)
June 23-25 - Berlin: BOPP Film - AMI (www.amiplastics-na.com)
September 21-22 - Stuttgart: International Composites Congress (ICC) - Composites Europe (www.composites-germany.org)
September 23-24 - Stuttgart: "bio!PAC: Conference on Biobased Materials for Automotive Applications" - Polymedia (www.bio-car.info)
November 5-6 - Berlin: European Bioplastics Conference (www.european-bioplastics.org - http://en.european-bioplastics.org/conference/)

Italy

April 29-30 - Rome: Identiplast, 12th International Conference on the Recycling & Recovery of plastics - PlasticsEurope (www.identiplast.eu)
May 5 - Milan: Plast 2015 - Opening Ceremony and Prizegiving to the Competition Plastic Technologies Award (www.plastonline.org)
May 6 - Milan: Plast 2015 - 3D Printing: Today and Tomorrow - Assocomaplast (www.assocomaplast.org)
May 6 - Milan: Plast 2015 - New Opportunities for Materials: Plastic and Rubber Wear Plasma - Plasmapps (www.plasmapps.com)
May 6 - Milan: Plast 2015 - Innovation for Polymeric Materials: from Basic Research to Industrial Development - AIM (www.aim.it) and Istituto Italiano Imballaggio (www.istitutoimballaggio.it)
May 6-7 - Milan: Plast 2015: Technology Innovations that Enhance Value in Polymer Processing - CPAC (www.cpac.washington.edu) and MacPlas (www.macplas.it)
May 6-7 - Milan: Plast 2015: 4th Assocompositi National Conference - Assocompositi (www.assocompositi.it)
May 7 - Milan: Plast 2015 - Data Sheets for the Safety of PVC Products: Substances, SVHC and

Recycled Products - PVC Forum Italia (www.pvcforum.it)
May 7 - Milan: Plast 2015 - Quality Control and Characterisation of Polymers by Thermal Analysis - Netzsch-Gerätebau (www.netzsch.com)
May 7 - Milan: Plast 2015 - Versalis Conference (HIPS and ABS; styrenics in food supply; SBR/BR portfolio innovations; sustainability through innovation in polyethylene; elastomers portfolio innovation in automotive, non tyre applications) - Versalis (www.versalis.eni.com)
May 7 - Milan: Plast 2015 - Bioplastics and Natural Fillers: State of the Art and Perspectives of Safefoodcontrol Platform - Politecnico di Torino (www.polito.it)
May 7 - Milan: Plast 2015 - Bioplastics, an Italian Case Study of the Bioeconomy - Assobioplastiche (www.assobioplastiche.org)
May 7 - Milan: Plast 2015 - Education and Training in the Plastics Supply Chain and Job Opportunities - IIS Giulio Natta, Mechanical Department (www.itisgiulionatta.it)
May 8 - Milan: Plast 2015 - EPS Production: Innovations, Financing Lines and Strategies to Improve Plants' Energy Efficiency - AIPE (www.aipe.biz)
May 8 - Milan: Plast 2015 - Innovation, Safety and Sustainability of Food Packaging in Plastic Materials - Assocomaplast (www.assocomaplast.org), Unionplast (www.federazionegommaplastica.it), PlasticsEurope Italia (www.plasticseuropeitalia.it) and Istituto Italiano Imballaggio (www.istitutoimballaggio.it)
May 8 - Milan: Plast 2015 - Colour & Technology Trends 2016/2017 - A. Schulman Plastics (Giovanna.Rabolini@aschulman.com)
May 8 - Milan: Plast 2015 - Plastic Manufactures Coating - Anver (www.anver.it)
May 20-22 - Riva del Garda: International Symposium "Frontiers in Polymer Science" - AIM and Elsevier (www.frontiersinpolymerscience.com)
May 24-28 - Gargnano (Garda Lake): Eupoc 2015, Conference on Conducting Polymeric Materials - AIM and EPF (www.dcci.unipi.it/eupoc2015)

Malaysia

June 10 - Kuala Lumpur: Asia Annual Petrochemicals Conference - ChemOrbis (www.chemorbis.com)

The Netherlands

May 12-13 - Amsterdam: bio!PAC: Conference on Biobased Packaging - Polymedia (www.bio-pac.info)

Switzerland

June 2-4 - Zurich: PEPP, Annual Global Technology and Business Forum on Polyethylene and Polypropylene Chain (www.cvent.com, www.ihs.com, plastic.events@ihs.com)

Turkey

September 8 - Istanbul: ChemOrbis Turkey Annual Petrochemicals Conference - ChemOrbis (http://turkey.chemorbisevents.com/)

United Kingdom

September 22-24 - Londra: Field Joint Coating - AMI (www.amiplastics-na.com)
October 26-28 - Manchester: GoCarbonFibre Europe - Smithers Rapra (www.smithersrapra.com)

Hall 22, Stand B 62

Assocomaplast

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