MACPLAS INTERNATIONAL

MP

THE MAGAZINE FOR THE PLASTICS AND RUBBER INDUSTRY

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- PROYECTOS EUROPEOS PARA LA INDUSTRIA DE MATERIALES PLÁSTICOS
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COVER STORY

Journey to the stars

Luminescent masterbatches in a wide range of colours and plastics applications from the Grafe Group have been on the market for years. This year, once again, the company is offering an outstanding array of excellent new ideas (Stand 5306, Hall B5, at the Fakuma exhibition). One of these is a colour effect that renders the appeal of the night time starry sky. An impressive experience that is worth discovering.

The importance of masterbatches for luminescent plastics remains unbroken. This can be seen by the strong market demand. While in the past, only one colour was available, there is today a wide range of colour options in luminescent plastics. The Grafe Group can produce this product in all popular thermoplastics, and can vary the duration and intensity of the luminescence individually in accordance with customer specifications.

"The application of coloured luminescent masterbatches for the plastics industry is booming again", reports Danny Ludwig, head of development. "Our product is available in a range of luminescent colours for all the usual thermoplastics. We can adapt the duration and intensity of luminescence to meet our customers' demands".

The resulting products can be found across a large range of applications from the fashion and advertising industries through the toy industry to the production of safety equipment. Especially in emergency situations caused by power failures, a quick orientation and a focused search for emergency exits can save lives. An example of such a useful, luminescent safety aid might be a carpet with embedded luminescent fibres which are normally not visible by daylight but appear only in the dark.

Luminescent masterbatches have been well-known for years but are gaining new importance through their application in technical materials. Until now, customary products have been available only in a green-yellow luminescent colour. With the innovative masterbatches of the Thuringian company, products can now light up in a whole new variety of colours.

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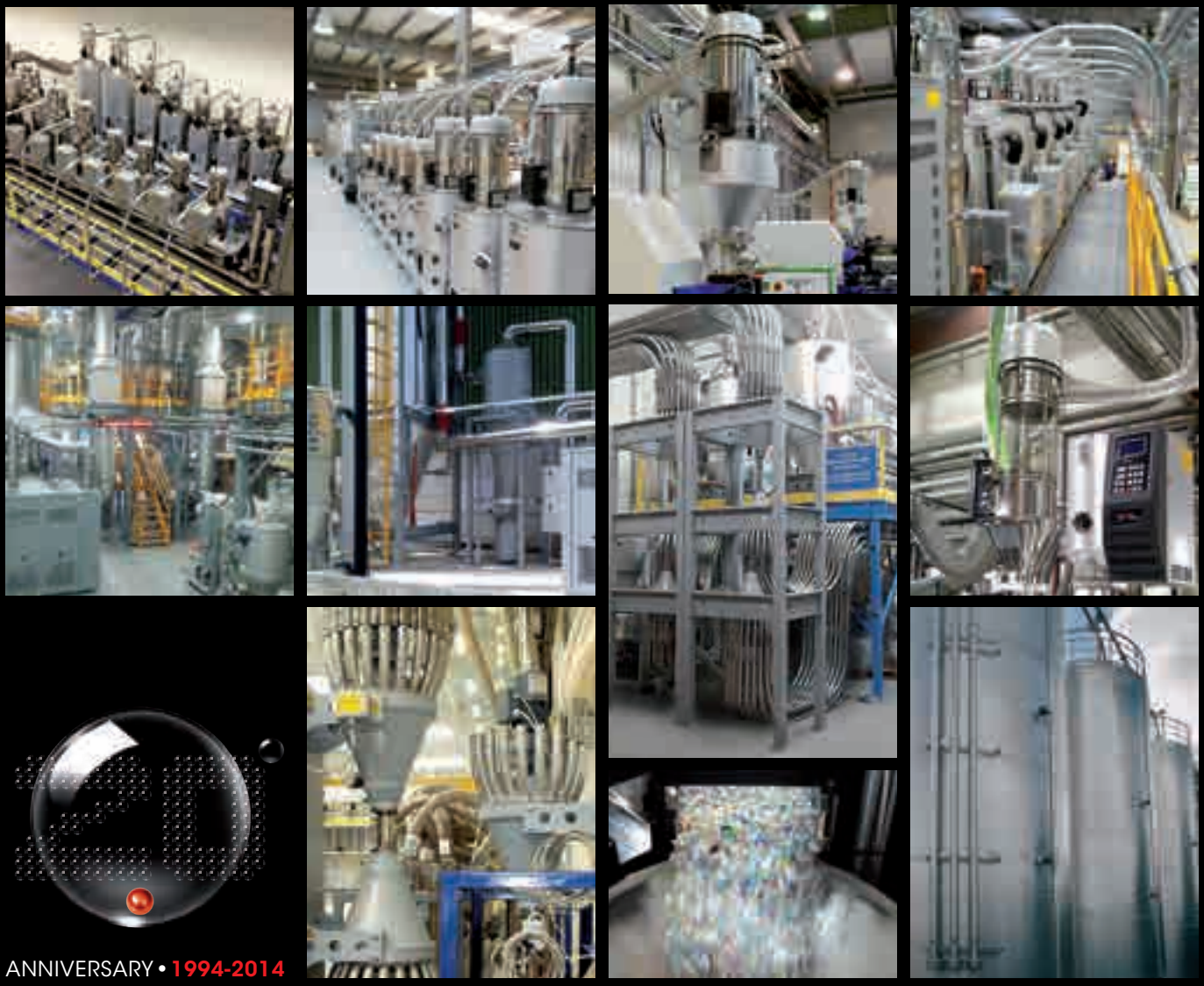

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ITALIAN PLASTICS AND RUBBER MACHINERY

A SEMESTER OF GROWTH

THE ITALIAN RISE IN IMPORT-EXPORTS OF RUBBER AND PLASTICS EQUIPMENT IS A GOOD SIGNAL. IF IT CONTINUES FROM HERE TO PLAST 2015, IT WILL HAVE UNQUESTIONABLY POSITIVE OUTCOMES IN TERMS OF GROWTH IN NUMBERS OF EXHIBITORS AND VISITORS, BOTH EXPECTED TO SHOW GAINS

The analysis by Assocomaplast (the Italian trade association, belonging to Confindustria, which groups together some 160 machinery manufacturers) of the Istat figures for Italian foreign trade for the first half of this year shows a rise in import-exports of rubber and plastics equipment, compared to January-June 2013. Extending the comparison also to the preceding months, we notice a progressive rise in imports, which closed the first half of the year up by +8%. This improvement can (we hope) partly be ascribed to the - albeit limited - stimulus measures enacted by the Italian government. Exports, on the other hand, though still comfortably positive, reveal a slight slowdown if we compare the +6.4% of June with the preceding months (+8.6% in May, +8.3% in April, and +8.9% in March). Looking at the most significant equipment categories, we notice in particular the twenty-percentage-point rise in imports of flexographic printers and injection moulding machines. On the export side, we note the +6% rise for extruders (which account for over 11% of the total), and also the strong performance of blow moulding machines (+16%) and flexographic printers, which continue to account for a considerable share of Italian exports in this sector. Finally, a separate mention goes to moulds, which account for the largest slice of Italian exports, and often contribute to sustaining them, with over 95 million euros worth going to Germany. The ranking of the top export destinations doesn't show any major changes compared to the first half of 2013:

• Europe (60% of the total; more specifically, the EU

ITALIAN IMPORT-EXPORT OF PLASTICS MACHINERY, EQUIPMENT AND MOULDS (JANUARY-JUNE 2014 - 000 EUROS)

	IMPORT			EXPORT		
	2013	2014	Δ% 2014/ 2013	2013	2014	Δ% 2014/ 2013
Flexographic printing machines	165	10 935	19,3	53 899	59 073	9,6
Plants for mono and multifilaments	738	453	-38,7	11 791	16 459	39,6
Injection moulding machines	30 572	37 189	21,6	57 178	50 267	-12,1
Extruders	8 183	8 613	5,3	140 078	148 718	6,2
Blow moulding machines	2 843	5 605	97,2	60 895	70 652	16,0
Thermoforming machines	1 339	4 811	259,4	22 668	35 693	57,5
Presses for tyres and inner tubes	1 619	182	-88,7	14 035	13 744	-2,1
Presses	5 139	7 631	48,5	35 335	28 498	-19,3
Machinery for moulding and forming	6 907	6 092	-11,8	71 357	70 963	-0,6
Machinery for reactive resins	1 481	1 630	10,1	20 815	21 764	4,6
Machinery for foamed materials	1 149	2 815	145,1	14 981	14 160	-5,5
Size reduction equipment	730	1 270	73,9	9 342	8 212	-12,1
Mixers	335	1 171	250,0	12 470	18 188	45,9
Cutting, splitting and peeling machines	1 763	892	-49,4	3 956	5 582	41,1
Other machines	20 976	21 289	1,5	174 616	174 523	-0,1
Parts and components	66 496	69 080	3,9	165 791	187 354	13,0
Moulds	120 391	122 518	1,8	344 002	366 816	6,6
Total	**279 823**	**302 176**	**8,0**	**1 213 208**	**1 290 666**	**6,4**

accounts for 47%): +4.6%
- Americas (18% of the total): +3.7%, driven by the considerable recovery of sales to NAFTA countries, which amply counterbalanced the slowdown of South America, affected by falling sales to Brazil
- Asia (17%): +24.7%. Also in this case, the balance was tipped by China, but exports towards India and Indonesia also performed well. The Asia area also includes the Middle East, where we note the positive performance of sales towards Saudi Arabia
- Africa (around 5% of the total): after a phase of relative expansion, the African continent is now seeing a slowdown, made worse in particular by the decline in sales to the markets of the Sub-Saharan quadrant.

Furthermore, a note on the sector for 2013 shared during the member assembly of Assocomaplast, on June 10, showed an overall production increase of 1.3% for member companies with exports leading the way as a fundamental factor for the industry, representing over 70% of revenues on average. This is a positive trend across the entire industry.

PLAST 2015 - VERY POSITIVE SIGNALS

There was a strong response from Italian and foreign companies taking advantage of the early booking opportunity for Plast 2015 offered by Promaplast, the organizer of this international exhibition for the plastics and rubber industry, which will take place on May 5-9 at the Fiera Milano fairgrounds in Rho, during the Expo 2015 inaugural week. More than 1,000 companies have cast their hats into the ring, affirming a strong interest in this international fair, the most important European event for the plastyc industry to take place in 2015. In spite of the economic crisis and recession that have struck almost all branches of international industry, the plastics sector has affirmed its solidity, having reached in May, almost one year prior to the opening of the doors, the same number of registered exhibitors as in the 2012 edition for the equivalent period. "The plastics and rubber machinery and moulds sector has held firm in a contest of continuing domestic recession", stated the Promaplast's managing director Mario Maggiani. "It is a sector of excellence in Italy which has made innovation its strong suit. The 2012 edition of Plast had a total of 1,500 exhibitors and 50,000 visitors. In 2015, thanks to the concomitance with the opening week of Expo, we expect an even stronger response from exhibitors and visitors alike". A range of novel initiatives will be presented during Plast 2015, such as the satellite exhibition Rubber, dedicated entirely to elastomers and their manufacturing, and the business incubator Start Plast.

START PLAST - AN ENGINE FOR THE ITALIAN INDUSTRY

The satellite show 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. "Given the way the recession is dragging on and the serious difficulties that continue to plague all of Italian business, including the plastics and rubber industry", stated Maggiani, "we feel it is our duty to find a way to facilitate young entrepreneurs and the companies that represent our future. The decision was thus taken, together with the technology incubator Comonext, to select up to a maximum of 50 start ups working in the field of plastics. Not just manufacturers, but also converters, creators of machine and process management software etc. 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". The selected companies will have the advantage of exhibiting their projects free of charge in a clearly recognizable dedicated area under the logo Start Plast.

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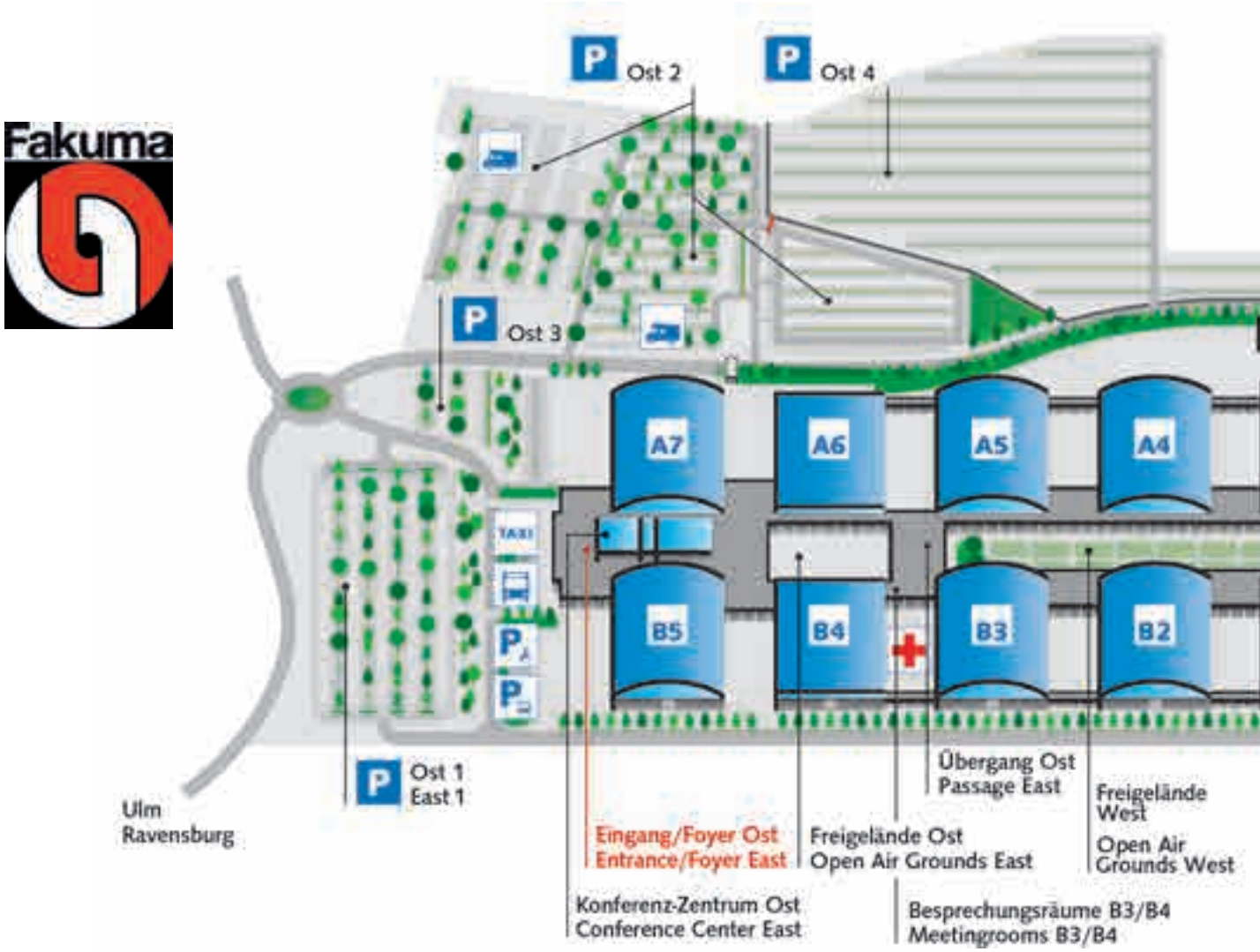


ITALIAN EXHIBITORS AT FAKUMA 2014

	HALL	STAND
ABATE BASILIO C.	A7	7106
AIGLE	A7	7205
BATTAGGION	A6	6111
BINOVA	A6	6207
BMB	A4	4105
CAMPETELLA ROBOTIC CENTER	A7	7208
CANNON	A1	1434
CELLOPLAST GD	A5	5116
CHEMORBIS	B5	5405
CMC	A5	5303
CMG	A1	1128
CMS	A1	1428
COIM	Foyer Ost	FO-20
COMEC ITALIA	A1	1403
COSSA POLIMERI	Foyer Ost	FO-06
CREI	A1	1411
CRIZAF	B3	3204
DAMILANO GROUP (DIV. PLASTHING)	A1	1223
DEDO RISORSE	Foyer West	FW-30
DEMAK	Foyer West	FW-49
DOMOPLAST	Foyer Ost	FO-26
ELIOS	A4	4012
ESSETI PLAST GD	A5	5116
F.IN.CO.	B4	4118
FB BALZANELLI	A6	6304
FIMIC	Foyer Ost	FO-05
FI-PLAST	Foyer Ost	FO-06
FP SERVICES	A1	1500

	HALL	STAND
FRANCESCO FRANCESCHETTI ELASTOMERI	B2	2012
FRANPLAST	B1	1306
FRATELLI VIRGINIO	A7	7212
FRIGEL	A5	5108
FRIUL FILIERE	A6	6111
GEFIT	A3	3305
GEFRAN	A3	3004
GIASINI	B3	3206
GIMA (A COMPANY OF IMA GROUP)	B1	1115
GIMATIC	A7	7204
GIURGOLA STAMPI	A1	1101
GREEN BOX	A1	1128
GRIP SERVICE	A7	7407
GRUNIVERPAL TRANCHERO	Foyer Ost	FO-25
HELIOS ITALQUARTZ	A1	1301
HRSFLOW	A2	2217
HT	A1	1503
IMI FABI	B4	4309
INDUSTRIE PLASTICHE LOMBARDE	B5	5120
INTERCABLE	A7	7503
ISPER	Foyer Ost	FO-22
LATI	B2	2205
LORANDI SILOS	Foyer West	FW-43
MACPLAS	Foyer West	FW-01
MAIN TECH	A1	1128
MAIP	B2	2213
MASS INTERNATIONAL	A1	1128
MB CONVEYORS	B1	1214

ITALIAN EXHIBITORS AT FAKUMA 2014

	HALL	STAND
MEPOL	B5	5108
MILLUTENSIL	A6	6104
MORETTO	B3	3208
MPI (MOULDS PLUS INTERNATIONAL)-ULTRA PURGE	A4	4013
NEGRI BOSSI	A5	5115
NORD COLOR	B2	2207
NUOVA RET	B5	5413
NUOVA SITT	A1	1229
OFFICINA CANNAROZZI	A1	1101
OMG	B3	3004
OTS	A7	7002
PANTOSTAMP	A1	1101
PEDROTTI NORMALIZZATI	A1	1125
PIOVAN	A7	7201
PLASTIC METAL	A7	7212
PLASTIC SYSTEMS	B3	3113
POLIBLEND	A5	5116
POLIS PTFE	B4	4305
POLYTHEMA	B5	5318
PROGIND	A1	1402
RADICI PLASTICS	A1	1106
RADICI NOVACIPS	B2	2009
RB	Foyer Ost	FO-21
RICA-IRCA ZOPPAS INDUSTRIES	A1	1317
RIPRESS	A6	6008
RMP SAVOINI	A1	1402
ROMAGNANI STAMPI	B3	3206
ROSÀ PLAST	Foyer Ost	FO-23

	HALL	STAND
SABO	B2	2125
SARA	Foyer West	FW-33
SCS (SOCIETÀ COSTRUZIONE STAMPI)	A5	5301
SERISTAMPA	B3	3008
SIRMAX	B4	4508
SO.F.TER.	B2	2208
SOREDI	B1	1216
SPA (STAMPAGGIO PLASTICA AFFINI)	A2	2400
STAR AUTOMATION EUROPE	A7	7115
SYTRAMA ROBOLINE	A5	5115
TARO PLAST	B5	5209
TECNOMAGNETE	A1	1211
TECNOMATIC	A7	7407
TECNOSTAMPI F.LLI PELIZZARI	B5	5201
TECNOVA	A6	6207
TECNOVITI	A6	6207
TEXER DESIGN	Foyer Ost	FO-08
THERMOPLAY	B3	3118
TOSH	A1	1331
UCISAP	A1	1101
UNIFORM	A1	1101
VAMP-TECH	A4	4004
VERSALIS	B1	1216
VIBA	B2	2009
VIGNATI	B2	2303
VIRGINIO NASTRI	Foyer West	FW-03
ZAMBELLO GROUP	A6	6105
ZRE	A5	5310

NEWS

Automotive

Polypropylene and polyurethane dominate the market

The global market for automotive plastics is expected to reach 41.49 billion dollars by 2020, according to a new study by Grand View Research. Global plastics demand for this field was 7,962.1 kilo tons in 2013 and is expected to reach 14,851.0 kilo tons by 2020, growing at a CAGR of 9.4% from 2014 to 2020. Shift in trend towards reducing the overall weight of automobiles in both developed and emerging markets is expected to drive the market for automotive plastics over the forecast period. However, volatile raw material prices should remain a key challenge for market participants.


BAYER

Polypropyene emerged as the leading product segment and accounted for 37.6% of total market volume in 2013, followed by polyurethane at 16%. Polyurethane is also expected to be the fastest growing product segment, at an estimated CAGR of 9.9% from 2014 to 2020.

Electrical components were the most dominant application for automotive plastics as the segment accounted for 37% of total market volume in 2013. Electrical components were followed by interior and exterior furnishings at 32.8% of total market volume in the same year. Power trains are expected to be the fastest growing application market for automotive plastics at an estimated CAGR of 10.4% from 2014 to 2020.

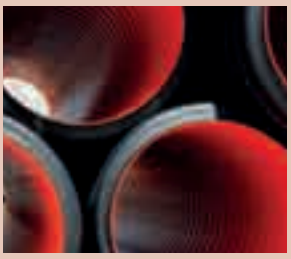
Asia Pacific continued its dominance in the global automotive plastics industry and accounted for 53.2% of total market volume in 2013 and is expected to continue leading the market over the forecast period. Along with the largest market, Asia Pacific is also expected to be one of the fastest growing markets for automotive plastics, at an estimated CAGR of 10.0% from 2014 to 2020. Growth of automotive industry, particularly in emerging markets of China and India, is expected to fuel the regional demand for automotive plastics.

The global market for automotive plastics is fairly concentrated with top four companies including Basf, Johnson Control, Evonik Industries and AkzoNobel accounting for just over 55% of total market in 2013. Other key companies operating in the global market include: Delphi Automotive, Solvay Plastics, DIC Corporation and Magna International.

www.grandviewresearch.com

Worldwide consumption

PVC on the rise at least until 2021



According to Ceresana, a market research company, the global consumption of PVC is expected to grow by an average of 3.2% per year at least until 2021. In 2013, the global demand reached 39.3 million tons, 56% of which was generated in the Asia-Pacific region, thus showing a higher potential than other areas. After several years of slowdown, mature markets such as North America and Western Europe have also shown a positive trend.

The countries (China, India and the United States in particular) that have planned higher investment in the field of construction and infrastructure - which are still the main application of PVC - should record higher than the average growth rates, up to 4.9% in India, whereas Europe should see a moderate increase by only one percentage point.

www.ceresana.com

Carioca processors

Brazil: slow around the first turn

Based on a survey by the trade association Abiplast, in mid-2014 the Brazilian converting industry (as well as the manufacturing industry generally) has registered a downturn of 1.9% in production of plastic articles with respect to the first half of 2013, just barely exceeding 3 million tons. There was also a drop of 0.7% in domestic demand coupled with a paradoxical 5.4% increase in imports, while exports fell off by 7.6%. This stagnation obviously brought negative effects on employment in the industry and Abiplast does not have a rosy forecast for the upcoming months, partially as a result of high production costs.

www.abiplast.org.br

Elastomers market

China continues to be the leader of global demand

In 2013 combined world production of natural and synthetic rubber exceeded 27.5 million tons, increasing by 3.1% over the previous year. Specifically, natural rubber was just over 12 million tons (+3.8%) with Thailand holding its top ranking among main supplier countries (over 4.1 million tons, +9.6% over 2012) and Indonesia again in second place (just under 3.1 million tons, +2.2%). These are some of the results of a recent survey by the International Rubber Study Group.

China is the world's leading producer of synthetic rubber, with over 4 million tons (up from just under 3.8 in 2012), with the United States as a distant second (2.2 million tons, -3.4%). Overall global rubber consumption approached 27 million tons, broken down as follows: 11.4 million tons of natural rubber, of which 4.2 were absorbed by China (+7.6% with respect to 2012); 15.5 million tons of synthetic rubber, of which China accounts for 5.5 (+8.6%) and the United States for 1.7 million (-3.9%).

China is the clear leader of global demand and continues to grow at a sustained pace, as it has over the past five years. There are many "emerging" countries in Asia where rubber consumption is increasing strongly, albeit with a great deal of variation in volumes. The Philippines, India, Indonesia, Malaysia, Pakistan, Thailand and Vietnam have recorded growth rates into the double digits, at least as regards synthetic rubber.

The European trend is much flatter, with EU countries consuming just over one million tons of natural rubber (-1.6%) and 2.4 of synthetic (-0.1%). For example, the following quantities have been recorded for Italy: synthetic rubber production - 187,000 tons (-10%); consumption of synthetic rubber - 171,000 tons (-5.7%); consumption of natural rubber - 96,000 tons (+2.5%).

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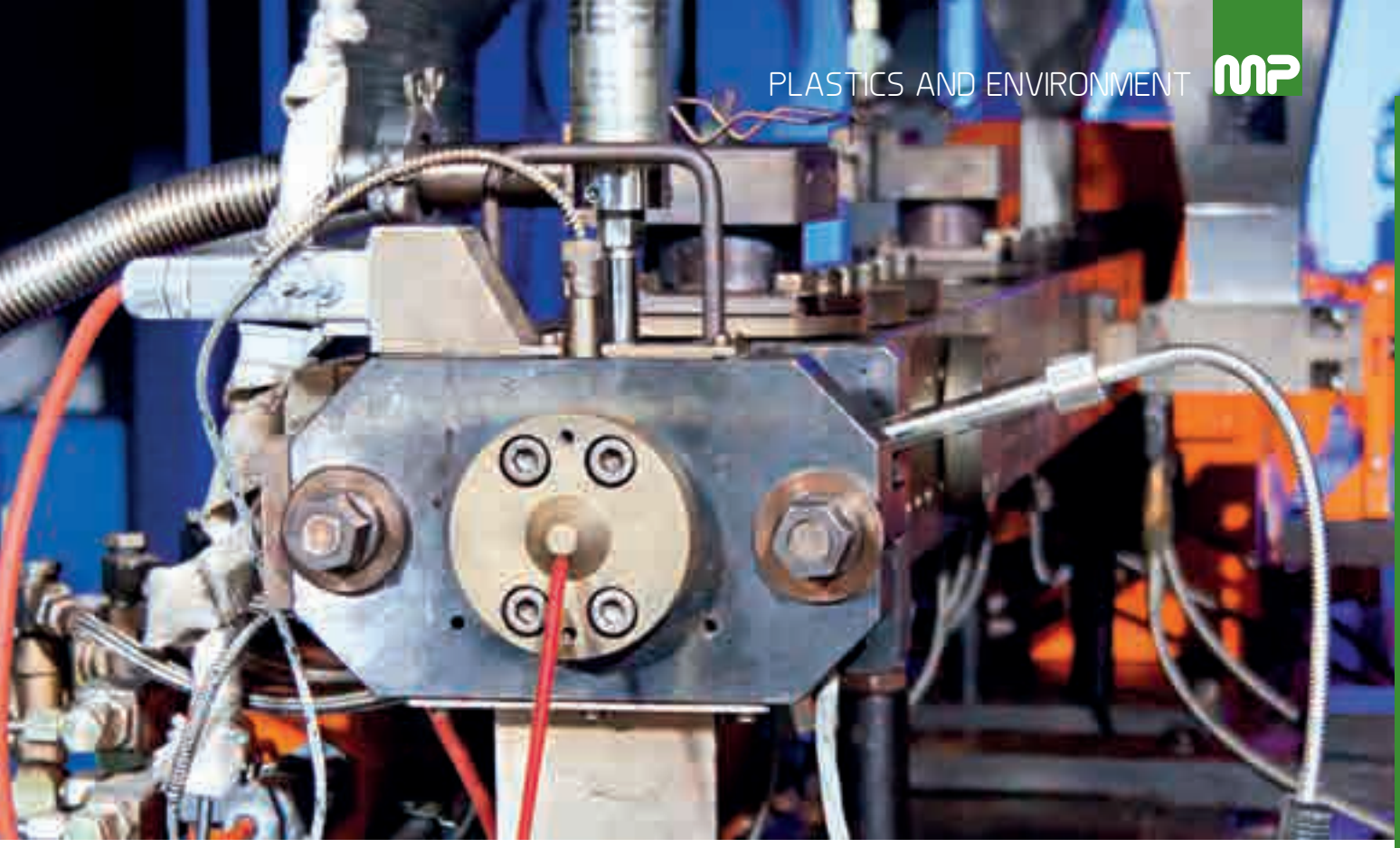


EUROPEAN PROJECTS: INNOREX, LEGUVAL, TDM-SEALS AND HIPERDRY

NEW CONCEPTS FOR SUSTAINABLE PROCESSING

INNOREX: ALTERNATIVE ENERGIES FOR PLA PRODUCTION

FUNDED BY THE EUROPEAN COMMISSION UNDER ITS EUROPEAN UNION SEVENTH FRAMEWORK PROGRAMME, RESEARCH ACTIVITIES ARE CONTINUING IN THE PLASTICS AND RUBBER FIELD, INVOLVING RESEARCH CENTRES, TRADE ASSOCIATIONS AND SMEs

BY **GIROLAMO DAGOSTINO**

The European project InnoREX - funded by the European Commission under its Seventh Framework Programme (Grant Agreement number 309802) - 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). 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.

A new reactor concept

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.

InnoREX at Fakuma 2014

InnoREX project is present at the 23rd edition of the Fakuma trade exhibition (Friedrichshafen, October 14-18, 2014) through the presence of three partners of the InnoREX consortium: Fraunhofer ICT (Stand 2104, Hall B2), Gneuß Kunststofftechnik (Stand 6501, Hall A6) and Assocomaplast (this special issue of MacPlas - Assocomaplast's house organ - is distributed at the entrance of the fair and with an European circulation).

www.InnoREX.eu

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

PACKAGING FILMS FROM LEGUME BY-PRODUCTS

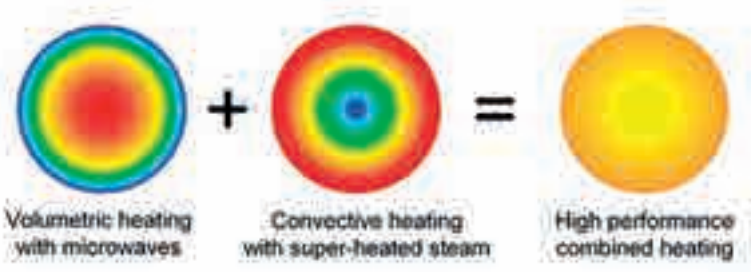
The research project called Leguval aims at valorizing legume by-products for packaging applications based on biodegradable films. It was launched on late 2013 with a kick off meeting held on December 11 at Iris (already partner in similar project such as Olipha, Wheylayer e Bioboard, related with waste valorisation for packaging applications), in Barcelona. 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. 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 industrialization 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 and new alternative energy sources. These strategies would add new value to legume co-products and by-products,

A new efficient plastic pellets drying technology

Microwaves + steam = HiPerDry

Within the HiPerDry project, a consortium of twelve partners from industry and research will develop 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. It 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 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



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

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

greatly improve the packaging sustainability and help to reduce petrol use for energy generation.
www.leguval.eu

"SEALING" THE DEAL WITH TDM-SEALS

Do you remember the Space Shuttle Challenger disaster? It is the most famous failure of an o-ring. The o-ring installed in one of the rocket boosters failed due to repeated over-compression during installation. The low temperatures, in the morning of January 28, 1986, affected the mechanical properties of the seal and produced an outflow of hot pressurized gas… and the space shuttle burst into pieces.

In pressure cookers, washing machines, fridges, watering or milking systems, oxygen conduction systems in hospitals, taps, watches… around us there are many more elastomeric seals than we can imagine. Assocomaplast is participating, as part of a consortium of 10 partners from all over Europe, in a project called TDM-Seals, which has received funding from the EU's FP7 mechanism. The working group will develop cost-effective, low friction seals by "Texturing During Moulding" technology. This 3-year project will run until mid-2015.

The new process will be integrated in the moulding for the surface texturing of elastomeric "dynamic seals". These seals are required to prevent leakage past parts which are in relative motion. They are present in all types of pneumatic and hydraulic cylinders, such as those used in automatic doors, construction machinery, reach stackers, brake cylinders or landing gears. Dynamic seals, subjected to higher friction force, wear faster than static seals. For this reason, and especially in pneumatic and hydraulic cylinders, high performance seals are installed in order to provide high resistance to friction and maximum durability.

How to reduce friction? It has been demonstrated that friction between two surfaces can be reduced by texturing one of them. This technique consists in making microdimples on the surface and doesn't affect the sealing properties. The problem is that such treatments must be applied, usually by laser, through a post-production process, which hinders its implementation on an industrial-scale production. That's why the TDM-Seals project aims to develop an optimised fabrication process of low friction seals, by integrating surface texturing in the moulding process, to achieve a reduction in the seal dynamic friction of more than 20%. Furthermore, one of the most important tasks consists in characterising the functional properties of texturized seals by FE (Finished Elements) simulation and quantifying the improvement achieved in the demoulding process by means of new coatings. This should reduce production costs related to the demoulding process, by developing ceramic coatings that reduce (>30%) the adherence elastomer-mould. New treatments and textures for moulds improving the process and the final making of the seal will be tested by the TDM-Seals Consortium partners: Instituto Tecnológico De Aragón (coordinator); amongst trade associations: The British Plastics Federation, Plastipolis, Assocomaplast and Swedish Plastics Industry Association; amongst SME participants: DMX, Miju, Barbieri A. & C.; amongst research centres: Tecnologias Avanzadas Inspiralia, Leibniz Universität Hannover (Institute of Dynamics and Vibration Research).

www.tdm-seals.eu

NEWS

Separation of plastics for re-use

The fluorescent fingerprint of plastics

At the Department of Chemistry of the Munich's Ludwig Maximilian University (LMU), a team of researchers led by Heinz Langhals has taken a significant step which promises to markedly expedite the recycling of plastic waste. They have developed a technique which provides for automated recognition of their polymer constituents, thus improving the efficiency of recycling and re-use of the various types of plastic. The technique takes advantage of the polymer-specific nature of the intrinsic fluorescence induced by photoexcitation.

"Plastics emit fluorescent light when exposed to a brief flash of light, and the emission decays with time in a distinctive pattern. Thus, their fluorescence lifetimes are highly characteristic for the different types of polymers, and can serve as an identifying fingerprint", Langhals explains.The new technique, which is the subject of a patent application, involves exposing particles of plastic to a brief flash of light which causes the material to fluoresce. Photoelectric sensors then measure the intensity of the light emitted in response to the inducing photoexcitation to determine the dynamics of its decay. Because the different polymer materials used in the manufacture of plastics display specific fluorescence lifetimes, the form of the decay curve can be used to identify their chemical nature. "With this process, errors in measurement are practically ruled out; for any given material, one will always obtain the same value for the fluorescence half-life, just as in the case of radioactive decay", Langhals adds. Unlike metals, the quality of which often suffers during the recycling process itself, recycled plastics can be processed quite efficiently. "The crucial requirement is that the recycled material should be chemically pure. In that case, bottles made of PET, for example, can be relatively easily turned into synthetic fibre for use in waterproof windcheaters", says Langhals.

Reheating of recycled plastic can, however, lead to deleterious alterations in its properties unless the sorted material is of high purity. Contamination levels as low as 5% are sufficient to significantly reduce the quality of the reformed product. For this reason, high-quality plastics are always manufactured exclusively from pristine precursors – never from recycled material.

The new method developed by the LMU team could, however, change this. "The waste problem can only be solved by chemical means, and our process can make a significant contribution to environmental protection, because it makes automated sorting feasible", says Langhals. Indeed, the use of fluorescence lifetime measurements permits the identification and sorting of up to 1.5 tons of plastic per hour. In other words, the method in its present form already meets the specifications required for its application on an industrial scale..

www.en.uni-muenchen.de

PRE

New recycling guidelines for PET trays

On September 24, Plastics Recyclers Europe (PRE) released the design-for-recycling guidelines for PET trays. These guidelines, one for clear thermoforms and another for coloured thermoforms, set the basic principles to create PET trays which could be treated by future plastics recycling plants dedicated to this stream.

The eco-design of PET trays is a first compulsory step to start the development of PET trays recycling. Additionally, this waste stream of 800,000 tons must be collected and sorted accordingly to create a dedicated waste stream. These two actions are essential in order to create a real recycling stream for PET trays and allow this specific packaging to help reaching the upcoming EU recycling targets.

As a proactive industry, the recyclers are calling the value chain, converters, retailers, brand owners, raw material producers, to join forces to build-up a PET trays platform in order to start a path to a value chain approach for PET trays similar to EPBP (European PET Bottle Platform).

www.plasticsrecyclers.eu

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NEWS

European market

Biodegradable plastics to grow at 12% through 2019

"The future of biodegradable plastics in Europe is expected to be bright due to imposition of stringent laws mandating significant reduction in plastic bag consumption in the region over the next five years", declared the research director of TechSci Research

According to a recently published report by TechSci Research, the biodegradable plastics market in Europe is forecast to witness a robust CAGR of around 12% during 2014-19. The growth in the market is being supported by various factors such as increasing environmental awareness among consumers, strict implementation of environment friendly laws and growing R&D investments in the bioplastics sector by public as well as private sectors.

European Union's decision to reduce overall consumption of thin plastic bags in the region by about 80% by 2019, compared to 2010 consumption levels, is expected to create huge growth opportunities for biodegradable plastics manufacturers over the next five years. The reduction in the usage of conventional plastic bags is expected to directly boost the consumption of biodegradable plastic bags in malls, retail outlets and loose packaging applications.

Biodegradable plastics are largely used in some essential applications such as shopping bags, refuge bags, agricultural mulch films, loose packaging, bottles etc. Presently, the average annual per capita consumption of plastic bags in Europe stands at 200 units. However, general consumer acceptability and preference for biodegradable plastics is increasing across all European countries. This growth is expected to be driven by growing popularity of biodegradable plastics in major end-user industries such as packaging, disposable plastic goods and textiles. Polymers based on cellulose, starch and polylactic acid (PLA) dominate the biodegradable plastics market in Europe, accounting for more than 80% of the total market share, in volume terms, in 2013. With significant technological advancements driven by public-private partnerships, biodegradable polymers have become cost-competitive with petroleum based products. These technology advancements have also facilitated improvements in various properties of biodegradable plastics over the recent years.

"The demand for biodegradable plastics is witnessing a significant rise from conventional end-user industries such as packaging, agriculture and textile. Nevertheless, use of biodegradable plastics, especially in European countries, is also increasing in other niche segments such as medical implants and drug delivery systems. In orthopedics, they are finding use in joint replacements, fracture fixation plates, bone defect fillers, artificial tendons, ligaments, bone cements etc. Realizing the benefits offered by biodegradable plastics, several research studies are underway to improve the commercial viability of these niche applications", said Karan Chechi, research director, TechSci Research.

www.techsciresearch.com

If a company is interested in colouring biopolymers, Vanetti has the perfect solution: biomasterbatches (a registered trademark)

Second generation biomasterbatches

Colours are nature's magical masterpieces

As we look around our planet we can find the most vibrant and unique colours. Vanetti wants to convey these colours and rediscovered them in the products we use every day. The Italian company was one of the first to examine and tackle environmental issues in the field of colouring plastic materials, and has now developed the second generation biomasterbatches (a registered trademark) for the latest biopolymers. These polymers have been molecularly modified and rendered even more suitable for processing. So colouring them with the use of biomasterbatches is a natural choice. The regulations concerning organic materials are constantly changing, and the use of biodegradable polymers on a large scale undeniably represents a challenge. When creating biomasterbatches, Vanetti started by studying the molecular structure of biodegradable materials. Once the company has verified the chemical properties in its laboratory, it then decided how to proceed with their processing by adding pigments that can be integrated without altering the end purpose for which they are used. Biodegradable materials require specific production temperatures and conditions for the processing machinery which characterise their resistance to heat and subsequently to light. The greatest advantages of using biomasterbatches are the ease of dispersion and easy processing during production, in compliance with the latest European regulations governing biodegradation. The new masterbatches are designed for application in PLA, Mater-Bi, and all the new biodegradable polymers. Vanetti's biomasterbatches with biodegradable ingredients are currently used in a variety of different industries from shopping bags to packaging and also more technically demanding products. In order to strengthen biodegradable polymers, the company is continually modifying their molecular structure, so it can broaden their range of potential uses to include even more industries. Using biomasterbatches means adding value. Not only do they comply with regulations and produce excellent colours, they also satisfy design demands for an industry whose key concern is protecting the environment.

www.vanettimaster.com

Fourth generation Mater-Bi

A higher content of renewable raw materials

The fourth generation of Novamont Mater-Bi integrates two consolidated technologies based on complexed amides and polyesters from oils with other two new technologies of recent generation. It is ideal for a vast array of applications - flexible and rigid film, coating, moulding, extrusion and thermoforming - and is characterized by an even higher content of renewable raw materials and an even lower emissions of greenhouses gases and lower reliance on fossil fuels.

The industrialization of the new technologies enables the company to produce two monomers from renewable sources: one from vegetable oil, using a technology - Matrìca, the first in the world - that transforms oils into azelaic acid and other acids; the other comes from sugars fermented into 1,4-BDO, a technology licensed by Genomatica for which Novamont, through its subsidiary MaterBiotech, is building the first dedicated plant in the world.

The company presented a road map for future generations of Mater-Bi products; the goals put in place have been pursued through the creation of a system of alliances, and approximately 300 million euro in investments, and have been leaded to the construction of two facilities that are the first of their kind:

- in Porto Torres (Sassari, Italy) under Matrìca, the joint venture between Novamont and Eni Versalis, for the production of monomer 1 (azelaic acid) from vegetable oil (the facility was inaugurated on June 16);
- in Bottrighe (Rovigo, Italy), through the subsidiary Materbiotech, for the production of monomer 2 (1,4-butanediol).

The CEO of Novamont, Catia Bastioli, confirmed: "I am convinced that integrated biorefining, focusing on a number of high added value products, represents a virtuous way of interpreting the concept of bioeconomy and a real opportunity for Italy and for Europe".

www.novamont.com

Mater-Bi film for the cultivation of lettuce

TWO DAYS IN GERMANY FOR HAITIAN

A GOOD YEAR

APPOINTMENT IN EBERMANNSDORF, IN GERMANY, WHERE THE SINO-GERMAN GROUP PRESENTED THE RESULTS OF THE 2013 FINANCIAL YEAR WITH RISING REVENUE, NET PROFITS AND MACHINE EXPORTS. THE NEW ZERES RANGE OF HYBRID MOULDING MACHINES HAS OFFICIALLY BEEN LAUNCHED

BY **LUCA MEI**

Revenue and net profits are up by 13.7% against 2012 (peaking at 7.2 billion RMB, equivalent to 858 million euro) and 22.3% respectively (equal to 1.2 billion RMB). Machine exports are also up by 3.6%, boosted by solid sales in South East Asia, the Middle East, Africa and North America. These are the primary results of Haitian International (Stand 6222, Hall A6) in the 2013 financial year, which for the Chinese manufacturer ended on June 26, 2014, the day they were presented at a press conference held at the Zhafir Plastics Machinery facility in Ebermannsdorf (Germany) as part of a European open house lasting two days. "As forecast, 2013 was a very busy year for all industrial sectors, but for Haitian International it was also a year of successes. We set new records in terms of revenues and profit, exceeding what we had already achieved in 2012. Performance that today gives us a 27% share of the global market, with China confirmed as our main trade partner", Franz Helmar, president of Zhafir Plastics Machinery and member of the board of directors of Haitian International, said.

PRODUCTS AND STRATEGIES

The Mars moulding machines are confirmed as being the highest seller of company products, in particular thanks to their efficient drive technology, which has led to good market results and which is offered as standard on other series. The two-platen Jupiter machine has also performed well, recording 40% growth over 2012. The second generation of this range is the fruit of in-depth technological development and today can be configured with clamping force of up to 88,000 kN. With the new high performance Jupiter II series, currently available in 10,000, 12,000 and 16,000 kN versions, Haitian International intends, in particular, to provide solutions for the needs of the automobile industry. From a technological standpoint, this means, first and foremost, ample space for the moulds, reduced injection volume and low clamping force. The distance between the tie-bars has been increased by 20%, and the entire clamping unit has been revised and modified. The new features of these machines include: servo-drive unit with greater power of 75 and 110 kW, for optimal distribution of motor energy; clamping system permitting flexible adaption of the moulds; parallel tie-bar

and platen blocking for rapid and precise response to reduce mould change times, and special linear guides to achieve precise, friction-free screw movements.

As far as the fully electric machine sector is concerned, in 2013 Zhafir sold more than 1000 Venus presses, recording growth in revenue of 22%.

For the launch, the Zeres range is available with clamping forces of between 40 and 230 t

The new hybrid Zeres series was presented at the open house. Its official launch was preceded by a European tour that began in May in Italy, at the premises of IMG, official Italian distributor of the Haitian International and Zhafir machines, and concluded at the recent FIP fair (Lyon, June 17-20), with stops along the way at the premises of Pieretti (Civitanova Marche, in the province of Macerata), Mapro (during its participation at the International Engineering Fair 2014, held from May 20 to 23 in Nitra, in Slovakia), Plastpol 2014 (Kielce, Poland, May 27-30) and Anderstorp (Smaland, in Sweden), before reaching, as mentioned, Ebermannsdorf. The launch model for the new machines, the first of which in Europe was sold by IMG to Slamp in Arcore, in the outskirts of Milan, is available with clamping forces of between 400 and 2300 kN. The basic characteristics of the Zeres range, based on an integrated servo-electric and hydraulic drive, derive from the Venus II series, and offer advanced dynamism and precision combined with greater production efficiency, thanks to the double-digit percentage of energy saving. The integrated hydraulics not only best exploit electrical technology, for example thanks to use of the moulds with ejector, but also repay the initial investment much more rapidly thanks to the broad application spectrum of the machines. The Haitian Europe branch, based in Nuremberg, presented its market strategy, which clearly mirrors that of the headquarters of Haitian International: concentrate on developing standard machines. With a range of products between 400 and 66,000 kN, currently applications in the European plastic processing sector account for more than 80% of production. On a continental level, the markets of Germany, but also Italy, the Czech Republic, Russia and Slovakia play a key role. "Germany has great potential, but processors are still tied to local brands, clearly cautious of foreign counterparts, particularly when it comes to the quality of Chinese products. To overcome this, we have to concentrate on our strengths and boost appreciation for our brand with complex projects developed in collaboration with major names", Uwe Baer, general director of Haitian Europe, commented. He added: "Injection moulding technology generally is still not fully mature: margins for improvement are apparent when it comes to the plastification process, reducing the number of mobile parts and most energy-efficient drives".

Franz Helmar (left), CEO of Zhafir Plastics Machinery and member of the board of directors of Haitian International, and Uwe Baer (right), managing director of Haitian Europe

BETWEEN MARS AND VENUS

The new hybrid series Zeres was developed by Zhafir Plastics Machinery to occupy the technological and application space as yet unfilled by entry-level Mars machines and electrical Venus moulding machines, destined for a medium-high market bracket and to which they are structurally identical. The differences and positioning between one range and another also lies in the higher performance compared to Mars and more affordable price range compared to Venus. Zeres, in fact, requires a 25% lower initial investment.

As far as technological aspects are concerned, hydraulic drive was adopted to set the carriage, ejector and nozzle, while the rest is driven electrically. This solution permits speed, precision and versatility in use, all with reduced energy consumption, especially using equipment that would require a hydraulic control unit. These machines have fully parallel movements and are ideal for using moulds with radial ejectors. In application terms, this translates into a solution particularly suited for production, for example, of optical components, where repeatability and precision are absolutely essential.

The clamping unit with 5-point toggle joint has been completely redesigned, reducing inertia of the platens and stress on the joints, optimising the kinematics and slashing cycle times. The injection unit offers improved response times and greater reliability, found especially in acceleration and in terms of energy saving.

The first Zeres in Europe was sold by IMG to Slamp. From the right: Bonfadini (sales manager for IMG), Remonti (owner of Slamp), Motta (product manager for Slamp) and Bandini (sales at IMG)

LOVE AT FIRST SIGHT

The Zeres Tour 2014, organised by Haitian International in collaboration with its Italian trade partner IMG, started from the premises of IMG in Capriano del Colle (Brescia), on May 14. The event centred on the launch of the new Zhafir Zeres electrical moulding machine, and Davide Bonfadini, sales manager for IMG, and his team, hosted about 50 processing companies."The Zeres machines appear to be made especially to meet the needs of the Italian market: efficient in terms of energy saving, precise, dynamic, electric and fitted with integrated hydraulic system in more than 70% of applications with core pulls", Bonfadini said. The machine on show during the tour was equipped with a four-cavity mould, supplied by Salomon, for the production of parts for ski attachments in PA6 reinforced with glass fibre.

At the end of the first leg of the tour, the IMG team celebrated not only the successful reception to the inauguration of the event, but also the first order for a Zeres machine in Europe, a ZE1900/830, purchased by Andrea Remonti, owner of the Slamp company, based in Arcore (near Milan).

Remonti is a long-term client, who already owns 3 Venus and 3 Mars moulding machines at his facility. When he placed the order he said: "In my opinion, Zeres represents the perfect symbiosis of the Venus and the Mars series, at a very tempting price. This machine guarantees the same precision as the electric versions in regard to mould handling and injection. Moreover, a hydraulic system has been integrated to drive auxiliary axes. This is exactly what we needed. For numerous moulds, for example, the reduction in pressure achieved by the hydraulic nozzles is very important. Lastly, the integrated hydraulic system can also reduce overall dimensions".

www.imgmacchine.it
www.zhafir.com

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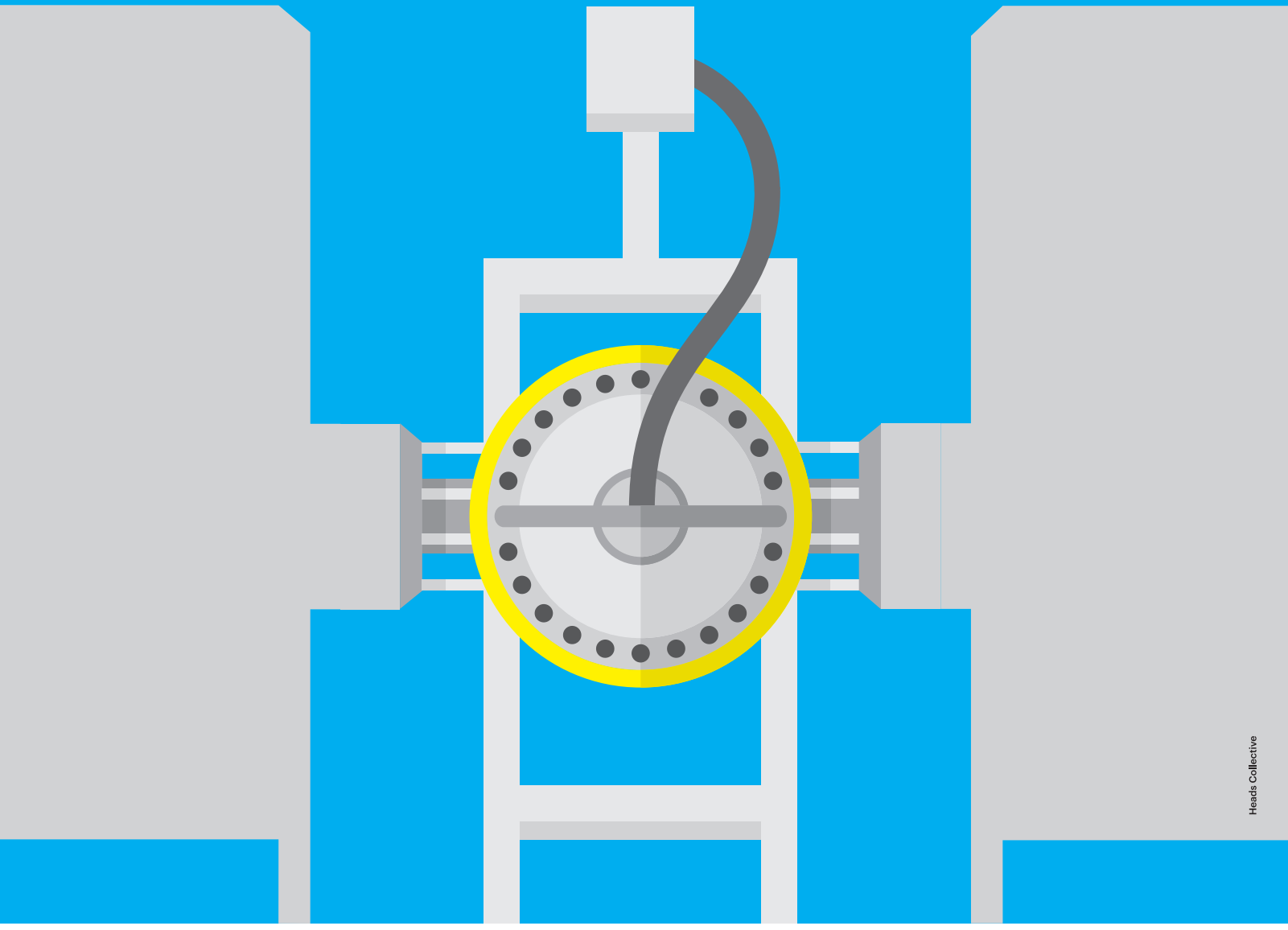

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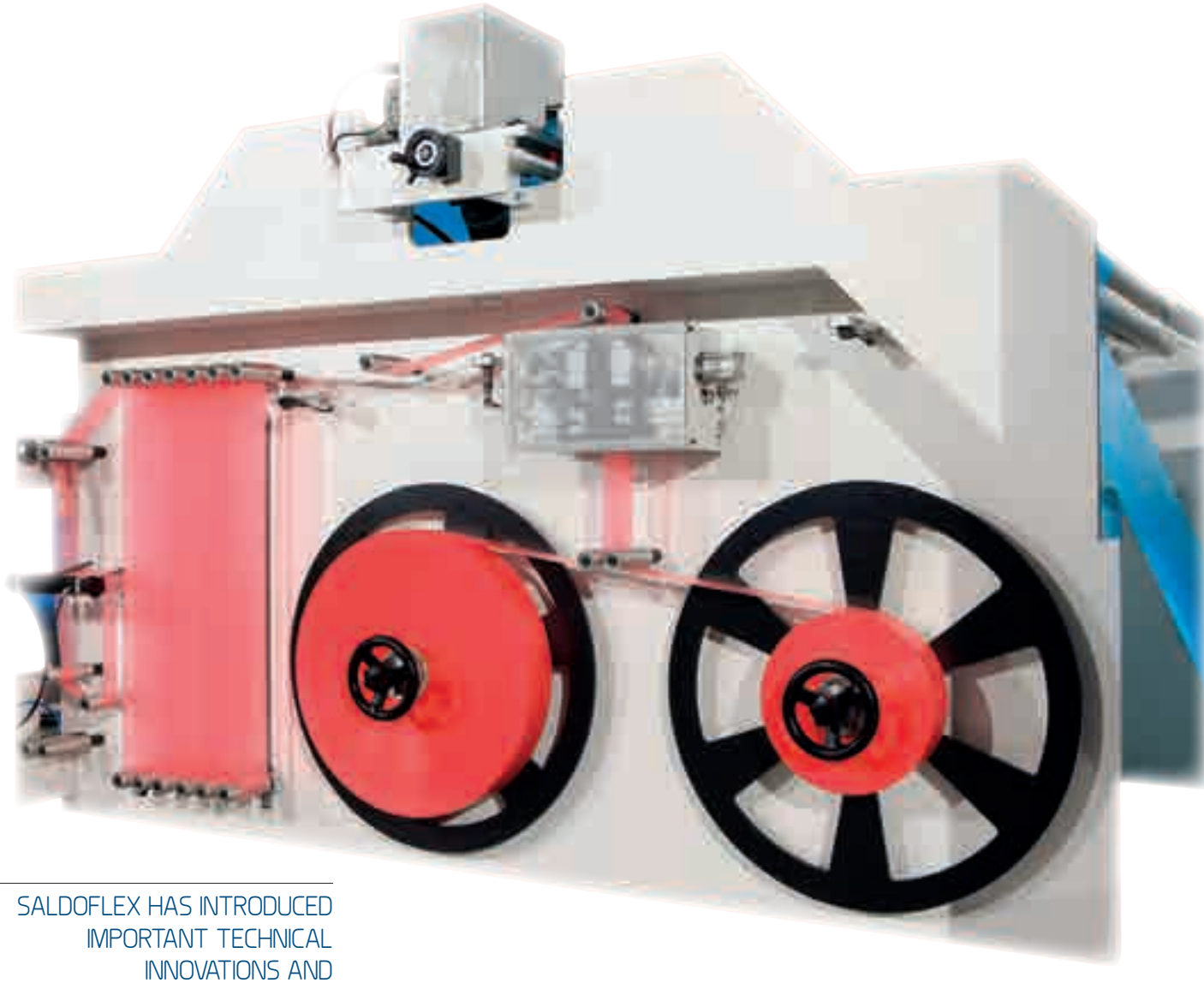
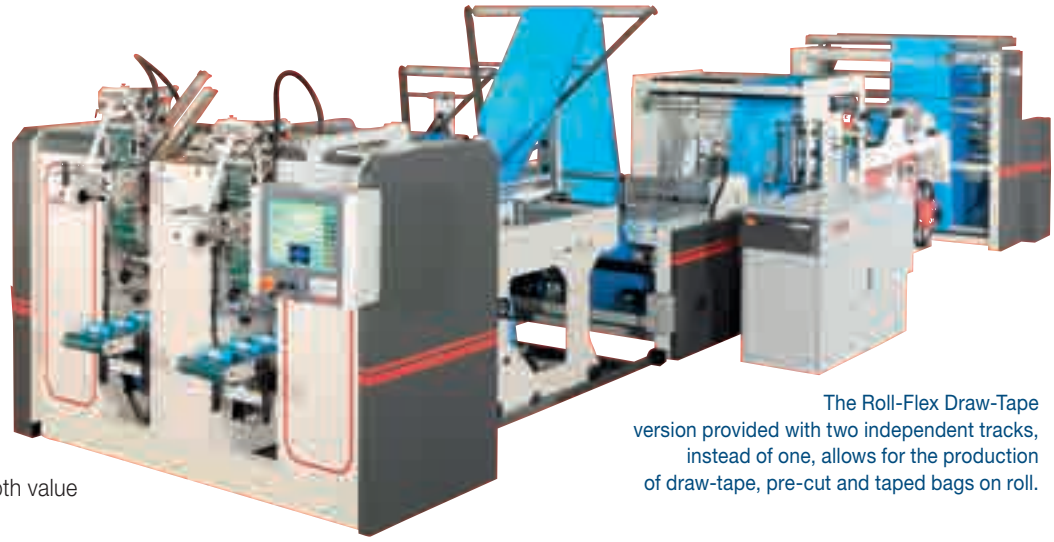


SALDOFLEX HAS INTRODUCED IMPORTANT TECHNICAL INNOVATIONS AND IMPROVEMENTS ON THE WHOLE RANGE OF ITS SERVO-DRIVEN BAG-MAKING MACHINES. THE NEW VERSION OF THE ROLL-FLEX DRAW-TAPE MODEL REPRESENTS THE TECHNOLOGICAL SYNTHESIS OF THE MANUFACTURER AND THE STATE OF THE ART IN THE MARKET OF BAG-MAKING EQUIPMENT

NEW BAG-MAKING MACHINE

TWO TRACKS FOR DRAW-TAPE BAGS ON ROLL

Important technical innovations and improvements have been introduced by Saldoflex (present in the markets of automatic bag-making machines and flexographic printing presses - with its Filippini & Paganini division - since 1961) on the whole range of its Roll-Flex and Roll-Flex Draw-Tape servo-driven bag-making machines for the production of pre-cut, taped bags on roll. The most important news is certainly the innovative Roll-Flex Draw-Tape bag-making machine, characterised by two independent tracks, instead of one, used for the production of draw-tape bags on roll. This new version, recently delivered to a primary European converting company, sums up all the improvements recently seen on the Roll-Flex series, thus representing the technological synthesis of the manufacturer and the state of the art within the market of bag-making equipment. First of all, it is marked by total flexibility, thanks to the possibility to work either on one or two tracks at the same time and to shift from bottom seal to double seal directly from the operator panel during operation, without any further intervention on the machine. This machine makes it possible to produce gusseted, star-seal, no-drop side-seal, “C”-folding and double “V”-folding bags. It is provided with two independent draw-tape unwinding systems (for each of the two tracks) with automatic change, each one consisting of two motorized unwinders as well as an accumulating and on-the-fly changeover unit, allowing for the change of the draw-tape reel without any need to stop or even slow down production. The sealing bar with special design enables an extremely quick replacement of the teflon tape (less



The Roll-Flex Draw-Tape version provided with two independent tracks, instead of one, allows for the production of draw-tape, pre-cut and taped bags on roll.

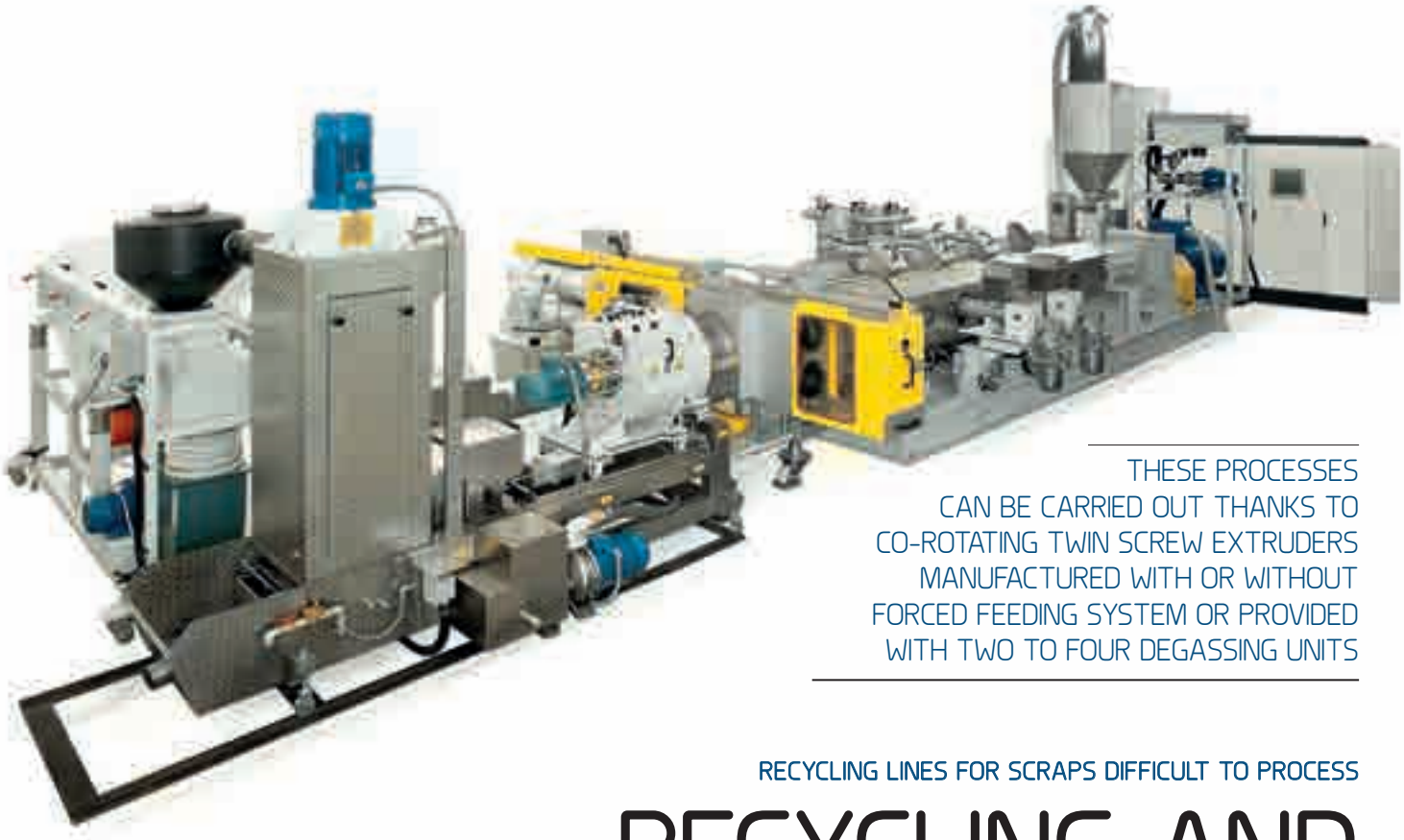
than 2 minutes). The machine features a servo-controlled pre-cut blade and an electronic micrometrical adjustment system of the pre-cut depth, which is controlled directly from the operator panel during production, without any manual intervention on the machine and with the possibility to save the pre-cut depth value in the process recipe.

The automatic revolver rewinder, which works on two completely independent tracks operated by two specific servomotors and controlled by two independent driving systems, grants the best control of tensioning and speed on each track, also in case the thickness of the starting film is not uniform. Further significant enhancements, leading to great improvements in terms of noise, speed, precision and ease of maintenance, include the new drivetrain system to the winding spindles by means of toothed belts instead of gears, as well as the innovative movement for roll extraction, which is now servo-driven instead of pneumatic. The rewinding cycle can rely on 4 stations/shafts for each of the two tracks, allowing the four winding phases, pre-cut tear-off, taping and roll removal operations to be performed simultaneously. In order to grant a very high productivity, also when producing rolls with a low bag count, it is possible to carry out up to 25 roll changes per minute (complete with taping). The taping units are provided with water metering and dosing system by means of a rubber and an engraved anilox roller, derived from the inking principle of the printing machines manufactured by Filippini & Paganini. It allows the best accuracy and repeatability in adjusting the quantity of water deposited on gummed paper regardless of the machine speed, thus making it possible to eliminate waste, avoid any issue related to insufficient or excessive amount of water, and facilitate the proper dosing for every type of gummed paper. The machine features excellent ergonomics and ease of use thanks to the 19" colour touch-screen operator panel mounted on adjustable suspended units as well as to the dedicated software, which is completely developed by the manufacturer.

Also the three-track version offers all the above-mentioned technical characteristics, except for the specific solutions intended for the production of draw-tape bags.

Further technical features shared by the whole Roll-Flex series include: the motorized shaftless unwinder with hydraulic lifting and positioning of the reel, the in-line motorized slit-sealing and post-gusseting unit, the automatic tensioning and film guiding system, the photocell allowing for the processing of printed film, the electrostatic polarization system for the production of compact rolls free from air bubbles also with low thicknesses, the "Bio-Ready" technology, which enables all the latest generation biodegradable and compostable films to be processed, and, last but not least, thanks to the Filippini & Paganini division, the possibility to equip the bag-maker with a one to 8 colour flexo printing machine. ■

www.saldoflex.com



THESE PROCESSES CAN BE CARRIED OUT THANKS TO CO-ROTATING TWIN SCREW EXTRUDERS MANUFACTURED WITH OR WITHOUT FORCED FEEDING SYSTEM OR PROVIDED WITH TWO TO FOUR DEGASSING UNITS

RECYCLING LINES FOR SCRAPS DIFFICULT TO PROCESS

RECYCLING AND DIRECT COMPOUNDING

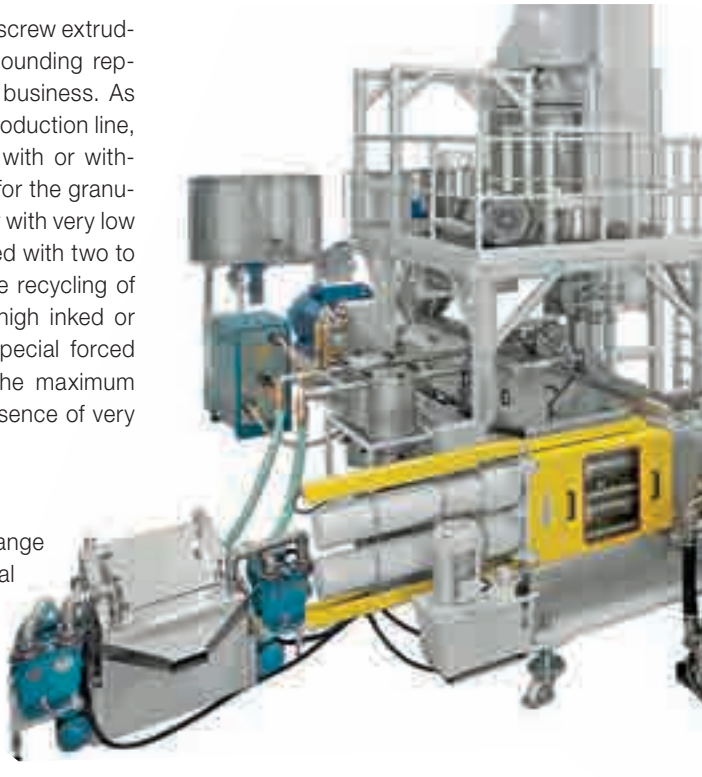
Founded in 2006, Binova (Stand 6207, Hall A6) aims at bringing relevant innovation and development in the recycling market which has, nowadays, to be faced with an industrial approach. The main element that has always characterised Binova's activity since the beginning is its ability to produce plants which are able to fully satisfy the end-user needs. To that end, they are developed in cooperation with the processors, in order to find the most suitable solution according to the different situations.

WITHOUT DENSIFICATION

The EBB112 co-rotating twin screw extrusion line, recently developed by Binova, allows for the direct compounding, without densification, of scraps resulting from film grinding with a special mix of granules and/or different regrind as well as with the addition of mineral fillers (calcium carbonate or talc) up to 50%. The line ensures a 2,000-2,500 kg/h production rate and is equipped with a gravimetric dosing which, thanks to a new patented control system, can determine the correct percentage of ground sheet that has to be fed in the extruder. The co-rotating twin screw extruders for recycling and compounding represent the company's core business. As they are the heart of each production line, they can be manufactured with or without forced feeding system, for the granulation of foamed materials or with very low apparent density, or provided with two to four degassing units, for the recycling of high moisture and/or with high inked or silkscreened materials. A special forced degassing system grants the maximum productivity even in the presence of very moist materials.

CASCADE COUPLING

The Binova production range includes, in addition, special recycling lines, which take advantage of cascade coupling provided by single screw/twin screw or twin screw/single screw extruders for the processing of heavy polluting materials or scraps which are difficult to process. The typologies of these plants have been radically modified compared with the



The Binova production range includes special recycling lines for the processing of heavy polluting materials or scraps which are difficult to process

The co-rotating twin screw extruders for recycling and compounding represent the company's core business. As they are the heart of each production line, they can be manufactured with or without forced feeding system

previous standards. The machines have been designed according to the specific market demands with the aim of achieving the maximum possible energy efficiency, accounting for 50% for some materials, and ensuring, at the same time, high quality levels referred to both the plants and the final product.

For instance, the EBB71 last-generation co-rotating twin screw extruder grants a capacity of more than 1,200 kg/h for the grinding and compounding of mixed PP scraps deriving from washing plants, without additives and/or mineral fillers.

In this case, consumptions are lower than 0.22 kW/kg for the whole plant, including the process water cooling unit.

The co-rotating twin screw extruders are the best road to follow for the future of recycling and compounding starting from scrap materials. This is mainly due to the necessity to process second-choice products or post-consumer scraps, trying to maintain their technical characteristics as unaltered as possible, or even to improve them with the addition of mineral or other fillers. The final quality of the product, ensured by high-tech plants, allows recyclers and compounders to enter new markets previously outside their business. ■

www.binovapm.it

Degassing system

DOUBLED CAPACITY

As a result of the continuous activity of its R&D department, Tecnova (Stand 6207, Hall A6) continues to develop its single screw lines. Tecnova now presents its latest product denominated VTS (Vacuum Twin Stuffer), which is a degassing system with automatic restoration of the melted material. Both as a single and double degassing system, this component is able to redouble the capacity of the lines to process material containing moisture. As a matter of fact, as far as the 37 D lines are concerned, the maximum processable moisture value increases from around 3-4% to 7-8%, while in case of 54D lines, it grows from approximately 7-8% to 15%. Obviously this results in a proportional increase of the hourly production of the lines with the same amount of processed material.

www.tecnova-srl.it

The new VTS (Vacuum Twin Stuffer) degassing system allows the lines to double their capacity to process material containing moisture

Special presses

Rotary injection machines for linear brooms

For the production of solid bases for linear brooms (both household and industrial ones), Presma supplies rotary injection moulding machines with between 10 and 18 stations; these solutions guarantee high output rates thanks to the elimination of downtimes for cooling of the component in the mould, as well as high quality processing. Actually, 10-station machines have been used for many years, but growing demands, in terms of both quality and quantity, have prompted the development of versions with 12, 15 and 18 stations, featuring larger, electrically-driven injection units and digital controls, to ensure optimal management of the moulding parameters. Platens and clamping forces have been increased to accommodate moulds that can have as many as 8 or 14 cavities, depending on whether they are to be used for the production of industrial or household broom bases.

The machines come with a single nozzle, which makes it possible to use both the moulds normally destined for traditional machines and those that are used on rotatory machines for two-component moulding. They can be equipped with a dual-nozzle head and double injector cylinder with two punches, each of which feeds one nozzle. This allows filling of the mould in two separate points, thereby avoiding, in the presence of 8 cavities or more, excessively long sprue channels and reducing cavity balancing problems by half. The 10- and 12-station versions feature a hydraulically-operated 80-mm plasticizing unit; an electrically-driven version with an inverter (Elettra) can also be supplied, on request. As regards the 15- and 18-station solutions, on the other hand, only the Elettra version features a 100-mm plasticizing unit; this allows greater plasticising capacity, better exploitation of the additional cooling stations, and energy savings of 20-30% compared with the hydraulic version. The standard versions can inject up to around 2,500 g of material (PP).

www.presma.it

With polypropylene pellets (even recycled) which guarantee efficient feeding and using the new models and 8-cavity moulds, it is possible, to produce bases weighing 150 g (1,200 g of material) at a rate of over 1,200 pieces per hour, which corresponds to a cycle time of under 20 seconds

Extrusion lines

Optimized waterproof membranes

Following the recent trend of the market that more and more prefers synthetic components than bituminous ones, Amut manufactures extrusion lines producing waterproofing membranes capable to treat different thermoplastic materials, such as PVC, TPO, and TPE. The use of these materials definitely improves the technical performances and the physical features of the membrane, complying with the specific exigencies required by the field of civil works.

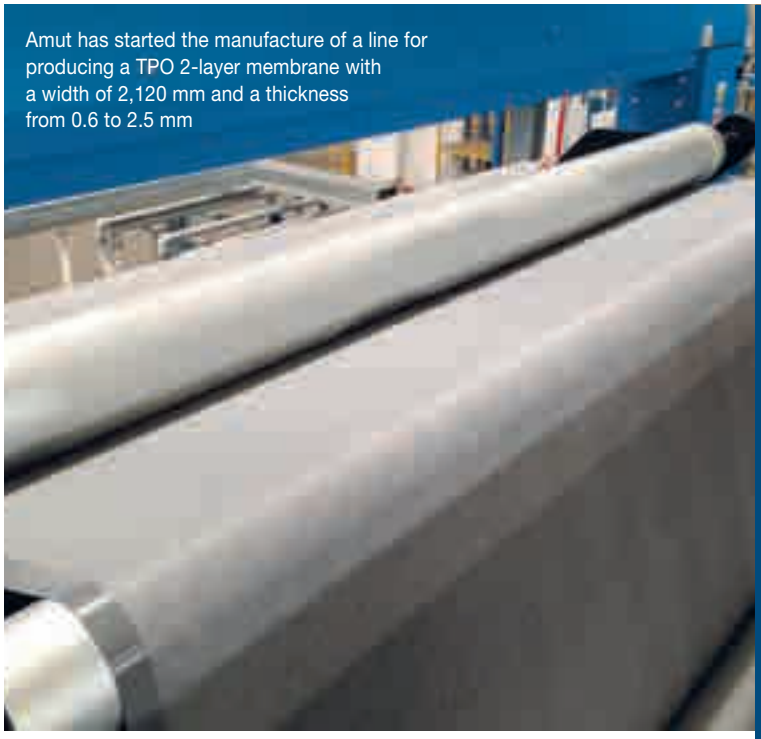
The Amut solutions allow to:

- produce the membrane in one step (without getting back the roll twice or three times) using a single calender properly designed. This process reduces the costs and simplifies the management operations for the operator;
- guarantee a flexible production to permit the processing of different materials on the same line;
- extrude multilayer products with reinforcing elements amongst the layers to enhance the mechanical strength of the finished product;
- laminate a support base, usually on the lower side of the membrane, as protection.

The Italian manufacturer has currently started the manufacture of a line, addressed to a leading German processor, to produce a TPO 2-layer membrane with a width of 2,120 mm, and a thickness from 0.6 to 2.5 mm. The different possible structures of the membrane also include an inner reinforcing scrim, a bottom protective/supportive fleece (fleece-back) and an upper coating with signal layer. The total capacity of the line is around 2,400 kg/h, resulting in an yearly production of more than 5 million sqm.

A dual-entrance calender allows to obtain a "sandwich" geometry with two plastics external layers (which contain the reinforcement in polyester or in fibreglass) coated with the signal film and the fleece-back. The line is also equipped with a thickness gauge system, an automatic winder group to produce jumbo and custom rolls and a control PC/PLC.

www.amut.it



Amut has started the manufacture of a line for producing a TPO 2-layer membrane with a width of 2,120 mm and a thickness from 0.6 to 2.5 mm

TECNOVA
RECYCLING PLANTS

binova
plastic machinery

TECNOVITI
EXTRUSION SCREWS AND BARRELS

Fakuma
14.-18./10/2014
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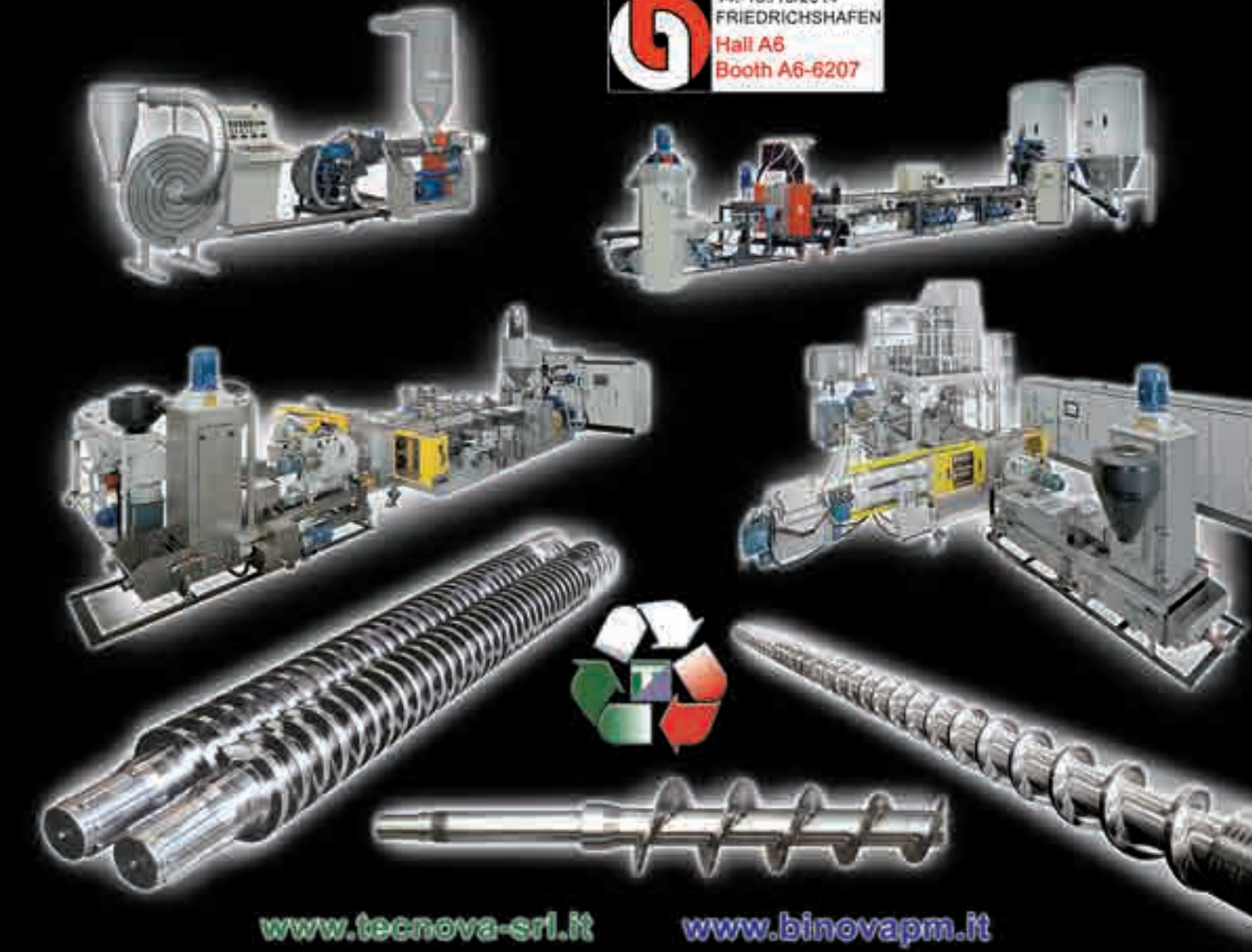

www.tecnova-srl.it

www.binovapm.it

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- Servocontrolled micrometrical adjustment of the pre-cutting depth, directly from operator panel while machine is running
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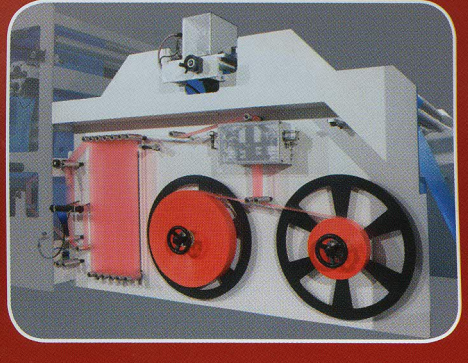
- No.4 rewinding stations/ shafts on each lane, performing contemporarily the 4 phases of winding, tear-off at the pre-cut, taping and discharge of the roll
- No.25 roll changes per minute also with taping
- Excellent ergonomics thanks to the adjustable-position operator panel with colour touch-screen



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EVERYTHING FOR TREATING POLYMERS

ADVANCED SOLUTIONS, NOT JUST ACCESSORIES

AN ESTABLISHED REALITY IN THE PLASTICS INDUSTRY, PLASTIC SYSTEMS DESIGNS AND MANUFACTURES POLYMER TREATMENT SYSTEMS; FROM STORAGE TO PNEUMATIC CONVEYOR SYSTEMS, DRYING AND BLENDING INCLUDED

AN ENTERPRISE IN CONTINUAL EVOLUTION

An international point of reference, Plastic Systems (Stand 3113, Hall B3) started up in 1994 to meet the pressing demand for technology in a number of application sectors: automotive, electronics, medical, home appliances, packaging and construction, recycling and textiles to name a few.

The group currently has 240 employees and four companies: the parent company Plastic Systems SpA is located in the province of Padua; Plastic Systems Shanghai began operations 7 years ago, and produces systems for the Chinese market; Plastic Systems Ltda., set up two years ago in São Paulo, Brazil, develops systems for the Latin American market; Plastic Systems India, in operation for 6 years, handles sales and assistance services on the Indian market, and is slated to begin production by 2014. In addition to international expansion, the company intends to fully integrate operations between the group companies. The recent implementation of SAP and its roll-out at the foreign branches of the group guarantees total control and sharing of data in real time.

SMART SOLUTIONS FOR EVERY NEED

In addition to engineering a vast range of standard products, the company assigns paramount importance to research and development, employing 25 engineers with a variety of specialisations.

It designs special systems for leading processors in the respective sectors. The company

Screen for the supervision system, material storage, drying and centralised feeding


The three owners of Plastic Systems. From left to right: Gianfranco Cattapan, Rinaldo Piva and Michele Zanon

DRYING AND CENTRALISED CONVEYORS

Depending on the sector of application, Plastic Systems also proposes three types of dryer:
- compressed air dryers with molecular sieves, DAC series, suitable for small batch production (electronics sector);
- rotor type dryers with hopper on the load cell, DWC series, for medium batch production. This machine is one of the major innovations launched on the market in recent years (sector: electronics, automotive, medical);
- molecular sieve dryers, D series twin tower system: the technology that Plastic Systems has used for years, delivering 5000 installations to the PET industry for the production of preforms and to the extrusion sector, to create centralised drying systems for large production.

All the drying systems are fitted with control valves and inverters to reduce energy consumption by up to 70% compared to conventional machines.

BLENDING AND GRANULATING

Gravimetric batch blenders or loss-in-weight blenders along with granulators complete the range of products supplied by Plastic Systems.

SUPERVISION AND TOTAL CONTROL

The company's slogan "Advanced solutions not just equipment" expresses its desire not to limit itself to the supply of individual machines, but to offer advanced system solutions. The new intelligent Matrix & Mes Control system communicates with injection machines at the customer's plant, measuring production efficiency and interacting with the company's ERP. The machines are connected to a serial port on the Matrix server and their operation is monitored by modern technological devices. Assistance is provided remotely to all installed systems across the WRD (Web Remote Diagnostic) system, guaranteeing outstanding after-sales service.

www.plasticsystem.it

Anniversary in the plastics field

A grand gala to celebrate 20 years

On September 19, 2014, Plastic Systems celebrated its first twenty years in business together with its employees and their families, suppliers, representatives of the local institutions and members of the press. The celebrations included a tour of the company, a dinner, with music and entertainment, and the conferment of several accolades. The company, which is based in Borgoricco, near Padua (Italy), is a well-established concern in the plastic materials sector: it designs and builds plants for polymer treatment, as well as storage systems, pneumatic conveyors, drying systems and feeders.

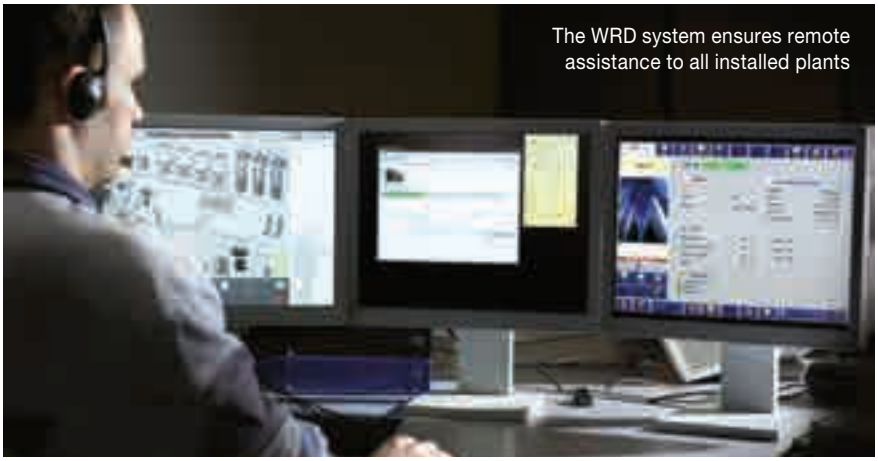

Outside the facility in Borgoricco, Padua (Italy)

also pays constant attention to new trends on international markets, in order to guarantee high performance, energy efficiency and the utmost reliability.

STORAGE, DRYING, FEEDING, SUPERVISION

The Matrix central feeding system can support up to 100 presses centrally. It is fully automatic and fitted with an automatic central control system that enables the machine to process material from various locations, which is conveyed to the machine without help from operators.

With increasing frequency, companies are looking for turnkey systems which include: storage systems with modular aluminium bins and positive loading systems; central feeding systems with Matrix microprocessor, which, combined with the coupling stations and a series of suction boxes, automatically loads up to 100 stations with a capacity up to 15000 kg/h.


The WRD system ensures remote assistance to all installed plants

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VEPLASTIC
Plastics compounding and trade since 1980

The perfect match among the side entry robot model TZ-1500HM, the 180-ton Arburg Allrounder Hidrive hybrid injection moulding machine and the mould supplied by Hofstetter ensure high output rates and quality in the production of rectangular thin-wall containers

DOUBLE MILESTONE

CELEBRATION FOR TWO

TWENTY-FIVE YEARS IN THE BUSINESS FOR STAR AUTOMATION EUROPE AND FIFTY FOR ITS PARENT COMPANY, STAR SEIKI. AN IMPORTANT GOAL THAT IS CELEBRATED AT FAKUMA 2014 WITH NEW AND INNOVATIVE PRODUCTS ON DISPLAY

This year, Star Automation Europe celebrates 25 years of business along with the 50th anniversary of its parent company, Star Seiki. In order to underscore this important milestone, at Fakuma 2014 (Stand 7115, Hall A7) the company exhibits two new robots and a packaging application in collaboration with Arburg and Hofstetter. The first robot series - the ES-800II - will be available on the market immediately after the exhibition, while the other series - the XW-122 - will be launched in spring 2015.

NEW ROBOTS

The goal of the new ES-II robot is to meet

every possible needs about low price without forgetting quality and performance. The research and development department worked on two main aspects: adding a new free programmable touch screen controller and reducing the price by at least 10%. Both aims have been accomplished. The new ES-II series consists of 5 models destined for injection moulding machines from 50 to 1600 tons. The XW series was instead designed for satisfying the most demanding customers by guaranteeing quality and performance. In this case the research and development department focused their attention on the structure of the robot, strengthening the previous Lx series and improving speed and acceleration performance. Moreover, a new touch screen and the free programmable controller model Stec-520 have been integrated and can be also transferred from one robot to another.

These were the main tasks completed by the company's designers. After hearing the needs and suggestions coming from the various international branches of the company, they have been able to develop an innovative project aimed to improve the functions of the classic Cartesian robot which is increasingly employed in production solutions connected to the web and controlled remotely. The main aim of this series is to guarantee performance and mechanical rigidity as well as high application flexibility similar to a six axis robot.

The new robots series ES-II (above) and XW (below) will be premiered at Fakuma 2014: the first will be available on the market immediately after the exhibition and the other in Spring 2015

The application developed in cooperation with Arburg and Hofstetter underlines the attention towards the mould open time, and thus to total cycle time

MOULD OPEN TIME

The application developed in cooperation with Arburg and Hofstetter underlines the attention towards the mould open time, and thus to total cycle time. The perfect match among the side entry robot model TZ-1500HM, the 180-ton Arburg Allrounder Hidrive hybrid injection moulding machine and the mould supplied by Hofstetter ensures high output rates and quality in the production of rectangular thin-wall containers with a capacity of 1 kg. It is a simple, efficient and reliable automation system which was also developed in collaboration with Sabic, MB Conveyors and other important partners.

www.star-europe.com

SYSTEM FOR THE INJECTION PROCESS

SERVO-DRIVEN VALVE GATE

THE HRSFLOW FLEXFLOW DEVICE ASSURES ACCURATE, EASY AND FLEXIBLE CONTROL OF PRESSURES AND FLOW RATES DURING THE WHOLE INJECTION PROCESS. IT IS A STEP FORWARD THE SEQUENTIAL INJECTION MOULDING THANKS TO ITS HIGH FLEXIBILITY IN ADJUSTING THE PROCESS PARAMETERS

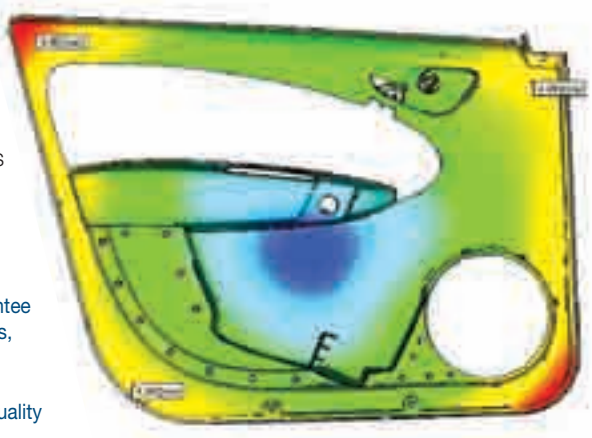
The new FLEXflow servo-driven valve gate, powered by HRSflow (Stand 2217, Hall A2), is designed to independently control each valve pin by precisely adjusting position, acceleration, speed and stroke. It assures accurate, easy and flexible control of pressures and flow rates during the whole injection process. It is a step forward the sequential injection moulding thanks to its high flexibility in adjusting the process parameters. Among the different benefits, FLEXflow allows to improve part quality and perform the most challenging applications.

AESTHETICAL RESULTS

The FLEXflow servo-driven valve gate is suitable for medium to large applications. It is the ideal solution to guarantee top quality parts, avoiding the common defects of aesthetical parts. By eliminating pressure drops during the filling phase, flow marks on aesthetical parts are removed. Optimal results can be obtained with class "A" surfaces, grained surfaces and aesthetical parts in general. It reduces the part warpage, indeed the packing pressure can be adjusted independently for each nozzle, resulting in lower stress in the part. Thanks to FLEXflow optimal balancing results can be obtained in family tools. Currently different channels geometry is used to manage various shot weights. FLEXflow allows to adjust independently and accurately the flow rate to each cavity and it can be used to overcome balance problems avoiding flash effects on the part.

COST SAVINGS

The servo-driven valve gate allows to obtain an even and reduced pressure profile over the part geometry. Therefore smaller injection moulding machines with lower tonnage can be used in order to reduce the operation costs.
The removal of the over-packing in the part allows to save resin material. In comparison to a standard sequential injection pro-



The FLEXflow servo-driven valve gate is the ideal solution to guarantee top quality parts, such as bumpers, door panels, instrument panels, spoilers etc. and for all optical part applications requiring peak quality

cess, pressure in the part is more even and peaks are reduced, and the part thickness is more uniform. This brings a weight reduction.The holding pressure can be adjusted independently for each nozzle, obtaining more uniform pressure distribution. This minimizes the bending of the mould. Reducing the stress in the mould, also the required stiffness is reduced, allowing steel saving in the tool production.

OPERATION BENEFITS

FLEXflow is a reliable system that makes no use of hydraulic/pneumatic connections, avoiding the risk of water and oil leakage. As a consequence the system results in being safe, clean and dry. It is an advanced technology however it is very easy to use and very little maintenance is required: the system needs only to be periodically greased. Easy valve pin adjustment is possible directly from the leverage (±1mm, steps of 0.1 mm). The valve pin can be forwarded over the edge to avoid issues of gate burrs (with traditional technology, the system must be dismantled).

The servo-driven valve gate is suitable for medium and large applications, such as bumpers, door panels, instrument panels, spoilers etc. and for all optical part applications requiring peak quality. FLEXflow is available in 3 different versions according to the processor needs: on plate, lateral and on manifold, and it can be installed in different positions in order to offer full design freedom to the user. The HRSflow FLEXflow controller grants accurate setting, control and monitoring of the valve pin position, speed, acceleration and stroke.

The HRSflow FLEXflow controller grants accurate setting, control and monitoring of the valve pin position, speed, acceleration and stroke.

Controllers are available in 7 different configurations: 4, 6, 8, 10, 12, 14 and 16 zones. Furthermore HRSflow Mold Flow department can provide processors with an optimized nozzle opening sequence for a minimized numbers of shots for colour changeover. This sequence can be recorded in the FLEXflow control unit to be easily recalled whenever needed. ■

www.hrsflow.com

TWIN SCREW RECYCLING AND COMPOUND PLANTS

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Fakuma
14-18 October 2014
Friesdrichshafen, Germany
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FRIGOSYSTEM AND VERBANO FILM

TWENTY-FIVE YEARS OF COLLABORATION IN FILM EXTRUSION

Verbano Film, which has operated in the flexible packaging sector since 1986, produces cast film in polypropylene (PP) for a variety of sectors, mainly the foodstuffs and medical ones. This interview with Antonio Platini, co-owner of the company with his brother Carlo, shows how this company has come to be an outstanding Italian name in the field of technical films and technological innovations for flat die extrusion. One of the factors contributing to the high quality of the end product is the company's almost exclusive collaboration with the refrigeration system manufacturer Frigosystem, here represented by its CEO, Alessandro Grassi.

VERBANO FILM'S ITALIAN PLANT RELIES EXCLUSIVELY ON FRIGOSYSTEM FOR THE COOLING OF ITS PRODUCTION LINES

BY **RICCARDO AMPOLLINI**

VERBANO FILM SEEMS TO HAVE BEEN LESS AFFECTED THAN OTHER PROCESSORS BY THE ECONOMIC CRISIS. WHAT IS ITS SECRET?

Antonio Platini (AP): "It is true. Our performance over the last few years has been quite positive overall. This may be because we make unique products and also because, thanks to our strategy of diversifying our business, we are present in a range of sectors, from the automotive industry to the medical sector, and also the food sector. We have perhaps been harder hit by the effects of the earthquake in Emilia Romagna, given that many of our customers in the medical sector are based in that region. In order to grow, our company has always drawn on its own resources, and thanks to these the outlook for the next few years is good. Our products are highly technical - advanced in some cases - and if a company has special products to rely on, then it is protected somewhat against the effects of economic crises, even if it serves the automotive sector".

YOU ARE REFERRING MAINLY TO MULTI-LAYER FILM, IS THAT RIGHT?

AP: "Yes, absolutely. What is more - and here I am referring only to the automotive sector - our multi-layer films do not age in the sunlight, do not degrade and are scratchproof. In the food sector, the technology is evolving; for example, our films make it possible to microwave food still in its packaging. Masterpack, a wonderful company based in Monvalle (Varese), is using laser technology to create some truly futuristic products in this field: valve bags and bags with very special features that are useful in everyday life. To cite just one example, one of the latest Bonduelle packages created by Masterpack (using one of our films) for the packaging of asparagus,

Alessandro Grassi, CEO of Frigosystem, in front of the control panel of the casting temperature control + Raca Plus Energy free-cooling chiller unit


The multi-layer film is trimmed before winding

cauliflower and carrots, allows these vegetables to be cooked directly in the microwave oven in just three minutes. The product is cooked using the liquid contained in the vegetables themselves and, remarkably, their flavour and organoleptic properties are worthy of a gourmet! Of course, in addition to Masterpack, Verbano Film also has a number of other important customers, such as Goglio and Safta (Guala Group)".

SINCE YOU TARGET HIGH-END PRODUCTS, DO YOU HAVE YOUR OWN IN-HOUSE R&D DEPARTMENT?

AP: "We certainly do. We carry out applied research in a small but efficient laboratory, which is equipped with standard machines for prototyping products and all the instruments used to carry out the different tests - optical (haze, gloss, colour, checks under the microscope), thermal (viscosity, hot tack, DSC) and physical-mechanical (with a dynamometer) - that are necessary to ensure that the film complies with the technical specifications agreed with the customer. Should further, special tests be necessary, we use external laboratories".

HOW DID YOUR COLLABORATION WITH FRIGOSYSTEM COME ABOUT?

AP: "It is a historical relationship. In the 1970s I was building and testing extrusion systems for a local company and even then the best chillers on the market were Frigosystem ones, which stood out for their high efficiency. I knew Sergio Grassi, Alessandro's father and, at the time, CEO of Frigosystem, and I witnessed the "birth" of his first chiller. He is a unique person. Therefore, I had every faith in him when the time came to purchase cooling systems for Verbano Film. Just think, during his weekend trips to the lake, he would drop in on our company, even on a Sunday, to see if we needed anything. So we installed a first system, then a second, and so it went on. We have several Frigosystem chillers that are 14 years old and they are still working very well. And when I encounter a problem, all I have to do is pick up the phone to obtain prompt technical assistance. In 1999 Verbano Film Polska was founded and that was the only occasion that, due to technical reasons and our relationship with the local supplier, we did not install Frigosystem chillers. But had it been up to me, we would have had ten plants equipped with Frigosystem systems in our Strzebielino facilities too! Indeed, in Varallo Pombia, all the chillers are strictly Frigosystem ones. The latest machine we had from them is an absolute gem. Twin motors and a remote assistance service. Basically it is one very fine chiller! We also use it for cleanroom manufacturing".

ARE YOUR EXTRUSION LINES ALWAYS ITALIAN MADE?

AP: "Two are Italian made and two are German made. In Germany I bought only the extruders, the head and the winding unit; all the rest was designed here at Verbano Film. Initially, we also designed and built the entire extrusion line in house as well, but then we started to outsource the construction so as not to waste our energies, and also so as to be able to focus more on the final product. The films (maximum 3 layers) are produced by 4 highly automated lines (1 for single-layer films and 3 for coextruded films) equipped with control systems and self-diagnostics to ensure that the production and quality parameters are kept within well-defined tolerances. Given the high output of the lines, the supply of granules is guaranteed and controlled by an automatic system, fed by a battery of 20 granule storage silos, for a total of 1400 tons. Nominally, the potential output of the 4 lines installed at Verbano Film is around 16000 tons/year. The films produced, depending on the end product and applications, can have the following features: thicknesses between 25 and 280 micron; widths up to 2750 mm; and reel diameters up to 1000 mm. The lines devoted to the production of films for flexible packaging of food products and/or health and hygiene products are installed in rooms protected from potential contaminants, such as dust and/or insects (2 overpressure chambers). This is essential in the film winding stage in order to obtain a good quality end product. The chambers are filled with finely filtered air, which is also conditioned by two air treatment units (ATUs); this also ensures the maintenance of the stable and controlled atmosphere that constitutes the ideal condition for ensuring repeatability of production processes. For our films, in which the presence of environmental contaminants and/or process defects such as fish eyes, pitting and microholes are unacceptable (or are acceptable only within specific tolerances), quality controls involving scanning/optical identification are carried out before winding. Because of its nature, CPP (cast polypropylene), on completion of the film casting process, needs a period of stabilisation. At Verbano Film, this is rapidly achieved inside a curing chamber. Finally, the company also offers inspection, cutting and winding, and single folding services".

COULD YOU GIVE ME A DESCRIPTION OF YOUR MOST RECENT PLANT?

AP: "Although it is based on a Reifenhäuser extrusion line, it is highly "customised", because it is designed specifically for the medical sector. It is currently used to produce three-layer film for the sterilisation of surgical instruments, although it can easily be converted so as to be able to produce other types of film - with up to five layers and with thicknesses ranging from 25 to 300 micron. It is equipped with inspection cameras and, from the extrusion head onwards, the entire process takes place in the clean room. The chillers, the raw material dosing systems, the extruders and the waste grinding units are situated outside the clean room, so as to prevent dust released into the environment from contaminating the end product. Contamination by insects is also avoid-

ed, thanks to the automatic pressurisation system that keeps them away from the production area. To be specific, we design and build only the structure, the feeding hoppers and the grinding unit. The dosing system is German built, as are the extruders and calenders, which are produced by Reifenhäuser. Finally, for the first time, we have incorporated a Frigosystem chiller for cooling the bearings of the grinding unit, supplied by Aertecnica Croci. In this way, they last longer and the granulator does not get stuck, as it often used to do".

WHAT ARE THE FEATURES OF THE REFRIGERATION SYSTEM?

Alessandro Grassi (AG): "The Raca E Superplus chillers installed on the two Reifenhäuser cast lines are last-generation chillers featuring screw compressors and very high performance integrated free-cooling units, allowing considerable energy savings. However, they are of the "heavy duty" type, i.e. have a cooling capacity above 700 kW. This makes it possible to achieve an energy efficiency ratio (EER) of around 6.8. The EER is the ratio between energy output and energy expenditure. Therefore, these chillers can supply 6.8 kW of cooling for each kW of electricity consumed. They are the first machines providing this level of cooling that Frigosystem has installed. In fact, they already achieve their maximum free-cooling performance when the temperature difference (delta) between the external ambient air and the water is less than 4°C. The temperature delta between air and water in free-cooling systems is normally between 7 and 10°C - the best ones even reach 5°C - and we have succeeded in integrating a free-cooling system that already achieves its maximum performance at a delta T of 3.8°C, thereby showing much greater efficiency. This allows energy savings of, on average, an additional 15% compared with what is possible using a free-cooling chiller belonging to the previous generation. Both chillers are monitored through a remote assistance service, and linked to a rather sophisticated temperature control system - the true heart of the machine - which controls and manages the different temperatures of all the utilities".

The complex system of pumps, pipes and valves that makes it possible to cool single zones of the extrusion line

WHAT AND HOW MANY UTILITIES ARE YOU REFERRING TO?

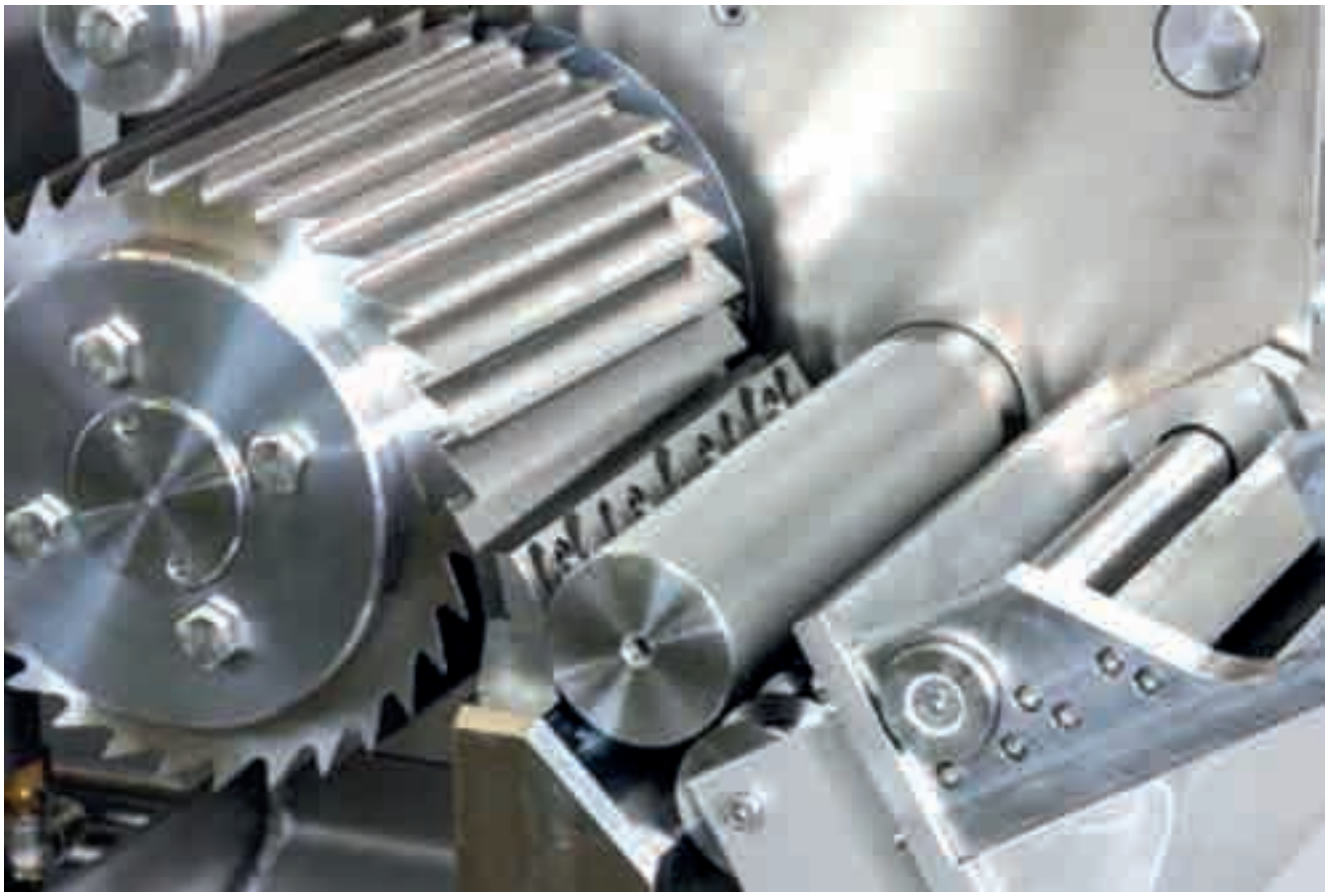
AG: "On the most recent (2012) line, just described, as many as six different zones are managed locally or remotely: primary chill roll; secondary chill roll; gauging rolls (first station); gauging rolls (second station); cooling of the corona treatment systems (supplied by Me.Ro.); cooling of the extruder motors. All of these can work at different temperatures. Furthermore, there are two other important utilities, external to the line but still managed by the same chiller. The first involves the electric container, which in this case is cooled to the tank temperature and therefore does not need thermoregulation: part of the water sent to the chill roll is used, normally at 10-12°C. Finally, as mentioned by Platini, one utility also cools the bearings of the grinding system, external to the line. Each utility is based on forced temperature control, so as to limit excessive temperature changes and keep the temperature constant and uniform over the entire surface of the two chill rolls, with a maximum delta T of 1°C. In this way, the heat is correctly transferred over the entire width of the film, protecting it and ensuring that it maintains its technical characteristics. This part, which is the most important technologically, is in direct communication with the management system of the Reifenhäuser line and converses via Profibus DP/DP. The great advantage of this for the operator is that it prevents him from having to go to the temperature control unit when there is a problem on the line. Indeed, it is possible, from the control panel, to bypass, switch on and off, or manage the alarm in another way. As regards the storage of the information for the correct operation of the line, the Siemens system used by the Reifenhäuser control also makes it possible to manage and record alarms, which, were they on a separate unit, would not even be visualised, unless they were noted down manually from the small chiller control".

IT IS QUITE A COMPLEX SYSTEM...

AG: "... and also an interesting one, given that the original Reifenhäuser line has been "highly personalised" by Verbano Film, which has added a great deal of its own know-how in order to meet its own production needs. Therefore, there has been close dialogue between all parties involved to get the desired result". ■

www.frigosystem.it

Some of the Frigosystem chillers installed outside Verbano Film, in order to take full advantage of the ambient temperature, especially in the winter and spring months, thanks to the integrated free-cooling unit



COMPLETE SYSTEM

EFFICIENT PELLETIZING FOR POLYMER PRODUCTION

MAAG PUMP SYSTEMS, AUTOMATIK PELLETIZING SYSTEMS AND MAAG FILTRATION SYSTEMS, THE PSG BRANDS, PRESENT A COMPLETE DEVICE FOR POLYMER PRODUCTION IN THE MID-TIER THROUGHPUT RANGE. THE WHOLE SYSTEM CONVINCES WITH IMPROVED ENERGY EFFICIENCY, GREAT RELIABILITY AND HIGH PRODUCTIVITY

At the Fakuma 2014, the PSG brands (Stand 6202, Hall A6) present a complete system for polymer production whic consists of the extrex 90 extrusion pump, the CSC-RS 116 arched screen changer and the brand-new Sphero S underwater pelletizer system. The whole system convinces with improved energy efficiency, great reliability and high productivity. Each of the individual system components is designed with compactness, space-saving and ease of operation in mind.

Further exhibits are the Primo 200E dry-cut strand pelletizer with its cantilever bearings and an extra-large cutting width of 200 mm, and the extrex GDP twin outlet gear pump that ensures an individual and constant supply of melt to two different nozzle blocks.

THE HEART OF THE SYSTEM

The newly developed Sphero S underwater pelletizer is the heart of the system. It was designed especially for compounding, masterbatch and recycling applications and operates in throughput ranges from approx. 700 to 3,000 kg/h. The pelletizers of the Sphero series can thus now cover applications from virgin polymer production through to recycling.

Great attention was paid during the design of the new pelletizer to making optimum use of the often confined space in production shops. The system requires no rails and can be exactly positioned thanks to the swivel arm. There are no leaks when the cutting chamber is closed. In order to guarantee the highest pellet quality, the design of the cutting tools has also been optimized.

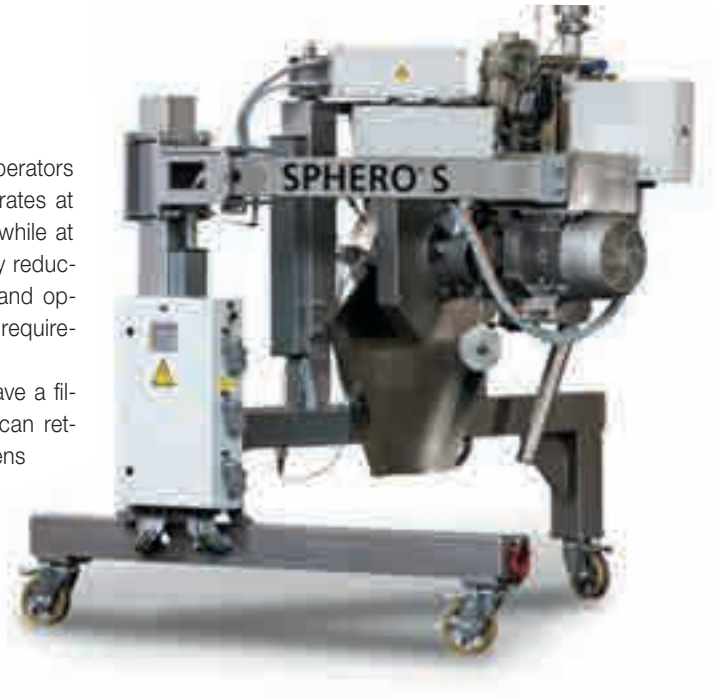
The improved water bypass construction ensures process reliability and a faster production start-up. Operation of the system has also been optimised; die plate changing, in particular, is now carried out in a minimum of time. The pelletizer is available with manual pressure setting and with pneumatic pressure control.

The extrex 90 extrusion pump from maag pump systems is used to feed the melt to the Sphero S. The proven gear and bearing technology of the extrex series combines high efficiency with minimised energy consumption. Optimized flow channels, very good self-cleaning properties and a long service life are the hallmarks of the pump.

A further highlight of the system is the CSC-RS 116 arched screen changer from maag filtration systems. The use of arched screens allows the screen surface area to be enlarged (up to quadrupled), so that up to four times more active screen area can be used than with comparable screen changers with round screen cavities. The use of a CSC-RS 116 enables operators to keep their production rates at a consistently high level, while at the same time significantly reducing energy consumption and operating costs. The space requirement is also minimised.

Operators who already have a filter from the CSC series can retrofit the new arched screens in this filter. The larger screen surface area results in a considerable increase in the flow rate, and hence in higher energy efficiency.

extrex GDP double-gear pump



The newly developed Sphero S underwater pelletizer is the heart of the system developed for polymer production in the mid-tier throughput range

SYSTEM FOR COMPOUNDS AND MASTERBATCHES

The Primo 200E from automatik pelletizing systems is particularly suited to the compounding of thermoplastics and the production of masterbatches up to a line throughput of 1.5 t/h. Primo 200E is a single-side mounted dry-cut strand pelletizer with an extra-large cutting width of 200 mm. Its unique cutting geometry - with the shortest, unguided length between the feed rollers and cut - permits optimal straight cutting of both hard, abrasive and very soft, flexible plastic strands. The pellet dimensions can be changed very quickly thanks to an optional, automatic pellet length adjustment system. The Primo 200E is an absolutely reliable, very robust and sturdy dry-cut strand pelletizer.

TWO NOZZLES FOR A SINGLE EXTRUDER

With the extrex GDP twin outlet gear pump, maag pump systems has created an absolute innovation: two different nozzle blocks can be supplied with an individual and constant melt stream by one extruder. The specific output and die pressure is guaranteed by the design and variable. The operators of extrusion lines can bundle their production capacities and optimize the efficiency of their lines by feeding two separate nozzles with different throughput and pressure demands from a single extruder.

www.maag.com
www.psgdover.com

END-OF-LINE AUTOMATION

EVERYTHING FOR PIPE PACKAGING

PACKAGING, STRAPPING AND PALLETISING THE FINAL PRODUCT TO MAKE IT READY FOR STORAGE OR DISPATCH. END-OF-LINE AUTOMATION HAS BECOME INCREASINGLY IMPORTANT FOR PIPES MANUFACTURERS, MAINLY IN THE MOST ADVANCED MARKETS

While in the past pipes packaging stations tended to represent the bottleneck of the whole manufacturing process, since they could not keep up with the higher performing cutting and socketing units, the next generation pipe packaging plants must be able to keep pace with the increasingly fast production rhythms of the most modern extrusion lines, particularly in the manufacturing of PVC and PP pipes. Considering the greater and greater attention paid by the pipe manufacturers to the management and reduction of business expenses, end-of-line automation systems are becoming a strategic choice, not only to grant higher productivity, consistency, quality and repeatability of the final products, but also to reduce health and safety risks and labour costs, as well as to preserve the capital equipment. All of this allows pipes producers to gain a more competitive edge locally and against cheaper imports and labour costs.

IPM designs and manufactures customised end-of-line pipe packaging solutions complying with the specific requirements of the end user (space available in the production hall, budget, pipes characteristics and types of packaging etc.). From small and ready-to-go packaging modules, via more structured packaging plants based on the interaction of differ-

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

ent modular units, through to the most complex and fully automated motor-driven robotic systems equipped with high-tech measuring and checking instruments, the company is able to satisfy the broadest range of market requests, offering equipment which covers all kinds of pipes, made of any material and featuring any diameter. Thanks to custom-tailored motor-driven conveyor belts, which can even run over the existing line to make maximum use - even in height - of the available space in the production hall, IPM packaging machines can be placed either on the side or along the extrusion line, or even in other rooms. Each belt performs a production step, and it is synchronized with the other belts as well as with the line, thus targeting the highest performances through complete automation.

AUTOMATIC MACHINES AND PALLETISERS

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, the company 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. In order to perform this kind of packaging in a completely automatic way the IP-AL/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.

ROBOTS FOR SEVERAL KINDS OF PACKAGES

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 meters, 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 pre-set 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.

CAROUSEL SYSTEMS

The supply and replacement of cardboard boxes, iron cages and wooden and plastic pallets have been automated by the so-called "carousel systems". Thanks to this transfer process, empty and full trolleys are automatically conveyed within a protected working zone, reducing human intervention to the mere removal of the final packages by fork-lift. Besides conferring a longer working autonomy to the packaging plants, also the internal organization of the production department benefits from this chain movement since trolleys remain secured inside the carousel systems, and none of them shall be found around the factory anymore.

The possibility to match together the various automatic packaging units gives even the chance to gather the final packages into even bigger pallets, to be then taken away by fork-lift and duly stored.

OPTIONAL ACCESSORIES

The company also supplies additional accessories, rounding off the packaging, codification and customisation of the final products. These include ink-jet printing devices as well as labelling machines printing or attaching bar codes, brands or any other required product specifications on the final packages.

Since the packaging stations described mainly handle socketed pipes equipped with rubber gaskets, an in-line automatic gasket inserter has been conceived and patented that simultaneously checks the correct placement of the gaskets, in order to ensure an excellent tightness. This system automatically detects and ejects defective sockets, preventing them from being conveyed to the next packaging units.

Finally, one of the latest IPM innovations is a packaging plant which can handle pipes with several diameters and six different lengths coming from 4 different extrusion lines, and pack up to 3600 pipes per hour.

www.ipm-italy.it

FOR PLAS MEC, AND IN PARTICULAR FOR ITS TECHNICAL DEPARTMENT, THE HIGH TEMPERATURE BONDING SYSTEM PROJECT (HTBS) HAS BEEN A CONSIDERABLE CHALLENGE FROM BOTH A DESIGN AND IMPLEMENTATION POINT OF VIEW

BY **DOMENICO CIANO***

CASE HISTORY IN THE MIXING TECHNOLOGY

HIGH TEMPERATURE BONDING SYSTEM

The Plas Mec project "High Temperature Bonding System (HTBS)" is the result of a request, by a leading company in the industrial surface treatments industry that specialises in the creation of non-stick and anti-wear coatings, to develop a small-scale plant capable of creating a special bonding cycle to produce a new type of fluorine polymer perfected in their own research and development laboratories. The bonding process is the process of adhesion of the pigment (metal) to the base, in such a way as to prevent their separation during application and recovery of product in the cabin of application.

The plant configuration that was decided on involved a high efficiency mixer combined with a vertical cooler. Development of the project not only relied on over forty years' experience in the creation of mixing plants for plastics (PVC, PPE, PE), powder coating and masterbatches, but also considerable R&D activities aimed at finding new solutions and materials that would allow Plas Mec to satisfy the project specifications and even exceed them, as has been the case in certain areas.

As is usual for Plasmec, projects aimed at developing new mixing technology start with tests carried out by process technologists in the company's own laboratory plants, which highlighted the process problems for which technical solutions needed to be found:

- the bonding cycle could not be connected to the action of the mixing device alone, as it was necessary to reach a process temperature in excess of 265°C to obtain a good agglomerate;
- it was necessary to confine the material, which proved to be highly volatile and tended to deposit itself on the cover and block the filters, creating a build-up of pressure in the mixing tank;
- the mixer had to be thermally insulated both on the outside and in its sub-components, and particular care had to be taken with respect to thermal dilation, particularly in moving parts;
- risk analysis resulted in considering the machine, both internally and with respect to the external environment (manual loading of bases and additives), as a potential explosion risk.

These process-related needs were joined by other specifications connected to the client's requirements:

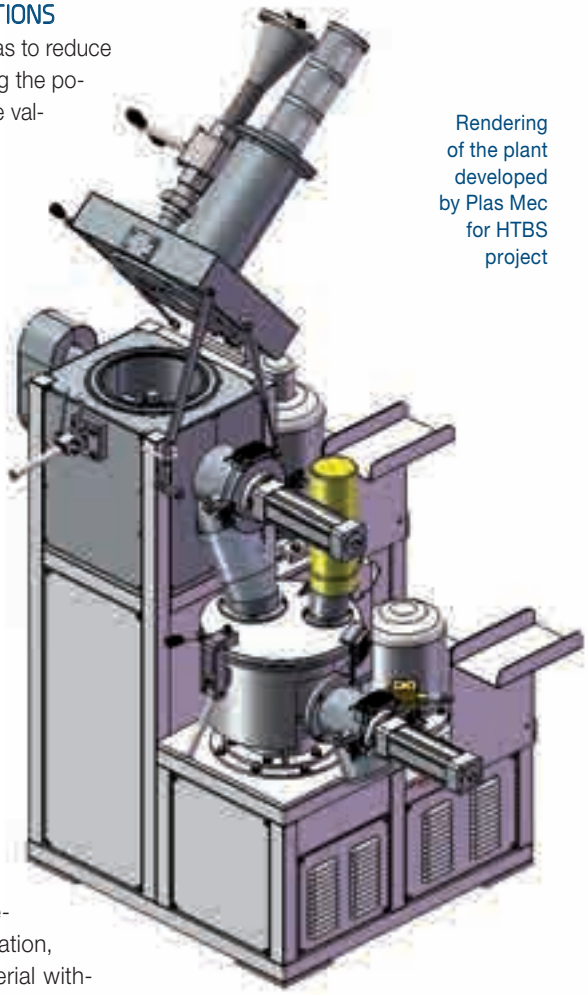
- the system had to be sized for continuous production of small batches, but at the same time it had to have the flexibility of a laboratory in order to carry out tests on the materials and on the process;
- quick and easy system cleaning, for rapid recipe changes.

THE FIRST DESIGN CHOICES

During the initial project development phase, Plas Mec engineers concentrated on how to achieve heating of the material to the process temperature. To do this, they opted for a mixing tank with a cavity into which diathermic oil, heated in an external heat regulation unit specially designed by one of Plas Mec technical partners, is made to flow. To control the temperature of the fluid it was decided to implement a PID controller, and this allowed optimum management of this important process parameter. The need for working at high temperatures meant it was necessary to completely redesign the transmission and mechanical seal units (see **figure 1**). Given the difficulty in proceeding using traditional methods, development of these components was carried out with the aid of the most up-to-date design tools (3D Cad, FEM and CFD) so that they could be assessed, even at the design stage. The problems of thermal insulation of the machines and thermal dilation were dealt with using the same methods.

FROM THERMAL INSULATION TO EXPLOSION PROOF SOLUTIONS

As regards insulation, the aim was to reduce heat loss to a minimum and bring the potential contact surfaces up to the values foreseen by the standards.
Here again, careful calculations and numerical analysis were carried out in order to select the right insulating material (ceramic spacer components and ceramic-silica fabric) for the mixer and the pipes connecting it to the heat regulation unit. Also, thanks to the analysis of thermal simulations it was possible to avoid problems relating to thermal dilation by identifying critical areas that required careful design and by making wide use of ceramic-based materials.
As regards problems with mixing and the volatility of the compound, careful design of the individual stages in the mixing equipment, the mixing tank cover, an innovative system of fluxed seals and a type of filter element, specifically designed for this application, have enabled to keep the material within the volume of operation of the blades, even at high mixing speeds. This gave undoubted advantages for dispersion and homogenisation of the various components in the mix, as shown by the laboratory tests performed by the client.
The need for high process temperatures contrasted with the need to safeguard against the risk of explosion, as was brought to light in the initial risk analysis. To deal with this, a series of countermeasures were adopted at design level to eliminate all possible trigger sources, in particular within the mixing tank (accumulation of static electricity, uncontrolled temperature increases in mechanical parts, sparks caused by rubbing of moving components). Externally, much work went into the selection of suitable components for Atex 22 classified environments and on the creation of the area around the machine. The risk analysis carried out following these modifications did not show any particular residual risks, and by following the requirements of the Atex standard it was possible to declare the machine compliant with CE EX II 2/3D IIIC T135°C.



Rendering of the plant developed by Plas Mec for HTBS project

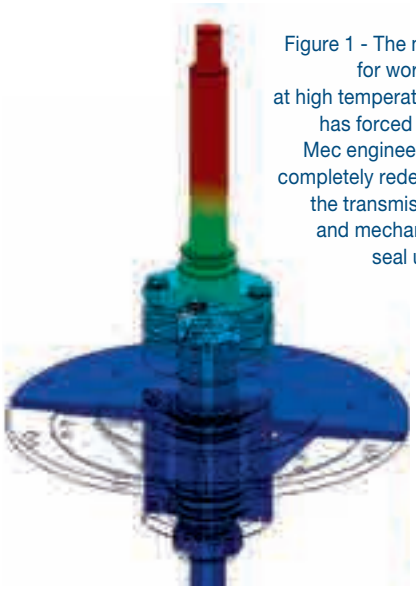


Figure 1 - The need for working at high temperatures has forced Plas Mec engineers to completely redesign the transmission and mechanical seal units

FLEXIBILITY AND IMPROVED CLEANING

The need for flexibility, required to use the plant to carry out tests on new formulations, was satisfied by working both at mechanical configuration and at control system level. Mechanically speaking, work was carried out to allow rapid changing of the mixing tool configuration, also providing various types of interchangeable blade. As regards the control system, while maintaining the levels of automation typical of production plants, an attempt was made to make it as complete as possible by implementing a whole series of typical laboratory functions that will allow technicians to create the recipes to be processed in a fast, intuitive manner.
In order to satisfy the cleaning requirements, the mixer and the cooler were equipped with easy-to-reach discharge outlets that can be completely dismantled for fast cleaning. The mixing tool itself can be dismantled using a single tool, while the entire mechanical and pneumatic section is protected by removable guards to reduce deposits of environmental dust on the components to a minimum.
Finally, after undergoing strict testing, the HTBS plant was installed and commissioned at the client's factory in December of last year, and is now fully operative. Furthermore, as attested by the client, the bonding process perfected has proved itself of fundamental importance in improving the application of coatings to the components prior to firing. ■

www.plasmec.it

**Plas Mec, technical manager*

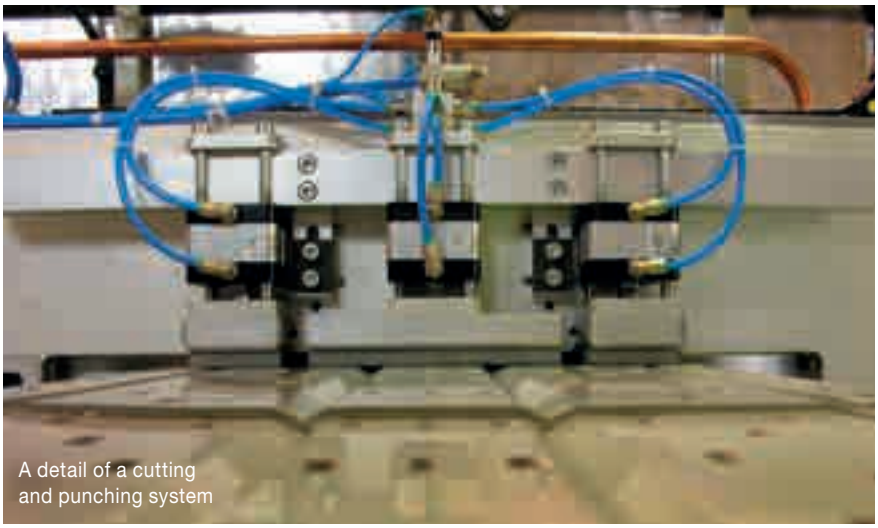
EXTRUSION OF PIPES AND PROFILES

COMPREHENSIVE RANGE FOR THE END OF LINE

BASED IN FERRARA AND ESTABLISHED IN 1953, BARUFFALDI PLASTIC TECHNOLOGY OFFERS A COMPREHENSIVE END-OF-LINE-MACHINES SELECTION FOR EXTRUDED PLASTIC PROFILES AS WELL AS FOR PIPES, INCLUDING PRIMAC BRAND PRODUCTS

Baruffaldi is a company with a strong tradition, but dynamic and flexible: all strengths it uses to satisfy the specific needs of its customers and win the competition with the biggest multinational corporations. The four company's core businesses are: high speed and high productivity tools for extruded profiles; machines for slotting, perforating and jointing corrugated pipes; PVC and aluminium roller shutter assembly machines; and turn-key plants for cable ducts. Specialised in the manufacturing of niche products, Baruffaldi has increased and established its market shares worldwide, especially as regards the development of machines and processing systems for punching, cutting and milling profiles, even those having very complicated geometries.
In particular, the company owns several patents for the cold blade and hot blade "guillotine" cutting units. The transversal cutting device, which is their peculiarity, ensures a high-quality cut without any deformation of the profile. Hot blade and cold blade guillotines are continuously improved and equipped with various accessories to cut a wide range of profile types and sizes. The hot blade guillotine cutting unit has been recently upgraded by a latest generation blade movement, which allows cutting both profiles and pipes with no deformation or out-of-roundness. The Baruffaldi range is rounded off by milling units and machines for the profiles handling and storage.

Thanks to the acquisition of Primac, the company's product range has been extended to include end-of-line units for pipes processing, such as vacuum calibration tanks for single or dual extrusion, cooling tanks, take-off units, several types of cutting units (tracking cutting units, units with planetary disks or knifes, units with automatic groove centre search, etc.), as well as dimension tolerance testing instruments and special equipment for coating PVC drainage pipes.


A detail of a cutting and punching system

ELIMINATE FLASHES

In order to eliminate the production of flashes and dust while cutting pipes and profiles, the company developed the TVP-110 orbital cutting machine and the TG series of guillotine units, respectively. The TVP-110, in particular, consists of a cutting unit featuring a rotating orbital blade, which carries out the simultaneous cut and chamfer of the pipe and is particularly fit for electrical cable pipes as well as for PP and PPR pipes used for water collection. It is an extremely versatile, safe and reliable machine, which offers several advantages: besides performing a clean cut without chips, material removal or dust, it is silent and precise, reaches a tolerance of up to 0.2 mm on the length and ensures lower energy consumptions. The unit can be equipped with different tools, according to the pipe material, and can reach speeds up to 25% higher than traditional cutting machines.

Finally, the aim of Baruffaldi research programme TAG (Technological Advancement Group) is to optimise all its technological resources, in order to satisfy converters' needs by manufacturing machines which improve work conditions and can be integrated with management software and remote automatic controls, using barcodes, optical fibres, smartphones etc. On the marketing side, the company has developed its own mobile app, available for Android mobile devices or downloadable from the Apple Store, which allows the customer to view his/her own catalogue even off-line and to support his/her agents in their activities wherever they are.

www.baruffaldi.eu

MIXING OF PVC

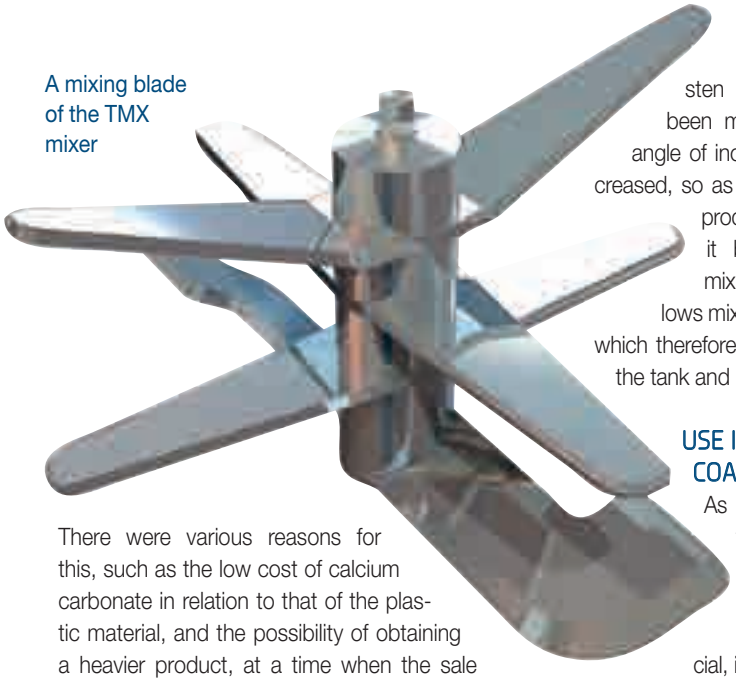
CHOOSING THE RIGHT MIXER

DESIGNED AND PRODUCED BY PROMIXON, A VERY YOUNG COMPANY, TMX IS A TURBOMIXER THAT REPRESENTS THE IDEAL SOLUTION FOR THE PRODUCTION OF BOTH RIGID AND PLASTICISED PVC-BASED DRY BLENDS

Ever since man made the discovery that, by mixing together separate materials, he could obtain a product quite different from the original components, he has looked for ways of making the process of mixing easier and quicker. Whether we are talking about mixing herbs with salt in order to add flavour to freshly hunted game, or mixing purple with carbon dust to obtain the material used to create splendid drawings that have lasted through the centuries, this type of process is part of everything we do and man, if he is attentive and cares passionately about his life and work, will undoubtedly endeavour to develop the best techniques in this regard. It is just such a passion that has led Promixon to build TMX, a "rapid mixer" that even our forefathers would have approved of on account of its capacity to obtain homogeneous mixing of large quantities of material. This company is barely a year old, but its team is made up of true professionals, who have been active in the mixing sector for over two decades. Promixon's managing director Marco Marinello, can proudly state that the TMX turbomixer is an excellent machine, the core part and beating heart of all the company's installations, automatic and otherwise, for the plastics industry. Everything revolves around this rapid mixer. Dubbed the "devourer of plastic and masterbatches", it is indeed responsible for mixing, in a very short time, all the components introduced. But let us look in more detail at the role of TMX in the production of rigid PVC-based dry blend.

MIXING PVC FOR THE EXTRUSION OF PIPES AND PROFILES

A very common application of rigid PVC-based dry blends is its use in the extrusion of pipes and profiles for windows. The raw material for this process is obtained by mixing PVC with various additives, necessary to stabilise the PVC itself and to obtain binding of the molecules with other basic components, such as calcium carbonate ($CaCO_3$) and titanium dioxide (TiO_2). The calcium carbonate serves to make the PVC compact, to reduce its softness and, obviously (given that calcium carbonate is, basically, ground stone), to make the end product heavier. This additive is very widely used in the production of PVC pipes; in previous years, in particular, efforts have made to increase the amount of calcium carbonate added to PVC.



A mixing blade of the TMX mixer

There were various reasons for this, such as the low cost of calcium carbonate in relation to that of the plastic material, and the possibility of obtaining a heavier product, at a time when the sale price was based on the weight. “Yes, in the past,” Marco Marinello explains, “the plastics processor would weigh up the plant maintenance costs (higher on account of the wear caused by the carbonate) against the profit generated by using calcium carbonate, and would still often happily opt to use calcium carbonate. We at Promixon have often come across PVC pipes containing 50% calcium carbonate, used as a filler: as a result the pipe would be extremely heavy but also very fragile, added to which it must be considered that mixing stone causes wear both of the mixer tool and of the mixer tank, given that the mixer works at very high speeds - these are currently around 32 m/s (this is the peripheral speed of the mixer tool), but in the past the standard speed was around 36 m/s and there were even some machines that operated at speeds of 40 m/s or more”. As a result of research activity, processors subsequently developed a better understanding of the most correct way to act in order to reduce wear of mixing plants, transport pipes and in particular extruders, which are extremely expensive to replace. In view of the increasing cost of spare parts and also the costs (in both time and money) of the resulting downtimes for maintenance, recent years have fortunately brought a reversal of the trend. The TMX turbomixer, with the numerous innovations it incorporates, was created precisely in order to overcome all these problems. The most important of these innovations include:

1. A better system for assembling the transmission, which is now incorporated into a single housing and allows assembly/dismantling to be carried out on the machine table.
2. Improvements to the mixer tool: the tungsten carbide coating has been made thicker and its angle of incidence has been increased, so as to be able to lift the product more and toss it between the upper mixing blades. This allows mixing at a lower speed, which therefore means less wear of the tank and mixer tool itself.

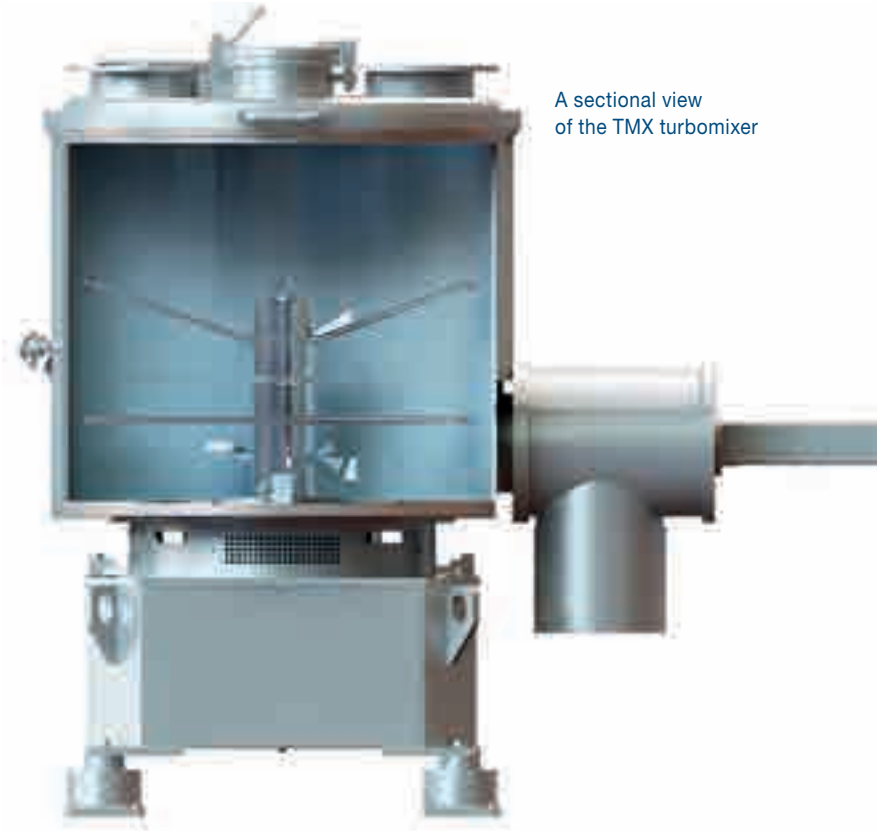
USE IN POWDER COATINGS

As regards the production of powder coatings on the other hand, cleanliness of the plant is crucial, in order to avoid contamination with other colours. In this type of process, the TMX is used almost exclusively to create “bonderised” products filled with metallic powders (aluminium, copper, mica) and it is configured to work with a hopper in which the powders are loaded upon completion of a set sequence and with a very high safety margin.

This safety is conferred through the release of nitrogen gas into the machine and through control of the percentage of oxygen it contains, which is monitored and kept below the trigger threshold created by the electrostatic currents and metallic powders. Furthermore, the TMX mixer tool is cooled to prevent material from building up on it, and it features and excellent opening system for inspection and cleaning of the discharge outlet. Promixon has also decided to improve the control software, which currently contains basic pages for the operator, other pages for the maintenance, and others still for the production, where the more complex system data are found.

In addition, a last-generation Siemens operating panel has been chosen, which will be a standard feature in the PLC too. “We have tried to provide operators with user friendly software”, adds Marinello, “simplifying the functions necessary to put the plant into production and avoiding choices that might jeopardise its smooth running. The supervisor, on the other hand, is given the possibility of intervening on all the sensitive data; therefore, he is the only one who can control the plant sequence”. “The purpose of a mixer”, remarks Promixon CEO, “is to mix well, but this key function often tends to be forgotten. When one is served a Bloody Mary, if it has been mixed properly with a shaker or a spoon, it will have the balanced taste that goes hand in hand with good mixing; if on the other hand, you are expected to mix it yourself with one of those terrible mixing sticks, the flavours will undoubtedly be stratified and, when you get to the bottom of the glass, you will get an unpleasant taste of tabasco and Worcester sauce. Quite undrinkable!” ■

www.promixon.com



A sectional view of the TMX turbomixer

ULTRASONIC WELDING

FUNCTION INTEGRATION: A PRINCIPLE OF MODERN PROCESSES

IN SEMI-AUTOMATED MULTI-HEAD MACHINES, SEVERAL PROCESSES ARE OFTEN JOINTLY INTEGRATED TO ACHIEVE HIGH FUNCTIONAL DENSITY IN CONFINED SPACES. PARTS ASSEMBLY FUNCTIONS, COMPONENT DETECTION AND SENSING FEATURES, AS WELL AS VARIOUS TEST PROCESSES ARE ADDED TO THE ACTUAL JOINING PROCESS. THE ULTRASONIC WELDING MACHINE INTERCONNECTS ALL AUXILIARY FUNCTIONS AND CREATES INTERFACES

The conventional concept of function integration originates from design theory pursuing the goal of covering as many technical functions as possible with as few components as possible. Today, it is an indispensable principle of modern manufacturing processes: several process steps are combined in one production unit to improve the added value potential. There is no need to interrupt the process chain; this contributes to reducing unit costs and increasing production safety.

IMPLEMENTED PROCESS INTERLINKING WITH MULTI-HEAD MACHINES

Large, complex plastic parts are welded in multi-head machines. Integration of auxiliary functions has long been common practice, with obvious advantages: plastic components with sensitive surfaces only have to be handled once when being inserted into the suitable fixture. Prevention of unnecessary part handling saves time and protects the product.

In the example shown (**in figure 1 a and b**), a multi-part engine cover is assembled and welded to the sound insulation mat. The work space comprises a large number of auxiliary functions. These include mechanical pressing-in of rubber dampers and scanning for correct fit, printing of a barcode label and verification of legibility, as well as permanent engraving of the component.

VDMA Blue Competence concept study for Fakuma 2014: standard modular ultrasonic welder HiQ Dialog with small-scale robot: handling, testing, welding, and marking of a toy elephant

IDENTIFICATION BECOMES INCREASINGLY IMPORTANT FOR TRACEABILITY

Today, identifying components, selecting preset 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 con-

ventional fieldbus interfaces and in a data base 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 has made it their business to comply with requirements from various industries and to provide customized 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.

Fig. 1a - Function integration in multi-head welding machine for automobile engine cover: entire tool change kit

Fig. 1b - Details of function integration: Ultrasonic welding (1), scratch embossing equipment (2), mechanical press-in unit (3) and sensors

CONCEPT STUDY AT FAKUMA 2014

At the Stand 4108, Hall A4, Herrmann Ultraschall demonstrates process interlinking of several production steps: a standard modular ultrasonic welder HiQ Dialog, is shown in combination with a touch-sensitive small-scale robot, a camera, and a marking device. The robot makes multi-axle handling of the applications possible. A camera checks the parts for their quality and completeness. After the weld process, all parts are individually marked, providing the current date and time and a unique application number.

IN CONCLUSION

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

FOUR CASE HISTORIES

IN THE OLD AND THE NEW CONTINENT

DOUBLE FILTRATION

Since 1993 Nuova Gandiplast (based in Gandino, near Bergamo, Italy), first in Europe to do so, develops a process to recycle LDPE post consumer film, with equipment partly self designed and partly from selected suppliers. It takes care of two different stages of the plastic recycling process: the first is the recycling of LDPE waste material; the following is the actual production of garbage plastic bags of various colours and sizes. 81% of the waste supply comes from national sources located at a maximum of 250 km from the company facility, 98% of the production uses recycled material. The process includes a first stage of material reduction through a grinder; then the material goes through a decantation system, it is washed in two phases and then compacted. The aim of Nuova Gandiplast is not only to increase the actual production of 1,000 kg/h when processing material with MFI 0,9-1,5, but also to improve the quality of the final product going to filtration finer than the actual 300 microns. In the last year, in fact, Fimic has included in its range of screenchangers a new laser drilled screen going down to 100 and 200 microns. Nuova Gandiplast has therefore decided to install a Fimic 500 mm diameter, instead of the current 325. In fact, reducing the filtration, the general working pressure rises and there is the possibility of incrementing the power consumption and some risk on the quality of the material. Increasing the filtration area both risks are avoided. Another innovation in the Fimic range of products is an extraction by auger instead of a valve. The company normally uses a valve that purges the waste material out of the filter when a certain pressure is reached (a pressure that can be set at different levels), which works very well when there are high levels of contamination. With the new auger designed, the equipment can gradually eliminate the contamination with a saving in waste from purging. Nuova Gandiplast contamination can reach

THE ITALIAN COMPANY FIMIC, PRODUCING SELF CLEANING MELT FILTERS, WHICH WORK IN BOTH SCRAPING AND BACKFLUSHING MODES, PRESENTS FOUR OF ITS RECENT INSTALLATIONS IN ITALY, IN THE UNITED KINGDOM AND IN THE USA. AT THE FAKUMA 2014 (FOYER OST, STAND FO-05) THE COMPANY SHOWS ITS FILTER 400

3%, including wood, aluminum, PET and nylon. These innovations will enable Nuova Gandiplast to increase the quality of the final material, reduce the waste and, consequently, increase the return on investment.

THIRD LINE AND THIRD SELF-CLEANING FILTER

Plasgran, based in the UK and formed in 1999 by a husband and wife partnership, in 2007 moved to the current site in Wimblington, Cambridgeshire, which has been divided into various processing areas. The company has three 400 Fimic filters installed on all of the pelletizing lines for a production of 1,000 kg/h each, with screens ranging from 100 to 600 microns, depending on material, contamination and customers requirement. The most recent company addition consists in a filter equipped to work in both scraping and backflushing modes, for very fine filtration. During installation, the machine, operating in backflushing HDPE with MFI 4, was able to produce the average production also when the filtration was down to 120 microns with a working pressure from 70 to 130 bar. With an estimated contamination of around 2%, including wood, grits and some aluminum, the discharge was about 2.5%.

Plasgran has three 400 Fimic filters installed on all of the pelletizing lines. The most recent addition consists in a filter equipped to work in both scraping and backflushing modes, for very fine filtration

VERY LOW MFI FILTRATION

Primex plastic corporation, one of the largest custom sheet extruders in the United States, specializes in several types of products. All products are extruded from top quality resins and may be extruded within the 100% recycled material utility program. The company extrudes a number of different HDPE, LDPE, and HMWPE. This latter presents huge challenges through the process and particularly as far as the melt filtration is concerned. The MFI, from 0.010 to 0.015, and the level of contamination made the use of a normal sliding filter not economical. Once the company decided to explore the possibility of using an automatic filter, extensive tests have been made on the different technologies available. The test on Fimic filter demonstrated that this equipment was able to better deal with the material characteristics and contamination. The Fimic filter chamber is completely enclosed and the contamination, which at the level of pressure caused by HMWPE is very aggressive, has no way of causing damages on the structure. Also, the lower level of working pressure guarantees a huge saving in power costs. Primex has two Fimic 600, producing around 1,500 kg/h when processing HMWPE with 300 microns filtration.

PROFITABLE RECYCLING OF MIXED PLASTICS

Idealservice is a leading company in the development and management of waste material processing. In its location in Costa di Rovigo (Italy), the company is able to recycle mixed plastics and to produce pellets suitable for application in the building sector and suitable also for another wide range of moulding materials. In the last years Idealservice has developed the recycling of the so called plasmix, integrating the selection activities with the recycling of the waste coming from the selection process, with an annual throughput of 40,000 tons. As per today, the company is able to produce 20,000 tons of granules and 15,000 tons of SRA (Secondary Reduce Agent), with a recycling rate of almost 90%. Idealservice has been able to reach this results also thanks to two Fimic self cleaning filters - diameter 500 mm - that enable the two lines to process about 1,000 kg/h of polyethylene each. The company has recently decided for the installation of a new line for 2,000 kg/h. This new project represented a tough challenge for Fimic because of the very high level of contaminations, that can have a considerable negative impact on the throughput. The initial idea was to install a filter with a diameter of 700 mm, with a filtration area of 3,793 cm^2. However, Idealservice was concerned about the unavoidable line stops. In fact, because of the high level of contamination, the screen is on average changed every 24 hours, with a stop each time of about 30 minutes. Therefore the company has decided to install two filters in parallel on the single 300 mm extruder, ensuring a filtration surface of 5,552 cm^2. The line is equipped with deviating valves so that the line doesn't stop when one of the screens is changed and the flow to the single filter is interrupted. The final part of the line includes two pelletizers, allowing to do maintenance on one of the two machine leaving the other in operation, thus keeping the plant in operation. ■

www.fimic.it

Idealservice is able to produce 20,000 tons of granules and 15,000 tons of SRA (Secondary Reduce Agent), with a recycling rate of almost 90%. It has been able to reach this results also thanks to two Fimic self cleaning filters with a diameter of 500 mm

NEWS

Dehumidification system

Eureka improved

Massanzago (Italy) headquartered ancillary equipment producer Moretto gives pride of place to its Eureka plastics material conditioning system at Fakuma (Stand 3208, Hall B3). The Eureka system consists of three elements: a Flowmatik airflow management and distribution system, the OTX hopper dryer and the X MAX dryer. Moretto's Eureka system has been developed over a 13-year period of simulation, experimentation and testing, leading to what company founder and CEO Renato Moretto describes as "the most ambitious project in the history of dehumidification during my 45 years carrier in the plastics world". By choosing the Greek word Eureka (I found it), as famously exclaimed by Greek physicist and mathematician Archimedes upon discovery of his theory of displacement, Moretto says that this word appropriately describes how the three elements of the system have finally "closed the loop" to form a highly efficient drying system. Moretto says Eureka is "the most advanced drying system for engineering thermo-plastics" and that it is "the only drying system that can process 10,000 to 12,000 kg/h of material in compounding, extrusion and PET processing - where it has up to 56% lower energy consumption than traditional drying systems as observed by customers". All vital components indispensable for optimum quality, economy and performance of the process and the end product have been redesigned and calculated utilizing the power and AI of the high-end Leonardo computer. The core X MAX dryer is based on Moretto's patented "X technology" and incorporates a multi bed single molecular sieve desiccant system providing constant -65°C to -85°C dew point. Although twice the size of conventional beds, it not only works without requiring cooling water or compressed air for the changeover valve, but also features complete energy recovery by rotation, heat being recovered from cooling of the bed during molecular sieve regeneration. A key enhancement in the latest X MAX dryer within the Eureka system is its multi-stage centrifugal blower, developed by Moretto since the initial launch in cooperation with nearby Padua University. Due to these combined features, the dryer is highly efficient. The X MAX 916 model, for example, providing each unit up to 1,600 m³/h drying capacity at 300 mbar pressure with exceptionally low electricity consumption of just 13.2 kWh. From two to ten X MAX dryers can be combined, providing extremely large drying capacity, with up to 20,000 m³/h airflow rate when using 10 units. Should full system drying capacity not be required, the Flowmatik airflow management can stop one or more dryers and distribute the reduced load over the other dryers, as well as sharing air with up to 32 truncated cone shaped OTX (Original Thermal Exchanger) hopper driers. The OTX is available in 28 sizes and its innovative internal geometry ensures even material and air flow through the hopper for maximum drying efficiency combined with much lower energy consumption than conventional hoppers - and 40% faster. During the Fakuma 2014 show, on Thursday October 16, Moretto organizes the press conference entitled "Eureka system for efficient drying of engineering thermoplastics".

www.moretto.com

20 years' experience

The importance of the technical-commercial staff

Thanks to its 20 years' experience celebrated in 2013, Filtec strengthens its development and presence on foreign markets. To this end, it has expanded its sales network outside Italy and has recently started a training program for its sales representatives, which will consist of several steps, until the end of 2014. Established in 1993, Filtec was founded by some technicians with proven experience and skills in the production of vertical cutting systems. But, very soon, the founders realized the necessity of creating technological solutions that could make the production processes more rapid and efficient. Today, the cutting equipment range is decidedly complete - in fact it includes vertical, horizontal, in-air, misaligned and underwater cutting systems - with which it is possible to process every kind of polymers, even the most critical ones. Besides the cutting lines, the product range also comprises screen changers, water filters, horizontal and vertical centrifuges and vented vibratory screens. The company strength lies in the specialization of the products and in the customization of the plants according to the specific and peculiar needs of each processor. To do so, three main groups of technicians with a deep knowledge of plastics, machinery and processes were established right from the beginning. The first group includes the design engineers, who follow the machine design from the conceptual idea to the start-up and daily operation. The second group comprises the technical assistants, who autonomously support customers during the assembly operations and provide assistance at the customers' premises. The third group consists of the sales representatives, who share information with the processors on plastics, machines and processes with the aim to offer the most suitable solution. The constant interaction and information exchange among these groups increase the company knowledge, which is considered its best tool.

www.filtec.it

Filtec has expanded its sales network outside Italy and has recently started a training program for its sales representatives

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NEWS

Extrusion auxiliaries

"Armoured" screws and barrels

Established in 1967 by Marino Arioli and kept healthy over the years by his sons Carlo and Marco, Mast provides the appropriate solution for the manufacture of screws and barrels destined for various types of product fabricated on extruders and injection moulding machines, as well as for systems manufacturers. The company based in Cagno (Como, Italy) offers different solutions in terms of materials and coatings, without particular limitations regarding the maximum diameter and length of the screws which, respectively, now can reach a diameter of 400 mm and maximum length of 7,000 mm. In detail, single-screw extruder systems require the production of screws of different profiles, from the traditional feeding thread with variable pitch, to transfer thread and Maddock mixer sections, as well as coatings of different materials such as Stellite, Tig5, Colmonoy or any other material specified by the customer. Moreover, Mast is able to provide chambers made of bimetallic materials. Instead, counter-rotating twin-screw extruders involve the production of two screws with thread areas of a different pitch, including a variable-pitch thread area. Mast also specialises in the production of taper screws. In this case, a version featuring threads with coated crests is also available. The company manufactures in-house parallel and taper twin barrels as well, supplied to the customer fully equipped with all components such as flanges, and comprising the installation of cooling pipes. As far as the co-rotating twin-screw extruders are concerned, it is important to emphasize that the screw sections can be assembled using several methods, such as key, broaching, hexagon, nitriding steels as well as fully hardened steel and sintered steel. Thanks to the vast competence gained by Mast, the screw profile is always kept intact in order to ensure an optimal self-cleaning effect while the machine is running. Finally, the barrel may incorporate modular sections with internal circulation of the coolant as well as hardened or bimetallic interchangeable bushings. "Considering the complexity of the typical thermal and mechanical cycles in plastics extrusion processes, the use of high-performance materials plays a very important role in the production department", says the director of Mast, Carlo Arioli. "For example, we use bimetallic barrels in case of high wear which is usually caused by filled or reinforced plastic materials. These barrels have an inner wall made of sintered material, or powder coated. In this case, hole boring is carried out by one of our partners exploiting the combined action of centrifuge, pressure and temperature, benefiting from the fact that the barrel inner surface will be considerably more compact - and the micro-hardness of the individual grains higher - in order to increase resistance to wear and corrosion compared to conventional nitrided barrels. Not surprisingly, we use bimetallic barrels combined with screws coated with Stellite - which is a cobalt alloy characterised by excellent resistance to wear and corrosion - or, more often, with Colmonoy, a nickel-based alloy which improves resistance to wear and corrosion, thus obtaining a really 'armoured' screw." ■

info@mastsrl.it

Moulds for caps and closures

Expanding market presence

In order to keep up with the times and anticipate market needs, Giurgola Stampi (Stand 1101, Hall A1, at Fakuma) has continually worked to provide processors with innovation, expertise, flexibility, service and, of course, high quality moulds. Primary emphasis has been placed on the moulders' production requirements. Although it remains a mouldmaker, the company feels it is necessary to expand its competence from the co-design of the processor product to the complete quality control of the moulded part, through the whole testing phase and pre-production, with the aim to provide processors with an answer to any need and a solution to any problem. The company takes part in several fairs, showing the latest technologies applied to moulds for closures, destined to sectors such as food and beverage, personal care, body care, pharmaceutical and medical, all of great interest to the company.

Caps are displayed with all their possible combinations, with unscrewing thread, pull thread, seals, flip top with and without closing of the lid in the moulding machine, mono, bi and three colour, realized using rotating and tilting technologies in the mould, completely designed and manufactured by the company to meet the needs that emerged from a particularly demanding processor. Equipment constantly updated and managed by qualified and dynamic people allows the company to expand its commercial presence in Europe and around the world, looking for continuous growth opportunities in a changing socio-economic reality. The company is trying to move the boundaries in mechanics using inventiveness and imagination to create solutions and pass on to processors its capability of being a reliable partner. ■

www.giurgolastampi.com

For extrusion and injection moulding

Gearboxes for all

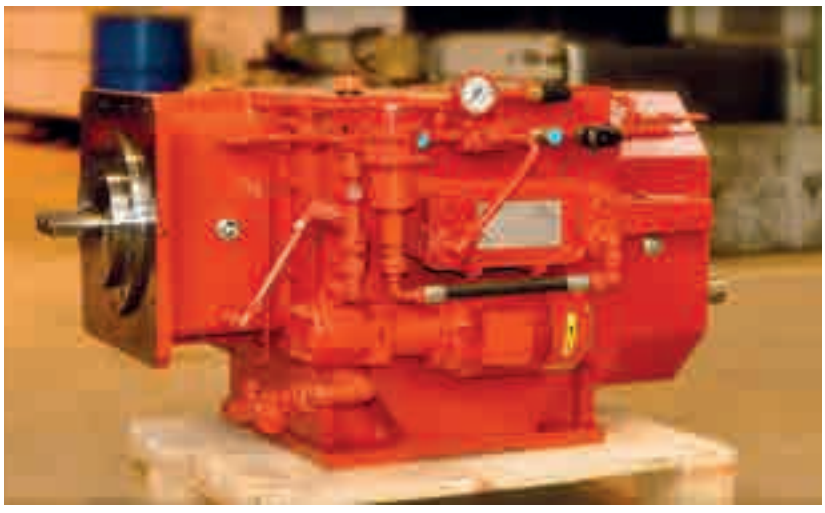
Company operating worldwide and specializing in the design and manufacture of gearboxes for extruders, Zambello (Stand 6105, Hall A6, at Fakuma) is more and more focused on offering a full range of products to cover all applications, from the single screw, to the parallel twin-screws (both corotating and counter-rotating) and the conical twin-screws. The gearboxes for injection moulding machines (hybrid or full electric) complete the range of products entirely designed and manufactured by Zambello.

Founded in 1957 by Zevio Zambello - the father of Elio and Alessandro, today's managing directors and owners of the group - the company has been involved, since the beginning, in the design and manufacture of reduction gearboxes of the highest technology. In the last decades, the range has gained a prominent position in the field of machinery for plastic materials and for extrusion in general. The company's industrial policy, inspired by quality criteria, has led it to make important investments over the years and to pursue significant industrial and commercial developments, which have determined a considerable increase in its international activities, making the company wellknown all over the world. The list of processors now include the most important companies in the extrusion field worldwide. Since the very beginning, the company has manufactured exclusively in Italy.

The headquarter of the group is located in Magnago, near Milan, and covers a surface of 16,000 sqm, 3,500 of which are covered. The Magnago factory produces gearboxes for single-screw and twin-screw extruders of large dimensions (i.e. for extruders having a screw diameter from 120 mm on) and gearboxes for injection presses of large dimensions. But the main manufacturing site is located in Lendinara, near Rovigo (still in Italy), and covers a surface of 110,000 sqm, 8,000 of which are covered. This factory produces gearboxes in series for single-screw and double-screw extruders of small and medium size (up to screw diameter 120 mm) and also gearboxes for injection presses of similar dimensions.

The company is now investing again to enlarge both the production facilities in Italy. The production capacity will be increased by 60% in order to meet the increasing demand of high quality gearboxes for extruders. On one side, the production plant in Magnago, will be doubled. On the other side, the covered surface of the production plant in Lendinara, will be increased by 5,000 sqm. As a consequence, new CNC machinery will be placed in production in order to enhance not only production capacity but also productivity. Moreover, its worldwide sales network is getting global with two new offices in Istanbul (Zambello Turkey) and Ahmedabad (Zamindia).

www.zambello.it



Zambello is specialized in the design and manufacture of gearboxes for extruders and injection moulding machines

DuPont and Biesterfeld collaborate at Fakuma

DUPONT AT FAKUMA

APPLICATION DEVELOPMENT PLUS COLLECTIVE INGENUITY FUEL INNOVATION

THE DUPONT EXHIBIT AT FAKUMA 2014 (STAND 4200, HALL B4) REFLECTS THE IMPORTANT ROLE PLASTICS PLAY IN SOCIETY AND HOW DUPONT IS ENHANCING ITS ADVANCED MATERIALS TECHNOLOGY TO HELP COMPANIES INNOVATE AND COMPETE IN THE GLOBAL ECONOMY

Under the banner of "Welcome to the Global Collaboratory", DuPont present how its Computer Aided Engineering (CAE) and Predictive Engineering Solutions coupled with its broad portfolio of advanced materials can provide outstanding benefits in a wide range of industries including automotive, electrical & electronics and heatlthcare. Highlights include:

- Zytel renewably sourced long chain polyamide in a rigid pneumatic tubing application made by Munkplast, Sweden;
- flexible and rigid automotive coolant pipes made in Zytel PA612 long chain polyamide and glass reinforced Zytel PA66;
- halogen free[1] Zytel FR95G25V0NH with enhanced long term heat ageing properties for Electrical & Electronic applications;
- recently launched Rynite PET halogen free[1] combining excellent long term heat

ageing and flame resistance performance for electrical & electronic applications.

LIGHTWEIGHTING MEETS ENGINE EFFICIENCY

Among DuPont innovations at Fakuma 2014 will be new forward-thinking materials and technologies to significantly reduce weight in automotive without compromising performance and sustainability. Lightweighting is probably the most significant and immediate pathway to CO_2 emission reduction for the car manufacturers. Every 110 kg weight saved on a car translates roughly into 10 g/km CO_2 emission reduction, and the greatest impact is through the introduction of plastics instead of metal. DuPont's collaborative approach goes beyond resins development, providing integrated and cost-effective solutions to the challenges of automotive lightweighting and compliance with regional emissions legislation. Good examples of this approach will be seen in rigid and flexible coolant pipes of glass reinforced Zytel PA66 designed for Water Injection Technology (WIT) and Zytel PA612 Long Chain Polyamide (LCPA) that offer excellent processability in extrusion and injection capabilities combined with long-term resistance to aggressive water/glycol and road salts under high pressure at temperatures ranging from -40°C to 125°C.

PERFORMANCE MEETS SUSTAINABILITY

The company offers a wide range of engineering polymers for the electrical & electronics that can be recycled vs. thermoset in applications such as housings, enclosures, sockets & switches. In addition, DuPont is also constantly evolving its range of halogen-free portfolio of engineering polymers which are being developed to address stringent sustainability legislation for better health and safety.

The new halogen-free[1] Zytel FR95G25V0NH flame retardant nylon 66 offers enhanced thermal aging (Relative Temperature Index, RTI Electrical, of 160°C under UL746 certification) and industry leading high Comparative Tracking Index (CTI), UL V0 @ 0.4 mm thickness and excellent surface finish. The material offers greater productivity as it is high flow and resists mould deposit. It has the highest Relative Temperature Index (RTI) value in Dupont's Performance Polymers portfolio and in most of the polyamide market. Furthermore, the company has recently launched the first halogen-free[1] Rynite FR533NH combining enhanced long term heat ageing performance (RTI Mechanical of 160°C under UL746 certification) and good electrical properties with a CTI of 325V. The resin also brings outstanding flammability benefit, allowing glow-wire ignition temperature (GWIT) resistance up to 775°C (UL V0 @ 0.4 mm).

SAFETY MEETS HEALTH

Agreeing with the increasing demand for consumer safety and with the customers demand to approach them to collaborate on safety applications, DuPont continue to expand its dedicated portfolio of SC and PC (Special Control and Premium Control) products for the healthcare industry. These grades are represented in Crastin PBT, Delrin acetal resins, Hytrel TPC-ET and Zytel PA product families. The SC and PC products are tested against relevant parts of USP Class VI and ISO 10993-5, -11, are manufactured according to GMP ("Good Manufacturing Practice"), provide sterilization data, are FDA and EU food contact compliant (with very few exceptions), and are globally available.

DuPont was one of the first to introduce a specific "FG" (Food Grade) portfolio of polymers. Its food contact materials (FDA and EU food contact compliant) not only use raw materials which comply with the relevant guidelines, but they are also produced in the facilities under GMP conditions, where special controls are in place for products expected to be in contact with food. These grades are represented in Crastin PBT, Delrin acetal, Hytrel TPC-ET, Rynite PET, Zytel PA and Sorona EP product families. This potential is clearly seen in the food processing industry where a food contact-approved, metal-detectable Delrin FG-400MTD acetal has found numerous applications when food safety is a key requirement".

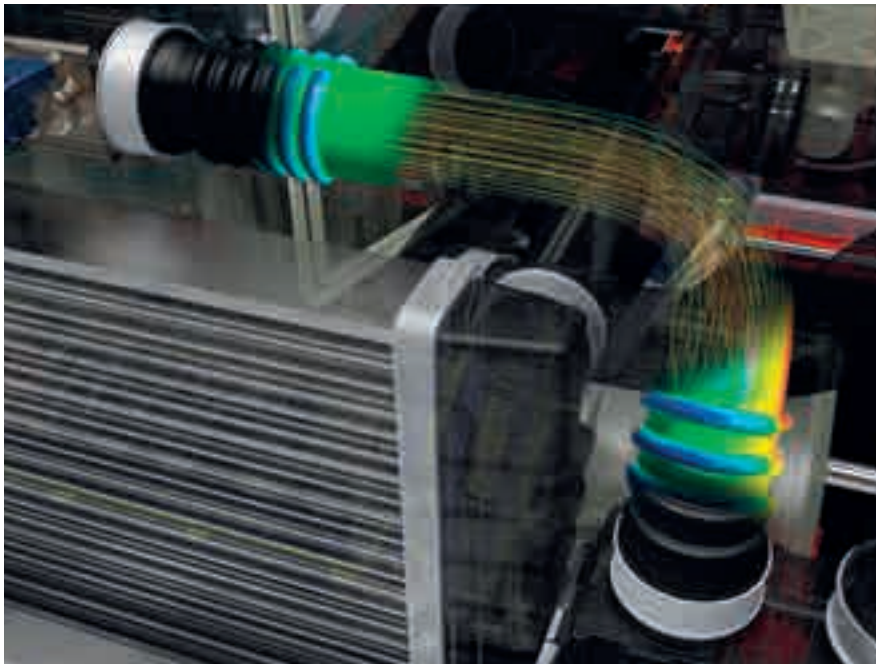
SCIENCE MEETS INNOVATION

The company works with customers throughout the product development cycle, continually advancing materials, supporting design and optimizing for processing.

At Fakuma, DuPont is emphasizing advances in the design stage by helping customers predict how its materials will perform based on enhancements made by DuPont Engineering Research to its materials modelling expertise. "Our State-of-the-art advanced computer modelling and simulation will help original equipment manufacturers confidently select the best material for the application because they will better understand how the material will perform given the dynamics of their particular product", said Craig Norrey, head of design (EMEA) at DuPont. "Our Finite Element Analysis (FEA) models are providing part performance confidence, thus minimizing prototyping".

Throughout the "art-to-part" process, DuPont's design and engineering teams share data and analysis with their partners using Computer Aided Engineering (CAE) standard software suites in a non-proprietary, transparent environment. "This transparency provides a true collaborative connection between DuPont and our value-chain partners, with real-time information available at all stages of design and development", added Craig.

www.dupont.com



At Fakuma 2014, DuPont present how its Computer Aided Engineering (CAE) and Predictive Engineering Solutions can provide outstanding benefits to customers

[1] "halogen-free" as used here indicates that no halogen is added as an intended ingredient.

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MASTERBATCHES AND COMPOUNDS

A "NEW LIFE" FOR POST INDUSTRIAL POLYMERS

THE REGENERATED COMPOUND IS A TECHNICAL ARTICLE ON WHICH VEPLASTIC'S INNOVATION ACTUALLY REPRESENTS AN OPPORTUNITY FOR CHOICE FOR PLASTICS PROCESSORS. THE COMPANY IS ABLE TO GIVE NEW LIFE TO POST INDUSTRIAL POLYMERS PROVIDING A REAL AND EFFECTIVE CONTRIBUTION TO THE DEMANDS OF ENVIRONMENTAL SUSTAINABILITY

"Don't call it only compound. It's a Veplastic compound". This sentence wish to signify that there is an entire company behind what could only be perceived as a good of fairly common use. An entire company that has been able to first understand that "Innovation is the central issue in economic prosperity" (Michael E. Porter, professor at Harvard Business School).

This is the constant and dominant thought in forty years of family Vezzari's business experience. Today, after a long lived experience nothing of the original spirit was lost but there is a deep look toward the "new" as a spring capable of providing the energy for success.

To help in understanding the company at first we must say that the business was born in the 70s as an artisan society for regeneration and compounding of plastics. At that time people lived an atmosphere of ardent passion for the work that it was able to gradually transform a small domestic reality in the actual reference company for the plastics market.

Today, forty years later, Veplastic is a manufacturer of polyolefin-based compounds on its own formulations and it is able to provide very high production standards of quality and logistics at a value highly competitive. It is really wide the availability of specific formulations ("tailor-made") for use in injection moulding and extrusion in the field of housewares, furniture indoor and outdoor articles for the building and automotive industries.

In the operating site of Vergiate (Varese, Italy), the current total production capacity stood at higher levels than the 180 tons/day and Veplastic is able to provide, from the first to the last kilogram, product quality and timeliness and promptness in delivery. The company management,

as expressed in the "Quality Policy", is also committed to respect a full ethical behaviour protecting the environment with the goal of complete customer satisfaction. On these key points a "code of honour" is built step by step and this has been able to generate full and loyal links both with suppliers and customers. Based on that "mission" this strategy is always alive in the company's style: to guarantee safe and reliable products that fully match the expectations of the customer, competitive in the market, in full compliance with applicable laws and regulations. Another key to success it was the gained awareness of "being a team" and therefore the management has devoted a lot of resources in the staff training. Remembering that "when an institution, organization, or nation, loses its ability to arouse high personal performance, its great days are over" (John W. Gardner), Veplastic has moved into the professional qualifications and consolidation of skills of all the people who work within the company. This attitude has been able to support the many technical challenges that the market continues unceasingly to put in the effort to improve performance and reduce costs.

REGENERATED COMPOUNDS, PROCESSING AIDS AND BIOPOLYMERS

There are wide generations of remanufactured products suitable for special applications, consisting of polyolefin polymers with fillers of different nature that combine the aesthetic and technological properties even in the presence of tolerances as often required. The regenerated compound is a technical article on which Veplastic's innovation, from the very beginning and beyond opinions ruling, actually represents an opportunity for choice for customers who are able to make a choice combine physical/ mechanical and thermal properties very similar to the polymer virgin, with an excellent dimensional stability. Even for the most demanding applications, with particular formulation components, it is possible to give a satisfactory reply and competitive and in particular appropriate treatments may also provide improvements in the aesthetic aspects.

The company is thus able to give new life to post industrial polymers providing a real and effective contribution also to the demands of environmental sustainability who want to develop without the waste of resources that are not renewable.

Last born in the large world of the Veplastic's compounds and flagship of the wide range of products are Master LV and Vebio, recent fruits of the plant of continuous innovation.

Master LV is a special additive, specifically designed for the production cycle of materials such as LLDPE, HDPE and metallocene resins (applications already present in the films by blow moulding, cast film, extrusion of pipes and sheets, flat head, moulding & blow moulding etc.) that requires a certification for contact with food.

This product behaves as a facilitator of the process and it is formulated to improve the processability of polymer masses for the extrusion of films made of polyolefins. Its main feature is to act by coating the inner surface of the extrusion line and/or the mould thereby reducing the friction between the polymer and the metal. The main advantages of this innovative product are:

- reduction or elimination of "melt fracture"
- improvement of the surface, purity, and brilliance
- reduction of energy consumption and melting temperature
- increasing of the flow rate
- improved transparency and better mechanical properties
- reduction of odour typical of PEG-containing additives.

Master LV behaves as a processing aid and it is formulated to improve the processability of polymer masses for the extrusion of polyolefin films

Vebio is made instead on the basis of a biopolymer (compostable according to UNI EN 13432) with dispersion of inorganic components. This product also marks Veplastic's entry into another market segment related to research performances that safeguard the sustainability. In this aim it could be again seen the original spirit declined according to another point of view.

Today the company is conducted in the first person by Claudio Vezzari, in an effective and continuous presence, backed by the passion and youth, that every day renews the tradition in innovative ideas that are being tested in the laboratories dedicated to the needs and requirements of customers.

www.veplastic.com


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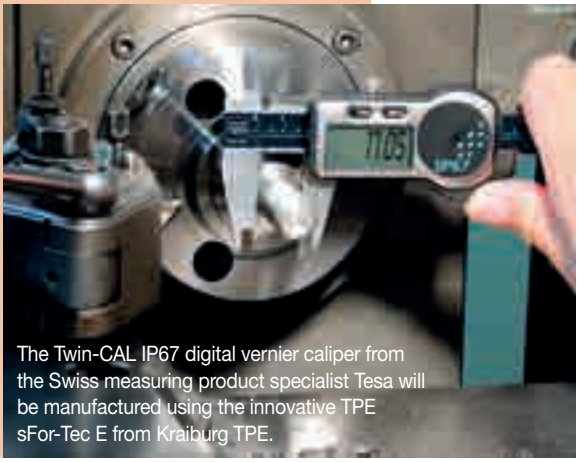
Thermoplastic elastomers

MORE RESEARCH IN THE FUTURE

With the support of the regional sales teams for EMEA and a view toward a research-oriented strategy, Kraiburg TPE's focus at Fakuma 2014 (Stand 5303, Hall B5) is on special developments for customers in the European market. The expanded exhibit stand is Kraiburg TPE's response to the positive feedback at previous trade shows: "We want to give our customers at Fakuma room for intensive consultation on our custom-engineered TPEs and our TPE portfolio. Consultations are conducted by our experts from diverse market teams and development", says Michael Pollmann, Sales & Marketing director EMEA. Individual compounds can be developed for a product at the request of the customer. The materials are used in the automotive, industry, consumer and medical sectors. The TPE specialist will pass on its expertise in a presentation on viscosity in the injection moulding process. At the exhibition, Kraiburg TPE will present its latest findings on the relationship between viscosity and surface quality in thermoplastic elastomers. The presentation is scheduled for October 14, at 2:40 p.m. in the Fakuma exhibitor forum. In addition to personal consultations at the trade show, prospective customers can also find information about desired compounds online in the new eight-language product database.The company emphasises the importance of increased strategic cooperation with OEMs in research projects. As a result, it has already been granted numerous material and component releases. "We are receiving more and more releases through new projects and new compounds. The industry can look forward to creative developments from Kraiburg TPE in the future", says Michael Pollmann. The TPE manufacturer supports its customers with its own regional sales teams. Currently the organisation is being expanded primarily in Germany, Poland, Russia, Finland and the Middle East and Africa. The company's sales team in Poland is supported by the retailer Plastoplan. Kraiburg TPE and Plastoplan already cooperate in Austria, Switzerland and Hungary. On the Finnish market sales will be supported in the future by the distributor of plastic products Bang & Bonsomer Group Oy, with which Kraiburg TPE entered into a cooperation in Russia two years ago. ■

www.kraiburg-tpe.com



The Twin-CAL IP67 digital vernier caliper from the Swiss measuring product specialist Tesa will be manufactured using the innovative TPE sFor-Tec E from Kraiburg TPE.

NEWS

Polyimide and polyetheretherketone

High performance polymers for high temperatures

Based in Hamburg, Germany, the distribution company Bieglo presents at Fakuma 2014 (Stand 4113, Hall B4) its portfolio of temperature-resistant high performance polymers. This year's focus is on Meldin 7000 line of semi-finished shapes, made up of thermoset polyimide, produced by Saint-Gobain. These plastic shapes are suitable for applications at high temperatures up to 315°C (482°C intermittently). Due to its high temperature resistance, Meldin 7000 meets the demands of excellent performance in different industries like aerospace, semiconductor, automotive, appliance, pumps, valves and controls. It can be processed in different ways, as for example isostatic moulding, hot compression moulding and direct forming. Another important cornerstone of Bieglo is the range of CoPEEK produced by Panjin Zhongrun High Performance Polymers. The powders and granules are used in the production of stock-shapes, tubes and sheet, but also find a growing number of injection moulding customers. Due to its excellent quality-price relation, CoPEEK (Tg of 143°C) has found an increasing group of converters that produce PEEK products under their own brand and do not need the costly helping hand of the market leader. Bieglo also offers PEEK compounds with fibres and other additives. In the growing market of thermoplastic high performance products, the company has added thermoplastic polyimide (TPI) to its program and therefore rounds up the CoPEEK-portfolio to the top with a thermoplastic that has a Tg of 250°C. Since early 2014, Bieglo has started another activity in semi-finished products made of CoPEEK; so rods, sheets and tubes are now offered via a new platform in the internet: www.peek-shop.de. Furthermore, Bieglo offers PEEK film and various filaments made of high performance polymers. As part of the Bieglo Group, the company ASP-Plastics is also present at Fakuma 2014 as co-exhibitor, focusing on their Royalite ABS fire-resistant sheet. Last but not least, at the exhibition Bieglo and Lavergne consolidate their exclusive partnership for engineering polymers made of recycled raw material. Lavergne is one of the world´s leading producers for recycled raw materials. With their ISO certified compounds, they pioneer in the contribution to the resource-saving production of innovative polymers. Sustainable products like Vyteen PC and PC/ABS, Vypet PET and PET/PBT blends are already commercially successful in the electronic and automotive industry worldwide. ■

The thermoset polyimide Meldin 7000 is a good substitution for ceramic, and can be shaped in different forms such as sheets, rods and tubes

www.bieglo.com

Engineering plastics

LED and gas tank applications at Fakuma

In Friedrichshafen (Stand 4408, Hall B4) Royal DSM introduces new high performance polyamides. The company is also demonstrating how its materials have been used in some of the latest application innovations to be introduced to the market, and it provides a sneak preview of the new R&D facilities in the Netherlands. More in detail, DSM is unveiling the next generation of Diablo high temperature resistant grades in its Stanyl polyamide 46 and Akulon polyamide 6 portfolios. These new Diablo grades are aimed at applications in automotive engine compartments such as air intake manifold, ducts and charge air cooler combinations, where temperatures can reach as high as 250°C. The company is also leading the way in high performance engineering plastics for the electrical and electronics sectors. It demonstrates the use of Stanyl TC, a thermally conductive grade of Stanyl polyamide 46, in a heat sink for new LED downlights from one of the world's leading lighting companies. Also on the DSM stand there are thermoplastic composite gas tanks for Compressed Natural Gas (CNG) that the company has developed with Covess, a specialist in advanced thermoplastic composite vessels for a wide range of applications. Together with hydrogen, natural gas is claiming its place in the field of cost-effective and low carbon footprint fuels for use in automobiles. Thermoplastic tanks

DSM is unveiling the next generation of Diablo high temperature resistant grades in its Stanyl polyamide 46 and Akulon polyamide 6 portfolios

weigh around 70% less than steel tanks, and they last longer than steel or even advanced thermoset gas tanks. They exhibit extremely low gas permeation levels, making them very safe, and they are fully recyclable. Besides thermoplastic tape, DSM provides solutions for liners in Type IV composite pressure vessels with its Akulon Fuel Lock polyamide portfolio. Most recently, a material is developed for large pressure vessels for heavy duty vehicles and gas transportation. DSM's commitment to exploitation of innovative and sustainable high performance materials is evidenced in its investment in a materials sciences research building on the Chemelot Campus in Sittard-Geleen, the Netherlands. This facility will be opened on November 17. It will be one of DSM's most important R&D center for engineering plastics, complementing facilities in Asia and the United States. Visitors to Fakuma will be able to obtain a sneak preview of this important investment in new materials technologies and expertise, aligned with DSM's focus on "Bright Science for Brighter Living". ■

www.dsm.com

Rubber 2015

Exhibition within the exhibition

After its great success in 2012, Rubber - the satellite fair dedicated to the elastomers industry - will be staged again at Plast 2015 (Milan, May 5-9, 2015). During Rubber last edition, proposed again at Plast after 20 years of absence, more than 100 Italian and foreign exhibitors of the sector have taken part, occupying a large area of Hall 11. The entire rubber industry has been represented: from machineries manufacturers to producers and processors of finished products semi-finished products, blends, thermoplastic elastomers, natural and synthetic rubber, auxiliaries etc. Given the interest that has been expressed by a host of former and new exhibitors, it already appears that the number of participants and the area dedicated to Rubber 2015 will both be larger than in 2012. Unlike last edition, Rubber 2015 will be coordinated by Sviluppo Servizi Gomma, Assogomma commercial company, that will take care of applications and stand allocations and even of congress, of course in cooperation with Promaplast (the organizer of Plast), to better satisfy the needs of exhibiting companies, being a benchmark always more and more relevant for the sector. For further information: Giovanni Panico (g.panico@federazionegommaplastica.it - Phone: +39 02 43928231-33); Fabrizio Vanzan (f.vanzan@promaplast.org - Phone: +39 02 82283744).

Synergy with Expo

It has to be also considered the extraordinary coincidence with Expo (held in Milan from May 1 to October 31, 2015), that will take place at walking distance from Plast 2015 and Rubber 2015. Benefits will be also granted to foreign operators of our sector, thanks to the support of the agencies of countries taking part in Expo that will organize delegations coming to visit Milan. A cooperation agreement between the Plast fair secretariat and the Fiera Milano executives will involve joint marketing initiatives and concrete benefits for international operators in the plastic and rubber industry, with the aim of exploiting all extraordinary incentives available from countries attending Expo 2015 in order to arrange delegation visits to Milan. Thanks to the network to be established between associations and foreign operators interested in Plast in collaboration with the various authorities working on Expo, the overlapping of the two events could provide an exceptional opportunity to strengthen the international scope of Plast. To date, 144 countries are officially signed up for Expo 2015, representing 94% of the total world population.

An exhibition on tour

The Plast 2015 promotional tour continued and reached China, Romania, Taiwan, Iran, United Kingdom and Spain, on the occasion of sectorial exhibitions. In fact, an informative booth was attended by the organizing secretariat and/or by local representatives of Plast 2015 during CMI Plas (Chongqing, September 18-21), Expo Plast (Bucarest, September 24-27), Iranplast (Tehran, September 25-29), Taipeiplas (Taiwan, September 26-30), Interplas (Birmingham, September 30 - October 2) and Equiplast (Barcelona, September 30 - October 3), where it was possible to ask for information in order to exhibit or visit Plast 2015.

www.plastonline.org

EXHIBITIONS & TRADE FAIRS

2014

October 27-29 - Luxe Pack Monaco (Principality of Monaco)

October 28-29 - Jec Americas (Boston, United States)

October 28-November 1 - IPF (Tokyo, Japan)

November 5-8 - Vietnam Plas (Ho Chi Minh City, Vietnam)

November 5-8 - Ecomondo (Rimini, Italy)

November 18-21 - Plastimagen (Mexico City, Mexico)

November 19-20 - Expoplast (Montreal, Canada)

November 19-22 - Plastics & Rubber Indonesia (Jakarta, Indonesia)

November 25-28 - Euromold (Frankfurt, Germany)

November 27-30 - Myanmar International Plastics Rubber Packaging Industrial Fair (Yangon, Myanmar)

December 3-5 - Rubbertech (Shanghai, China)

December 4-7 - Plast Eurasia (Istanbul, Turkey)

2015

January 10-13 - Arabplast (Dubai, United Arab Emirates)

January 27-30 - Interplastica (Moscow, Russia)

January 29-February 3 - India Plast (Gandhinagar, India)

February 5-10 - Plastindia (New Delhi, India)

March 1-3 - Saudi Plastics & Petrochem (Jeddah, Saudi Arabia)

March 10-12 - JEC Composites (Paris, France)

March 10-14 - Intermold Korea (Seoul, South Korea)

March 10-14 - Koplas (Seoul, South Korea)

March 23-27 - NPE (Orlando, United States)

March 26-28 - Mecspe (Parma, Italy)

April 28-30 - Plast Print Pack Nigeria (Lagos, Nigeria)

May 4-8 - Feiplastic (São Paulo, Brazil)

May 5-9 - Plast 2015 (Milan, Italy)

May 19-21 - Plast-Ex (Toronto, Canada)

May 20-23 - Chinaplas (Guangzhou, China)

May 26-29 - Plastpol (Kielce, Poland)

August 26-29 - Tiprex (Bangkok, Thailand)

November 4-6 - Fullplast (Santiago, Chile)

November 27-30 - Indplas (Kolkata, India)

2016

January 10-13 - Plastivision Arabia (Sharja, Saudi Arabia)

January 18-21 - Saudi Plastics & Petrochem (Riyadh, Saudi Arabia)

March 1-3 - Plastics & Rubber Vietnam (Ho Chi Minh City, Vietnam)

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MEETINGS & CONGRESSES

Austria

November 3-5, 2014 - Vienna: Wood-Plastic Composites - AMI (www.amiplastics-na.com)
December 2-4, 2014 - Vienna: Silicone Elastomers/Thermoplastic Elastomers World Summit - Smithers Rapra (www.smithersrapra.com)
February 17-19, 2015 - Vienna: International conference and exhibition on pipeline protection, coating technology, materials and markets - AMI (www.amiplastics-na.com)

Belgium

November 20-21, 2014 – Brussels: Plastics Recyclers Europe Annual Meeting 2014 (www.plasticsrecyclers.eu)
December 2-3, 2014 – Brussels: 9th European Bioplastics Conference (www.en.european-bioplastics.org)

Arab Emirates

December 8-10, 2014 - Abu Dhabi: Flexible Packaging - AMI (www.amiplastics-na.com)

Pira Packaging Summit 2014

The new world of packaging

Over the last five years, the economic downturn and declining consumption in many key developed countries have led the global packaging and packaging materials sectors to be increasingly driven by cost cutting, resource saving considerations and efficiency improvements. As these overbearing market dynamics have been gradually reducing their grip, the packaging sector is now confronted with a new set of complex market drivers set to catalyse a new world order of packaging, and a wealth of new opportunities. On November 11-12, Smithers Pira's packaging event will fully explore the meaning of this emerging new order. The 5th annual Pira Packaging Summit, which is once again held in association with the magazine Packaging News, is taking place at 230 Bishopsgate, London, and precedes the UK Packaging Awards. The different sessions running throughout the conference will include: Consumers demanding more for less; Internet of things - How will packaging function; Broadening scope of price comparison sites; Material consumption, cost innovation, innovation in luxury and economy. Featuring presentations by experts from Kingfisher, SABMiller, NVC Packaging Centre, Linpac Packaging, Marks & Spencer, Global Print Strategies and more; these days of summit will delve into the new and evolving industry drivers related to the new world of packaging, changing global consumer behaviours, the digital world, market innovations and enabling technologies that have emerged within the packaging sector since the recession. For firms to position their business to take advantage of this growth potential and to innovate effectively, it is imperative to understand how this wide range of drivers will co-relate to create the packaging market of the future and how the industry can work together to meet the demands of its customers.
www.pack-summit.com

France

March 11-12, 2015 – Lyon: 2nd World Elastomers Summit - ACI (www.wplgroup.com)

Germany

October 28-30, 2014 - Cologne: Polyolefin Additives - AMI (www.amiplastics-na.com)
November 4-6, 2014 - Cologne: Polymer Foam - AMI (www.amiplastics-na.com)
November 11-13, 2014 - Nuremberg: PETnology Europe - PETnology/tecPET (www.petnology.com)
December 9-10, 2014 - Frankfurt: - Maximising Propylene Yelds - ACI (www.wplgroup.com)
December 2-4, 2014 - Cologne: Thin Wall Packaging - AMI (www.amiplastics-na.com)
December 9-11, 2014 - Cologne: Fire Resistance in Plastics - AMI (www.amiplastics-na.com)
June 21-26, 2015 - Dresden: EPF 2015 - European Polymer Congress (www.epf2015.org - www.aim.it)

Spain

February 23-25, 2015 - Barcelona: European Additives & Colours Conference - SPE (www.4spe.org)
March 9-13, 2015 - Sitges (Barcelona): 4th International Conference on Multifunctional, Hybrid and Nanomaterials - Elsevier (www.hybridmaterialsconference.com)

United Kingdom

November 11-12, 2014 - London: Pira Packaging Summit - Smithers Rapra (www.pack-summit.com)

United States

November 6, 2014 - Philadelphia: Medical Plastics Minitec - SPE (www.4spe.org)
November 11-12, 2014 - Philadelphia: Plastics in Photovoltaics - AMI (www.amiplastics-na.com)
December 9-10, 2014 - Philadelphia: Compounding World Forum - AMI (www.amiplastics-na.com)
February 22-25, 2015 - Houston: International Polyolefins Conference - SPE (www.4spe.org)

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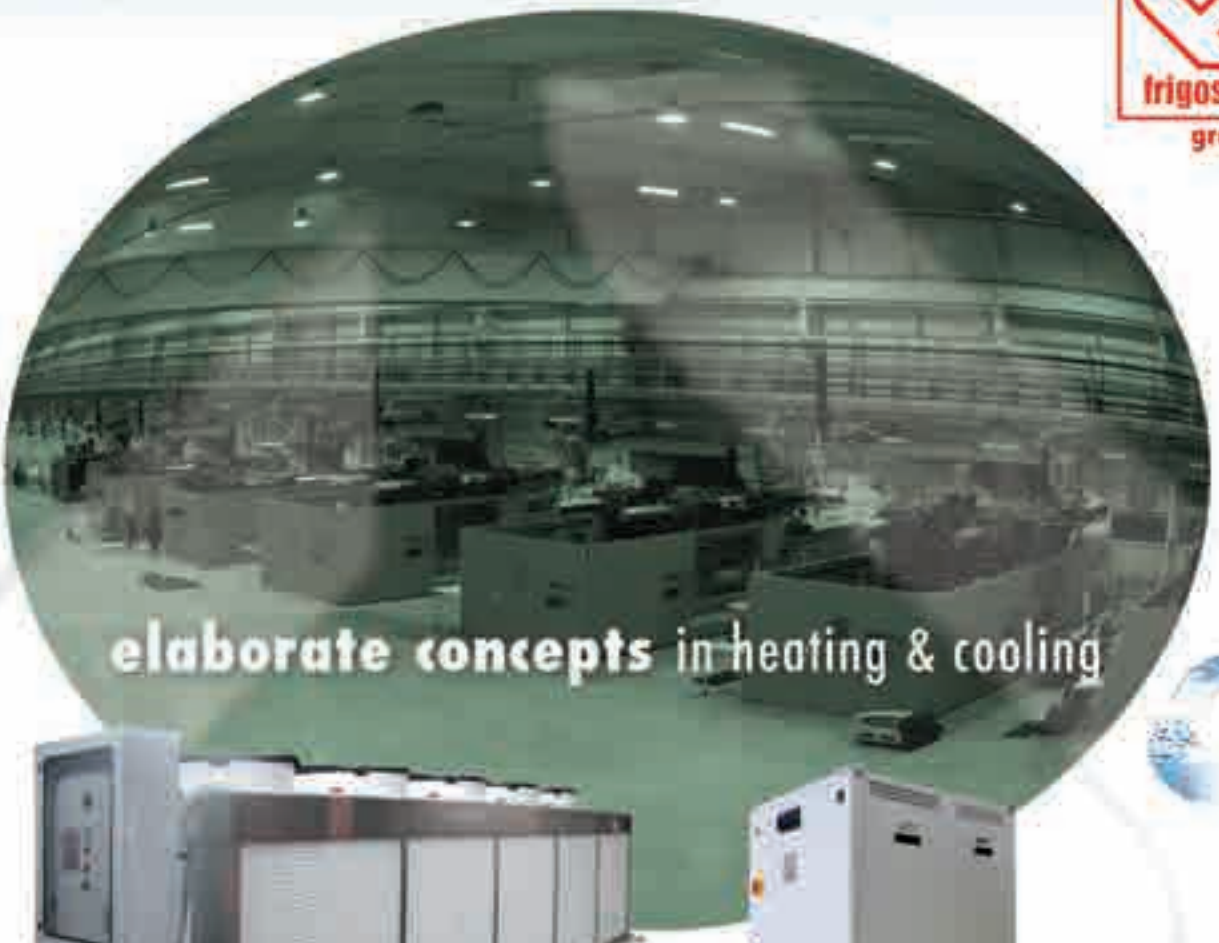

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