OCTOBER 2018

ISSN 2052-9376

Injection WORLD

E&E MATERIALS SHOW THEIR POWER

PRODUCT DEVELOPMENT TECHNOLOGIES

FAKUMA 2018 INJECTION MOULDING PREVIEW

AMI

Bringing the plastics industry together

Want to read Injection magazine offline?

WORLD

Get the app and take your editions anywhere!

The *Injection World* magazine app is really easy to use and, once you've downloaded an edition, there's no need for a live data connection. It's great for anyone on the move. Just open the app to browse the latest edition on planes, trains, subways – anywhere.

The dedicated *Injection World* app is available free-of-charge for iPads, iPhones and a huge range of Android-based tablets and smartphones. Aside from enabling off-line reading, the app also gives you fast access to our archive of more than 35 back issues allowing you to build up your own library. And if you opt for the free subscription on installation, all future editions will arrive on your device automatically.

The *Injection World* magazine app has already been downloaded more than 17,500 times by readers in more than 85 different countries. Why not try it out yourself. You can find the app in Apple's App Store, in iTunes and in the Google Play Store. Just search for "Injection World" or "AMI Plastics". Or click the relevant button below.

Download on the App Store

GET IT ON Google Play

Injection WORLD

COMING NEXT ISSUE
› Automotive Interiors & Exteriors › Engineering Plastics › Moulds & Hot Runners

CONTACT US

AMI
Third Floor, One Brunswick Square,
Bristol, BS2 8PE, United Kingdom
Tel:+44 (0)117 924 9442
Fax:+44 (0)117 311 1534
www.ami.international
www.twitter.com/plasticsworld
Registered in England No: 2140318

EDITORIAL

Editor-in-Chief: Chris Smith
chris.smith@ami.international

Editor: David Eldridge
david.eldridge@ami.international

Technology editor: Peter Mapleston
editorial@injectionworld.com

Contributing editor (UK): Mark Holmes
editorial@injectionworld.com

ADVERTISING

Advertisement manager: Claire Bishop
claire.bishop@ami.international +44 (0)1732 682948

Sales & commercial manager: Levent Tounjer
levent.tounjer@ami.international +44 (0)117 924 9442

Sales manager (China): Jenny Zhou
jenny.zhou@ami.international +86 13651 985526

Events and magazines director: Andy Beevers
andy.beevers@ami.international

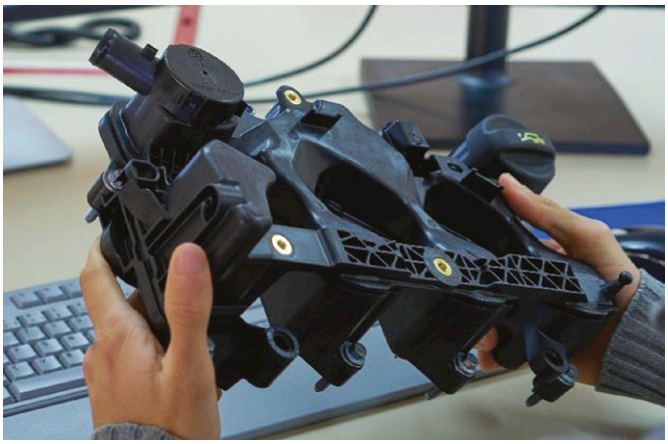
DOWNLOAD MEDIA DATA

Warning of PA 66 shortages

Growing tightness in the polyamide 66 market is putting automotive injection moulders that use the material in "serious difficulty", according to GPA (Groupement Plasturgie Automobile – the association of French automotive plastic parts makers). It adds that the price of PA 66 has increased by more than 40% since 2017.

The organisation said in a statement that force majeure has been declared by a number of PA 66 producers which have imposed quotas on their customers. The current situation is caused by limited production capacity for the PA 66 feedstock adiponitrile, it said.

The GPA says its members are asking PA 66 producers to increase production in order to secure the supply chain. It is also asking carmakers to help the situation, in particular by shortening their approval processes for new materials.



PA 66 is used in automotive parts like cylinder head covers

Armelle DuMont, Managing Director of the GPA, said: "These shortages of materials mean that supplies to certain members of the GPA will dry up at the start of 2019, a situation that could put the complete production chain in peril." He noted that only 55% of Europe's PA 66 production capacity is currently available. "Hasn't the time come to speed up investments in Europe and renovate the existing lines?"

US-based integrated PA 66 producer Ascend Performance Materials responded with a statement in which it said the compounding facility of Britannia Techno Polymer in Tilburg, Netherlands, which it recently acquired, is running at full capacity. Two of its US facilities are producing at optimal levels, it added, and although its Pensacola site remains under force majeure, its production is around 90% of capacity.

Ascend also has adiponitrile expansion projects, with 40,000 tpa set to start up soon and a further 180,000 tpa expansion by 2022. "We plan to continue adding capacity to relieve the bulk of constraints felt in the market," said Ascend.

The company stressed that PA 66 is still the "material of choice… in a number of industries."

› **www.autoplasticgate.fr**
› **www.ascendmaterials.com**

Saint-Gobain US project

Saint-Gobain Performance Plastics has broken ground on an expansion of its site in Beaverton, Michigan, which will create 60 jobs for skilled workers when it opens in December 2019. The project will increase capacity for single use systems for drugs and vaccines. The expansion will add space to host extrusion, moulding and assembly in an ISO Class 7 production area.

› **www.saint-gobain.com**

Hasco boosts hot runner division

Hasco, the supplier to mould makers, is investing in further expansion of its hot runner capacities.

The German company said that the process of restructuring and expanding its Hot Runner division over the past three years has led to a large number of new employees being taken on, investments being made in machinery and plants and the product portfolio extended. "These measures have led to a clear growth in sales and hence to a strengthening of the company's market position in the highly competitive hot runner market," it said.

It has recently added a high-precision NLX-series lathe from DMG Mori and a Studer cylindrical grinding machine at its Guntramsdorf site in Austria. This opens up more machining options to produce complex precision components for hot runner nozzles and shorten delivery times.

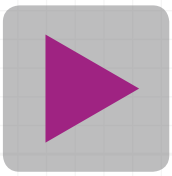
› **www.hasco.com**

An NLX-series lathe from DMG Mori has been installed by the Hasco team

Dryflex® WS

How would you use it?

Be curious...
click the play button



Request a sample

Fakuma®
HALL B1
STAND 1217

HEXPOL TPE
info@hexpolTPE.com
www.hexpolTPE.com

HEXPOL TPE

Milacron in agreement with Hawk

Milacron Holdings' DME business has signed an agreement, under which Hawk Mold and Die Supply of Pipersville, Pennsylvania, will become an exclusive US East Coast distributor and warehouse for DME's mould technologies, mould bases and industrial supplies.

Hawk had hitherto been a 'premier' stocking distribution channel for a competitor to Milacron. DME launched 15 new products and product line extensions at NPE 2018 in Orlando, Florida, in May.

› **www.milacron.com**
› **www.hawkmold.com**

Borealis gives green light to Belgian PDH plant

Polyolefins major Borealis is to go ahead with its plan to build a major propane dehydrogenation (PDH) plant at its facility in Kallo, Belgium. The project, which was first announced in 2017, will see Borealis build a world-scale plant with capacity to produce 750,000 tpa of propylene. It is scheduled to start up in the first half of 2022.

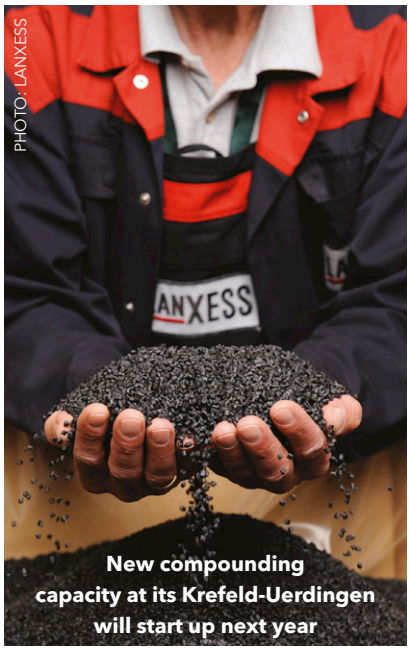
Alfred Stern, Borealis CEO, said: "This important investment in our European assets fully supports our strategy to be a leading supplier of innovative polypropylene solutions and propylene to our customers in Europe… In addition, we are currently studying the feasibility of various capacity increases for polypropylene based on this additional propylene capability."

The Kallo facility in Belgium, where Borealis will build its new propylene plant

The Borealis Kallo location was selected due to its logistical position, its experience in propylene production and handling and synergies with Borealis' existing PDH unit. Borealis will use Honeywell UOP's Oleflex technology, designed for on-purpose propylene production.

› **www.borealisgroup.com**

Lanxess adds more compounding capacity at Krefeld-Uerdingen



New compounding capacity at its Krefeld-Uerdingen will start up next year

Lanxess is to build another compounding plant at its Krefeld-Uerdingen site in Germany to produce Durethan PA and Pocan PBT technical compounds. The company said work will start on the "mid double-digit million-euro" investment in Q4 of this year with production expected to commence in the second half of 2019. Capacity was not disclosed.

This latest investment at the Krefeld-Uerdingen site follows the start up of a new line for production of specialty compounds in March this year. "Krefeld-Uerdingen is our central production platform for high-performance plastics, especially for the European markets. The expansion will enable us to better serve the continuing high demand from this market region in the future," said Michael Zobel, Head of the Lanxess High Performance Materials business unit.

Lanxess Management Board Member Hubert Vink said the high performance plastics unit is central to the company's growth strategy. "By expanding capacity, we are further strengthening our position as a provider of innovative product solutions for modern mobility. At the same time, we are making even better use of the potential of our integrated value chain for these products," he said.

In addition to compounding, Lanxess polymerises PA6 at Krefeld-Uerdingen. At its other European facilities, it also produces PA6 at Antwerp in Belgium and produces PBT and compounds at Hamm-Uentrop in Germany.

› **www.lanxess.com**

Next generation temperature controllers for the 4.0 factory

New Easytherm

Temperature control unit
for mould conditioning

Fakuma
A7 - 7201

Ergonomic control

- New TFT 4.3” display, tilted for optimal visibility in any situation
- Capacitive touch buttons for immediate access to the main functions
- Designed for communication with machines from different suppliers via OPC-UA

Innovative design

- Electronics separated from the hydraulic components for maximum control reliability
- Removable side panels for easy maintenance
- Integrated front handle for excellent portability

Total versatility

- Deep-drawn tank made of AISI 304 stainless steel, against the effects of aggressive fluids
- Plate heat exchanger designed to maximize cooling response speed
- Optional flowmeter for absolute precision in parameter control

Wf 4.0 Winfactory 4.0 Ready

Aquatech
A Piovan Company

aquatech.piovan.com

SABIC performance unit set up: plans to merge with parts of Clariant

Sabic has signed a memorandum of understanding (MoU) with Clariant that will ultimately enable the formation of a new 'High Performance Materials' business. As part of the plan, Sabic will turn parts of its Specialties business – the Noryl and Ultem resins and LNP compounds and copolymers – into a standalone business in order to prepare it "to participate in further organic and inorganic growth".

The process is anticipated to take until the end of 2019. If the transaction with Clariant then proceeds, the separated businesses would be merged with Clariant's additives and the "high value" parts of its masterbatch division by the end of 2020. This includes its colour, high temperature resins and healthcare activities.

Sabic has recently acquired a 24.99% stake in Clariant but has stressed that there are no plans for a full merger.

PHOTO: SABIC

SABIC announced plans for a High Performance Materials business unit

Yousef Al-Benyan, CEO of Sabic, said: "Uncoupling the Specialties business will allow the unit to achieve accelerated organic and inorganic growth as aligned with our broader corporate strategy of creating a sizeable, world class specialties company."

Clariant's remaining plastics and coatings businesses will not be included in the new High Performance Materials unit. Clariant said in a statement that these businesses, which include pigments, standard masterbatches and medical specialties, will be divested by 2020.

"Despite being well positioned and having significantly increased their profitability over the past years, the businesses to be divested do not match the Group's criteria to differentiate through innovation in higher growth and higher profitability areas," the company said.

› **www.sabic.com**
› **www.clariant.com**

Momentive to have new owners

MPM Holdings, SJL Partners, KCC and Wonik QnC have entered into a definitive agreement to acquire silicones company Momentive of the US. The deal values Momentive at about $3.1bn.

Jack Boss, CEO and president of Momentive, described this as "the result of a thoughtful and comprehensive review of the strategic growth and value creation opportunities available to the company". It will, he added, enable the silicones and quartz businesses to benefit from KCC and Wonik's industry expertise, while "expanding our portfolio of products, broadening our geographic reach and strengthening our financial position".

It will be financed by a mixture of cash and new debt but is not subject to any financing contingency and is expected to close in the first half of 2019.

› **www.momentive.com**

RJG's new E60 servo-driven hydraulic machine

Boy delivers to RJG

RJG, the specialist in injection moulding training, has received a new E60 servo-driven hydraulic injection moulding machine with over 2,750 bar of injection pressure and 60 US tons of clamping force from Boy Machines at its training facility in Gibsonville, North Carolina, US. The machine also features Boy's new Procan Alpha 4 machine controller, with graphic menu guides and high-speed screen set-ups.

RJG added that the two-platen design allows students to see a machine that differs from the typical three-platen design, while occupying less floor space.

› **www.dr-boy.de** › **www.rjginc.com**

There are numerous applications for injection moulding technology in electronics. We revolutionised the overmoulding of plug connections several decades ago. What counts is technology, capability and quality. Play it safe with our customised production concepts. We incorporate the entire range of ARBURG products and services - including upstream and downstream steps.
www.arburg.com

ARBURG

Piovan to list its shares

The Piovan Group Piovan has started activities for listing its ordinary shares on the Mercato Telematico Azionario by its majority owner, Pentafin. About 35-40% of the shares are expected to be offered in a process that is expected to be launched by the end of 2018, subject to market conditions and certain regulatory approvals.

Based at Santa Maria di Sala, near Venice, Piovan produces auxiliary equipment systems for the storage, transport and processing of polymers and plastic powders. Since 2015, it has also become active in auxiliary automation systems for food powders. During the six-month period to the end of June 2018, it had total revenues and other income of €127.4m and adjusted EBITDA of €18.3m.Piovan has seven manufacturing plants around the world.

› **www.piovan.com**

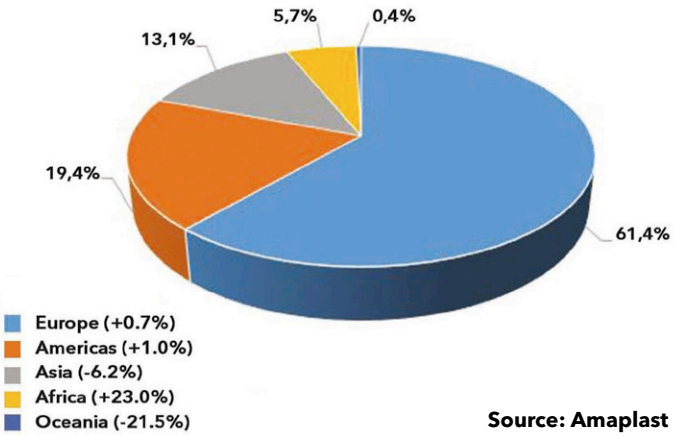
Italian machinery trade balance weaker in H1

Italian imports of plastics and rubber processing machinery grew by 23% in H1 2018 compared to the same period last year while exports edged only fractionally up. This meant the trade balance fell by 7% and is attributed to "the lacklustre performance heralded in the early months of the year", according to the country's plastics and rubber machinery trade association Amaplast.

The plastics machinery industry was still over €1bn in the black in total, but €14m in the red for injection moulding machinery. "The dynamism of purchases from abroad may be interpreted as renewed faith in the domestic market, mainly due to investment incentives that are likely to be renewed and naturally hoped for by businesses in the industry," Amaplast said in its analysis.

Strongest growing import sectors included injection moulding machines (+31%), blow moulding machines (+75%), flexographic printers (+111%) and moulds (+12%). This was driven mainly by strong demand from the packaging sector, which grew by 14% last year and has continued on a strong growth path in 2018.

Italian plastics machinery exports by destination (% share and Δ% H1 2018/H1 2017)



Source: Amaplast

Amaplast said Germany remains the largest exporter of plastics machinery to Italy and widened its lead over China in H1.

Europe remains the largest export market for Italy's plastics machinery firms, accounting for 61% of the total, although export sales were static year-on-year. The NAFTA countries were in second place and saw a 7% increase in sales. Russia, which had a very strong 2017, saw a major decline. Sales to Asia, Oceania and the rest of Latin America were down.

According to Amaplast president Alessandro Grassi, its members' July order books were stable to slightly up on both June 2018 and July 2017. "This gives us reason to hope for a rebound in production and exports in the last quarter of the year," he said.

› **www.amaplast.it**

Wittman takes stake in ICE-flex MES firm

The Wittman Group has entered into a joint venture with ICE-flex, an Italian producer of manufacturing execution systems (MESs) mainly for injection moulding companies with up to 50 machines per production plant. This will enable Wittmann to offer TEMI, a modular MES package, to its customers.

According to Wittmann, TEMI "offers a considerable number of easy-to-operate functionalities as standard", while also being able to support various manufacturer-dependent versions and interpretations of Euromap 63, which together cover virtually all machine manufacturers on the European market. The new Euromap 77 protocol will be introduced as an additional future communication standard at Fakuma 2018.

Wittmann Battenfeld is selling the package developed by ICE-flex for production planning, monitoring and data storage under the brand name TEMI+. The '+' is said to stand for "the support of functions which can only be realised with Wittmann 4.0 production cells", which connect machines and auxiliaries in a moulding plant.

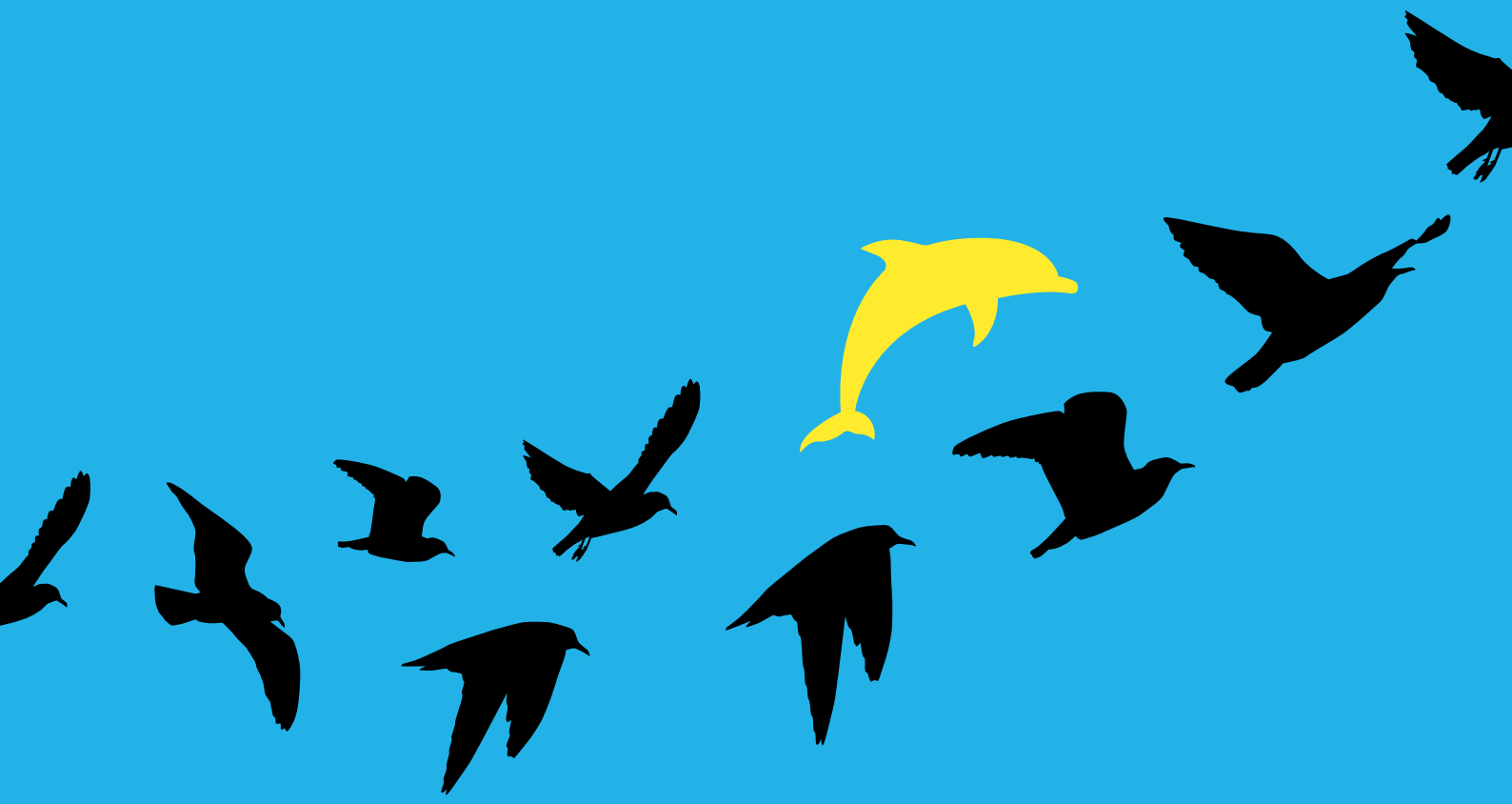
› **www.wittmann-group.com**

Fakuma

16-20 OCTOBER

HALL B1 STAND 1218

Demand the Impossible



PA PBT PPA PET PC PP TPU PK POM PPS PEEK

The future is formed in the hands of the ones who achieve the impossible. Eurotec is a reliable and competitive manufacturer of engineering plastics; provides flexible, innovative, sustainable, fast and tailor made solutions. Presents competitive products in standard grades and also generates creative solutions for special demands.

www.eurotec-ep.com

eurotec® engineering plastics

Long-Fibre Thermoplastics 2018

Capitalising on advances in LFT materials, processing technologies and applications

4-5 December 2018
Sofitel Kurfürstendamm, Berlin,Germany

Sponsored by:

LFT-G®

Media supporters:

Compounding WORLD

Injection WORLD

AMI's Polymer Distribution in Europe 2018 study shows growth, M&A and new entrants to be key features of the market, writes the report's author Elena Mozzato of AMI Consulting

Consolidation drives European polymer distribution market

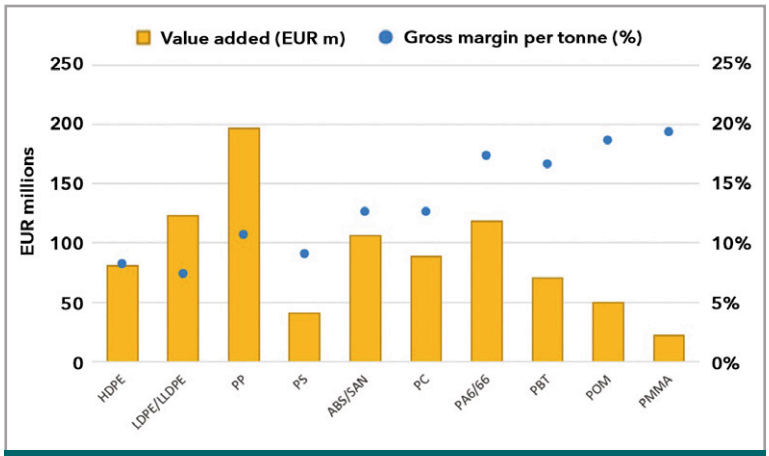
Polymer distribution plays an increasingly important role within the polymer industry supply chain providing opportunities for polymer producers to cut costs, improve efficiencies and deliver better service and support to the plastics processor. For converters, distributors enable them to purchase small lots of material and gain invaluable expertise and technical assistance in the journey from concept development to product delivery with its own customers. However, in an industry notorious for its slim margins and in a low growth economy, the successful distributor needs to be rigorous in understanding the cost-to-serve and the value gained from its customers in order to ensure its survival and growth.

Following challenging periods of resin price volatility and times of extreme resin shortages, distributors have managed to enhance profitability and margins by offering much needed reliable supplies of material, technical support and new services to customers. Innovative strategies and inventive customer dialogue have also been key elements in the strategy of successful companies in the industry.

The 2018 edition of AMI's Polymer Distribution in Europe report revises and updates the status and position of distributors across Europe. It builds on its earlier research to consider the newest trends influencing the industry, such as: the EU Strategy for Plastics in a Circular Economy; investments in bioplastics, recycled resins and 3D printing; a strong focus on plastics in pharma and medical sectors; digitalisation as a new competitive strategy; and Brexit's influence on the political and economic situation.

Continuing growth

Approximately 13% of polymer materials sold in Europe in 2018 were supplied through the distribution channel. This proportion is predicted to increase in the future as polymer suppliers move



Value added by distribution in the EU in 2017 (EUR million)
Source: AMI Consulting 2018

higher volumes through distribution to save costs and optimise sales networks. However, these benefits are likely to accrue to the larger, pan-European groups, presenting challenges to smaller distributors or groups.

In 2017, the volume of polymers distributed in Europe surpassed 4 million tonnes, proving that this is a healthy business in which specialties are becoming increasingly important, as they add a competitive edge. Polymer distribution accounted for revenues of above €8.2bn, with polyethylene, polypropylene and polyamide being the largest contributors to an added value of nearly €950m.

The pattern of distribution sales and country ranking by sales volumes, confirms Germany and Italy as the top two countries in Europe. These are now followed by the Benelux countries, which have seen distribution sales increasing substantially as local players who used to operate as traders have recently embraced the official distribution model. Spain ranks fourth, which corroborates the positive economic outlook the country has been recently enjoying.

Resinex remains the leading distributor in Europe, while other familiar names such as Biesterfeld and Ultrapolymers Group maintain a strong position in the market. The entrance into the official distribution market by historical traders such as Vinmar International, Bamberger Polymers and NCT Holland, represents the biggest disruption that the distribution sector has experienced over the last three years. Their presence is often seen as a threat by smaller local distributors who operate in markets where customer size varies enormously and where most clients buy small quantities. However, despite the lower prices these traders-turned-distributors offer and the disruption they may cause, they may often find it difficult to sell with success due to a lack of knowledge of local networks.

Despite the difficulties intrinsic to polymer distribution – including demanding customer service and tight margins – this is still a growing market, and so is attractive to many companies. The structural changes brought by recent M&A activities portray a lively business environment offering opportunities to those who are ready to grab them. During the last couple of years, industry news has been inundated by reports of strategic corporate moves. In the most remarkable deal of this year, LyondellBasell gave the industry much to talk about with its acquisition of compounder and distributor A. Schulman. While in September Univar announced the acquisition of Nexeo Solutions in a transaction worth $2bn.

Diverging directions

Consolidation and rationalisation activities have certainly posed a degree of uncertainty for smaller distributors who have seen their contracts with suppliers ended in favour of larger pan-European groups. This trend has been pushing some of the smaller players in the opposite direction and, now free from the impediments of exclusivity and binding contracts, they are moving towards more fluid distribution agreements. Overall, the big

Polymer Distribution in Europe 2018

Polymer Distribution in Europe 2018 is a new detailed market report from AMI Consulting published in September 2018. The report identifies the trends and dynamics characterising the distribution industry, while profiling the leading suppliers and polymer distributors in the region as well as their impact on industry dynamics.

Over the seven editions, this study has evolved into the most comprehensive analysis of polymer distribution currently available on the market and represents an essential guide for industry players as they optimise business activities and plan future investments. For further information please contact Elena Mozzato, **elena.mozzato@ami.international**, tel: +44 117 924 9442.

In addition to its consultancy work, AMI organises annual conferences including Polymer Sourcing & Distribution 2019, which will be held in Barcelona, Spain on 13-15 May 2019 and is specifically created for companies involved at every stage of the European polymer supply chain. For more information on the event please contact Maud Holbrook, **maud.holbrook@ami.international**, +44 117 314 8111.

distributors are getting bigger, and the smaller ones are surviving by focusing on niche activities and the provision of unrivalled technical knowledge and customer support.

Over the next five years, polymer distribution sales are expected to continue growing above polymer demand as distributors take advantage of promising opportunities. On the one hand, the impending new polymer production capacity coming from the US, Middle East and Asia is forecast to be partly absorbed by existing distributors. On the other hand, the trend of traders embracing the official distribution model will become increasingly important as official agreements have proved beneficial, particularly in times of material shortage.

PHOTO: MANCHESTER PLASTICS

Engineering plastics

Engineering plastics are expected to continue driving the demand growth, with producers consistently investing in research and development activities to offer innovative products for new applications. Environmental sustainability and compliance with regulations will continue to be key elements in their R&D programmes and will stimulate manufacturers to expand and refine their product portfolio to gain competitive advantage.

Distribution markets of Central and Eastern Europe and Poland will continue experiencing the strongest growth as networks in this region are still growing and there is a greater opportunity to export to markets further east. Western Europe is forecast to grow at a slower pace as rationalisation activities have stabilised and suppliers are monitoring the outcomes of consolidation strategies.

Performance Polyamides

Pittsburgh / 2018

Trends and technical developments in the polyamides industry

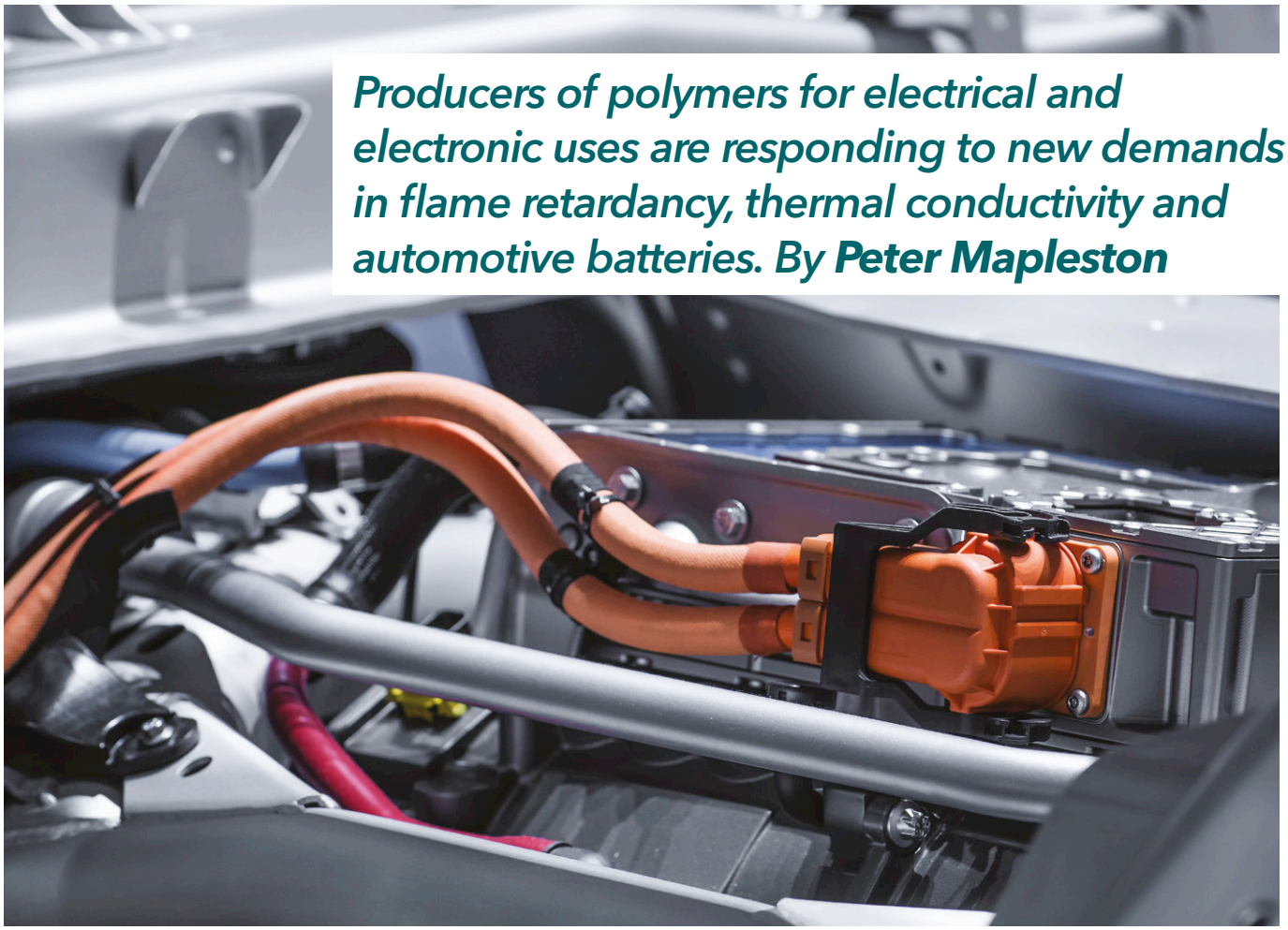
November 6 - 7, 2018
Pittsburgh Marriott City Center,
Pittsburgh, Pennsylvania, USA

Sponsored by:

THE TECHNYL FORCE

Media supporters:

Injection WORLD
Compounding WORLD



Producers of polymers for electrical and electronic uses are responding to new demands in flame retardancy, thermal conductivity and automotive batteries. By Peter Mapleston

The power of E&E materials on display at Fakuma 2018

Electrical and electronic applications are an increasingly important development area for plastics materials manufacturers. That trend will continue well into the future, as road vehicles move from petrol to electricity as a power source, as domestic appliances get smarter, and as LEDs take over from incandescent lighting. Here's a look at some of the latest progress being made, much of it to be on display at the Fakuma show in Friedrichshafen, Germany, this month.

At polyamide 66 major **Ascend Performance Materials**, its Global Segment Leader for E&E, Ed Nerlich, says considerable resources are going into expanding the Vydyne portfolio of PA66 grades for connectors, working together with connector producers and OEMs to develop improved solutions, especially in terms of safety.

Many applications, most notably unattended appliances, require finished parts to pass the Glow Wire End Product Test (GWEPT) at 750°C. "We set out to enable our customers to exceed that," says Nerlich. "Vydyne FR350J [an unreinforced flame-retardant type launched at Fakuma 2017] enables parts to achieve a GWEPT rating of over 775°C – and sometimes even 800°C – with no flame."

Nerlich also highlights Vydyne ECO366H, which is a non-halogenated unfilled FR PA66, which he says responds to the trend for thin-walling in connectors with improved electrical performance. This grade achieves a UL94 V-0 rating at 0.2mm and also has an RTI electrical rating of 150°C. "This, together with a tracking index (CTI) of over 600V, makes it unique among unreinforced PA66 types," says Nerlich's colleague Development Engineer Ralph Guyer. Vydyne ECO366H is also being considered for terminal blocks.

›

Right: EV power connector has Ascend's Vydyne PA66 moulded around its contact points

In the automotive electronics area, Nerlich points to the rapid growth in the use of sensors as cars accumulate "smart" functionality. "We see PA66-based solutions, unfilled and glass reinforced, fitting well here," he says. He also expects growth in PA66 for battery systems in full-electric and hybrid power systems, where there will be a need for materials combining flame retardance and protection against higher voltages (48V rather than the traditional 12V).

"It's not just inside the vehicle either," says Guyer. "We are looking at 1,000V chargers for fast charging in your garage."

Halogen-free gets better

Nerlich and Guyer both point to the increasing capabilities of halogen-free FR materials. Nerlich says: "In the past, there has always been a trade-off between key properties and cost. Ideally, you want a halogen-free material – or at least under 900 ppm – with a 150 RTI, high glow wire temperature, and a reasonable price. We are putting a lot of resources into [developing] a best-in-class material that meets those needs, not only for appliances, but also newer areas like e-mobility." Guyer adds: "The auto industry is looking more at V-0 materials – that's a change, they were never really all that concerned about that in the past – and everybody seems to want to go non-hal."

All at low cost, of course. That's not so easy with PA66 at the moment, where shortages of feedstocks have been aggravating the situation for some time. Ascend, which is fully integrated upstream, said last October that it would increase capacity of adiponitrile (ADN), hexamethylene diamine (HMD), adipic acid and polymers through 2018. Then this June, it announced plans for expanding its ADN capacity through 2022.

Ascend completed its first expansion of 50,000 tpa at the end of 2017. An additional 40,000 tpa expansion will be completed by the end of 2018, with plans for an additional 180,000 tpa to be realised by 2022.

Another supplier with a long track record in developing halogen-free flame-retardant (HFFR) compounds for the E&E market is compounder **Eurostar Engineering Plastics**. "The halogen-free concept is now being reconsidered by some E&E players and aligned for new developments towards a new European standard, EN50642," says Technology Manager Alexis Chopin. This specifies a method for the determination of the content of halogens in Cable Management System (CMS) components or products made of polymeric materials. It sets the levels for bromine and chlorine at under 0.15%, and fluorine and iodine at under 0.3%; while the sum of all four must be no more than 0.4%.

"Eurostar Engineering Plastics took this opportunity to develop a new range of HFFR and PTFE-free self-lubricated compounds that equals or outperforms PTFE lubricated formulations," Chopin says. The company's new Starflam grades were co-developed with CETIM (a French technological institute of mechanics).

Wear resistance properties and friction coefficients of grades modified with polymeric lubricants comply with the new requirements and have a V-0 or GWFI 960°C performance level. Two grades, Starflam PA66 30V D271 and Starflam PA66 25V D272, are commercially available.

At Fakuma this year, **DuPont Transportation & Advanced Polymers**, a newly formed business segment within DowDuPont's Specialty Products Division, is introducing an innovative HFFR high-performance bio-based PPA for SMT (Surface Mount Technology) connectors and other electrical components, including circuit breakers, where it presents a more sustainable alternative to thermosets. The company says Zytel HTNFR42G30NH "provides an optimal balance of improved performance and safety with increased productivity."

According to Joe Read, marketing manager EMEA at DuPont T&AP, benefits include a high weld-line strength, resistance to lead-free reflow soldering (no blistering at 280°C, thanks to its high melting point and low moisture pick-up), low corrosion on processing equipment, and low mould deposits. Zytel HTNFR42G30NH obtains a UL94 V-0 flammability rating at 0.4 mm, obtains the highest glow wire ignition temperature (GWIT) rating and has a Comparative Tracking Index (CTI)

Eurostar Engineering Plastics' new HFFR PA grades

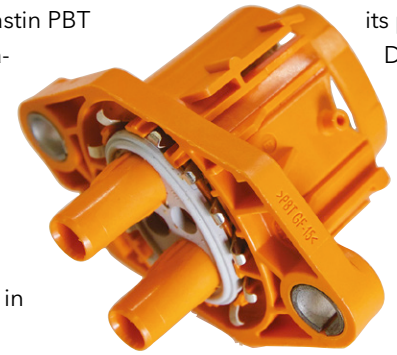
Compound	Dynamic COF	Wear Rate ($mm^3/N.m$) x 10^{-6}	Load (N)
PA6 GF30	0.42	222	25
PA6 GF30 PTFE	0.15	4	25
PA-66 FR GF25 PTFE	0.15	6	25
PA-66 FR GF25 PTFE-free	0.14	9	25

Table compares tribological performance of new Starflam PA66 HFFR grades incorporating PTFE-free lubrication technology with state-of-the-art PTFE-containing grades, according to ASTM G133 (ball-on-plate)

of 600V. It has "superior" flow properties, making it suitable for parts with multiple, fine-pitch pins and low height. Its UL746B Relative Thermal Index (RTI, an indication of a material's ability to retain a particular property when exposed to elevated temperatures for long periods) is 130°C.

New PBTs

DuPont T&AP is also introducing two new fully colour-compounded grades of Crastin PBT thermoplastic polyester for applications such as high-voltage connectors in the hybrid and fully-electric vehicle market. Read says the new products "meet automotive OEM safety requirements to clearly indicate high-voltage components in orange for use in hybrid, plug-in and battery electric vehicles. What's more, the grades offer best-in-class CTI performance (600V) frequently requested for these demanding parts. There are benefits for moulders as well, including increased productivity and long-term reliability."



Left: Electric and hybrid vehicle connectors are a target for DuPont's Crastin PBT

Crastin FR684NH1 OR162 is a 25% glass-reinforced, high-flow HFFR PBT in laser markable orange. Crastin HR5330HFS OR516 is 30% glass-reinforced, hydrolysis-resistant (best-in-class, according to the supplier), and high-flow, also in laser-markable orange.

Lanxess, too, is beefing up its PBT range for E&E. Its Pocan BFN series of HFFR polyesters, specifically designed for such applications, now includes an unreinforced version and several reinforced products with up to 25% glass fibre. All achieve a V-0 rating at 0.4 mm and exhibit excellent heat aging resistance – they have RTIs of at least 140°C. Further strengths include high stability against UV light, high tracking resistance, and a low tendency to corrode when in contact with metals, says Marc Marbach, head of the E&E sales segment at Lanxess's High Performance Materials business unit (HPM).

Unreinforced Pocan BFN2502 exhibits a high strain at break, more than 7%. "This easy-flowing material is particularly suitable for components that need to maintain dimensional stability while providing permanent electrical insulation," says Alexander Radeck, application developer at HPM. In development is a reinforced compound said to achieve very good glow wire results both on test specimens (IEC 60695-2-13) and on finished parts (IEC 60695-2-11). Radeck says it also has the potential to pass the more stringent glow wire tests described in IEC 60335-1 for unattended household appliances, meaning it will produce no flame.

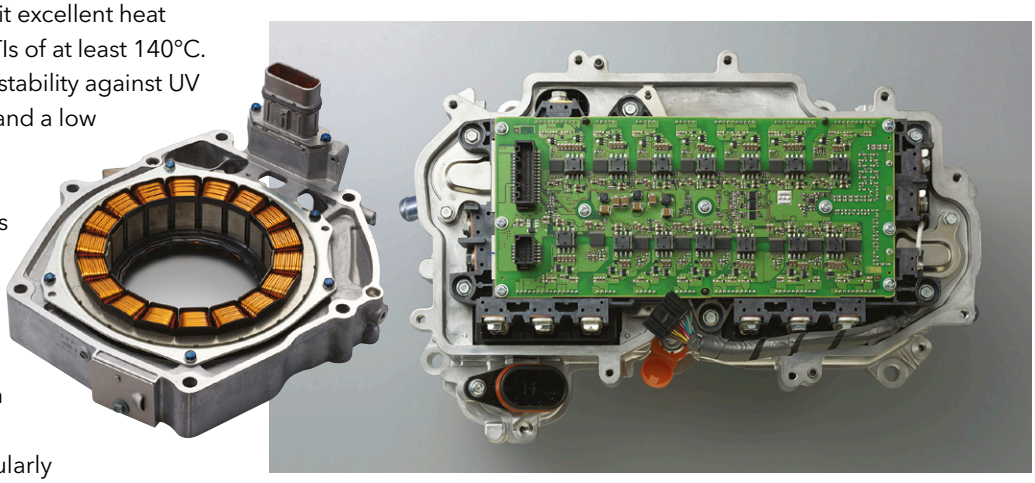
Polyplastics will have a strong focus on e-mobility at Fakuma, as well as on its efforts in research and development; it recently opened a new technical centre in Frankfurt. Products in its portfolio include Duracom POM, Duranex PBT, Durafide PPS, Laperos LCP, and Topas COC resins.

One product under the spotlight will be newly-developed Duranex 457EV, an unfilled, high-impact PBT which satisfies the UL2251 standard for plugs, receptacles, and couplers for electric vehicles.

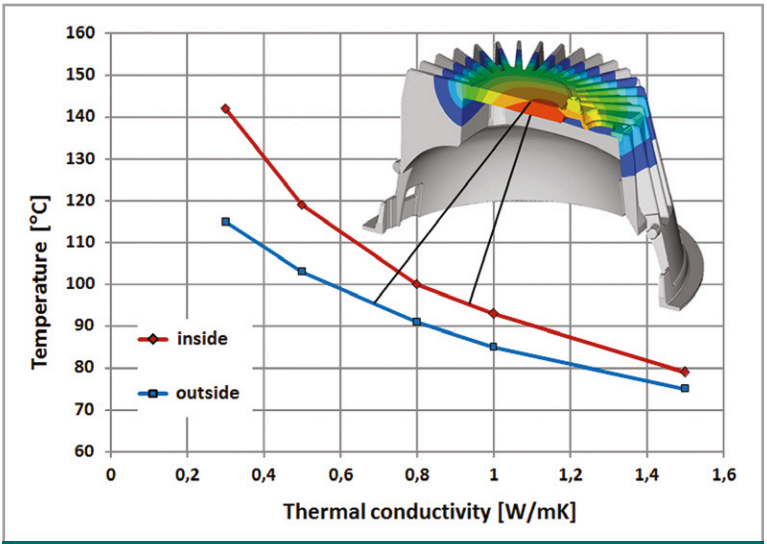
Thermally conductive advances

Demand for thermally conductive thermoplastics is growing in E&E applications and automotive. One reason for this is the miniaturisation of electrical and electronic components, which results in more heat being generated inside devices; another is the extra freedom that thermoplastics often offer over metals in design, processing and overall cost-effectiveness. Several companies are expanding their offerings in thermally conductive compounds, Lanxess among them, with its Durethan TC line of polyamides.

These compounds are quite heavy, owing to their high filler content. In many applications, this might be considered a negative aspect, but



Left: Polyplastics says its Durafide PPS has proven to be the right material for this motor coil for use on hybrid EVs, thanks to its high heat resistance, good electrical properties, heat shock resistance, dimensional stability and high flowability. Right: This power control unit features Polyplastics' Laperos LCP, which the company says provides a perfect fit because of its heat resistance, low warpage and high stiffness



Lanxess uses a simple heat sink to demonstrate that even a slight increase in thermal conductivity is enough to significantly decrease the temperature in plastic components and prevent an accumulation of heat. In addition, as the thermal conductivity of the plastic increases, the temperature is increasingly dependent on convection. As a result, the ambient air makes heat dissipation the decisive factor

Christof Boden, an expert in application development at Lanxess, says that here, the high density helps make parts feel good to the touch and can be used to create components with a perceived quality similar to those made of metal.

One highlight of the TC line is a new PA6 trial product said to combine excellent thermal conductivity (2.5 W/m.K in-plane) with high reflectivity, flame retardancy (V-0 at 0.75mm, GWFI 960°C at 0.75 mm), and tracking resistance (600V CTI). Target areas of application range from heat sinks and support profiles for LED lights to LED cooling fins for automotive headlamps to housings and cell holders for battery systems.

The TC product line also includes two easy-flowing PA6 compounds filled with a special thermally conductive mineral that comprises 65% and 75% of the compound's weight, respectively. Durethan BTC65H3.0EF and BTC75H3.0EF have a thermal conductivity of 1.3 and 1.7 W/m.K, respectively, in the direction of flow, and through-plane numbers are not much lower. They dissipate heat similarly well as aluminium oxide systems and they have better mechanical properties than polyamides with boron nitride additives, Boden says.

Making batteries better

Optimistic predictions show that electric vehicles of all types will represent a total share of 35% of new vehicles sold in 2025. Much rides on the cost-effectiveness of these types of vehicles, and the distance that plug-in types can travel before they need topping up. So an enormous amount of work is going into improving lithium ion batteries.

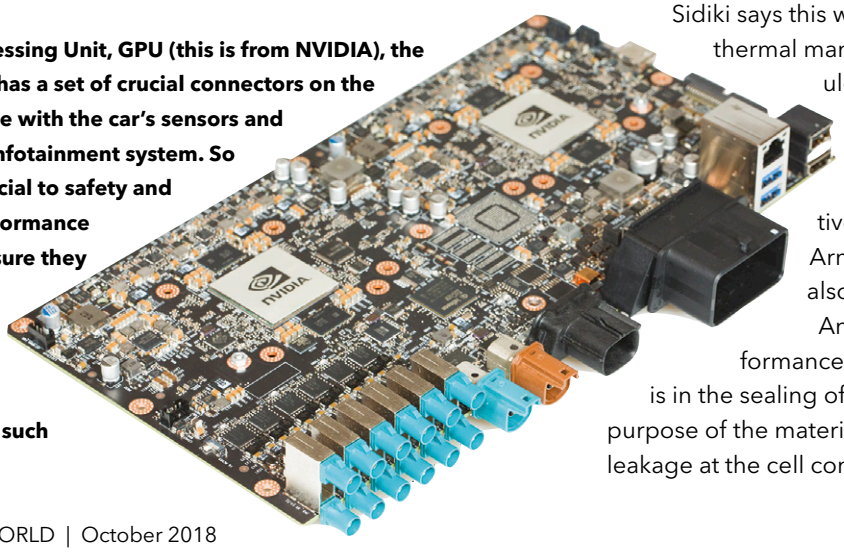
These are composed of multiple interconnected cells stacked inside a housing, with an electrical control unit that drives the cells, and protects them from overloading or charging too fast. The battery cell housing ensures that each battery remains in position in spite of vibration or impact, withstanding all the harsh conditions the vehicle is exposed to. Since the individual cells are connected via busbars safeguarded by fuses, mechanical stability of the total system is essential. Any displacement of the cells will change the contact resistance and electrically stress the fuses, leading to potential failure of the cells or the entire module.

This need for mechanical stability is one of the main reasons that thermally conductive compounds of polyphenylene sulphide, PPS, were developed for this application, says Tamim Sidiki, Global Marketing Director, Electronics, at **DSM Engineering Plastics**. He says DSM's Xytron TC5070C and TC5018I grades provide high dimensional stability, best-in-class chemical and temperature resistance, intrinsic flame retardance, and high thermal conductivity to ensure that the heat generated within the cells is conducted away to the active and/or passive heat sink of the module.

Sidiki says this will greatly improve the total thermal management of the battery module, achieving higher efficiency and longer battery life.

Depending on battery design, thermally conductive compounds based on Arnite PET and Stanyl PA46 can also be used, he says.

Another area where high-performance plastics are used in batteries is in the sealing of prismatic cells. The main purpose of the material is to avoid electrolyte leakage at the cell contacts. The material must be



The Graphics Processing Unit, GPU (this is from NVIDIA), the "brain" of the car, has a set of crucial connectors on the board that interface with the car's sensors and also interlink the infotainment system. So connectors are crucial to safety and comfort. High-performance thermoplastics ensure they perform as they should. DSM has a dedicated line of ForTii products based on PA4T for such applications

highly resistant to chemicals, and provide very strong bonding between plastic and metal. Once again, Xytron material is being used, Sidiki says. "It demonstrates excellent direct bonding to metal without the further need for adhesives or glues and outperforms other PPS materials in processability with very low flash during injection moulding."

Polycarbonate too

The battery compartment is also a focus of attention at polycarbonate producer **Covestro**. Just like DSM, Covestro notes that, in order to position a large number of battery cells precisely and in a small space, cell holders and frames as well as housing components must be very dimensionally stable and mechanically robust. Depending on the design principle of the battery pack, the material must also be flame-retardant (V-0 down to 0.75 mm).

Not surprisingly, Covestro's answer is not the same as DSM's. It points to its many years of experience in encapsulating lithium-ion batteries for laptops and other electronic devices, using polycarbonate blends. It says these meet the above requirements and are also extremely impact-resistant over a wide temperature range, down to below zero. On its stand at Fakuma, it will present various battery modules, cell holders, crash absorbers and other products.

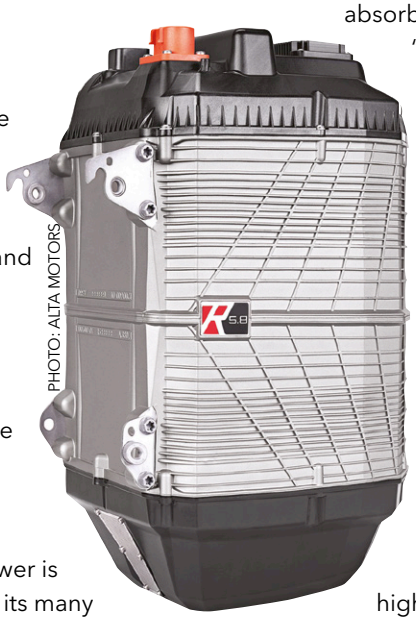


PHOTO: ALTA MOTORS

"When it comes to cell holders and the integration of battery cells into modules, flame protection is particularly important," says Dr. Julian Marschewski, and e-mobility expert at Covestro. He says a Bayblend FR PC-ABS blend is ideal for cell holders and battery modules, being temperature-resistant and dimensionally stable. It is already used in mobile GreenPack rechargeable batteries from the Berlin-based manufacturer of the same name.

Another special material is the highly filled polycarbonates of the

Left: The Alta Pack battery of Californian electric bike specialist Alta Motors is equipped with a jacket made of the extremely impact-resistant PC-PBT blend Makroblend from Covestro

PEEK helps eco-designed vacuum cleaners

Polyetheretherketone (PEEK) has long been recognised for its outstanding mechanical properties and performance, having a strength-to-weight ratio equal to or in some cases better than that of metals. In home appliances, it can help reduce weight and down-size without negatively affecting performance. Even though it is expensive among thermoplastics, PEEK can also reduce the cost of parts, when replacing metals.

A case in point is the latest generation of portable vacuum cleaners. In September 2017, new EU eco-design rules banning the sale of noisy and inefficient vacuum cleaners came into effect. The rules reduce the maximum power rating from 1,600 W to 900 W and limit the maximum noise level to 80dB.

PEEK producer **Victrex** says the processing flexibility of its injection moulding polymers and their consequent advantages in manufacturing have allowed designers to explore new approaches to the design of smaller, yet powerful, vacuum cleaner components. It says the ability to injection mould Victrex PEEK to produce high engineering tolerance parts that cope with high speeds (in some cases faster than 100,000 rpm), while cutting noise by up to 50%, is impressive.

The material's high stiffness-to-weight ratio allows the impeller to maintain its shape at very high speeds, potentially resulting in stronger suction compared to more ductile materials. In addition, PEEK is resistant to a wide range of household chemicals, heat and moisture, and can enable reductions in the weight of parts and the size of motors and components needed.

Makrolon TC product family, which are already used for heat sinks in LED lamps, for example. These products are thermally conductive but also available as electrically insulating versions, so they can contribute to the efficient thermal management of batteries.

"Enduros [motorcycles] have to be ready for all wind and weather conditions, but above all must withstand the toughest mechanical demands. In these off-road motorcycles, too, the trend is towards electric drive," says Covestro.

One of Covestro's customers in this area is Californian electric bike specialist Alta Motors, a leading manufacturer of such machines. The company's Alta Pack battery for its motorbikes is equipped with a jacket made of the extremely impact-resistant PC-PBT blend Makroblend.

Also building up its offering in polycarbonate grades for E&E, but only for automotive, is compounder and distributor **Albis Plastic**. Top of its list of new products is Alcom LDDC for lighting applications, which the company says was created in response to the latest developments in user interface design. "The product can be used to create high-gloss lacquer surfaces that can be back-lit in any colour, resulting in exceptionally high-quality symbols and displays on seamless functional surfaces in any colour imaginable," Albis says.

"Newest developments resulted in the transparent, deep black types without light scattering as well as light diffusing, deep black types with maximal light scattering," the company adds. They are respectively designed for components with a wall thickness of 1, 2, and 3 mm. The deep black transparent types are suited for example for applications with underlying LCD displays, while the light scattering materials are, for example, used for components that are coated and subsequently labelled using laser engraving, or for backlit components fabricated using the IMD process with decorative film.

Two light scattering products in deep white were also developed for display applications with white housings: Alcom LDDC PC 1000 UV 18041 WT1078-12 and Alcom LDDC PC 1000 UV 18045 WT1048-18, which differ in their light transmission levels. A further grade, Alcom LB PC 1000 17164 WT1162-17, was developed especially for applications that are exposed to temperatures above 100°C and need to guarantee superior reflection over a period of several thousand hours. It still exhibits nearly 96% reflection even after 2,000 hours of storage at 115°C.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.ascendmaterials.com**
- **www.eurostar-ep.com**
- **www.dow-dupont.com**
- **www.lanxess.com**
- **www.polyplastics.com**
- **www.dsm.com**
- **www.covestro.com**
- **www.albis.com**
- **www.victrex.com**

Design for Sustainability 2018

Rethinking design and materials for a sustainable future

11 - 12 December 2018
Radisson Blu Portman Hotel, London, UK

Image courtesy of: **HP Inc**

Media supporters:

Compounding WORLD | Injection WORLD | Plastics Recycling WORLD

COMPOUNDING WORLD EXPO

PLASTICS EXTRUSION WORLD EXPO

PLASTICS RECYCLING WORLD EXPO

MAY 8 - 9, 2019

HUNTINGTON CONVENTION CENTER, CLEVELAND, OHIO, USA

CLICK HERE TO BOOK YOUR BOOTH TODAY

Connect with your target customers in a cost-effective and time-efficient way at AMI's focused exhibitions for plastics compounders, extruders and recyclers

Join leading industry players

cumberland

DAVIS-STANDARD

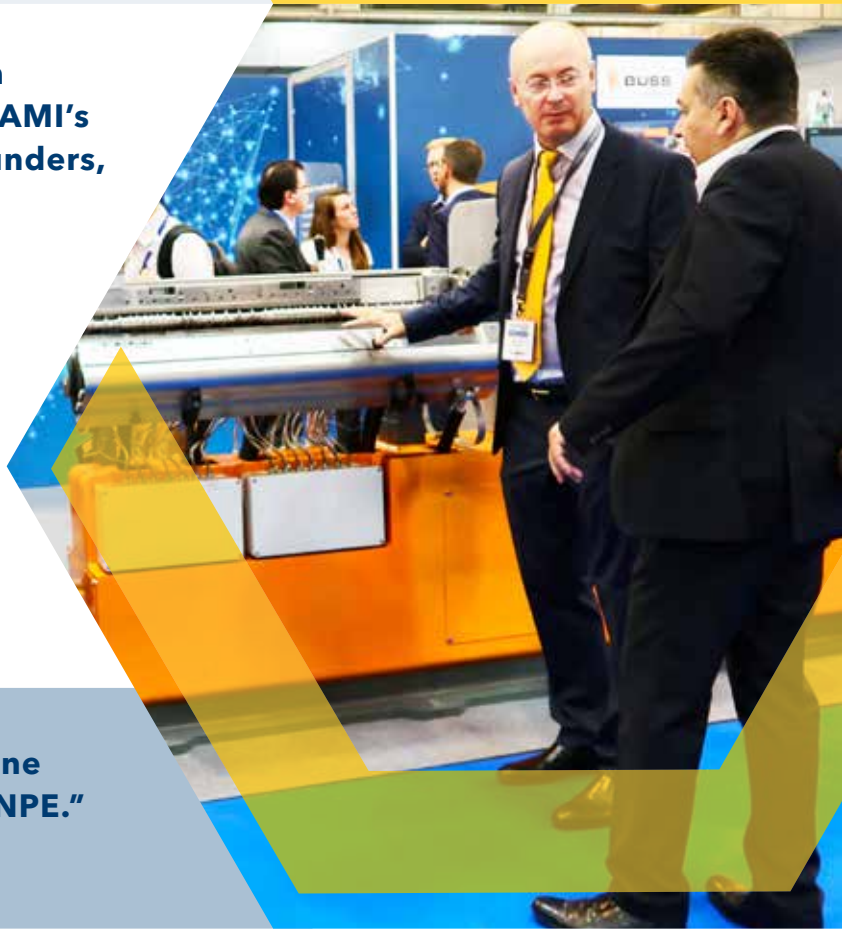
aec

CABOT

Experience Addex

EXTRICOM EXTRUSION

and many more...



"I have received more quality leads in one day of this event than a whole week at NPE."
Bernhard Gabauer, Bühler

Click here to book your booth today:
exhibition_sales@ami.international / +1 610 478 0800

Brought to you by:

Compounding WORLD

Plastics Recycling WORLD

Film and Sheet EXTRUSION

Pipe and Profile EXTRUSION

AMI

Bringing the global plastics industry together

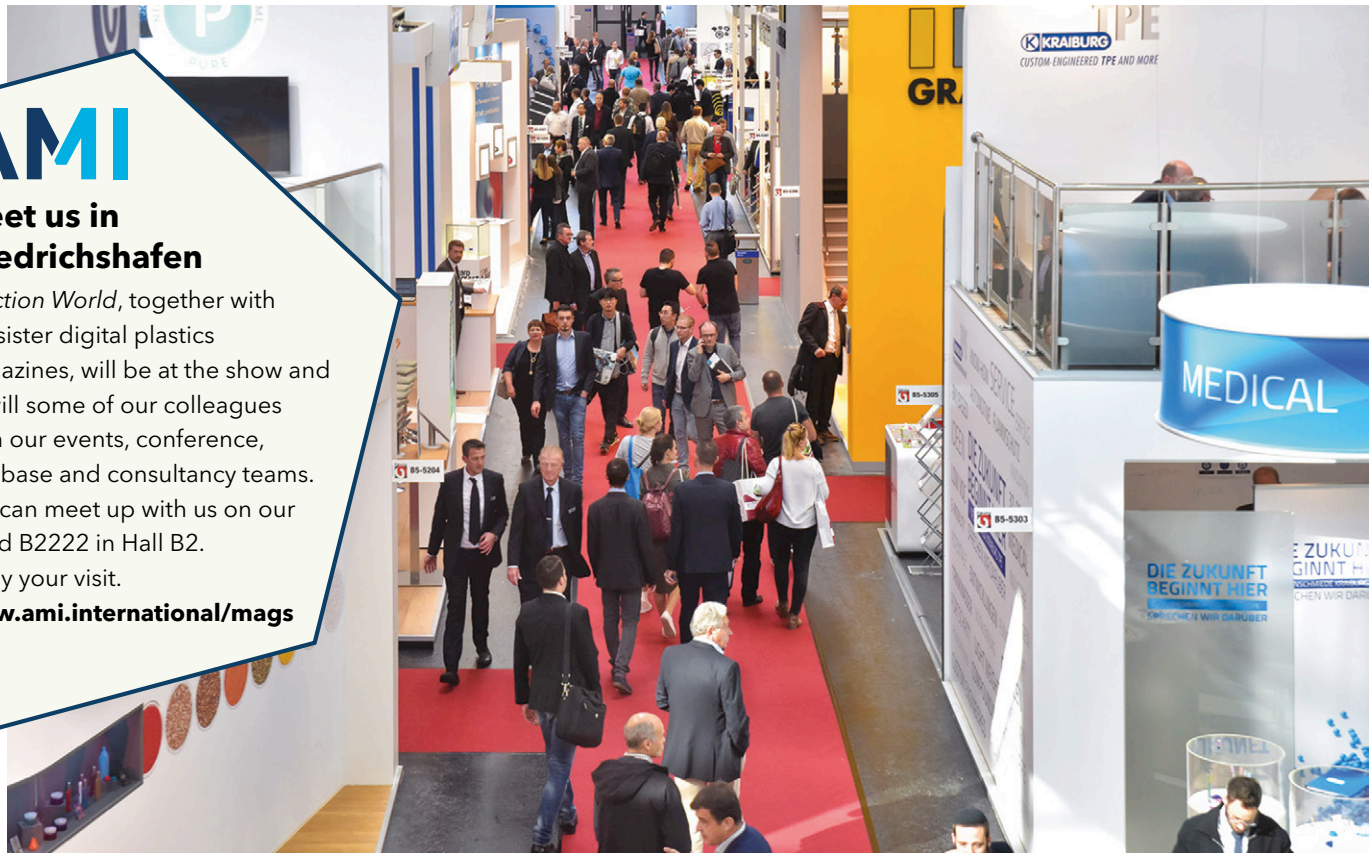


PHOTO: PE SCHALL

Fakuma 2018 holds promise for injection moulders

As Europe's plastics industry prepares to set out for Friedrichshafen and the 26th Fakuma fair, we take a look at what will be on show for injection moulders

The 26th Fakuma plastics fair takes place at Friedrichshafen in Germany on 16-20 October. The event – located on Lake Constance where the high tech engineering regions of Germany, Austria and Switzerland meet – runs every year there is no K show. It has grown considerably over recent years and is now arguably one of the most important plastics exhibitions in Europe. Last year's event drew almost 1,900 exhibitors and more than 48,000 visitors, according to organiser PE Schall.

Injection moulding has long been at the heart of the Fakuma exhibition and the organisers see it as the number one venue for this technology. "There's no getting around injection moulding if you want to combine lightweight design and highly complex components," says Fakuma Project Manager Annemarie Schur. For visitors from the injection moulding sector, this year's Fakuma promises innovations in processing technology, new machines and ancillaries, a swathe of materials and the latest in mould-making and hot runners. Read about these over the next few pages. ›

Main image: The 26th Fakuma plastics fair takes place this month in Friedrichshafen and is likely to draw close to 50,000 visitors

Fakuma 2018 – Key Information

Dates: 16-20 October 2018 **Hours:** 09:00-17:00 Tuesday-Friday (09:00-15:00 Saturday)
Tickets: One day €28.00, Two day €47.00 (Students €20.00) **Website:** www.fakuma-messe.de/en
Venue: Messe Friedrichshafen, Neue Messe 1, 88046 Friedrichshafen, Germany

Above: Arburg is showing visitors the "Road to Digitalisation"

Arburg's theme at Fakuma 2018 is "Road to Digitalisation", with the German company guiding injection moulding customers "along the path towards future-proof and efficient plastic parts production". Arburg has created new assistance packages for this task, which will be presented at six stations:

- "4.set-up" actively supports machine operators with set-up and parameter entry.
- "4.start-stop" simplifies production start-up, reduces the number of start-up parts and increases production capacity.
- "4.optimisation" is designed for product optimisations aimed at enhancing part quality and reducing unit costs.
- "4.production" gives experienced operators greater flexibility and freedom when programming functions.
- "4.monitoring" offers detailed process and quality monitoring and seamless documentation.
- "4.service" makes it possible to quickly help customers through direct access to the machine control system and via online support, thereby increasing machine availability.

Other stations will show Arburg's new Gestica control system and the Selogica ND (new design), and the potential for augmented reality to be used in "smart" service will also be demonstrated.

The Arburg Turnkey Control Module (ATCM) will be presented for the first time at Fakuma. This is a data collection system for complex turnkey systems from Arburg which visualises the entire process, captures the corresponding data and transmits the part-specific data sets. ATCM is being shown with an electric Allrounder 470 A machine with a clamping force of 1,000 kN, producing two housing parts for a spirit level in 46 s using a 1 + 1-cavity family mould.

Individualisation is at the heart of a turnkey system based around a vertical Allrounder 375 V machine producing elastic tension straps. Other Arburg machines on its stand include: a 'Packaging' version of the hybrid Allrounder 820 H producing thin-walled IML containers; an electric Allrounder 270 A with a size 5 micro-injection unit producing 0.038 g LSR slit valves; and an electric Allrounder 570 E Golden Electric producing a high-precision technical component for housing optical components.

› **www.arburg.com**

Boy is staging the world premiere of its Boy 125 E machine at Fakuma, which will come into series production in the spring 2019. The 1,250 kN machine (a large clamping force in the context of Boy's machine range) was developed in response to the needs of customers and was designed with a clear width of 470 mm between the tie bars instead of the previous 430 mm. In addition, the maximum platen distance has been extended to 825 mm as standard. This should provide more space, for example when using rotary plates, says Boy.

The Boy 125 E is being shown with a two-component application at Fakuma. In combination with a BOY 2C S, cups made of NAS 30 are first injected, which are then partially overmoulded with a design surface as a second component by the additional injection unit BOY 2C S in the same mould. The gripper head of the Boy LR 5 removal and handling robot repositions the pre-moulded cups in the mould, removes the finished two-component parts and places them on a conveyor belt in the protective housing of the LR 5 automation cell.

For the first time, Boy is showing a telescopic version of the LR 5 robot on a Boy 35 E machine, which is particularly suitable for production sites with low ceilings. The vertical travel path can be reduced to a minimum by the telescopic arm. The long-term positioning accuracy of the transfer/removal handling developed by Boy is ± 0.1 mm. At the Boy stand, a total of three LR 5s with different designs will be presented.

› **www.dr-boy.de**

Right: The new Boy 25 E is demonstrating a two-component application

Billion is highlighting recent technology developments in its injection moulding machines: EasyTurn, EasyConnectPro and Dixit4. EasyTurn rotary shaft technology is integrated into the machine for overmoulding applications. One application is an automotive sealing part made with recycled PP 30% filled with glass fibres, overmoulded with SEBS. EasyConnectPro is Billion's connectivity solution that enables remote maintenance and production management. Dixit4 is the company's new generation control system.

› **www.billion.fr**

One of **Engel's** demonstrations brings together three premieres in a highly integrated production cell on which two-part callipers are manufactured using ABS. A new system for very rapid switching of mould inserts will be presented for the first time. The new size 120 of the all-electric and tie-bar-less E-motion TL series with a clamping force of 1,200 kN will be introduced to the public. Expanded functionality of the E-flomo electronic temperature-control water manifold will also be presented.

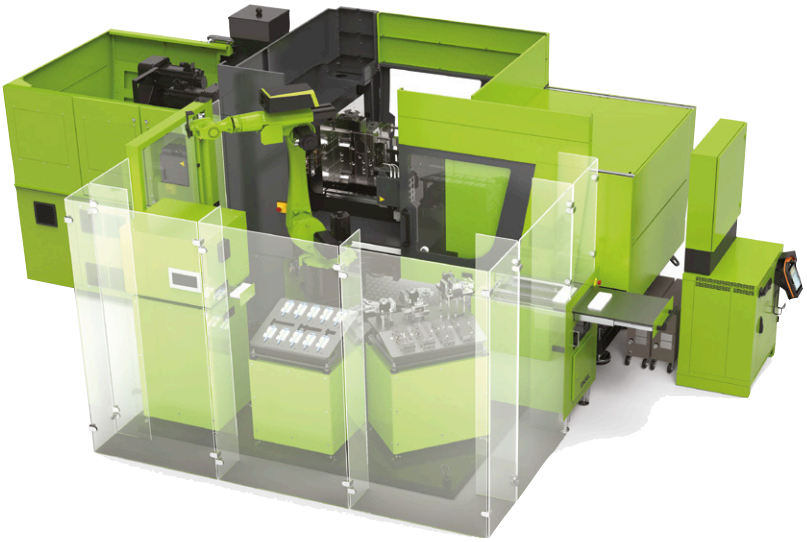
Developed by Braunform as a solution for short-run moulding of batch sizes of less than 1,000, the fully automated switching of mould inserts can be completed within 1 minute. To demonstrate the potential of the new system, the two geometrically different components of the calliper will be produced in rapid succession one after the other. After only three shots, the injection moulding machine alerts the integrated Engel Easix articulated robot that the lot has been fulfilled and unlocks the mould inserts. The robot first removes the last produced component, then changes grippers and switches the mould inserts.

To deal with the different shot weights of the two components, the injection moulding machine continuously optimises itself using Engel's iQ weight control, iQ clamp control and iQ flow control. Engel said: "One real eye-catcher at the Fakuma is the extremely compact layout of the production cell with the Easix robot at its centre."

Engel is showing a number of other developments, including the Foilmelt technology shown in a roll-to-roll IMD application with increased flexibility. Another innovation in this cell is a new safety guard developed by Engel according to EN ISO 14120, which is now available for all automated injection moulding machines and integrated system solutions.

› **www.engelglobal.com**

Fanuc Europe is showing several all-electric Roboshot injection moulding machines during Fakuma. One highlight is the Roboshot α-S450iA



Above: A highly integrated production cell is being shown by Engel, producing two-part callipers

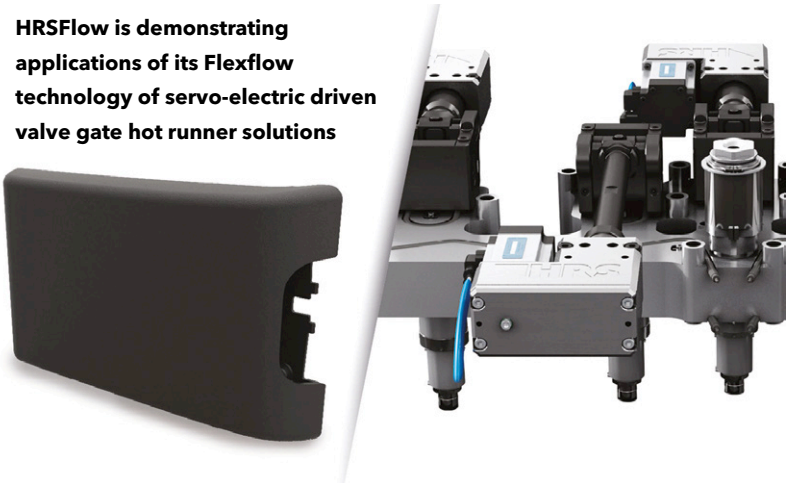
4,500 kN clamping force precision machine which is making its debut in the European market. This will be producing connection pieces for infusion components using a 32-cavity medical device mould. Wolfgang Haak, Fanuc's Product Manager ETS Europe Roboshot, said the company was responding to market needs in developing a bigger machine based on the same performance and reliability as the other six models between 150 and 3,000 kN clamping force. "Now we have 4,500 kN clamping force, a tie bar distance of 920 mm by 920 mm, a clamping stroke of 900 mm, a 1,300 mm by 1,300 mm platen size and a maximum die height of 1,000 mm. Four different screw sizes for the two basic injection units achieve high flexibility," he said.

A production cell, based on a 100 t Roboshot machine, will produce technical parts in engineering grade plastics using vario-thermal mould processing. The system incorporates a six-axis Fanuc LR Mate robot and a CR-7iA robot for parts assembly and handling.

In mould making, Fanuc is showing Robonano, a 5-axis CNC machining centre for "ultraprecision" machining in freeform surfaces with 0.1 nanometre command resolution. This machine tool demonstrates automated, predictable and repeatable optical-quality finishing of high-accuracy mould inserts.

› **www.fanuc.eu**

Hasco has a number of new developments in mould-making at Fakuma. The new hardened and tempered Hasco steel 1.2714HH has "outstanding dimensional stability and wear resistance, very good polishing and etching properties as well as optimum thermal conductivity", the company says. It is offering new products such as manifold blocks for flexible cooling circuit design and flat centering



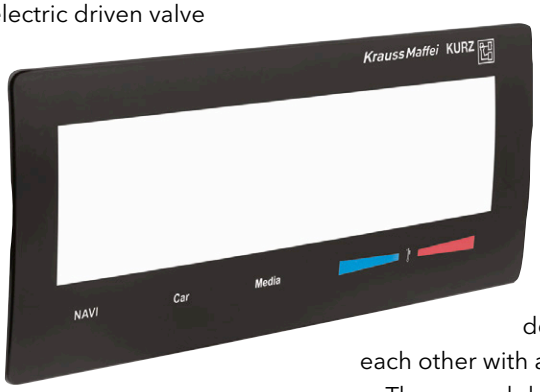
HRSFlow is demonstrating applications of its Flexflow technology of servo-electric driven valve gate hot runner solutions

units with a tight fitting tolerance for the centering of two mould halves in limited spaces.

A new generation of control units supplements Hasco's product portfolio serving hot runners. A touchscreen interface enables immediate operation without instructions or previous knowledge, and supports the user at all navigation levels. Another new product is a screw-in vario shot nozzle, which allows ready-to-assemble systems to be designed and manufactured according to the customers' requirements.

› **www.hasco.com**

Hot runner technology group **HRSflow** is showing the use of its Flexflow servo-electric driven valve gate technology in the moulding of complex, high-quality parts. It will be showing an in-mould graining application in cooperation with tool specialist GK Concept and injection moulding machine manufacturer Yizumi, using the Flexflow One technology.



Right: IML and IMD come together in this screen application being produced by KraussMaffei

A Flexflow five-nozzle hot runner system is being used for the production of an automotive spoiler also shown on the company's stand. Other demonstrations include rapid heating and cooling, foaming and overmoulding organosheet-based composites.

› **www.hrsflow.com**

Kistler Group is unveiling two modular systems for injection moulders in the context of Industry 4.0. Version 3.0 of Kistler's ComoNeo system, which analyses cavity pressure during injection moulding, offers users a total of seven different functions from which they can assemble the combination that best suits their requirements for assistance, monitoring, control and prediction. Due to the system's modular structure, users can tailor the support they receive to their level of know-how, says Kistler. It has also integrated the Stasa QC software into ComoNeo specifically for medical moulders and other sectors where safety is critical. On the basis of measured values and statistical analyses, this software calculates the quality of manufactured parts in advance, with evaluations inside the tolerance limits.

The second modular system is Kistler's MES which has various modules that can be combined with each other to achieve maximum transparency in networked injection moulding production. Users can choose either the entry-level or the full version and then decide on the scope and depth of their solution. As well as machine and operation data acquisition, users can choose from function modules such as production planning, maintenance management and ERR-Link.

› **www.kistler.com**

At Fakuma, **KraussMaffei** says it will show how far manufacturing integration can go in a demonstration using the all-electric PX 320-2000 machine performing IMD and IML simultaneously. The machine is producing a 10-inch screen with integrated electronics, black decorative frame and scratch-proof coating. In addition to the IMD film for the electronic display, another film runs through the mould and provides a second cavity with another decor. KraussMaffei says this is possible due to the IMD SI DUO film feed from Leonhard Kurz, which is the first worldwide to be able to position two single-image decors independently of each other with a hundredth of a millimetre accuracy. The second decor shows dead-front surface aesthetics, which comes to life only with backlighting and then reveals operating symbols, for example.

The new PX 320 and PX 25 machines at Fakuma extend the clamping force range at both ends. A PX 25-55 SilcoSet machine is being shown with a special micro-plasticising unit for LSR. It is shown making an LSR sealing ring with an intricate undercut and a weight of only 0.15 g in a cycle time of 14 s. A new plasticizing process was developed with a 12 mm screw and complemented with a spring-loaded check valve. Below the cantilever clamping unit there is space for the necessary vacuum pump or similar peripherals.

› **www.kraussmaffei.com**

Meusburger Group will be showing various new developments for mould-makers in addition to its "classics", such as the multifunctional H 1000 Clamping system and the H 4062 Assembly table which makes it possible to move the mould halves easily by way of multiple air nozzles. Group company PSG, a specialist in hot runners, has a new variant of the ProfiTemp+ hot runner controller with up to 192 control zones, which features innovative technology and space-saving design.

Also at the Meusburger stand is a team from WBI Knowledge Management, which offers a simple, pragmatic method of knowledge management, based on more than 25 years of development and experience at Meusburger. Segoni, the newest member of the Meusburger Group, offers ERP/PPS software solutions for efficient production planning for companies with individual production structures in the fields of mould, die, and jigs and fixtures construction. Segoni will present a live demonstration of its current software version and the benefits and possibilities of the system.

› **www.meusburger.com**

Above: The Quantum toggle machine from Milacron

Milacron is staging the European debut of its M-Powered suite of machine connectivity tools at Fakuma. M-Powered is a portfolio of observational, analytical and support services which Milacron launched at the NPE 2018 exhibition in the US in May. M-Powered-enabled machines currently include remote service capability with OEE and downtime analytics, and data collection with maintenance and parts recommendation intelligence. M-Powered also includes full API integration as a standard setup in addition to hardware applicable to specific functions.

Milacron is extending the portfolio to include real-time adaptive process controls and at Fakuma it will show IMFlux technology on a Milacron

machine for the first time. The IMFlux technology, which provides real-time adjustment for mould and material changes, was developed by Procter & Gamble in 2013 and now operates as a wholly owned P&G subsidiary. The technology enables filling a mould at a lower, defined melt-pressure profile, allowing a variable filling rate that adapts automatically to the part geometry. Using IMFlux, moulders can increase productivity by up to 50% on existing machines, says Milacron. IMFlux is shown working on an Elektron EVO 155 machine in a cell including a Mold-Masters hot-runner system with servo-electric valve actuators and a TempMaster SeVG + controller with integrated temperature and valve actuator controls.

The Quantum 180, Milacron's newest and most advanced toggle machine will also make its European debut at Fakuma. The new machine is designed to deliver higher productivity, reduced cost of ownership, enhanced performance and advanced technical specifications. Quantum comes equipped with Milacron's Endura Touch control interface. In the Fakuma demonstration the machine will be integrated with a Mold-Masters E-Multi secondary injection unit, TempMaster M1 controller and an indexing rotary unit, producing a two-component squeegee.

Milacron will also show new developments from its Mold-Masters, DME and Tiard mould businesses on its Fakuma stand.

› **www.milacron.com**

Auxilliary equipment manufacturer **Motan-Colortronic –** in addition to exhibiting its products at Fakuma – is holding a ceremony to announce the winner of its Motan Innovation Award 2018. "Make good ideas sustainable" is the theme for this year's iteration of the biannual award. Six innovative ideas have made it to the final round and the winner will be announced on 18 October during the award event at the Dornier Museum in Friedrichshafen. The prize in the award consists of a total of €20,000. Find out more about attending the award ceremony at the company's website here:

› **www.motan-colortronic.com**

The high-speed Netstal Elios 4500 machine is making PP plant pots

Netstal, the packaging injection moulding technology specialist within KraussMaffei Group, is placing the spotlight on its Elios high-speed hybrid machine range. At Fakuma, it will showcase the Elios 4500, the model with the smallest clamping force in the series, making 12 cm PP plant pots in a six-cavity mould from Glaroform. A Brink Automation robot will remove and stack the finished pots. A cycle time of approximately 3 s is achieved. The flow path/wall thickness ratio is 331:1.

The machine has high energy efficiency and recuperates kinetic energy. The consumption of the trade fair exhibit is 0.59 kWh per kg of material, which translates to 9 W per pot.

Netstal is also highlighting its AnalytiX mobile production monitoring system, which allows users to monitor production via an app. Using intelligent indicators, trends and performance deviations of individual machines can be detected at a glance. All information is hosted in the secure Netstal cloud in Switzerland and is not accessible to third parties. User management and the granting of access rights is controlled entirely by the customer and can be set up flexibly via the new Netstal e-Service.

› **www.netstal.com**

Piovan Group is featuring its Piovan, Aquatech and Fdm brands at Fakuma. While Piovan and Fdm are specialized in material handling systems and advanced solutions for plastics processing – with Fdm more focused on the extrusion process –

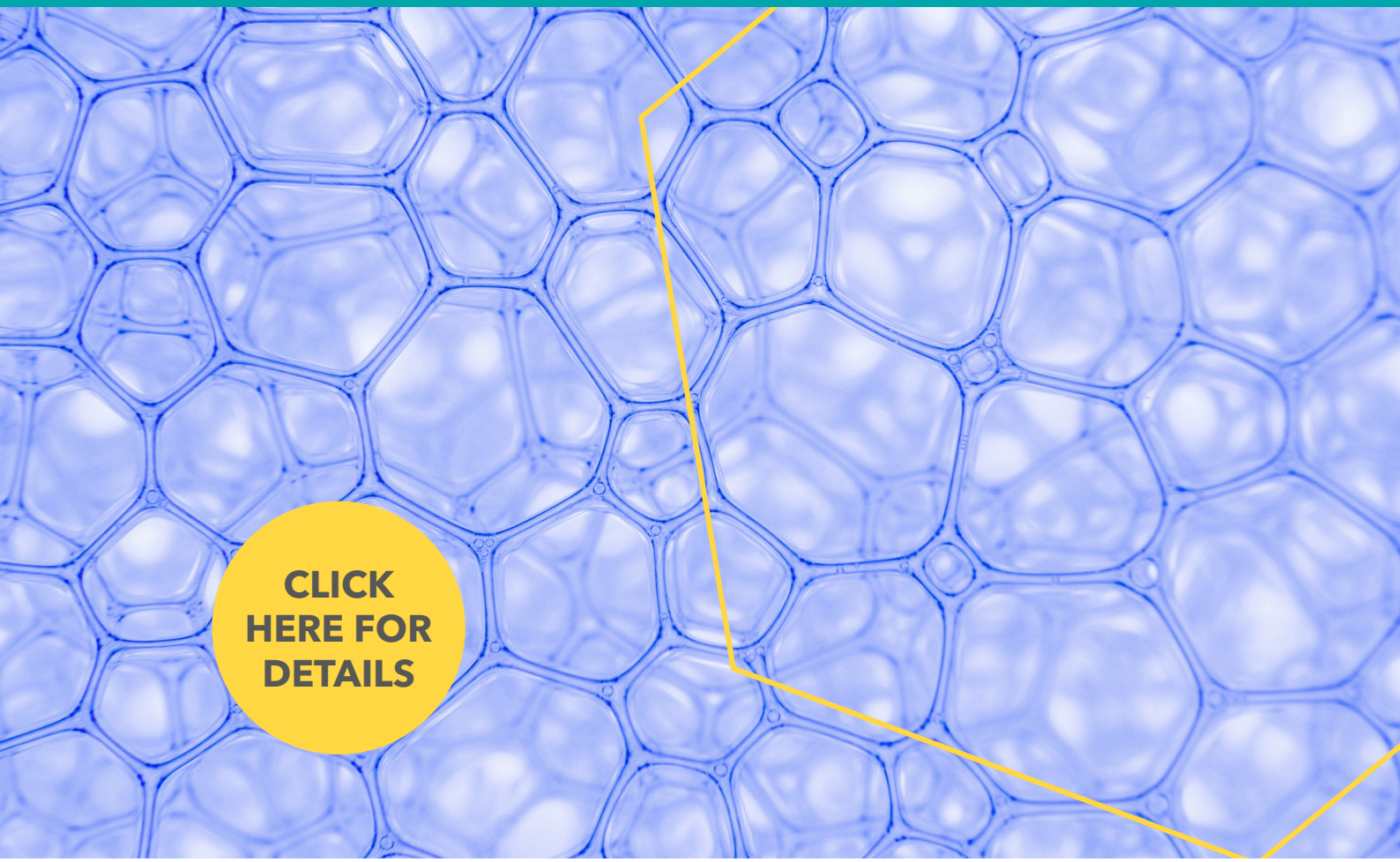
Below: Piovan is showing its Winenergy and Winfactory 4.0 supervision software

Polymer Foam

Hamburg / 2018

Making the most of advances in polymer foam materials, processes and applications

28 - 29 November 2018
Marriott Hotel, Hamburg, Germany



Sponsored by:

BOREALIS

بروج Borouge

Media supporters:

Compounding WORLD

FAPU EUROPEAN POLYURETHANE JOURNAL

Blockchain for Chemicals 2018

Exploring how blockchain technology will transform the chemicals and plastics supply chain

12-13 December 2018,
Sofitel Kurfürstendamm, Berlin, Germany

SPECIAL OFFER
Save **€200** if you register before 19th October 2018

Media supporters:

Compounding WORLD | Film and Sheet EXTRUSION | Injection WORLD | Pipe and Profile EXTRUSION | Plastics Recycling WORLD | forklog

AMI

Bringing the plastics industry together.

@Contact_AMI #AMIBlockchain

Aquatech specialises in industrial cooling and temperature control technology.

Easytherm by Aquatech is a new temperature control line which has integrated OPC-UA protocol and a range of versatile units allowing smart energy management. Another solution from Aquatech is Flexcool, a system which enables efficiency and flexibility of application, whose core is the thermochiller DigitempEvo.

Piovan will show its Winenergy and Winfactory 4.0 supervision software which will be featured on touchscreens. Winenergy is the energy use monitoring and analysis system comprising proprietary software that is connected to a series of measuring devices – which acquire data about a variety of physical parameters including power, electricity, thermal energy and temperature. It can be installed on its own or in combination with Winfactory 4.0, to maximise system control and efficiency.

The company is also showing the model EL20 of the Easylink+ materials handling line, which will be in operation with the Modula series auto-adaptive dryer and the Pureflo filterless granule receivers. For the first time at Fakuma, Piovan will show the Quantum E gravimetric batch blender with continuous extrusion control.

› **www.piovan.com**

Sepro Group is showing a total of 22 robots at Fakuma, with eight operating on its own stand and the others on the stands of injection-moulding machine manufacturers.

On the Sepro stand partner companies will have machines fitted with the French company's robots. A 180 t Sumitomo (SHI) Demag machine will be equipped with a new high-speed 3-axis robot developed by Sepro for the injection moulding machine maker. A Success 5 robot, the smallest unit that Sepro makes, will be operating (also with an SDR label) on a 100 t Sumitomo (SHI) Demag machine. And a 60 t Haitian machine will be equipped with a Sepro 5X 15. The premium 5X robot family combines the versatility of Sepro's 3-axis Cartesian platform with the precision of a 2-axis Stäubli wrist.

One section of the Sepro stand is dedicated to the company's Open 4.0 approach to integration in the 'Factory of the Future.' Visitors can get hands-on experience with the Visual control platform, which Sepro says is easy-to-use and which makes it possible to integrate robot controls with those of the IMM.

› **www.sepro-group.com**

Above: The compact high-speed IntElect S machine from Sumitomo (SHI) Demag

Sumitomo (SHI) Demag says it is taking a "step ahead" with the launch of the compact high-speed version of the IntElect S at Fakuma. "Our in-house drive technology has advanced to a level that delivers not only fast cycle times and unparalleled process stability but also guarantees maximum energy efficiency," says CEO Gerd Liebig. IntElect S machines are available with clamping forces between 500 kN and 1,800 kN and with injection speeds between 350 and 500 mm/s. They are designed for high-speed applications with cycle times between 3 and 10 s. At the show, an IntElect S 130/520-450 machine, with a package of options specially developed for medical engineering requirements, will be producing pipettes in a 32-cavity mould.

In the packaging sector, Sumitomo (SHI) Demag is demonstrating an El-Exis SP 200 machine with a high-speed IML application. Highlighting capabilities using complex packaging processes, the machine is producing IML decorated food cups in a four-cavity mould.

IMD is being demonstrated with another machine, a Systec Servo 280/630-1450 machine, in the automotive sector. Henrik Langwald, Director Automotive Business Development at Sumitomo (SHI) Demag, said: "Together with our partner Leonhard Kurz, we will present an automotive application: a door sill with a new day/night design is initially decorated by IMD and then covered with functional foil for touch functionality." The Systec Servo is also equipped with downstream systems supplied by Piovan.

› **www.sumitomo-shi-demag.eu**

Trexel, which is best known for its Mucell physical foam injection moulding technology, will be promoting its recently-developed TecoCell chemical foaming system. The company claims its patented TecoCell chemistry is superior to current foaming agents. The system uses CaCO3 nanoparticles measuring less than 0.08 microns to create a highly uniform and evenly distributed cell structure.

The result is said to be injection moulded components with impressive weight savings, good mechanical characteristics and high quality surfaces.

› **www.trexel.com**

Windsor is showing the servo-hydraulic SD300SV injection moulding machine, with 3,000 kN clamping force, from Taiwanese manufacturer **FCS**. The machine is the fruit of a 2016 agreement under which FCS committed to construct and supply hydraulic and servo-hydraulic machines according to European standards and specifications as prescribed by Windsor. In return, Windsor was given responsibility for long-term sales, trading, installation, replacement parts supply and service for the machines in all EU and EFTA countries.

Windsor is also showing a machine from another partner, Japan-based **JSW**. The fully electric J100ADS from JSW is being demonstrated with an actuator mould for medical device applications. A special highlight on the stand is Windsor's own product: the PxP73 is an independent injection unit for upgrading machines for multi-component injection moulding. The machine is part of Windsor's PlugXPress range, which has driven the company's sales growth, as demand has flourished in the multi-component sector.

› **www.windsor-gmbh.de**

Wittmann Battenfeld will present its new vertical Vpower injection mould machine range at Fakuma. Unveiled at the Wittmann subsidiary's 10th anniversary event in June, Vpower is the last of the company's machine ranges to be updated in the PowerSeries design. The machine's large rotary table is powered by a servo-electric drive as standard and laid out for short rotation times. The injection unit can be converted from vertical to horizontal and vice versa even after commissioning. The absence of a central tie-bar enables central media supply from below through the rotary table or the installation of a compact rotary manifold. A VPower 160/750 featuring a 1,600 mm rotary table will be shown at Fakuma.

Wittmann Battenfeld is extending its all-electric EcoPower Xpress series by adding machines in the lower clamping force segment. At Fakuma, an EcoPower Xpress 160/1100+ will be shown producing a lid made of PP in four-cavity mould, using IML technology. The IML system is a high-speed model with a Wittmann W837 side-entry robot.

The Combimould multi-component technology will be demonstrated on a servo-hydraulic SmartPower 240 and on an all-electric MicroPower 15. On a SmartPower 240/750H/210S, the housing of the Wittmann R9 Teachbox will be produced from ABS and TPU in a single-cavity mould. In the second Combimould application, a sensor component for a medical measuring instrument will be produced on a MicroPower 15/10H/10H in a four-cavity mould.

The group will demonstrate the full extent of Wittmann 4.0 integration on an EcoPower 90/350, in whose Unilog B8 control system the robot is integrated, together with all connected peripheral appliances, such as Tempro temperature controllers, Gravimax blenders, Drymax dryers and Flowcon electronic flow controllers.

Wittmann Group will show the latest additions to its Primus robot range, the Primus 10 and Primus 26. A new robot range will also be showcased, the WX series, which the group says has maximum dynamism and minimal energy consumption. Wittmann is simultaneously launching A-C Slim Servo Axes for applications with small residual mould openings.

Other new equipment being launched by Wittmann includes the Tempro Plus D300 oil temperature controller and a new SL Design for Gravimax material hoppers.

› **www.wittmann-group.com**

Woojin Plaimm is launching its HD-A5 injection moulding machine at Fakuma. The South Korean manufacturer says the HD-A5 series, which was designed at its European development centre in Leobersdorf, Austria, features "a state-of-the-art energy-saving, cost-efficient hydraulics system". The new series also features a 18.5-inch full-HD touch-screen IMC 500 machine control system. The new HD-A5 is designed for producing precision moulded components for the automotive, electrics and e-technology industries.

› **www.woojin.eu**

Below: Woojin Plaimm's new HD-A5 hydraulic machine

Polymers for 3D Printing

2018

Developing polymers and filaments for optimised 3D printing applications

11-12 December 2018
InterContinental Hotel Düsseldorf, Düsseldorf, Germany

Media supporters:

Compounding WORLD Injection WORLD

Conductive Plastics

Vienna / 2018

Developing technologies and applications for electrically and thermally conductive plastics

6-7 November 2018
Austria Trend Hotel Savoyen,Vienna, Austria

Sponsored by:

CABOT

nanocyl
THE CARBON NANOTUBE SPECIALIST

Media supporters:

Compounding WORLD

Injection WORLD

Agrana Starke will present its Amitroplast thermoplastic starch (TPS). Suitable for injection and blow moulding and extrusion, the company claims that the biodegradable Amitroplast TPS can be added to compounds at 50% higher loadings than alternatives without compromising processability. It says compounds containing the materials also generate less smoke during processing and particularly in production of blown films.

› **www.agrana.com**

Akro-Plastic will be showing the first in its new Akromid B+ PA6 family of compounds, which are intended as alternatives to PA66 materials. The first grade in the range is a 50% glass reinforced compound claimed to provide the same strength at 80°C as a conditioned PA66 GF50 (115 MPa breaking stress) and near the same levels of stiffness.

"Our new polymer-modified PA6 grade is priced between PA66 and PA6 and thereby opens up considerable savings potential," says Thilo Stier, Head of Innovation and Sales at the company. "We will be presenting the first components made of the new material and complemented material values such as ageing and conditioning to trade fair visitors at our stand."

The company says 30 to 50 % glass fibre reinforced Akromid B+ compounds are already available for sampling, with a grade with 60% glass fibres to follow shortly.

Other novelties include a new addition to its Akromid PST range of PA compounds for adhesion to metal during overmoulding. Developed in partnership with Plasmatreat, the product line now includes a grade formulated to adhere to aluminium. "In some aluminium variants, tensile shear tests result in breakage in the aluminium and not in the adhesive surface," says Cyprian Golebiewski, Akro Plastic Head of Application Technology.

Also new is Akromid A3 GF 30 4 L black (4678), a new hydrolysis-stabilised PA66/PP blend offering very good mechanical properties and hydrolysis resistance. The company says the proportion of PA66 is reduced in this new grade, providing an additional weight advantage.

› **www.akro-plastic.com**

Albis Plastic will be showing a number of new introductions to its own product portfolio as well as the latest developments from prinicpals such as Covestro and BASF.

Its own novelties will be headed up by its expanded Alco Med range of compounds for medical applications, a new addition to its Alcom Lighting range for high gloss automotive applications, and new high flow additions to its Alfater XL line of TPVs. The latter "Easyflow" grades are high gloss black products available in hardnesses from Shore A50 to D40.

Following its recent acquisition of Wipag, the company will also be showing an expanded range of recycled compounds. These include carbon reinforced PP grades intended to compete with glass reinforced PA as well as a new PET/PBT blend addition to its Altech Eco family.

› **www.albis.com**

Left: A cooling water pipe produced in Akromid A3 GF 30 4 L black (4678) PA66/PP blend from Akro-Plastic

Ampacet will exhibit a number of new products aimed at improving the quality of recycled plastics in terms of odour and colour.

Odor Scavenger 1000258-E is a wide spectrum odour absorbing masterbatch suitable for neutralising odours in post-consumer recyclates, allowing usage at higher percentages without sacrificing end-product quality. REC-O-BLACK 216 is a black masterbatch produced from carbon black pigment recovered from post-consumer recycling of rubber products such as tyres in a PCR PE carrier resin. Blue Edge 78 (7600078-E) masterbatch counteracts the yellow/brown tint in post-consumer recycled PET, providing a lighter bluish tone that is more appealing to the customer's eye.

Ampacet will also show its Biorange masterbatches for use with compostable bioplastics and biodegradable resins. All products in the range are compatible with compostable polymers and comply with the EN 13432 composting standard.

› **www.ampacet.com**

Arkema is showing products from its wide-ranging specialty polymers portfolio. These include its Kynar PVDF family and Rilsan and Pebax high performance polyamides ranges. The company says these advanced polymers meet the highest technical requirements of various applications in the chemical, automotive, sports and consumer goods markets. Its Altuglas PMMA resins target applications in the major transport trends, such as e-mobility and give home appliance and lighting designers the opportunity to combine greater creative freedom with a high level of technicality.

› **www.arkema.com**

Ascend Performance Materials will introduce its Vydyne R433H PA66, which is designed to rein-

force down-gauged steel and aluminium in vehicle body in white (BIW) structures.

Vydyne R433H has improved energy absorption over traditional glass-filled PA66, reducing noise, vibration and harshness (NVH) and absorbing impact energy from crashes, says the company. "The BIW accounts for nearly half the weight of a vehicle," says Vikram Gopal, Ascend's Senior Vice President of Technology.

Ascend will also highlight its new manufacturing facility at Tilburg, in the Netherlands. The acquisition of the Britannia Techno Polymer compounding operation this summer gave Ascend its first European manufacturing base.

› **www.ascendmaterials.com**

Right: BASF extends its Ultramid Deep Gloss PA technology to coloured variants

BASF announces the extension of its Ultramid Deep Gloss PA range to include coloured grades. It will also show new additions to its PPA portfolio and colorants from its Color Solutions division for use with recycled resins.

Previously only available in black, the new coloured Ultramid Deep Gloss products offer the same benefits in terms of resistance to scratching, chemical and UV resistance without the need for coating. They also reproduce mould surface details faithfully, allowing a contrasting mix of light and shadow to be created. "This opens up versatile possibilities for car interior design," says Xaver Hopfenspirger, Project Manager for Ultramid Deep Gloss.

Ultramid Advanced T1000 is a new group of compounds based on PA 6T/6I. The new compounds offer the highest strength and stiffness within the Ultramid family and display constant mechanical properties up to 120°C. The semi-aromatic chemical structure also means the T1000 products offer high resistance to moisture and aggressive media. The new Ultradur PBT grade B4340ZG3 has been launched for automotive applications such as cable harness connectors. BASF says it has improved mechanical properties and increased impact strength, offers increased stiffness and resistance to external loads.

› **www.basf.com**

Below: Covestro's automotive front end concept is a seamless black panel in which the PC film is backlit

Covestro's offering in Friedrichshafen includes continuous fibre reinforced composite materials and PC blends for use in demanding new application areas such as electric vehicle batteries and light guides. It will also highlight its materials for additive manufacturing (3D printing), showing a complex shock absorber manufactured using three different additive manufacturing techniques – FFF, SLS and SLA - using a combination of PC filament, TPU powder and liquid PU.

An automotive front-end concept explores what cars of the future may be like without the the classic radiator grille. Covestro says the front section of cars will be characterised by three-dimensional, jointless and glass-like surfaces. The concept being shown at Fakuma is film-insert-moulded using Makrolon AG PC, Makrofol PC film and silicone hard-coating.

› **www.covestro.com**

ELIX Polymers will introduce its CC (Chemical Compliance) product line at Fakuma. The grades are intended for applications where specifiers are concerned about regulatory aspects. These include toys, cosmetic containers, and products that come into contact with food. CC grades are supplied with additional guarantees on regulatory compliance and are supported with a package of extended verification and stewardship services.

The specialty ABS supplier will also feature recent product introductions, including plating grades for automotive and sanitary parts, specialty grades for consumer goods that offer laser-markability and high flow, and special ABS grades optimised for 3D printing using FFF/FDM technologies.

› **www.elix-polymers.com**

FKuR will show its latest biodegradable injection moulding compound – Bio-Flex S 7514 – plus examples from its range of part bio-based TPE and PP grades.

Based on PLA, Bio-Flex S 7514 is a biodegrad-

able compound with an MFI of 27 (g/10 min), making it easy to process and suitable for use in multi-cavity and long flow length moulds. Its high heat resistance of 110°C (Vicat A) is achieved without using a hot tool, so cycle times are short. The material has a bio-based content of 75% and is available in natural and white.

Other products on display include Terraprene, a range of TPEs with a bio-based content of 40% to 90%. The materials offer similar mechanical properties to fossil fuel-based counterparts and are suitable for 2K injection moulding. Terralene PP is a PP compound with a bio-based carbon content of around 35% that can be used as a "drop-in" alternative to conventional PP.

› **www.fkur.com**


PHOTO: FKUR

Left: Disposable cutlery produced in FKuR's biodegradable Bio-Flex S 7514 compound

Gabriel-Chemie will introduce the first in a series of digital tools designed to make it easier for its customers to communicate – and to satisfy – their colour needs. GABi is a virtual assistant that uses an intelligent search-algorithm to find suitable products based on common colour systems or standardised colour references such as RAL.

The system is also able to recognise colours and propose appropriate products using the X-Rite Color-Eye System via a smartphone camera. The Color-Eye calibration card enables accurate colour measurements to be made on Apple and selected Android phones, removing variation caused by lighting and camera differences. Dosage, temperature stability and light-authenticity are just a few processing parameters that can also be filtered.

GABi is the first tool to be launched under Gabriel-Chemie's "Master of Batch" line. "Master of Batch provides quick digitised access to our masterbatch world," says Digital Colours Project Manager Lukas Houska. "Customers can quickly and easily select their products to shorten product development and time to market."

Other exhibits include the company's Colour Vision No 19 concept, presenting its latest colour and effect ideas in the form of plastic lens plates and surfaces in selected polymers. It will also demonstrate its laser marking additive developments and its halal and vegan masterbatch products.

› **www.gabriel-chemie.com**

Inno-Comp will present its range of masterbatches for production of PP LFTs. The company claims that, using its long glass fibre masterbatch and optimised LFT additive masterbatches, processors can produce performance and cost optimised LFT

compounds on the injection moulding machine. The company says the Innopol PP LFT Open-Compound System allows development of application specific LFTs offering performance attributes such as halogen-free flame retardance, electrical conductivity, reduced friction as well as custom colours.

› **www.inno-comp.hu**

KD Feddersen's theme for Fakuma will be focused on lightweight construction, improved aesthetics and low noise and emission compounds, with examples of solutions to all these challenges from its principals.

With its unique "soft touch" feel, Softell PP compounds from LyondellBasell require no painting to create leather-grain effects, including seams, direct from the mould. Softell also boasts high noise dampening, good colourability, and high weld-line and impact strength. Also from LyondellBasell, HiFax PP compounds are UV-stabilised metal effect grades designed to replace metal in exterior automotive applications.

The company will also show two Hostaform products from Celanese. Hostaform SlideX POM offers increased durability for heavy-duty slide/friction applications; Hostaform XAP² POM is a low-emission formulation that meets Asian and European automotive industry requirements for interior applications.

› **www.kdfeddersen.com**

Lanxess will highlight a number of PA6 and PBT compounds designed to replace PA66. Durethan Performance PA6 grades are said to be several times more resistant to fatigue under cyclic loads than standard Durethan grades with the same glass content and also offer enhanced mechanical performance at elevated temperatures under static loads. Meanwhile, it says that unreinforced halogen-free flame retarded Pocan BFN2502 PBT provides an alternative to halogen-free unreinforced PA66 in applications where cost or water absorption are concerns.

The company will also show infrared-transparent PA6, PA66 and PBT compounds developed for laser transmission welding applications. One example is the halogen-free flame-retarded Durethan AKV30FN04LT grade, which achieves V-0 at 0.4mm in the UL 94 test. "With these products, we are responding to the growing demand for housings for sensors, control units, and display systems, which are needed for applications ranging from driver assistance systems to autonomous driving," says Jan Bender, Head of Marketing EMEA in the High Performance Materials (HPM) business unit.

› **www.lanxess.com**

Lehvoss Group, which marks its 35th anniversary this year, will present its Luvobatch PA BA 1001/1002 blowing agent system for production of lightweight PA components produced from compounds containing glass or carbon fibres and mineral fillers.

Using the Luvobatch system, it is possible to reduce part weight by up to 30% while maintaining most of the original mechanical properties, the company claims. It says foamed components produced with the system exhibit a performance factor for bending stress in the range from 1 to 1.3, meaning the change in flexural strength is less than the reduction in weight.

In addition to the weight saving, the PA-optimised endothermic blowing agent enables sink marks and shrinkage cavities to be avoided. Delamination in components subject to high mechanical stress, which may arise during the addition of masterbatch based on polyethylene or universal carriers, is reduced or prevented by the use of a PA carrier system. Luvobatch PA BA 1001/1002 can be used in all common processing techniques.

Lehvoss will also show its Luvosint and Luvocom 3F products for 3D printing, its Luvotech line of technical compounds, and Luvocom P powders for electrostatic coating.

› **www.lehvoss.de**

Polykemi, which marks 50 years of compounding this year, will be presenting the latest additions to its technical and recycled compounds product lines, including previewing a new translucent non-reinforced PC for use in automotive switches and light guides.

With its €1m plant upgrade at its Ystad site now complete, the company has intensified develop-

PHOTO: LEHVOSS

Below: Lehvoss Group will show its products for injection molding, extrusion, 3D printing and electrostatic coating

Thin Wall Packaging

Cologne / 2018

Identifying opportunities and maximising returns in plastic tubs, pots and trays industry

11-13 December 2018
Maritim Hotel, Cologne, Germany

CLICK HERE FOR DETAILS

Images courtesy of **Emmi** and **Verstraete in Mould Labels**

Sponsored by:

BOREALIS Keep Discovering
KIEFEL PACKAGING A Member of Brückner Group
StackTeck
ERMO

Media supporters:

Injection WORLD
Film and Sheet EXTRUSION

Left: Automotive compounds feature heavily among Polykemi's latest developments

ment of its flame retardant portfolio. Its POLYfill PP HC has been extended to include flame retarded glass fibre reinforced grades with up to 25% filler content while a new glass reinforced UL94 V-0 PBT for thin wall moulding is under development.

It will also show examples from its POLYfill PP HC line. These high performance reinforced PP compounds can be used as an alternative to PA6, PA66 and PBT in some applications – it says several customers have replaced PA6 GF 30% with POLYfill PP GF5030HC. Polykemi says it is now developing a 35% glass reinforced PP HC to substitute 30% glass reinforced PA66. Benefits are said to include reduced weight, easier processing and low moisture absorption.

The display will be completed with a full range of recycled compounds, including examples from its REZYcom line which combine selected recycled and virgin material. It will show a REZYcom PC/ABS grade formulated to meet automotive finish and colour requirements and a new fire retarded product – REZYcom PP R15000FR V0 – that meets railway industry specifications.

› **www.polykemi.se**

Polyplastics will exhibit the latest developments of its Duracon POM, Duranex PBT, Durafide PPS, Laperos LCP, and Topas COC resins.

New Duracom POM grades include low-VOC emissions for the production of automotive interiors while the latest Durafide PPS grade is said to deliver improved heat shock resistance for a range of demanding applications. It will highlight an example part produced in Durafide PPS using "bump-off" moulding techniques, allowing undercuts to be created without the use of moving mould cores.

The company will show its newly introduced Duranex 457EV an unfilled high-impact PBT, which meets the UL2251 standard for electrical/electronics and automotive, and a range of laser welding resins.

› **www.polyplastics.com**

Teknor Apex will introduce a new series of high-heat glass-reinforced PA66 compounds that it says bridge the cost-performance gap between standard heat-resistant PA grades and costly specialty polymers.

The Creamid 240 H7.5 Series compounds provide the strength and stiffness of high glass filled engineering polymers while maintaining mechanical properties even after continuous service at temperatures of 240 °C.

"These new materials exhibit lower melt and mould temperatures than competing PA66 compounds and high-performance products like PPA, providing economies in terms of energy consumption, cycle times, and tooling requirements," says Dr Hartmut Elsässer, Global Director of Technology for Engineering Thermoplastics at the company.

Currently available unfilled or with glass fibre contents of 35, 50 or 60%, the company says the compounds exhibit dramatically improved property retention when compared to similarly glass-filled standard PA 66 alternatives while costing around 30% less per kg than high-performance polymers such as PPA or PA 46.

The new compounds process at around 280 to 300 °C; typical mould temperatures are in the range of 80 to 110 °C. Both are considerably less then PPA and PA46.

Teknor Apex sees applications for the Creamid 240 H7.5 compounds in automotive under-hood components such as charge air cooler end caps, air intake manifolds, quick-fit connectors and radiator end tanks, as well as electronic connectors and lamp sockets.

› **www.teknorapex.com**

Victrex will introduce its FG food-grade range at Fakuma. New to the company's portfolio, the move is intended to meet the specific regulatory and quality requirements of OEMs in the food equipment sector. Offering significant benefits in terms of cost and performance compared to metals, the new grades are aimed at applications in cookware and beverage dispensers for commercial and domestic use through to industrial applications in conveyor systems, aseptic processing, sensors, gears, and nozzles.

› **www.victrex.com**

Oil & Gas
Non-Metallics
London / 2018

Identifying and exploiting opportunities for polymer materials in onshore and offshore oil and gas engineering

30-31 October 2018
Radisson Blu Portman Hotel, London, UK

Headline Sponsor

TEIJIN

Also sponsored by:

أرامكو السعودية saudi aramco

SOLVAY asking more from chemistry®

materia® INNOVATIONS WITH IMPACT

Media supporters:

Pipe and Profile EXTRUSION

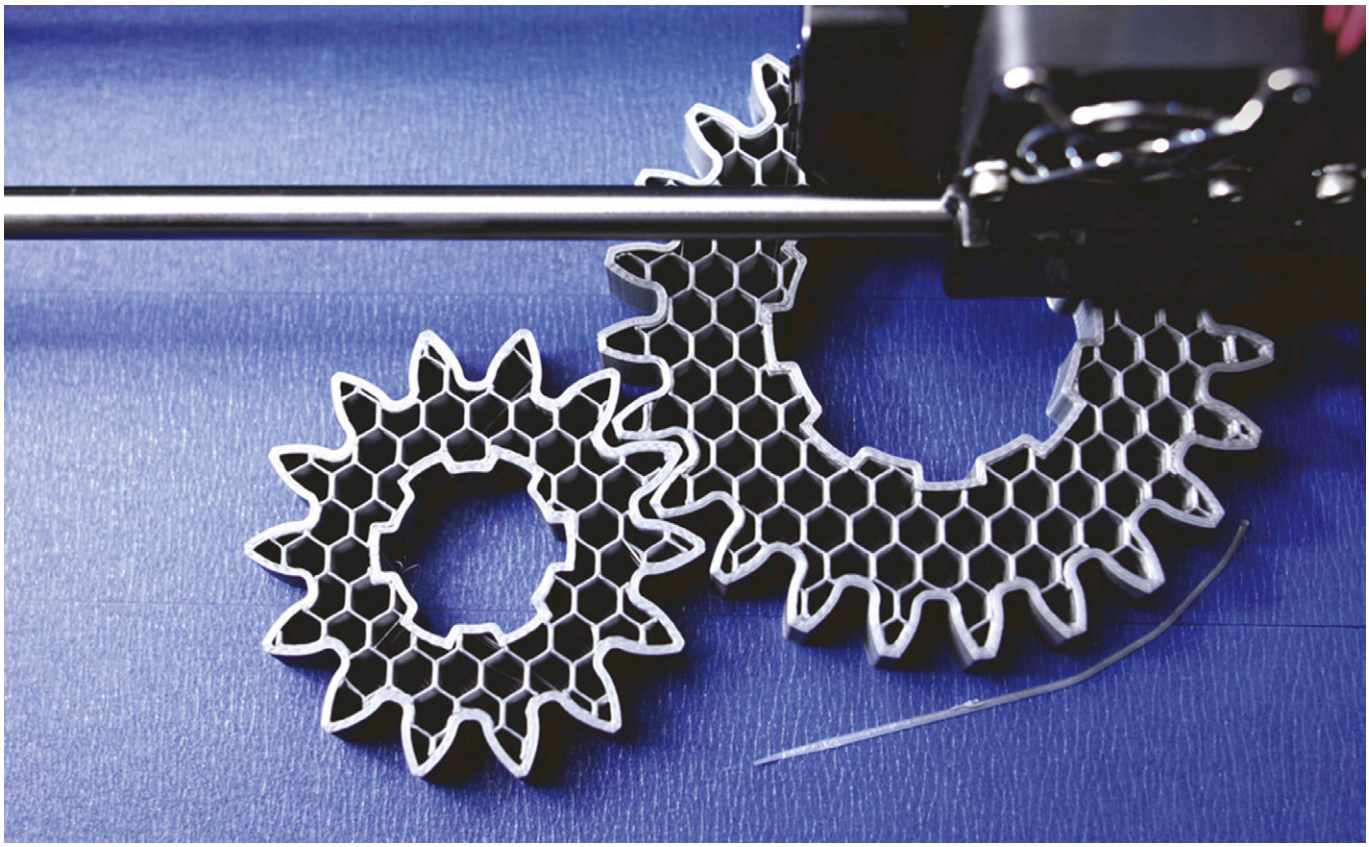
NEWSBASE WHAT, WHY AND WHAT NEXT

InnovOil

Petroleum Africa

WorldOils

PHOTO: SHUTTERSTOCK



Building a future in 3D print

AMI's Polymers for 3D Printing conference will explore the opportunities this fast developing technology offers

Main image: As 3D print technology transisitons from prototyping to production new demands will be placed on materials, presenting new opportunities for plastics producers and compounders

3D printing is growing globally. The technology has already secured its place as a powerful tool for design and prototyping and is now increasingly being considered for manufacture of low volume and highly customised final-parts. Polymers for 3D Printing is a new conference that will provide a timely international learning opportunity for anyone considering the development of specialised polymers for 3D printing, filament extrusion, or rapid prototype production. The two-day event takes place on 11-12 December 2018 in Dusseldorf in Germany. This article previews the expert speakers sharing their insight at the event.

The conference will open with an additive manufacturing overview delivered by **Dr Suveni Kreimeler**, Head of the Part Design/Materials Technology Department at **IKV** (Institute of Plastics Processing) in Germany. Then **Dr Luca Chichio**, Business Development Manager for **Elix Polymers in Spain**, will look at the evolving property requirements of ABS for additive manufacturing technology, and **Deepak Venkatraman**, Applications Development Engineer at **Natureworks** in the US, will share details of some of the company's developments in PLA for industrial 3D printing applications.

The next session will be opened by **John Jones**, EMEA Materials Business Group Director at **Stratasys** in Germany, who will showcase some of the exciting and unlimited innovation potential of 3D printing. **Dr Richard Janssen**, Business Development Manager at the **Brightlands Material Centre** in the Netherlands, will explore the challenges and opportunities of additive manufacturing using continuous fibre. Then **Brian Alexander**, Global Product and Application Manager at **Solvay Speciality Polymers** in Germany, will speak about tailored high-performance materials for additive manufacturing and related simulation.

Lukas Pawelczyk, Senior Manager Additive Manufacturing at **Arburg** in Germany, will discuss the company's experience with new materials for rapid prototyping and low volume production. ›

Then **David Pascual**, Global 3DP Marketing Manager for **Lubrizol Advanced Materials** in Spain, will explain some techniques to elevate performance in 3D printed applications. The session will then move on to look at flame retardant filaments, which will be delivered by **Dr Joanna Marguier**, 3D Printing R&D Manager at **Clariant Produkte** in Germany. And **Gary Pooley**, Ink Development Manager at **Haydale Graphene Industries** in the UK, will explain how graphene can be used to enhance PLA for 3D applications.

The final session of the first day will explore the material science behind some of the emerging 3D print technologies. **Varun Srinivas**, PHD Lead at **Maastricht University** in the Netherlands, will discuss the relationship between polymer molecular structures and 3D printing. And the day will be brought to a close by **Dr Harold van Melick**, R&D Director at **DSM Additive Manufacturing** in the Netherlands, who will explain how material science can drive digital manufacturing applications forward.

The second day of Polymers for 3D Printing will look at innovations driving the use of additive manufacturing from prototyping towards volume manufacturing. **Jean-Marie Maldjian**, Material Senior Expert at **Schneider Electric** in France, will share developments in the company's use of 3D printed resin cavities for injection moulding, which enables it to achieve a 10-day part turnaround. He will be followed by **Luis Roca**, Head of Compounding **at AIMPLAS** in Spain, who will present an update on the centre's studies on composition, thermal behaviour and performance of 3D printed mould inserts. The final presentation in the session will be delivered by **Dr Thomas Joffre**, Project Manager at **Innovation Plasturgie Composites** in France, who will look at the use of heat pipes in polymers made by 3D printing to aid cooling.

The focus of the conference will then shift to process developments. **Fabien Stöver**, Senior Product Manager Polymer at **EOS** in Germany, will explain how the company is adapting its polymer laser sintering technology for serial production. **Dirk Leister**, Leader Technical Marketing at **Thermo Fisher Scientific** in Germany, will explore how novel polymeric materials are enabling more advanced fused filament fabrication (FFF) applications. Then **Daniel Cohn**, General Manager at **Protolabs** in Germany, will speak about selection of 3D print materials for parts ranging from micro to macro scale.

The final session of the conference will look at developments in the use of multi-material 3D print. **Margot Segers**, Scientist at **TNO**, the Netherlands Organisation for Applied Scientific Research, **will** discuss multi-material printing using photopolymers. Then **Dr Kevin Eckes**, R&D Engineer at **Aerosint** in Belgium, will bring the two-day event to close with an explanation of how selective powder deposition can allow multi-material SLS printing.

Expert speakers sharing their insight at Polymer for 3D Printing include (top row from left) IKV Head Part Design/Materials Technology Dr Suveni Kreimeler, Stratsys EMEA Materials Business Group Director John Jones, Solvay Specialty Polymers Global Product and Application Manager Brian Alexander, Arburg Senior Manager Additive Manufacturing Lukas Pawelczyk, (bottom row from left) Lubrizol Advanced Materials Global 3DP Marketing Manager David Pascual, Maastricht University PHD Lead Varun Srinivas, Thermo Fisher Scientific Leader Technical Marketing Dirk Leister, and TNO Scientist Margot Segers

About Polymers for 3D Printing

Polymers for 3D Printing is a new two-day conference from AMI exploring the development, production and application of innovative polymers and compounds for 3D printing and other rapid manufacturing technologies. Taking place at the InterContinental Hotel in Düsseldorf, Germany, on 11-12 December 2018, it will cover the latest developments in resins and compounds for a variety of 3D printing and rapid manufacturing methods. Expert speakers will detail developments in established 3D print polymers such as ABS, PLA and PETG, as well as emerging high-performance polymers and compounds offering additional functionality.

To find out more about the event, or to book your place, visit the **conference website** or contact the Conference Organiser, Harriet White. Tel; +44 (0) 117 314 8111; Email: **harriet.white@ami.international**.

Plastics Regulations

Pittsburgh / 2018

Responding to new and future regulatory developments that will impact the plastics supply chain

December 11-12, 2018,
Pittsburgh Marriott City Center, Pittsburgh, Pennsylvania, USA

SPECIAL OFFER
Save **$300** if you register before October 12, 2018

Sponsored by:

Verisk 3E

Media supporter:

Compounding WORLD | Film and Sheet EXTRUSION | Injection WORLD | Pipe and Profile EXTRUSION

A wider role for 3D printing

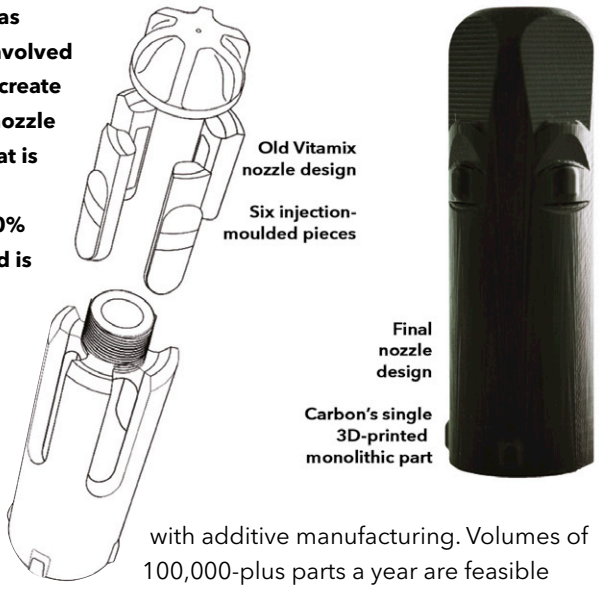
*Additive manufacturing systems are becoming more affordable and offer many advantages to the injection moulder for rapid prototyping, product development and increasingly for niche production tasks. By **Mark Holmes***

Makers of additive manufacturing systems and materials are engaging with the plastics injection moulding industry to demonstrate the many advantages that this technology can bring to the business in rapid prototyping and increasingly in production, and the market is developing quickly. "For the plastic injection moulding industry, there is a lot of focus on engineered-grade resins," says Scott Kraemer, Production Development Engineer at **Carbon**. "In other words, there is more focus on using specialised resins that are designed for the final part performance rather than using what has always been used by the previous engineer. Rapid prototyping is also following that same trend by developing more engineered resins that fit the need of the product design."

Speed to production is the main driver. "More and more people want to make parts faster and get into production faster - whether it is printing a mould insert or printing production parts," adds Kraemer. "This is where digital engineering comes in to play. Having minimal amount of touches to the CAD part and streamline right in to final production. With Carbon's materials, we are seeing more trends of prototyping and producing on the same technology rather than the need to cut a mould."

However, design limitations can come into play. "Current engineers need to be designing for the final manufacturing process – whether it is additive manufacturing or injection moulding," Kraemer says. "Just like designing for the part performance, you will also need to design for the correct manufacturing process. One of the main technical areas of interest at present is making production parts

Main image: The Ultimaker S5 3D printer



Right: Carbon has recently been involved with Vitamix to create a micro-fluidic nozzle at mass scale that is ten times more durable, uses 30% less material and is 33% more economical

with additive manufacturing. Volumes of 100,000-plus parts a year are feasible with materials that have similar properties to injection moulded parts. The material properties are there, we just need more engineers to spec out for these processes and materials. The OEMs are starting to take advantage of this potential, but there is still a long way to go."

The latest product that Carbon has introduced is MPU-100, a medical-grade resin that can be used in its additive manufacturing machines. The company currently has materials that mimic ABS, TPU, polypropylene and 10% glass-filled polyamide that are all being used for production, and others are in development. Future developments will find applications in the automotive, medical, dental and consumer markets, and will focus on the need to produce larger parts and large-scale production volumes.

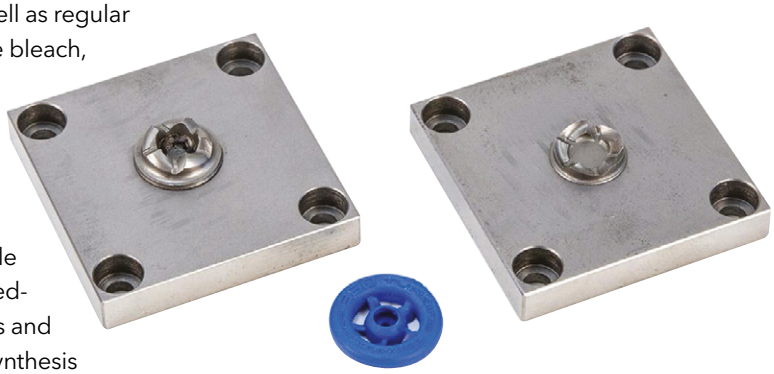
Carbon has recently been involved with **Vitamix**, in collaboration with **The Technology House (TTH)**, a Carbon Production Partner and leading contract manufacturer, in a project where part design and production were altered to create a micro-fluidic nozzle at mass scale that is ten times more durable, uses 30% less material and is 33% more economical. "Historically, the nozzle was designed to be six different injection moulded pieces, and also needed to be made with durable materials that can withstand high pressures and temperatures, as well as regular exposure to strong cleaning agents like bleach, detergents, and sanitisers," says Scott Kraemer. "Seeking a simpler and more economical design, Vitamix set their sights on the ambitious goal of manufacturing the six-part nozzle as a single, monolithic part. Carbon's durable rigid polyurethane (RPU) material, Speed-Cell system (which includes M2 printers and Smart Part Washer), and Digital Light Synthesis technology enabled them to manufacture complex geometries and channels with excellent surface finish, a critical element due to the high-pressure fluidics performance requirement of the nozzle. As a result, the Carbon-produced part exceeded the quality standards previously achieved through traditional manufacturing, and Vitamix is deploying tens of thousands of these nozzles into stores all over the USA."

A new service from UK injection moulder **OGM** has been introduced to reduce the lead-time for producing mould tooling by up to 50%. Based on the combination of conventional subtractive machining and the latest additive manufacturing processes, to form a hybrid technology, the new Rapid Production Mould Tools (RPMT) service will help to compress lead-times and enhance still further the quality and finish of most types of mould tool inserts.

Mould tool inserts have traditionally been manufactured using conventional CNC machining techniques. The company says that although these produce high quality inserts, the production time, especially for complex tooling, can be lengthy, the ability to create intricate shapes is limited and the costs are relatively high. In an effort to drive down tooling cost, many companies in recent years have outsourced production to the Far East, in the knowledge that there is then a trade-off in even longer lead-times and potential quality issues. Typically, the lead time for a new tool set can be between 12 and 14 weeks.

By comparison, the hybrid RPMT technology can reduce lead times to between four and six weeks. This has been achieved by using standard modular tool components, such as bolsters, blank inserts and ejector sets, which are then CNC machined and drilled to create a substructure with the appropriate cooling channels and fixtures to match the characteristics of each injection moulding machine. OGM then uses an advanced direct metal laser sintering (DMLS) system, to build custom designed mould inserts onto the standard tool base.

The DMLS technology incorporates an auto-



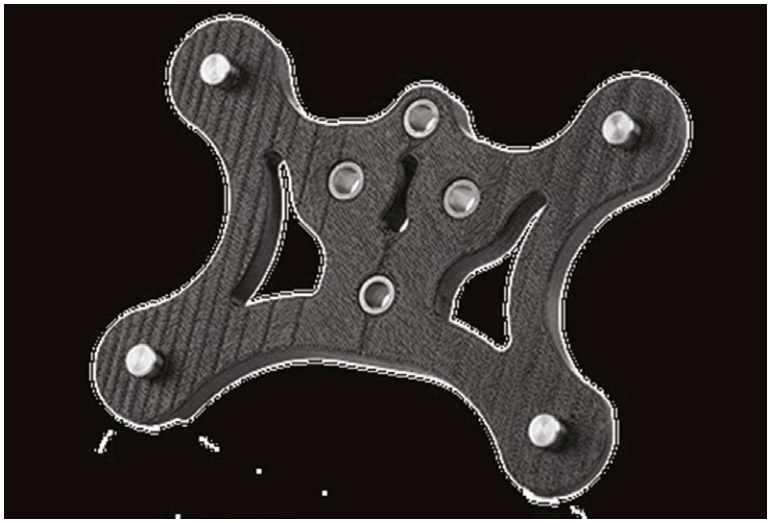
Right: A new service from UK injection moulder OGM has been introduced to reduce the lead-time for producing mould tooling by up to 50%

matic milling capability for fine finishing of each design as it is sintered layer by layer. This allows extremely complex mould shapes to be built and finished in a matter of hours, and produces a high quality surface finish. The process can be carried out using a variety of materials, including steel, stainless steel and Inconel nickel-chromium alloys, to create tool sets capable of withstanding extended use. It can also be used to repair or modify tool inserts quickly and efficiently.

3D printer manufacturer **Ultimaker** has formed an alliance with **DSM** and **Owens Corning** to optimise materials for the Ultimaker S5 and provide a wider variety of 3D printing materials for Fused Filament Fabrication (FFF). DSM Novamid ID1030 CF10 is a new carbon fibre filled PA6/66 filament that brings the properties of 3D printed parts close to what is usually achievable only by injection moulding. With 10% carbon fibre reinforcement, it produces stronger, tougher, and stiffer 3D printed parts for functional prototyping and end-use applications, at the same speeds as unreinforced plastics. In addition, Owens Corning has developed a high-end 3D printing material Xstrand. This material is designed for functional prototyping and industrial applications, and has strong mechanical and thermal properties enabled by glass fibre reinforcement. The material is claimed to be durable, with stiff mechanical properties, a low thermal expansion coefficient, and a high working temperature.

Left: 3D printed grips made from DSM Novamid ID1030 CF10, a new carbon fibre filled grade PA6/66 filament, on the Ultimaker S5

Ultimaker says that the S5 is fully optimised to fit into existing workflows and deliver reliable results. With its larger build volume, the Ultimaker S5 can print functional prototypes, manufacturing tools, and end-use parts. The Ultimaker S5 has fully integrated hardware, software and materials configuration, as well as optimal settings alignment, designed for professional users that require full geometrical freedom capabilities, industrial-grade material properties, repeatability, high uptime and an integrated



Above: The Fortus 380CF 3D printer from Stratasys can produce high-performance Nylon 12 carbon fibre parts

workflow. It has an optimised touch screen for better user experience and has a 330×240×300 mm build volume for printing larger objects. There is dual extrusion and an improved feeder system with a filament flow sensor that auto pauses and resumes when materials run out, leaving print quality untouched. The enhanced bed levelling ensures a perfect first layer and continuously compensates the print bed while printing, which allows unattended use. The company says that the Ultimaker S5 unlocks new applications and can print with a wider range of materials, from PLA to advanced engineering plastics such as PA and PC. The Ultimaker S5 includes a closed front system and an anodised build-plate.

Ultimaker has also introduced two additional products for its 3D printing systems. These include Tough PLA, a technical PLA filament optimised for printing models at larger sizes such as functional prototyping, tooling and manufacturing aids, with no delamination or warping. With an impact strength similar to, and higher stiffness compared to, Ultimaker ABS, Tough PLA is less brittle than regular PLA and gives a more matte surface finish quality. In addition, the Ultimaker App allows users to stay updated on the print's progress from a phone or tablet. The free App notifies users when a print job is ready or when a printer needs special attention or maintenance.

Stratasys has introduced the Fortus 380CF Production 3D printer for its high-performance Nylon 12 carbon fibre thermoplastic material. Containing 35% chopped carbon fibre, the company says that Nylon 12CF is strong enough to replace metal, allowing designers to develop more practical and functional design. Visual First, a Dutch service bureau, is using FDM Nylon 12CF to replace metal machine parts for its customers. This is significantly reducing machine downtime on the factory floor, ensuring production line continuity. In fact, for its customer, The Chocolate Factory, the replacement time of broken machine parts has been reduced from one month to just one week, while costs have reduced by 60% since using Stratasys additive manufacturing instead of traditional subtractive metal-based processes. ›

Arburg goes larger with Freeformer

Arburg is launching a larger Freeformer, the 300-3X, at Formnext to be held from 13-16 November 2018 in Frankfurt am Main, Germany. The company says that the new large machine can process three components using the Arburg Plastic Freeforming (APF) process, enabling the industrial additive manufacturing of complex functional parts in resilient hard/soft combinations with support structure as a world first.

"For many years, users have appreciated the benefits of our Freeformer 200-3X and the possibilities that the system and Arburg Plastic Freeforming have to offer," says Lukas Pawelczyk, who has been responsible for Freeformer sales worldwide since July 2018. "As a revolutionary next step, we're celebrating the world premiere of the Freeformer 300-3X at Formnext 2018, which will expand the Arburg product range and open up new fields of application. For the first time worldwide, complex and resilient functional parts can be produced from three components in hard/soft combination with support structure using this machine for industrial additive manufacturing – that's unique in the industry."

With the Freeformer 300-3X, the designation 300 stands for the available part carrier surface area in square centimetres. This is just under 50% larger than on the Freeformer 200-3X. The build chamber now offers space for larger small-volume batches and 50% wider parts with dimensions of up to 234 × 134 × 200 mm. '3X' stands for the moving axes of the part carrier in the x, y and z directions.

A two-part build chamber door is a new feature on the Freeformer 300-3X. This enables the feed hoppers, for example, to be refilled during ongoing operation by opening the top half of the door. The heated build chamber now only needs to be opened for inserting the part platform and removing the finished parts. Automatic opening and closing of the build chamber door, as well as optional interfaces, also enable automation of the additive manufacturing process and integration of the Freeformer in complete production lines. ›

Other customers harnessing the technology to produce 3D printed composite tools include McLaren Racing.

Stratasys has also developed a range of printers for prototyping solutions, including the F123 Series of 3D printers. From concept verification to design validation and functional performance, the company says that the F123 is aimed at designers and workgroups as an easy-to-use solution adept at every prototyping stage. In addition, the full colour, multi-material 3D printer Stratasys J750 can eliminate several assembly and post-processing steps during the product design. This enables designers to make significant time-savings during prototyping and allow rapid decision-making to accelerate product development. This is exemplified by Audi, which produced an ultra-realistic rear brake light housing 50% faster with the J750 compared to its previous prototyping methods.

3D Systems has developed a number of solutions for helping manufacturers move from prototyping to production and achieve competitive advantages. One such platform designed for production is Figure 4 Production and Figure 4 Standalone. The company says that the Figure 4 Production offers part print speeds of up to 65 mm/h, with prototyping speeds of up to 100 mm/h. The Figure 4 platform delivers part accuracy and repeatability, with Six Sigma repeatability across all materials. The system offers a combination of speed and accuracy complemented by a light-based UV curing process that takes minutes compared with hours for heat-based curing processes.

Figure 4 enables high-speed digital moulding, a process that complements traditional production methods, providing manufacturers with the accuracy, reliability, repeatability and uptime of traditional moulding, producing parts without the costs and more time-consuming aspects of tooling. Digital moulding is completely scalable, and with the high surface quality available on Figure 4, excels at fine part texturing. In comparison to conventional manufacturing, part texturing is essentially free and applicable to any surface no matter the shape.

In addition to supporting long- and short-run

The EOS P 810

The Freeformer 300-3X expands the application range of Arburg Plastic Freeforming (APF). With its three discharge units, complex functional parts can be additively manufactured as resilient hard/soft combinations

With the two Freeformers 200-3X and 300-3X, Arburg will in future cover a significantly broader range of applications. At Formnext 2018 there will be three exhibits and a host of parts, including a selection of two and three-component items, on display. The exhibited functional parts include a two-component gripper as a hard/soft combination, cable clips made from PP, transparent test discs made from PMMA and bellows made from medical TPE-S.

Users can process their own original materials and optimise droplet size as well as process control with the open Freeformer system. The Arburg material database documents qualified standard granulates such as ABS (Terluran GP 35), PA10 (Grilamid TR XE 4010), PC (Makrolon 2805), TPE-U (Elastollan C78 A15) and PP (Braskem CP 393). Further examples include special plastics for specific applications such as medical PLLA (Purasorb PL18, Resomer LR 708) and a PC (Lexan 940) approved for aerospace use. The range of qualified materials is continuously being expanded, says the company.

Plastic Pipe Fittings & Joints

2018

Exploring new developments in plastic pipe fittings and joining technologies

24-25 October 2018
Sofitel Kurfürstendamm, Berlin, Germany

CLICK HERE FOR DETAILS

Media supporters:

Pipe and Profile EXTRUSION

Injection WORLD

FAPU EUROPEAN POLYURETHANE JOURNAL

batches, high-speed digital moulding allows different parts to be produced in the same batch. This gives manufacturers the ability to quickly iterate a design or manufacture end-use parts without regard to a minimum order quantity.

The Figure 4 Standalone has recently been launched as an affordable industrial-grade solution for functional prototyping and low volume production. Figure 4 Standalone enables same-day functional prototyping iteration and low volume production at speeds up to 100 mm/h – also with Six Sigma repeatability. The statistical result is stated as Cpk > 2, where Cpk is the process capacity index. 3D Systems has also developed a portfolio of materials to complement the Figure 4 Standalone 3D printer. The materials enable creation of parts for rapid design iteration, functional prototypes and low volume production with good durability, elasticity and functionality.

EOS has launched the EOS P 810 polymer platform specifically designed to process the new high-performance, ALM material HT-23. Developed in close cooperation with Boeing, this high-temperature polymer AM solution addresses industry requirements for demanding high-performance parts. As such, this technology package is particularly developed for the aerospace industry but can also be applied for other industries.

The system builds on the EOS P 800 and is specifically designed for the requirements of industries such as aerospace and processes exclusively the HT-23 material. With a build volume of 700×380×380 mm and two 70 W lasers, the EOS P 810 system enables the production of large structural parts with excellent dimensional accuracy and provides increased productivity. It is particularly suited for industrial applications.

HT-23 is the first carbon fibre-reinforced PEKK material that can be processed on EOS systems, as such offering isotropic part properties. Parts additively manufactured with this material offer high strength, low weight and are capable of withstanding high temperatures. It is the first high-performance material with a low refresh rate of 40%, which also contributes to reduced costs-per-part.

Beyond aerospace, the solution also offers new design and manufacturing opportunities to the electronics and mobility industries – with applications such as plugs or housings, serial parts as well as spare parts for the interior and exterior (exterior facing) of buses and trains. Parts made of HT-23 fulfil the regulation EN 45545.

EOS has entered partnerships with OEMs in various industries. In September, it extended its collaboration with Siemens in the areas of software, automation and drive technology and the use of AM technology. EOS said Siemens is adding an EOS P 500 system at its Additive Manufacturing Experience Centre in Erlangen, Germany.

Mimaki has developed the 10 million colour 3DUJ-553 3D printer with the ability to produce colour detail in layers as fine as 19 microns. Of the many different approaches to 3D printing, the Japanese manufacturer has chosen to adopt one where the printer jets and instantly UV-cures tiny droplets of liquid photo-polymer. Fine layers accumulate on the build tray to create precise 3D models or parts and where overhangs or complex shapes require support, the printer jets a removable support material.

The Mimaki 3DUJ-553 features a maximum build size of 50 × 50 × 30cm, which the company says is larger than comparable 3D printers and offers white ink, as well as a clear ink that can be mixed with colours to add transparency to the printed product. Its water-soluble support material eliminates the need for manual work to cut tags or other support structures and allows even the most intricate designs to be realised.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.carbon3d.com**
- **www.vitamix.com**
- **www.tth.com**
- **www.ogm.uk.com**
- **www.ultimaker.com**
- **www.dsm.com**
- **www.owenscorning.com**
- **www.stratsys.com**
- **www.3dsystems.com**
- **www.eos.info**
- **www.mimaki.com**
- **www.arburg.com**

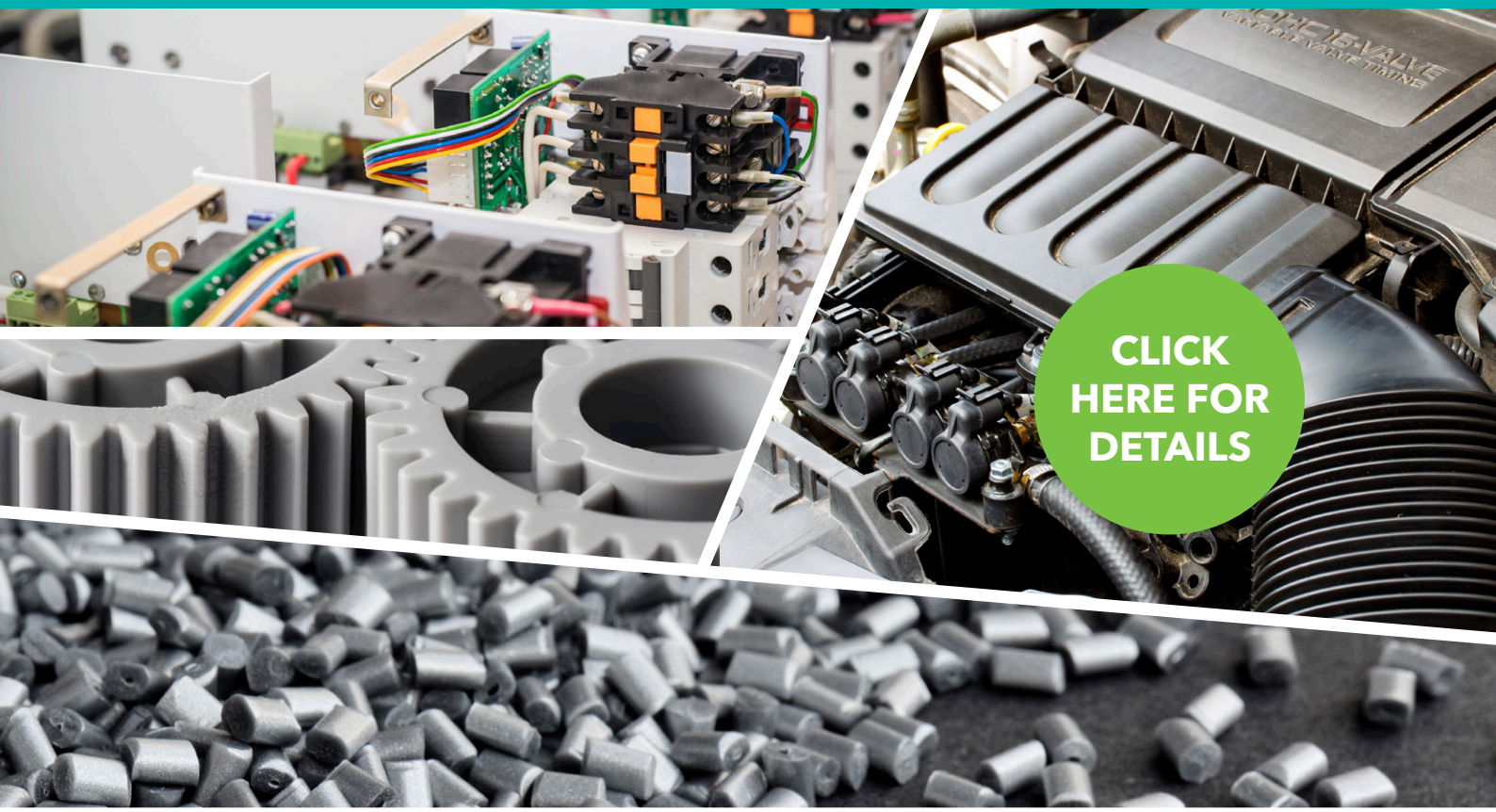
Below: Mimaki has developed the 10 million colour 3DUJ-553 3D printer

Compounding World Forum

2018

Exploring innovative technologies and successful business strategies for compounders

December 4-6, 2018
Ft. Lauderdale Marriott Coral Springs Golf Resort, Coral Springs, Florida, USA



Headline Sponsor

MHolland

Also sponsored by:

NFM Nordson Budenheim AZO. ENTEC

Media supporter:

Compounding WORLD

PHOTO: SHUTTERSTOCK

***Chris Middleton** explains how blockchain aims to make sensitive supply chains smarter and more trustworthy. But the technology is not without its challenges...*

Blockchain: redefining industry supply chains

Blockchain – the encrypted ledger technology that secures cryptocurrency and potentially a whole raft of business transactions – is simultaneously one of the most hyped and criticised technologies in living memory. And it is sometimes hard to sift the truth from the fiction.

Last month, the professional services specialist PwC published global research suggesting that 84% of organisations are experimenting with the technology. 25% of organisations have projects that are either live or at the pilot stage, it said, while 32% have projects in development and a further 20% are researching the market.

However, in May the technology analyst firm Gartner had published a very different set of findings. Its 2018 CIO survey said that only 1% of CIOs report live blockchain programmes within their organisations and just 8% are either planning blockchain initiatives or looking at or experimenting with the technology. According to Gartner, 77% of CIOs said their organisation had no interest in the technology and/or no plans to investigate or develop it.

Two highly reputable organisations and two detailed, global surveys presenting contradictory findings published just three months apart. These extremes of claim and counter-claim have typified discussions about the technology. However, Gartner's latest Hype Cycle report, published at the end of August, acknowledged that blockchain is a fast-maturing technology.

Main image: Blockchain technology could reshape supply chains in industries such as chemicals and plastics

Blockchain explained

Essentially, a blockchain is a distributed ledger. It is a continuously expanding chain of records (blocks) that are linked and secured via strong cryptography to create a networked audit trail of transactions. Because each block, ledger, or record usually contains a cryptographic hash of the preceding one, together with a timestamp and data about the

Right: The development of smart cities is paving the way for real time data collection to create permanent and inviolable records

transaction, the system is designed to be resistant to tampering and modification.

Typically, blockchains work using the processing and mirroring power of distributed/peer-to-peer computing systems, which is both the technology's advantage and, some argue, its inherent problem, because it replaces trust with networked complexity.

Theoretically, tampering with any one record creates a ledger entry that differs to all of the verified copies across the network. This is why blockchain's proponents believe it could become the foundation of a new data commons, challenging the concept of proprietary data and data landlords. The disadvantage is that this type of distributed processing is typically slower and more resource intensive than others. And that means that the cost of every transaction is higher and uses more energy.

Most blockchains are either public/permissionless – meaning anyone can join or add their processing power – or private/permissioned. The latter demands that someone's identity can be verified before they are allowed onto the closed system.

Linked with blockchain are the concepts of digital tokens and cryptocurrencies. Indeed, the technology was developed as a decentralised computing model to support cryptocurrencies and verify transactions. On some distributed, blockchain-supported systems, digital tokens are exchanged for work/processing and may represent an asset of any kind – that could include plastics, chemicals and compounding or mixing services.

The big attraction

The concept of an immutable system of record makes blockchain attractive for many applications that demand verification and authentication, which is why use cases are fast developing in supply chain management, logistics, transport, manufacturing, financial services, publishing, intellectual property, contracting, legal services, and more.

PHOTO: SHUTTERSTOCK

And in an increasingly interconnected world of smart things – from smart, connected cities, transport networks, factories, industrial installations, offices, and homes, to smart trucks, shipping containers, delivery boxes, and even sensor-filled labels on perishable goods – the idea of an inviolable system of record, together with smart contracts and automated payments, is even more attractive.

Blockchain is making its presence felt in all of these areas, because of the Internet of Things (IoT), the same technology, incidentally, driving interest in Industry 4.0 manufacturing management systems. Imagine a supply chain for sensitive, fragile, and/or perishable goods on which they could be authenticated at source and throughout the chain, shipped in ideal conditions, and delivered safely, on time, to the correct recipient. Each stage of that process could be logged and stored on an immutable ledger, with payments made automatically if and when all conditions are satisfied. That's the promise of blockchain in the chemicals sector – and in others that face similar challenges.

Below: Blockchain technology provides a mean to track, monitor and record condition of goods at every point in the supply chain

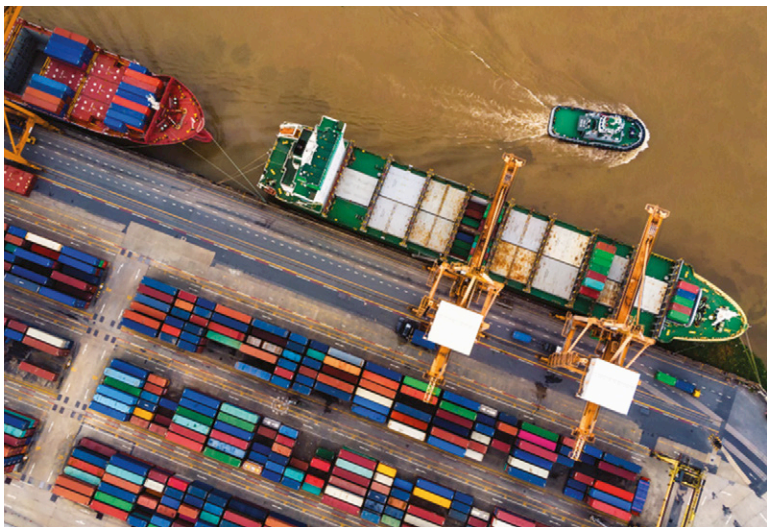


PHOTO: SHUTTERSTOCK

Blockchain realities

So how does blockchain look in practice? In March IoT supply chain specialist Brieftrace developed a blockchain solution to transform the way that pharmaceutical companies track their assets and perishable goods, allowing them to ensure that they are being handled correctly and delivered safely. The firm teamed up with transport and logistics company DSV on a pilot programme that deploys blockchain-connected tracking and sensing devices to monitor shipments. The pilot is based on the Traceum blockchain, which facilitates smart contracts, fiat currency transactions (currencies backed by a government as legal tender, rather than by a commodity such as gold), fixed transaction fees,

partner transparency, trusted data, and archiving.

The new system gives companies the ability to monitor issues such as product temperature, humidity, and light exposure, which can affect many drugs, chemicals, and other sensitive or perishable goods. This information is then stored on the blockchain, along with the vehicles' locations at every point.

Meanwhile, in the meat supply chain, the Arc-net initiative connects each step of pork product journeys using blockchain technology. This extends to encoding the DNA signature of each pig into the blockchain so the system can ensure that the same meat is being processed throughout the supply chain.

Blockchain is also being used in the diamond industry to authenticate the origin of each stone from a specific pit in a specific mine, and to then trace it all the way to the end customer.

There are other indications that blockchain is changing the business landscape, according to the August PwC report. For example, the concept of tokenisation is spreading to raw materials, finished goods, income-producing securities, membership rights, carbon offset trading, and even charitable donations. At the same time, initial coin offerings (ICOs), in which a company sells a predefined number of digital tokens to the public, are funnelling billions of dollars into blockchain platforms. ICOs raised $13.7bn in the first five months of 2018 alone, according to PwC.

There are other potential advantages in the technology. "Using blockchain in concert with enterprise resource planning platforms will enable companies to streamline processes, facilitate data sharing, and improve data integrity," said the PwC report. As a distributed, tamperproof ledger, a well-designed blockchain doesn't just cut out intermediaries, reduce cost, and increase speed and reach, it also offers greater transparency and traceability for many business processes, the firm said.

PHOTO: SHUTTERSTOCK

Above: Systems such as IBM's Blockchain World Wire aim to provide trusted "near real time" international payments

Securing transactions

However, while such a blockchain validates data and eliminates the need for a central authority to approve and process transactions, cutting out that authority also removes the institutions important to ensuring market stability, combating fraud, and more. And that is a challenge to any long-established, risk-filled sector. Some organisations are working to ensure that centralised trust and blockchain are not mutually exclusive concepts by being in the vanguard of the change. In September 2018, for example, IBM officially launched its Blockchain World Wire (BWW) banking payments network.

Blockchain World Wire uses the Stellar block-

Learn at Blockchain for Chemicals

Blockchain technology is much more than cryptocurrency – it holds the potential to redefine supply chains across industry. Blockchain for Chemicals is a two-day conference that will focus on application of this emerging technology in the chemicals and plastics industries. It will explain how it could be used in the future to demonstrate traceability of materials, save time with paperwork, prevent fraud and lost goods in transit, build trust in the supply chain, and provide the plastics/chemical industries with a new tool for growth.

Taking place at the Sofitel Kurfürstendamm in Berlin, Germany, on 12-13 December 2018, the event will bring together industry leaders to discuss the opportunities for the chemicals industry and to explain how early adopters can save time and money for their businesses through fast and secure access to end-to-end supply chain information.

The conference will be chaired by Chris Middleton, an expert author and journalist covering blockchain technology and application. Other key participants include: Peter Busch, Mobililty Lead Distributed Ledger Technologies at Robert Bosch in Germany; Heinz Lux, Senior Digital Strategist at Evonik Industries in Germany; Rafael Cayuela, Chief Economist at Dow Europe in Switzerland; Nicolas Buhmann, Commercial Manager at Maersk in Denmark; and Dr Stefan Guertzgen, Global Senior Director Industry Marketing and Communication for Chemicals at SAP in Germany.

For information about attending the event, taking an exhibition space, or sponsoring the conference, visit the **conference website** or contact Grace Midgley. Tel: +44 (0) 117 314 8111; **grace.midgley@ami.international**.

PHOTO: SHUTTERSTOCK

Above: Blockchain is being touted as a means to assess and rank logistics suppliers and create new on-demand options

chain to clear and settle international payments between banks in "near real-time", according to IBM, via a mutually agreed digital currency. Using the new system, two financial institutions agree to use a digital asset as the bridge between any two fiat currencies. That digital asset facilitates the trade and supplies settlement instructions.

Using their own payment system, the first bank converts the fiat currency into the digital asset. IBM's World Wire system then simultaneously converts that digital asset into the second fiat currency, completing the transaction, which is then immutably recorded on the Stellar blockchain for clearing.

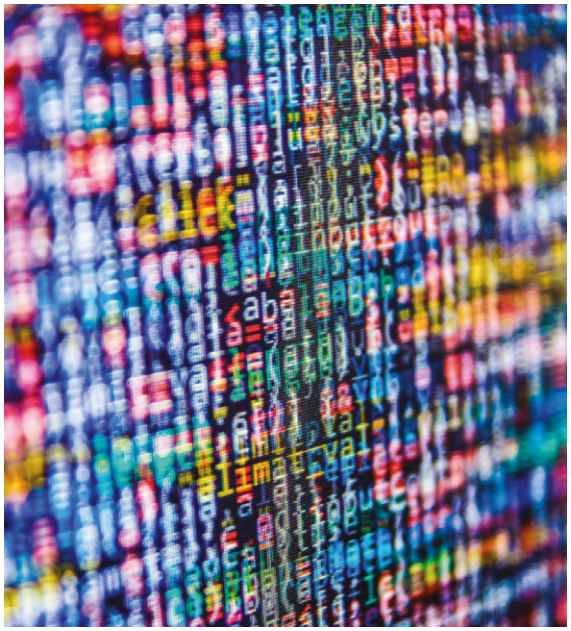
The financial services industry has been in the vanguard of exploring blockchain and what IBM terms "programmable money" for some years. In July, for example, a number of European banks, including HSBC and Deutsche Bank, adopted their own blockchain platform – we.trade. Earlier in the year Japan's biggest bank, Mitsubishi UFJ, announced its own blockchain payment platform in partnership with US cloud provider, Akamai.

Linking to business

This summer, Swiss B2B blockchain company Equidato Technologies announced the launch of its SophiaTX blockchain – main net. It is a decentralised computing system that extends traditional enterprise applications, such as enterprise resource planning (ERP), supply chain management (SCM), and customer relationship management (CRM), into the blockchain environment.

The aim of main.net is to use the distributed ledger and decentralised processing structure of the Graphene blockchain to underpin enterprises' operational and management processes "to ensure maximum transparency, traceability, and trust",

PHOTO: SHUTTERSTOCK



Left: GDPR is one of the challenges blockchain technology providers and users will have to address

according to the company.

Meanwhile, DB Schenker, the transport and logistics division of the German railway company Deutsche Bahn, has co-developed a decentralised application for supplier evaluation using the VeChainThor blockchain. Its system aims to rank and track service providers by such factors as the quality of their packaging, transportation times, and overall service.

Blockchain could also underpin an entire integrated transport system in the future without the need for large, costly, centralised control mechanisms, according to a UK research paper from the Transport Systems Catapult (TSC) and the University of Sheffield.

Counting carbon

Another novel venture, which is being billed as the "world's first retail platform that connects consumers to their own carbon footprints" was launched as a pilot programme in the UK by non-profit organisation the Poseidon Foundation earlier this year. The Poseidon retail platform uses blockchain technology to integrate carbon markets into transactions at the point of sale. Poseidon is partnering with ice cream giant Ben & Jerry's to demonstrate the system at one of its stores in London. The back end of the system runs on the Stellar blockchain network.

Environmental fintech company Veridium Labs is also working in the area of carbon offset trading. The company is partnering with IBM to transform carbon credits into fungible (exchangeable or interchangeable) digital assets that can be redeemed or traded on Stellar. In this relationship, Stellar acts as the underlying ledger, IBM as the token manager or broker, and Veridium provides the environmental expertise and industry structure. The resulting 'digital environmental assets' are designed to help companies and investors purchase carbon credits to mitigate their own environmental impacts, and/or hedge against future liabilities.

Also in the summer, the Mobility Open Blockchain Initiative (MOBI) announced its foundation across the transport industry. The aim is to create "a minimum viable network" for the technology that includes car makers such as Ford, GM, Renault, and BMW, public transportation and toll road providers, technology firms such as IBM, blockchain innovators such as Fetch and the IOTA Foundation, academic institutions, startups, and regulatory bodies across the globe.

Blockchain challenges do remain in terms of complexity, cost, energy usage, and, some argue, GDPR compliance. GDPR stipulates that data should be permanently erased from storage systems, should that be requested by a data subject. In theory, blockchain makes that impossible, although various initiatives claim to work around the problem, as **this report** explains.

Taken together, however, it seems clear that the potential that these and other blockchain initiatives are demonstrating to transform supply chains for fragile or sensitive goods in terms of authentication, transport, contracting, finance and payments will see this emerging technology adopted across the chemicals sector in the future. And these initiatives are being backed by some trusted names. Welcome to blockchain!

About the author

Chris Middleton is a leading business and technology journalist and author specialising in information technology, artificial intelligence, machine learning, automation, enterprise policy and technology ethics. He is editor of InternetofBusiness.com, contributing editor to diginomica and Computing, and a former editor of Computing and Computer Business Review. He has also written for The Guardian, BBC, Computer Weekly and The Times. Middleton will be chairing AMI's Blockchain in Chemicals conference, which takes place in Berlin in Germany on 12-13 December 2018.

Fire Resistance in Plastics

2018

Benefiting from advances in fire retardant additives, compounds and applications

10-12 December 2018
Maritim Hotel, Cologne, Germany

Sponsored by:

CLARIANT

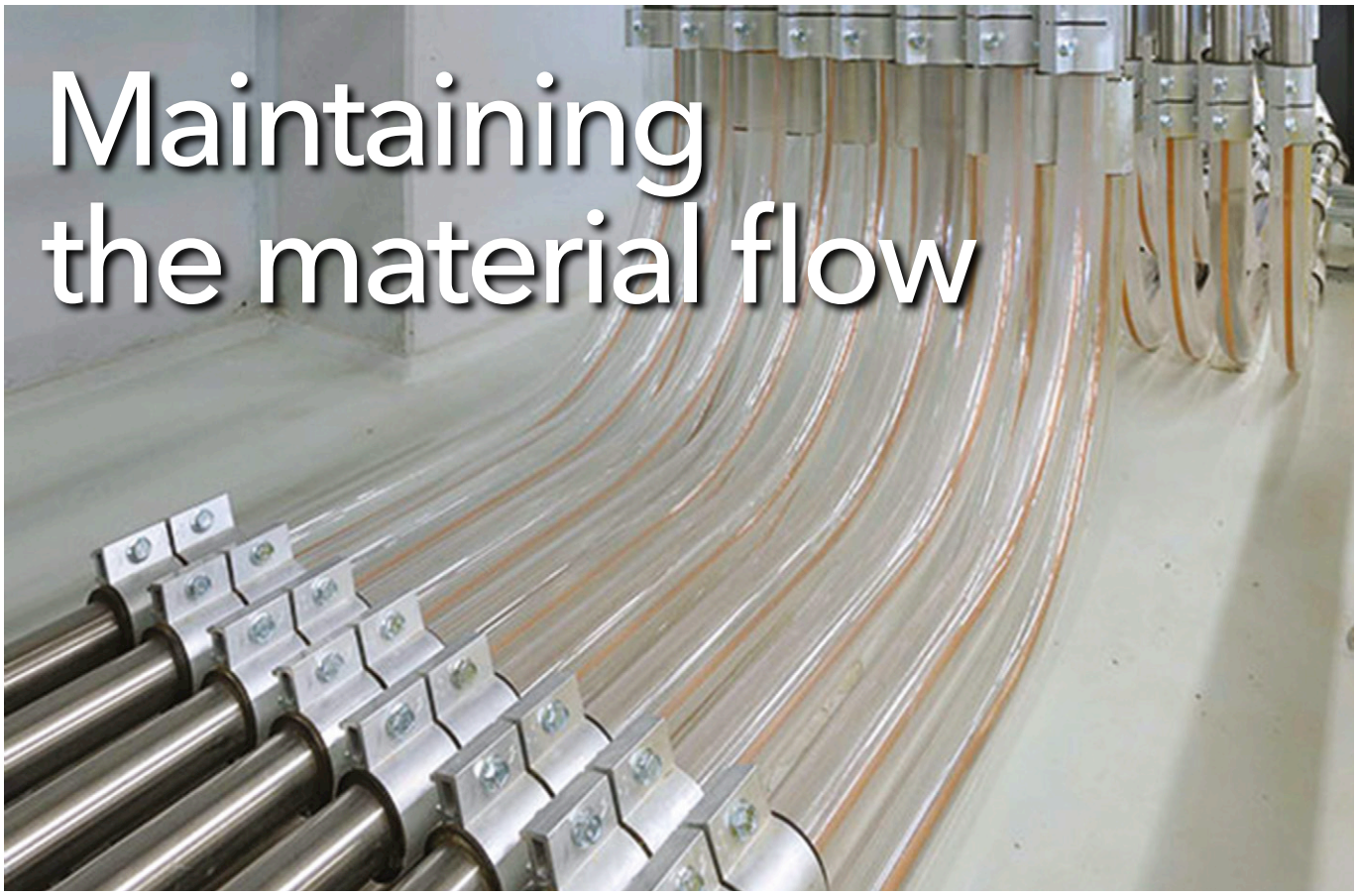
ICL Industrial Products
Where needs take us

pinfa
Phosphorus, Inorganic & Nitrogen Flame Retardants Association

Media supporter:

Compounding WORLD

Maintaining the material flow



Industry 4.0 technology is gathering pace in materials handling as suppliers look to provide the solutions that the injection moulding industry demands. Mark Holmes reports

A cost effective and efficient injection moulding operation needs materials to be in the right place at the right time and in the required quantities. Suppliers of materials handling equipment and systems are meeting these needs through modern conveying systems and sophisticated material hoppers, loaders and dosing equipment capable of delivering resin, additives, fillers and colour to the injection moulding machine in precise amounts. In addition, keeping downtime to a minimum and allowing easy cleaning techniques to facilitate shorter runs and quick changeovers are a prerequisite. Increasingly, manufacturers of plastics ancillary machinery are also incorporating Industry 4.0 compliant systems in their equipment as part of the accelerating digitisation of the industry.

According to Mike Jordan, Managing Director of **Summit Systems**, a UK supplier of plastics ancillary equipment and services, the shift in materials handling towards integration and supervision that can monitor in much more detail than previously continues to gather pace. "While the Internet of Things and Industry 4.0 are still currently buzz words, machinery suppliers are now being forced to invest in the knowledge to truly bring real benefits to manufacturers by using data and connectivity to reduce their costs further. For example, polymer drying has always been based on assumptions; these can be wrong of course and in the worst cases catastrophic, so there is a big focus on fully understanding the initial material conditions before assuming what energy needs to be delivered to dry the material. Now moisture meters can provide the full link in

Main image: Motan-Colortronic now offers pipe bends made from wear resistant, PU coated glass

Left: Moretto has developed three new types of maintenance hoppers, including TMK (pictured)

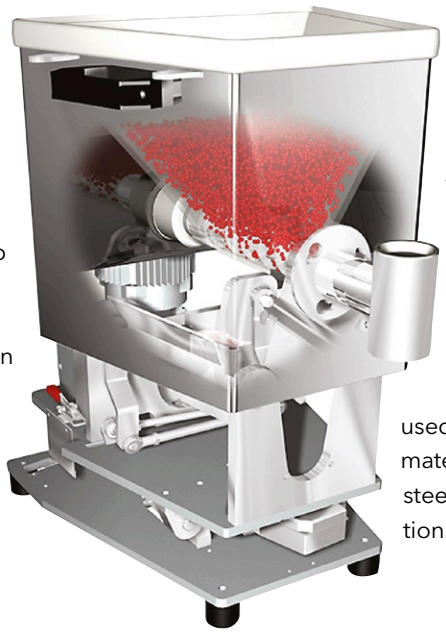
Above: The Kem-Touch from Koch Technik is a direct colouring device for dosing masterbatch or additives directly in the material input of the processing machine

the drying closed loop.

"We also have an advanced IoT solution with a single router capable of a 5 km wireless range supporting up to around 1,500 devices. This system is particularly easy to install and develop. Most systems use a combination of both wifi and Bluetooth connection and some cellular – all these methods have good bandwidth but poor range with the exception of cellular, which can be patchy. The system we use has less bandwidth but excellent coverage. We can connect almost any sensor or gauge to the router with no wiring. Future developments will include refining our supervisor system to incorporate all the IoT information, plus develop the platform to deliver good dashboards and a remote monitoring program."

Koch Technik has developed a direct colouring device Kem-Touch, which represents a cost-effective solution for dosing masterbatch or additives directly in the material input of the processing machine. The company says that Kem is used with injection moulding machines and extruders for the direct colouring of thermoplastic materials. A flange instead of a material hopper is sufficient for installing a colouring unit and for dosing masterbatch into a free-flowing supplied material. All programs required for precise dosing, whether based in the cycle of an injection moulding machine or in accordance with an extruder rotation pulse, are included in the new control system. Control is carried out from a touch screen, which offers a clearly structured menu. The programs are selected and modified from a sensitive touch display. The dosed quantities can be set continuously in percentages or seconds.

When used with injection moulding machines, the dosing values can be saved in a recipe memory and later recalled. An optionally added filling level and rotation monitoring can provide greater safety in the dosing cycle. The optional network interface also enables the integration of each Kem into an external ERP system. The OPC UA-based communication ensures that the colouring devices will be capable of the upcoming digital transformation in companies. Kem-Touch also has a new dosing motor. This stepper motor with an epicyclic gear case provides retention torque, precise starting and stopping behaviour, as well as 60% lower energy consumption.



Right: Brabender Technologie has developed an Easy Change version of its FlexWall Plus feeder

Brabender Technologie has developed an easy change version of its FlexWall Plus feeder. The company says that a feeding exchange module enables users to reduce downtime during product changeovers. One module will be in production while the other is being cleaned. This allows further quick product changeovers once the dry and wet cleaning process has been completed. "This smart solution minimises cleaning times, accelerates bulk material changeovers and makes more formulations feasible with less equipment," says Bernhard Hüppmeier, Head of Sales in Germany, Austria and Switzerland.

The company says that the FlexWall Plus feeder is an all-purpose loss-in-weight feeder for practically any free-flowing bulk materials, such as powders, pellets or flakes. Its flexible polyurethane hopper features lateral massage paddles, which gently stir the bulk material and ensure mass flow without degradation. Different replaceable screw profiles are used depending on the bulk material handled and the performance range required. The easy change version includes the hopper, screw, screw tube and housing as a single unit. Quick-release clamps secure this unit to the chassis and drive mechanism. They only need to be released to enable any residual bulk material to be removed.

Moretto has introduced the DPK, a compact loss-in-weight dosing unit suitable for intermittent or continuous dosing of small quantities of colour or additives into a flow base material that solves the problem of overdosing through precise control. The company says that due to a vibration immunity system, the machine control algorithm and the hopper being removable from the dosing unit, the DPK achieves a dosing accuracy of up to ±0.03%.

Moretto has also developed three new types of maintenance hoppers for plastic granules on processing machines. Made of stainless steel, the company says that the conical TM hoppers guarantee an optimal flow of any material and are suitable for single- and three-phase operation and for receivers of centralised conveying systems. TMC hoppers are used for the treatment of dried hot materials. Also produced in stainless steel, they have double-wall insulation with a removable cone that

avoids heat loss by creating process consistency. Krystal maintenance hoppers (TMK) are made of transparent shock-proof acrylic material, ensuring effective containment of plastic granules, while offering good visibility to allow the operator to immediately verify material levels.

Moretto's Efficiency 4.0 initiative is designed to manage the entire plastics preparation process, from storage in the silos to injection moulding machine. The range includes technologies and machines developed to guarantee adequate levels of dehumidification, granulation and dosage of the polymer. Mowis 3 is an integrated self-configurable supervision system with intuitive object programming, developed by Moretto for connection and control of the whole automation chain in plastics processing plants. The company says that Mowis 3 is modular software with an auto-configurable and user friendly interface which allows immediate display of the system status. It allows the process to be controlled from any location, on-site or remote. Based on the SCADA system, Mowis 3 allows safe and immediate exchange of data between standard and tailor-made modules and the customer management system.

Motan-Colortronic has adapted its mixer module MB 2l with dosing unit Miniblend V combination for use with additional systems. The company adds that mechanical forced mixing is the best technology to homogenise powder additives, masterbatch, virgin material and regrind. The MC 2l can now be used in combination with the dosing and mixing Minicolor series and the unit can also be used with other system technology and applications. Different connection, installation and protection options enable flexible use. The unit can be installed directly under the dosing unit on the machine or it is also possible to combine it with material loaders and proportioning valves as well as small drying bins. No matter how it is installed, the casing and mixing module remains easy to clean. The unit is operated with the Volu MC control which is available as a separate module. It reliably adjusts the mixer revolutions according to the defined set-point value for different materials and blends.

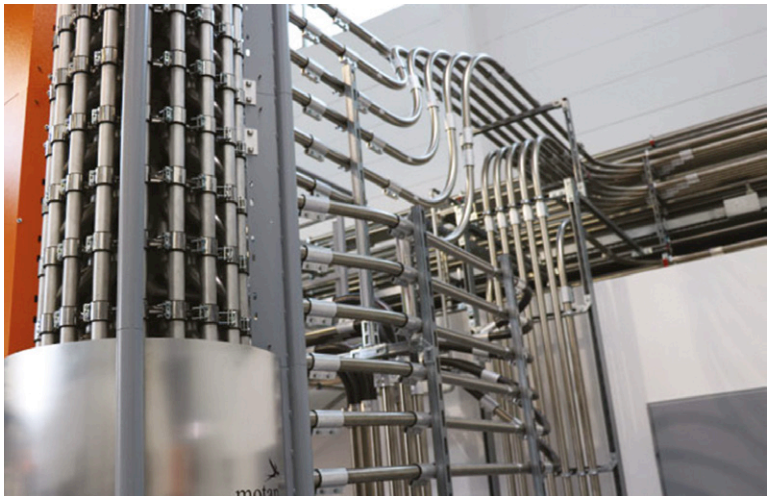
Motan-Colortronic has also expanded its universal material flow and selection system. The Metrolink now has additional modules and one additional size. The company says that central material supply using fixed piping has significant logistical and quality-relevant advantages over material supply to each individual machine. This is because much less space is needed for production and there is no need for costly forklift transportation. There is no material loss and the production area typically remains much cleaner. If the system is designed correctly, the entire material flow can be documented.

Left: The DPK from Moretto is a compact loss-in-weight dosing unit.

As the centre of the material supply system, Metrolink can connect 16 material feedlines with 2-32 machines. The modular design of the station makes it possible to expand the system easily at a later date. In addition to the established 45 mm and 60 mm pipe diameter systems, there is now also a 50 mm version. Due to fine tuning of all versions, vacuum loss has been eliminated. As a result, energy consumption has been reduced and performance has increased, says the company.

The use of granules with increased percentages of glass fibre or certain recycled material can result in increased wear of the pipes. As an alternative to standard stainless-steel pipes, Motan-Colortronic says that it now also offers pipe bends made from wear resistant, PU coated glass. These bends are

Below: Mowis 3 is an integrated self-configurable supervision system with intuitive object programming from Moretto



Above: Motan-Colortronic has expanded its universal material flow and selection system, the Metrolink

compatible with the stainless steel versions and are shatter-proof and anti-static, resulting in significantly less maintenance.

The company has also introduced a gravimetric dosing module for the Spectroflex V. It uses the same base and exchange modules and is also suitable for granules, regrind, powder and flakes. Depending on the feed material and the unit version, throughputs from 0.7 to over 3,000 litres per hour are possible with small dosing tolerances. Free-flowing and non-free-flowing materials can be dosed. Little training is required for production or to switch between materials and the two dosing technologies. Due to the exchange modules there is no cleaning time required for material changes and changing the set-up is quick and easy. The gravimetric dosing unit is controlled through GRAVInet SF. This is a network-compatible control for up to two dosing modules. The precise DMS load cells are equipped with separate amps and CAN-bus interfaces – making them ideal for use in modern production environments, says the company.

Wittmann has added new functions to its Gravimax blenders to improve operation and part quality. The blenders are available for a wide range of throughput rates from 60-200 kg/h and come with touch screen control terminals. All parameters can be set and retrieved via the display. The luminous ambiLED signal mounted on the front displays the appliance's current status. The control system allows the operator to save compound formulations together with the appropriate blending processes. These formulations can be passed on to other appliances either by USB stick or by special GraviLog software. Moreover, a Gravimax operating in the SmartRegrind mode will automatically adjust the formulation – depending on the available quantity of granulate to be blended.

Right: Motan-Colortronic has introduced a gravimetric dosing module for the Spectroflex V

The company says that the blenders have RTLS (Real Time Live Scale) weighing that enables a consistently reliable blending result. This is a metering process carried out in two steps, progressively becoming more accurate until the target weight has been reached. Following a rapid metering phase just before reaching the target weight, the residual quantity of material is subsequently added by several short metering impulses. In this way, any overdosing of ingredients is reliably prevented.

The material hoppers have been designed so that the material can flow freely inside them. The hoppers can be equipped with fold-back lids to allow for material loaders mounted on top to be tilted back, which facilitates cleaning of both the material loader and the hopper. The designation SL stands for 'Stationary Lid'. This structure allows the hopper to be removed without having to detach the material loader. Whenever the material hopper – designed a little higher for this purpose – is removed, the material loaders mounted on top of the stationary lid can remain in place.

Every Gravimax is equipped for easy connection to a central computer, a laptop or PDA device with an Ethernet interface. In this way, data transmission can also be achieved by OPC UA via a licence acquired later. If no reporting system is already in place, Wittmann offers its GraviLog software as a solution for data recording. This software package enables the acquisition and administration of all data from every Gravimax blender present in a production facility, such as compound formula management, material consumption or visualisation of fluctuations.

Models are also prepared for Wittmann 4.0 - the standardised communication system from Wittmann for all appliances in an injection moulding production cell. In this way, the Gravimax can be connected with the processing machine and operated from there as well, with operation being effected via the control panel, which is transmitted

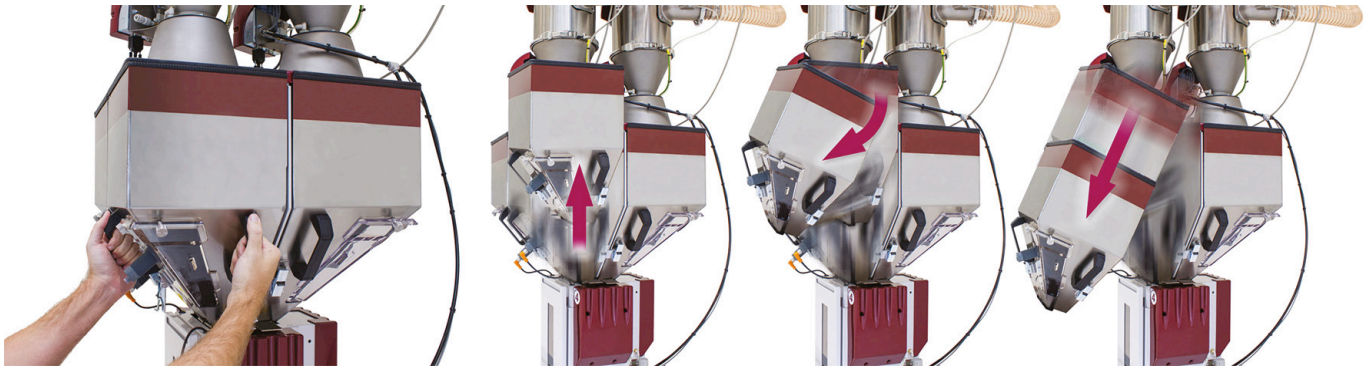
to the machine's control system.

Conair has launched the SmartServices Industry 4.0 platform that combines powerful equipment monitoring and visualisation functions with advanced cloud-based data storage and analytics. The company says that the platform promises new levels of process, performance and quality optimisation, predictive diagnostics and maintenance, and maximum equipment uptime. The SmartServices offering is claimed to be straightforward, starting with compact wireless machine adapters (WMAs) that are installed in the controls of each piece of auxiliary equipment, and a connection to the web-based SmartServices platform. Upon login, users identify and configure their auxiliaries into the system, organising them by equipment type, plant names, production lines, physical locations – whatever customised format fits their operation. Once enabled, WMAs automatically collect data from each piece of auxiliary equipment and transmit it into the secure, cloud-based SmartServices database where it is processed and stored for presentation to the user.

The Conair SmartServices web portal streams user data into a dashboard format, providing a clickable list of the user-specified equipment groups on one side and a large working screen on the other. Within the dashboard, users can rapidly navigate to a selected equipment group and then drill down to Key Performance Indicators (KPIs) for each piece of equipment. The KPI display shows real-time data. By default, three KPIs are selected and highlighted at the top of the display, while other KPIs are shown below in the form of real-time line graphs. Each KPI is marked with a colour indicator – red, yellow, or green – that makes it easy to scan current operating conditions and spot performance trends. Both the highlighted KPIs and the time intervals shown on the line graphs are user-selectable and can be modified at any time.

The Machine View display is a schematic of the equipment populated with readouts of set-point and actual readings. A view of a dryer, for instance, identifies hopper inlet air temperature, temperature gradients within the material hopper (with Drying Monitor), outlet air temperature, dew-

Below: The Wittmann Gravimax control: clearly laid out 32 bit processor control with touch-screen and USB interface

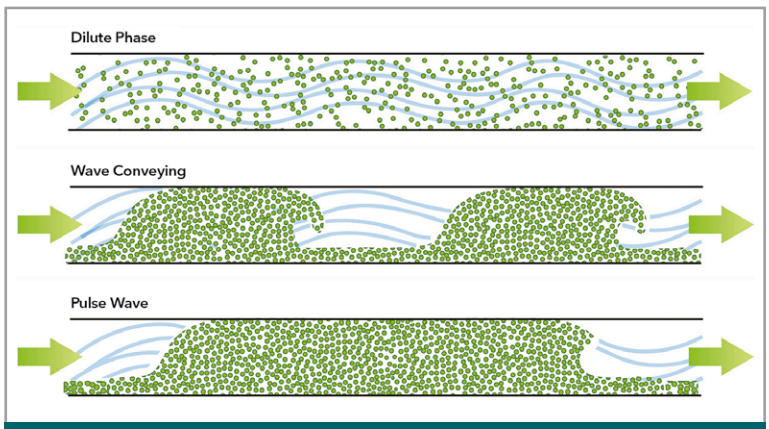


Above: The SL 'Stationary Lid' from Wittmann provides simple and easy removal of the material hoppers

point setting, target moisture level, for example. The Alarms display offers real-time alarm status and a complete alarm history, together with a special panel that allows managers to create a hierarchy of alarm types, generate messages (texts or e-mails) specific to each, and direct/delegate alarm responses to selected individuals or groups of plant personnel.

Even as individual users interact with data from their equipment, the Conair SmartServices platform collects, analyses, and stores performance data from their auxiliaries and thousands of others connected worldwide. The result is an ever-growing auxiliary-equipment database that can be leveraged by both processor and Conair personnel to improve efficiency, performance and uptime. Already, that information is beginning to be mined and used to develop algorithms for a range of predictive, diagnostic and comparative purposes.

New developments in the operation and application of Conair's Wave Conveying material handling system now give processors a wide range of options to achieve control over the vacuum conveying process. One of the newest enhancements is an 'automatic flush' valve that eliminates valve-sealing problems, reducing receiver fill times and effectively increasing system capacity. The system now makes it possible to move any resin, at virtually any speed, with higher throughputs over longer distances – without the material and equipment damage normally associated with conventional, dilute-phase vacuum conveying.



Unlike conventional dilute-phase conveying (top), Conair Wave Conveying technology moves resin in compact slugs of material that travel at much slower speeds

Conair has also added an advanced auto-flushing common line valve to its Wave Conveying system, which is claimed to maximise throughput by eliminating even the briefest valve-sealing problems that can occur with some material types. By ensuring the most rapid and positive valve seal on every fill cycle, the action of this valve significantly reduces receiver fill times and effectively increases Wave Conveying system capacity. The Wave Conveying system uses Conair LDP Series vacuum pumps equipped with variable frequency drives, which can operate at the precise level of capacity and power consumption needed to maintain a specific material velocity in the system. The hardware, together with the FLX-128 Plus control, regulates material flow, fine tuning both the vacuum level and the influx of material from the material supply point to the conveying system. In addition, there is a conveying speed sensor, which measures the speed of material (not the speed of the air) as it moves. It provides feedback to the FLX control and Wave Conveying system, helping the system maintain even and correct material flows throughout. Material-specific recipes are programmed into the FLX control, which enables the system to automatically change conveying speeds and characteristics to suit the requirements of any material.

Now available as an option for the FLX-128 Plus material-handling control system or as a stand-alone control package, Conair's Railcar Unloading (RCU) controller offers processors a time-saving, secure and expandable way to monitor and manage the unloading and storage of railcar-quantity resins from any convenient indoor location.

The RCU controller enables any authorised user to view and manage the entire process on one touchscreen – railcar unloading, silo selection, material routing, and silo filling – without the need to go outside. The RCU package integrates control

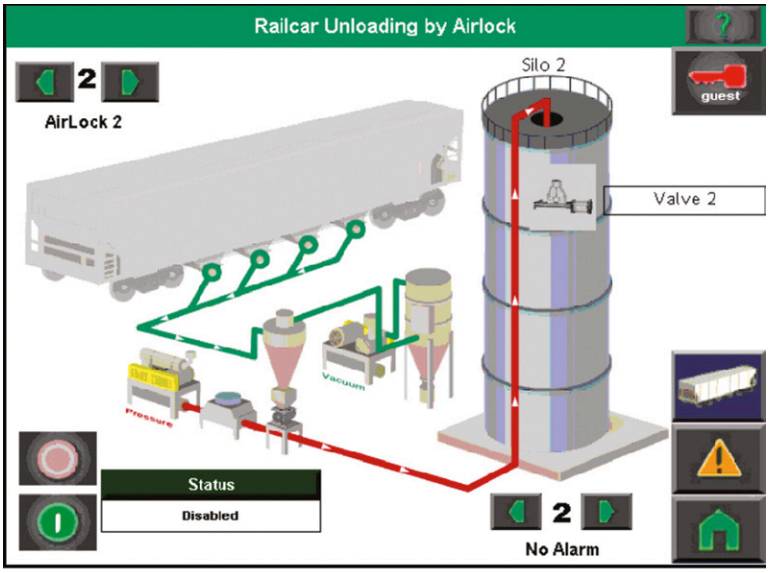
functions that would otherwise be accessed using dedicated control panels that serve individual railcar unloading systems, airlocks, material-routing valves, silo loaders and level sensors/monitors throughout the plant.

"More and more processors are purchasing – or thinking about purchasing – resin in railcar quantities to reduce material and production costs," says Doug Brewster, Conair's Conveying Systems Manager. "The RCU controller offers them the ability to set up and manage bulk-resin handling securely and economically, with plenty of future expansion capacity. Because it shows and controls the entire process on one touchscreen, it saves a lot of time and labour. There's no longer any need to go outside or to manually monitor and operate a lot of dedicated equipment controls at the rail siding or at various locations in the plant. All control is in one, convenient place – indoors."

Available as a stand-alone system, or as an easy-to-install connection for its FLX-128 Plus material handling control, the new Conair truck-fill line-proofing system safeguards the process of transferring truckload-quantity material to silos. It prevents expensive material mix-ups by remotely locking access to silo-fill lines, preventing trucks from connecting to any silo line until the correct line is confirmed and remotely unlocked by an authorized user.

The new truck-fill line-proofing system consists of a PLC module, wiring leads, and one electronically-controlled interlock device per silo line. The 'plug-and-play' system control, which when connected directly to the FLX-128 Plus control panel, is pre-loaded with line-proofing software. From it, power/communications wiring extends to each of the remotely-mounted interlock devices at the end of each silo fill-line. Each provides a new 4-inch quick-connect point that is protected by a hinged, electro-mechanical access gate.

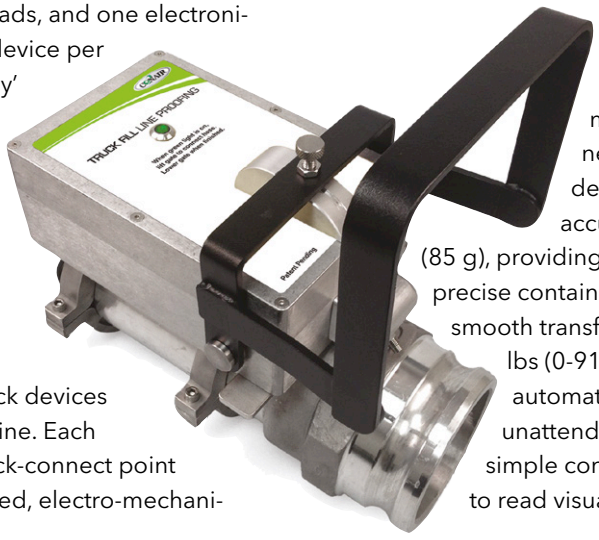
In normal operation, the gate on each interlock device is locked by default to prevent unauthorised silo-line access. When truck unloading is required, authorised plant personnel log into the control, complete a brief list of required information for each delivery, and then select and electromechanically unlock one silo-fill line. Outside, at the silo location, a green indicator light indicates the open interlock. The trucker lifts the interlock gate to open it, connects to the silo-fill line and fills the silo. When filling is complete, the trucker disconnects from the fill line and closes the interlock gate, which automatically re-locks the device.



Above: The new RCU Controller from Conair integrates all process and equipment controls into a single touch-screen display for the railcar unloading process

US company **Dynamic Conveyor** has developed DynaCon conveyor systems for the plastics industry. The company says that the conveyor systems offer customisation using standard components and a variety of accessory options to create a flexible conveying system that provides easy re-configurability.

Dynamic Conveyor now offers both in-line and side-by-side box filling systems by part count, cycle count or weight. All box filling systems are engineered to order to meet specific box filling needs. Systems allow user defined fill rates to ensure accuracy up to 0.3 ounces (85 g), providing hours of unattended precise container filling. Offering a smooth transfer of boxes from 0-200 lbs (0-91 kg), the systems are automated and allow for unattended filling operation with simple control set-up and an easy to read visual indicator.



Left: An add-on to the Conair FLX-128 material handling control, the new truck-fill line-proofing system prevents material mix-ups

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.summitsystems.co.uk**
- **www.koch-technik.com**
- **www.brabender-technologie.com**
- **www.moretto.com**
- **www.motan-colortronic.com**
- **www.wittmann-group.com**
- **www.conairgroup.com**
- **www.dynamicconveyor.com**

Thermoplastic Concentrates

2019

Discovering new trends for the thermoplastic concentrate industry

January 29-31, 2019
Ft. Lauderdale Marriott Coral Springs Golf Resort,
Coral Springs, Florida, USA

SPECIAL OFFER
Save **$400** if you register before November 9, 2018

Headline Sponsor

MHolland

Also sponsored by:

FERRO Where innovation delivers performance™
CABOT
OMYA
Chemours™
LANXESS Energizing Chemistry

Media supporter:

Compounding WORLD

Exploring conductive plastics

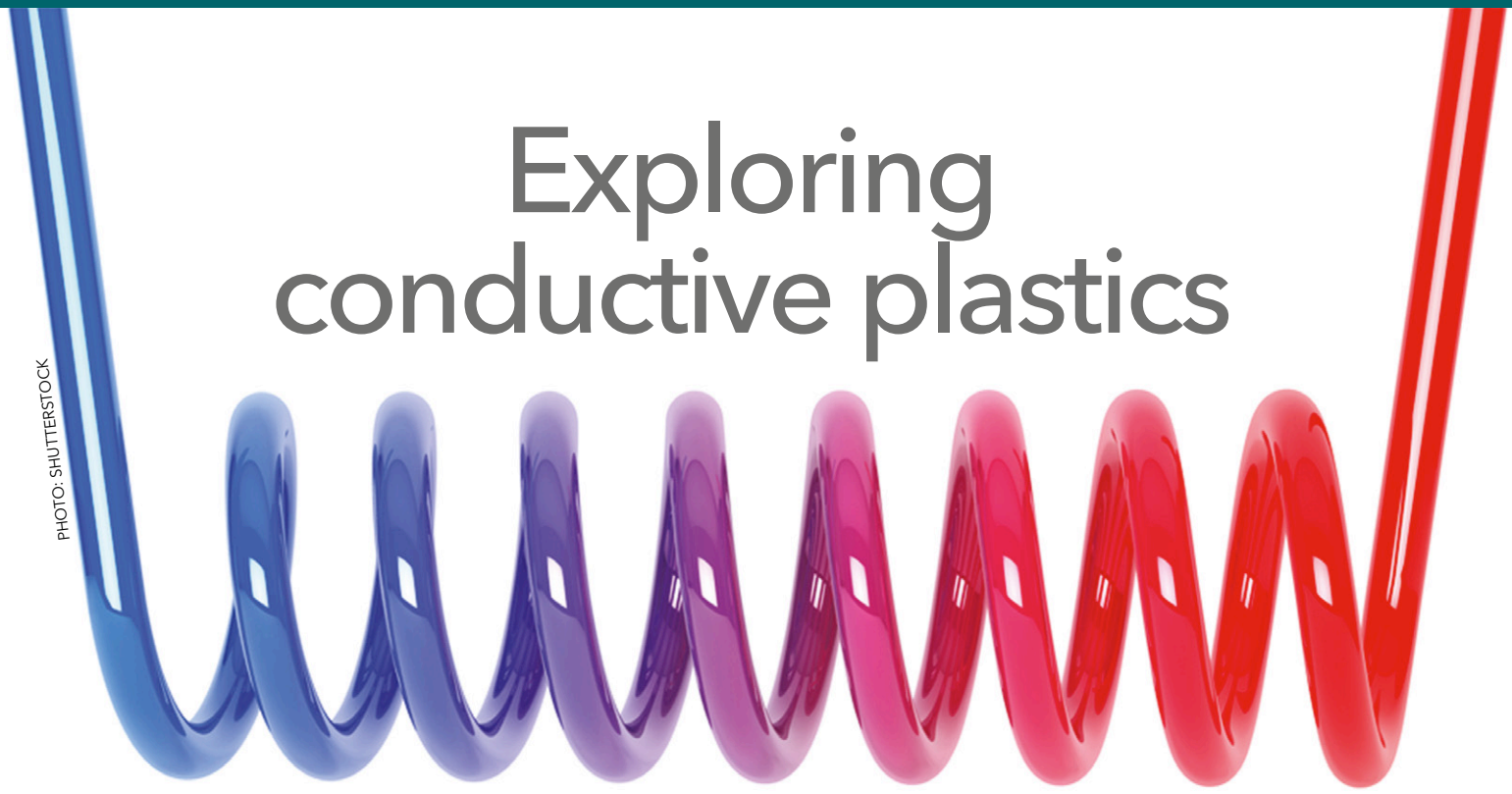


PHOTO: SHUTTERSTOCK

Smart devices and safety-critical electronics are driving interest in polymer compounds offering enhanced electrical and thermal conductivity. Conductive Plastics 2018 explores the enabling technologies and potential opportunities

The increasing penetration of electronics into today's industrial and consumer products, together with the emergence of critical application sectors such as autonomous vehicles, is driving demand for enclosures that can eliminate the risk of signal interference while protecting sensitive electronic components and dissipating heat. Meanwhile, traditional applications for conductive polymer applications, such as ATEX and ESD products and trace heating, could extend to include heat exchangers and decorative surfaces with optimised haptics.

AMI's third European Conductive Plastics 2018 conference, which takes place in Vienna in Austria on 6-7 November, explores the latest developments in additive and compounding technologies that will enable the production of electrically and/or thermally conductive plastics compounds capable of meeting these demanding new requirements.

With automotive a key potential market for conductive plastics, the conference will open with a presentation by **Dr Tamim P Sidiki**, Global Marketing Director at **DSM Engineering Plastics** in the Netherlands, who will identify some of the key upcoming application areas. He will be followed by **Klaus Rathberger**, Managing Director of **Georg H Lüh** in Germany, who will discuss carbon-based additives ranging from graphite to graphene. Then **Seçil Yilancioğlu**, R&D Manager at **Eurotec Engineering Plastics** in Turkey, will talk through the performance of some electrically and thermally conductive PA materials.

The focus then turns to electrically conductive additives. **Michael Claes**, Chief Technology Officer and Global Strategic Account Manager at **Nanocyl** in Belgium, will detail its work on creating cost-optimised compounds using multi-wall carbon nanotubes (MWCNTs). **Dr Christian Maus**, Development and Support Leader at **OCSiAl** in Luxembourg, will explain how its single-wall carbon nanotubes (SWCNTs) can be used in thermoplastic compounds. And **Tom Daniels**, Market Manager Conductive Plastics at **Bekaert** in Belgium will discuss the use of its stainless steel fibres products.

Moving on to thermally conductive additives, **Dr Stefanie Wildhack**, Senior Specialist Product and Application Development at **3M Technical Ceramics** in Germany, will cover the latest experience with its boron nitride filler products. **Dr Carsten Ihmels**, Head of Department R&D at **Nabaltec** in Germany, will cover the use of mineral FR fillers and metal oxides to enhance thermal conductivity. **Péter Sebö**, Head of Marketing & Market Development at **Quarzwerke** in Germany, will cover fillers for white and colourable applications. And **Dr Bashar Diar**

Main image: Polymer compounds that offer enhanced thermal and electrical conductivity could find applications as varied as heat exchangers to smart sensors

Plastics Recyclers in Europe 2018

Access verified contact, source and reprocessed product data for 877 plastics recycling sites:

- ✔ *Identify* suppliers of recycled polymers
- ✔ *Find recyclers* of production waste
- ✔ *Analyse* each recycler's potential for your business
- ✔ *Contact* managerial decision makers
- ✔ *Research* the industry

Find out more **HERE** or email evren.akfirat@ami.international for a free sample excel file of this database

Bakerly, Senior R&D Specialist at **Huber-Martinswerk** in Germany, will detail the use of alumina-based fillers in thermal management applications.

Day One ends on novel conductive technologies. **Morten Lindberget**, VP Business Development & Sales at **Condalign** in Norway, will explain how it is producing conductive films using a particle alignment technique, and **Dr Daniela Sordi**, Chief Technology Officer at **CarbonX** in the Netherlands, will detail use of its porous carbon nanostructures in films and 3D print applications.

Day Two opens with a review of the processing of electrically conductive polymers by additive manufacturing techniques, presented by **Dr Christof Hübner**, Group Leader Nanocomposites at **Fraunhofer ICT** in Germany. This forward-looking presentation will be followed with an end user panel session including DSM's Tamim P Sadiki plus **Urszula Kosidlo**, Materials Research Manager at **Motherson Innovations Deutschland** in Germany, **Miloslav Smutny**, Material Engineer and Technical Professional Polymeric Materials at **Varroc Lighting Systems** in the Czech Republic, and **Andreas Brunner**, Materials Engineer at **Georg Fischer Piping Systems** in Germany.

The conference then looks at some application challenges. **Jean-Michel Poncelet**, Business Development Manager at **Cabot Performance Materials** in Belgium, will detail how advanced carbons can be used in electrically conductive applications. **Christine Van Bellingen**, Business Development Manager at compounder **Witcom Engineering Plastics** in the Netherlands, will explain how overall compound properties can be optimised while achieving electrical performance. And **Yves Trolez**, Manager of Polymer Material Department at **Total Research and Technology** in Belgium, will detail application of CNTs in industrial ATEX applications.

Expert speakers and panellists include (top row from left) Bekaert Market Manager Conductive Plastics Tom Daniels, 3M Technical Ceramics Senior Specialist Product and Application Development Dr Stefanie Wildhack, Nabaltec Head of Department R&D Dr Carsten Ihmels, Condalign VP Business Development & Sales Morten Lindberget, (bottom row from left) Fraunhofer ICT Group Leader Nanocomposites Dr Christof Hübner, Georg Fischer Piping Systems Materials Engineer Andreas Brunner, Witcom Engineering Plastics Business Development Manager Christine Van Bellingen and Dr Andreas Kaiser, Technical Marketing Manager at Arlanxeo

The final session of the conference focuses on thermally conductive applications. **Luca Posca**, Technical Service & Marketing Director at **Lati Industria Termoplastici** in Italy, will speak about development of heat sinks for high power LED lamps. **Marco Grundler**, Group Leader Materials and Compounding Technology at the **ZBT** fuel cell research centre in Germany, will detail its work with graphite filled heat sinks. **Michael Schäfer**, Product Specialist at **Celanese Services** in Germany, will explain the influence of molecular orientation on thermal conductivity of polymer compounds. And **Dr Andreas Kaiser**, Technical Marketing Manager at **Arlanxeo** in Germany, will review developments in thermally conductive synthetic rubbers.

About Conductive Plastics Europe 2018

Taking place in Vienna in Austria on 6-7 November, Conductive Plastics 2018 is AMI's third conference covering this topic in Europe and its sixth globally. It is now firmly established as a high level learning point for OEMs, engineering designers, processors, compounders and additive producers to learn about the latest developments in the use and formulation of electrically and/or thermally conductive plastic materials.

Expert speakers will cover the opportunities and challenges in the development and application of these materials in sectors ranging from LED lighting and electric vehicles through to wireless communication systems and ATEX-compliant equipment. Presentations will focus on compound formulation as well as product design and processing. This year's event also includes an end user panel session where attendees can learn how some leading technology providers see applications developing in their markets.

To find out more about Conductive Plastics 2018, visit the **conference website** or contact Conference Organiser Grace Midgley. Tel: +44 117 314 8111; Email: **grace.midgley@ami.international**

Download these new product brochures

Simply click on the brochure cover or link to download a PDF to your PC or smartphone

SOLVAY: TECHNYL 4EARTH

Technyl 4earth is a polyamide 6.6 made from post-industrial technical textiles which is able to offer mechanical performances similar to traditional Technyl materials while providing breakthrough environmental benefits.

› CLICK HERE TO DOWNLOAD

POLYKEMI: CUSTOM COMPOUNDS

This 12-page brochure provides an introduction to Polykemi and its range of custom engineered plastic compounds. It includes details of production locations, subsidiaries, R&D capabilities and quality certifications.

› CLICK HERE TO DOWNLOAD

HEXPOL: DRYFLEX TPES

The Dryflex family of TPEs from Hexpol TPE add soft touch appeal, function performance and product safety features in a range of consumer, automotive, industrial and packaging applications. Find out more in this brochure.

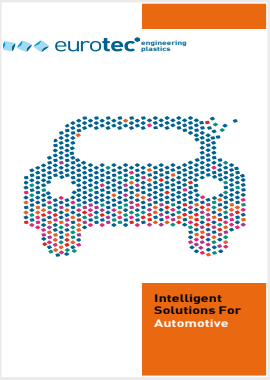
› CLICK HERE TO DOWNLOAD

BOY: PROCAN ALPHA 4

Procan Alpha 4 is the new machine control from BOY with a fast and intuitive touchscreen operation. A more powerful CPU allows a 50% improvement in screen refresh times. Read more about Procan Alpha 4 in this brochure.

› CLICK HERE TO DOWNLOAD

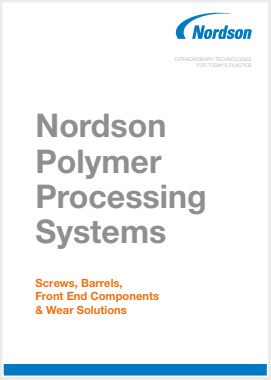
EUROTEC: AUTOMOTIVE COMPOUNDS



This brochure presents the full range of Eurotec's engineering polymer compounds for automotive applications, including interior, exterior and under the hood. Read all about Eurotec's innovative products and tailor made services.

› CLICK HERE TO DOWNLOAD

NORDSON PROCESSING SYSTEMS



The plasticising components offered by Nordson for injection moulding include bi-metallic barrels, screws and FECs, as well as barrel coatings and wear solutions. Find out more in this brochure.

› CLICK HERE TO DOWNLOAD

If you would like your brochure to be included on this page, please contact Claire Bishop claire.bishop@ami.international. Tel: +44 (0) 1732 682948

Optimise your industry knowledge with AMI's recommended databases

Injection Moulders in Italy

Get a key insight into the fragmented Italian market with managerial contact names, polymer consumption, market and machinery data for 1128 sites. Identify companies of interest for your business by receiving an updated overview on their production activities.

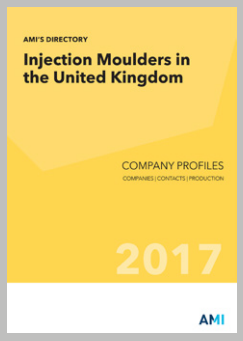
CLICK HERE

Injection Moulders in France

Get an updated picture on the injection moulding industry in France with instant access to 884 production sites. Get managerial contact names, polymer consumption, market and machinery data for each site. Access manufacturers supplying plastic products to the automotive, medical, building and packaging sectors amongst others.

CLICK HERE

Injection Moulders in the United Kingdom



A complete and up-to-date picture of the injection moulding industry in the United Kingdom. Find out the polymers processed, the products manufactured and the number and size of machines operated by 904 injection moulding sites in the United Kingdom.

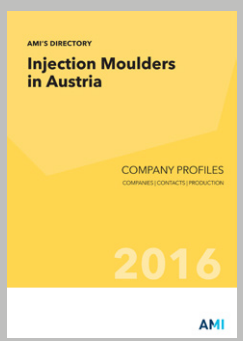
CLICK HERE

Injection Moulders in Spain and Portugal

A unique insight into the production of 1011 injection moulders in the Iberian peninsula. This directory gives you access to managerial contacts and production information on 790 manufacturing sites in Spain and 221 in Portugal serving a number of markets such as medical, automotive, electronics as well as food and non-food packaging.

CLICK HERE

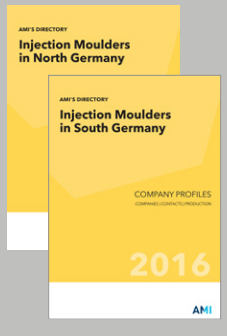
Injection Moulders in Austria



This directory identifies 189 injection moulders in Austria serving the electronic and electrical markets as well as other industry segments. The data is available in book format or as a database which enables you to search companies by polymers processed, markets served or number and make of machines operated.

CLICK HERE

Injection Moulders in Germany



Germany is the leading country for injection moulding in Europe. The company profiles of 2350 injection moulding sites in Germany reveal in-depth contact and production information. The data is available in book format in 2 volumes for the North and South of Germany, or as a single database which gives you extensive search capabilities.

CLICK HERE

Learn more about AMI's upcoming conferences

Click on the relevant brochure cover or link to download a PDF of the full conference programme

PERFORMANCE POLYAMIDES US 2018

Following its successful 2017 debut, AMI is holding the 2nd US edition of Performance Polyamides on 6-7 November 2018 in Pittsburgh. The event will explore injection moulders' opportunities in automotive markets using PA materials.

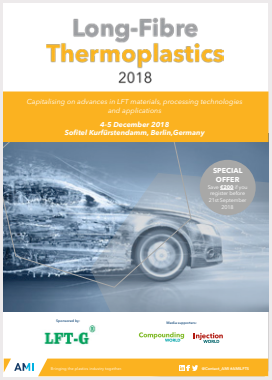
❯ CLICK HERE TO DOWNLOAD

POLYMER FOAM 2018

Taking place in Hamburg in Germany on 28-29 November 2018, AMI's sixth Polymer Foam conference brings together international experts to learn about the latest developments in blowing agents and physical foaming of polymers.

❯ CLICK HERE TO DOWNLOAD

LONG-FIBRE THERMOPLASTICS 2018



On 4-5 December 2018, the 2nd edition of Long-Fibre Thermoplastics in Berlin, Germany will see LFT experts discuss the latest developments in materials, production techniques and end-use applications which are driving growth in LFT composites.

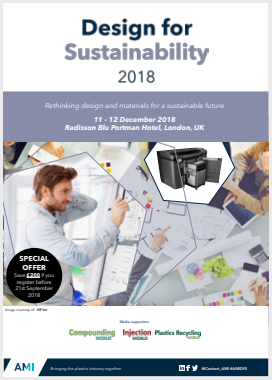
❯ CLICK HERE TO DOWNLOAD

FIRE RESISTANCE IN PLASTICS 2018

AMI's Fire Resistance in Plastics conference takes place on 10-12 December 2018 in Cologne, Germany. Now in its 13th year, the event provides a forum to debate fire safety requirements and regulatory and technical developments.

❯ CLICK HERE TO DOWNLOAD

DESIGN FOR SUSTAINABILITY



A new conference, Design for Sustainability on 11-12 December 2018 in London, UK, discusses how innovations in polymer materials and processes can help designers meet the sustainability challenge in packaging, automotive, electronics and other markets.

❯ CLICK HERE TO DOWNLOAD

POLYMERS FOR 3D PRINTING

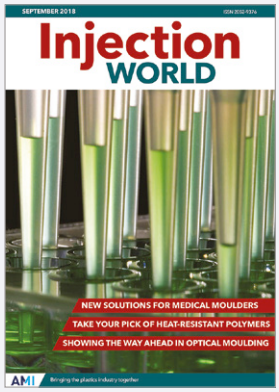
Polymers for 3D Printing is a new conference from AMI exploring the development, production and application of polymers for 3D printing and other rapid manufacturing technologies. The event will be held in Düsseldorf, Germany on 11-12 December 2018.

❯ CLICK HERE TO DOWNLOAD

To see our full line-up of more than 50 plastics industry events over the next 12 months, please visit www.ami.international/events

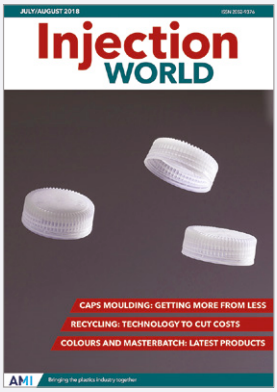
Keep informed: read our latest editions

AMI publishes five process-specific FREE plastics industry magazines. Simply click on the cover below to read each magazine. Or download the issue in the relevant Apple or Android app



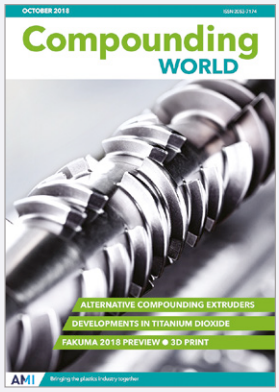
Injection World September 2018
The September edition of Injection World magazine takes a close up look at the latest medical polymers and processing technologies. It also reviews developments in heat-resistant polymers and moulding of optical parts.

› CLICK HERE TO VIEW



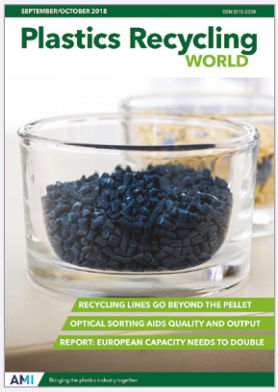
Injection World July/August 2018
The July-August issue of Injection World contains features on caps and closures, masterbatch and recycling technology, plus review features on the Plast 2018 show and Arburg's Technology Days event.

› CLICK HERE TO VIEW



Compounding World October 2018
The October edition of Compounding World considers alternative options to extrusion for compounders, such as kneader technology. The issue also features titanium dioxide issues, 3D printing and a compounding preview of Fakuma 2018.

› CLICK HERE TO VIEW



Plastics Recycling World September/October 2018
The September/October edition of Plastics Recycling World looks at the equipment on offer for direct recycling to sheet. Plus, exclusive analysis of Europe's recycling capacity needs and a review of the latest optical sorting technologies.

› CLICK HERE TO VIEW

Pipe and Profile October 2018
The October edition of Pipe and Profile Extrusion magazine has features taking an in-depth look at pipe inspection, oriented PVC, advances in materials handling and new methods for in situ pipe production. The edition also previews AMI's Conductive Plastics conference.

› CLICK HERE TO VIEW

Film and Sheet September 2018
The September 2018 edition of Film and Sheet Extrusion magazine takes a detailed look at the latest developments in the plasticiser sector. It also reviews innovations in biaxial films, laboratory extruders and downstream equipment.

› CLICK HERE TO VIEW

Take out your own FREE subscriptions to any of the magazines. Click on the logos below to simply register on-line.

Compounding WORLD
Film and Sheet EXTRUSION
Pipe and Profile EXTRUSION
Injection WORLD
Plastics Recycling WORLD

GLOBAL EXHIBITION GUIDE

2018	**14-17 October**	Pack Expo, Chicago, USA	www.packexpointernational.com
	16-20 October	Fakuma, Friedrichshafen, Germany	www.fakuma-messe.de
	7-9 November	Expo Plasticos, Guadalajara, Mexico	www.expoplasticos.com.mx
	14-16 November	JEC Asia, Seoul, South Korea	www.jeccomposites.com
	26-29 November	All4Pack, Paris, France	www.all4pack.com
	5-7 December	Plastic Japan, Chiba, Japan	www.plas.jp/en
	5-8 December	Plast Eurasia, Istanbul, Turkey	www.plasteurasia.com/en
2019	**5-8 January**	ArabPlast, Dubai	https://arabplast.info
	12-15 March	Pro-Pack Africa, Johannesburg, South Africa	www.propakafrica.co.za
	19-21 March	EU Coatings Show, Nuremberg, Germany	www.european-coatings-show.com
	25-29 March	Plástico Brasil, São Paulo, Brazil	www.plasticobrasil.com.br
	8-12 April	Feiplastic, Sao Paulo, Brazil	www.feiplastic.com.br
	8-9 May	Compounding World Expo, Cleveland, USA	www.compoundingworldexpo.com/na
	21-24 May	Chinaplas 2019, Guangzhou, China	www.chinaplasonline.com
	21-24 May	Moulding Expo, Stuttgart, Germany	www.moulding-expo.com
	18-21 September	T-Plas / Tiprex, Bangkok, Thailand	www.tplas.com
	16-23 October	K 2019, Dusseldorf, Germany	www.k-online.com
2020	**16-20 January**	Plastivision India, Mumbai, India	www.plastivision.org
	21-23 January	Swiss Plastics, Lucerne, Switzerland	www.swissplastics-expo.ch
	7-13 May	Interpack, Dusseldorf, Germany	www.interpack.com

AMI CONFERENCES

30-31 October 2018	Oil & Gas Non-Metallics, London, UK
6-7 November 2018	Conductive Plastics, Vienna, Austria
6-7 November 2018	Performance Polyamides, Pittsburgh, US
28-29 November 2018	Polymer Foam, Hamburg, Germany
4-5 December 2018	Long-Fibre Thermoplastics, Berlin, Germany
11-12 December 2018	Design for Sustainability, London, UK
11-12 December 2018	Polymers for 3D Printing, Düsseldorf, Germany
12-13 December 2018	Blockchain for Chemicals, Berlin, Germany

For information on all these events and other conferences on film, sheet, pipe and packaging applications, see

www.ami.international

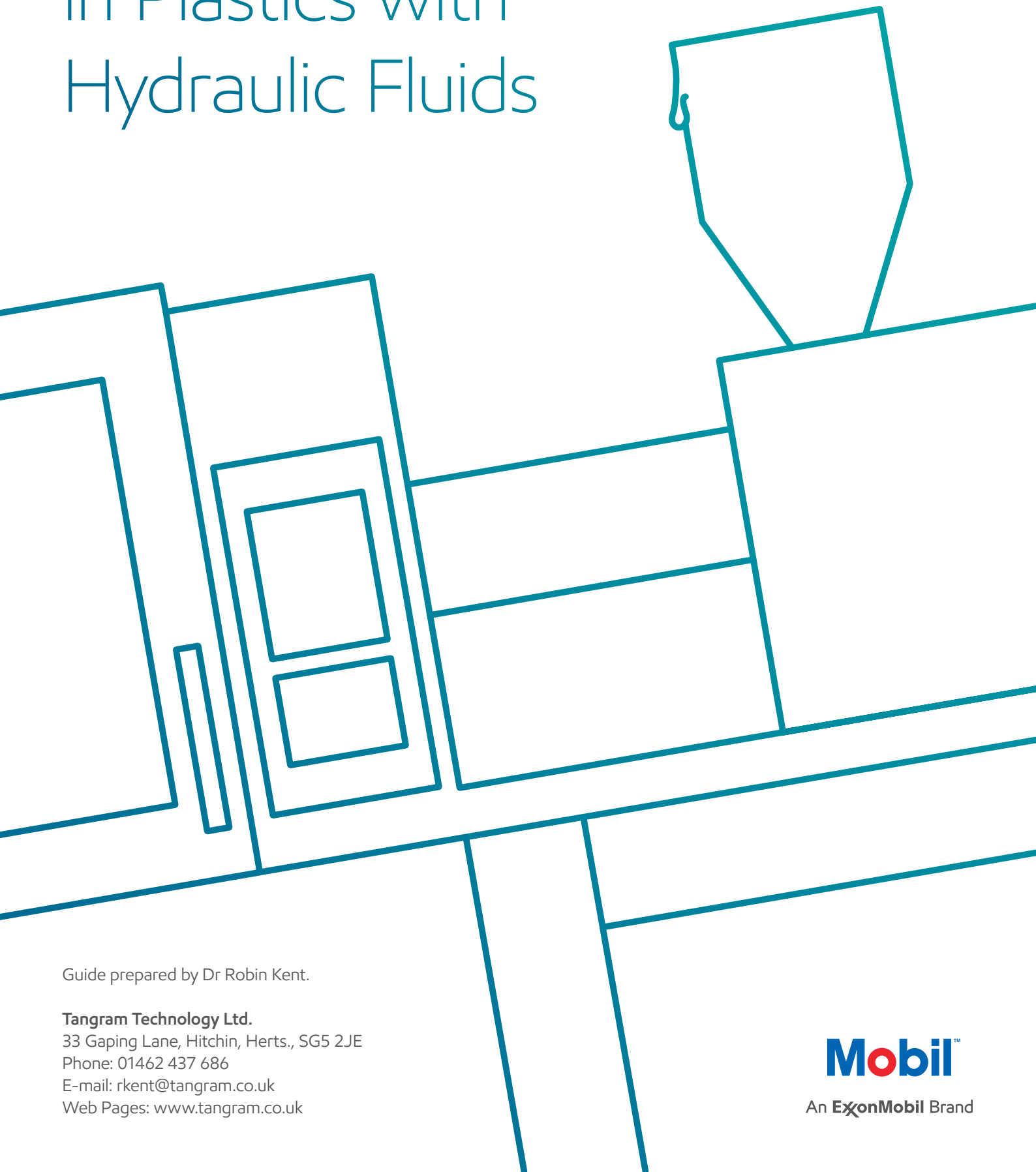
DON'T MISS A SINGLE ISSUE

Register now for your free subscription at:

www.injectionworld.com

And don't forget to tell your colleagues, customers and suppliers about the magazine. You can use the share button above (the ⍐ symbol in the browser) to help spread the word.

Advancing Industry 4.0 in Plastics with Hydraulic Fluids



Guide prepared by Dr Robin Kent.

Tangram Technology Ltd.
33 Gaping Lane, Hitchin, Herts., SG5 2JE
Phone: 01462 437 686
E-mail: rkent@tangram.co.uk
Web Pages: www.tangram.co.uk

Mobil™
An ExxonMobil Brand

Contents

1 Introduction

Opportunities for plastics processing continue to grow across a range of industries. Despite the current demonisation of plastics, there are still many advantages that plastics possess over more traditional materials. Automotive, construction, medical and many other industries are all keen to take advantage of the latest innovations in plastics processing.

However, the industry also faces challenges to profitability; plastics processing is not only highly competitive, it is also energy intensive.

Basic polymers are the largest single outlay in plastics processing and rising feedstock prices across many grades are squeezing bottom lines. With the emergence of Industry 4.0 and the smart factory, processors need to look at every opportunity to reduce their outlays and increase the overall efficiency of their operations.

High performance hydraulic fluids are one easy opportunity to improve efficiency in a range of areas.

"Lots of my business is demanding, high quality work for the automotive sector. Unfortunately, my company's overheads are squeezing my profit margin."

1.1 Small change with a big impact

The right hydraulic fluid offers a range of benefits, from improved energy efficiency to enhanced operational performance, which can help plastics processors reduce costs and increase productivity.

This is an easy topic to overlook because the cost of hydraulic fluid is typically less than 1% of operating costs. This is made even worse if the processor has a 'fit and forget' attitude to hydraulic fluids.

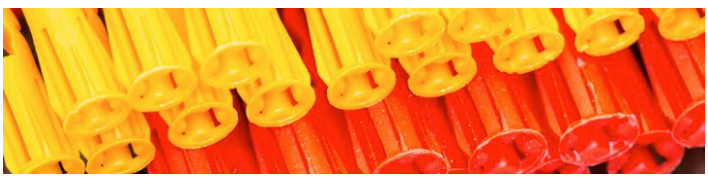
This ignores the fact that the hydraulic fluid is literally the 'lifeblood' of any hydraulic injection moulding machine.

Choosing a high performance fluid will not only protect the hydraulic system, it can also reduce energy use and help advance your efforts towards Industry 4.0.

A separate Energy Saving Guide for Injection Moulders is available, which explains the steps that plastics processors can take to help reduce their energy bills and enhance plant efficiency.

1.2 In this guide

We will explore how to optimise your hydraulic fluid usage and make the most of the many benefits that they offer, contributing to Industry 4.0.



5 Switching hydraulic fluids

Once you've identified the most suitable hydraulic fluid you'll need to drain out the existing oil in order to make the upgrade. The process is quite straightforward from an operational perspective but there are important steps to follow to help make the switch seamless.

5.1 Compatibility

Before switching your injection moulding machines to a high performance hydraulic fluid it is first necessary to ensure that it is compatible with the fluid it is replacing. Co-mingling incompatible oils can result in a detrimental loss of functionality that can reduce equipment performance and ultimately result in costly and avoidable maintenance.

Testing can be organised via your lubricant supplier using a service such as ExxonMobil's Mobil Serv Lubricant Analysis (MLSA). If test results reveal a compatibility issue it will be necessary to completely drain the old hydraulic fluid from your equipment before refilling.

ExxonMobil helped Kotronis Plastics make an annual saving of more than €17,000 by switching its 40 Sumitomo Demag El-Exis SP 250 injection moulding machines to Mobil DTE™ 10 Excel 68 hydraulic oil. The move helped cut energy consumption by 2.23%, safely extend oil drain intervals beyond 20,000 operating hours and reduce cycle times.

5.2 Best practice

Even if no issues are spotted it is still good practice to fully remove the fluid so as to ensure the new fluid is not diluted, which could result in a reduction of overall hydraulic performance.

Once drained it is advisable to flush the tank to remove any build-up of sediment. Having refilled the tank, it should be left to settle before switching on as there is a risk that any remaining residues could be disturbed. This is especially important for older machines.

In order to minimise disruption to plant processes it is advisable to switch hydraulic fluids during scheduled maintenance periods.

Compatibility is dependent on a fluid's chemistry and particularly its additive package. To help reduce potential risks, seeking professional advice is key.

Want to know more?

Click here to download this full guide and register for our free webinar:

DOWNLOAD