JULY/AUGUST 2019 ISSN 2053-7182

Pipe and Profile EXTRUSION

HOW POLYMERS ARE BEING USED IN OIL & GAS

PVC STABILISERS ● EXTRUDER TECHNOLOGIES

FIRST LOOK AT K2019: OUR GUIDE TO DUSSELDORF

AMI Bringing the plastics industry together

GET THE APP...

Pipe and Profile EXTRUSION

Pipe and Profile Extrusion magazine is available free-of-charge on iPads, iPhones and a huge range of Android-based tablets and smartphones.

Our dedicated Pipe and Profile Extrusion app is easy to use and provides completely free access to the latest edition of the magazine plus back issues – more than 15 in total. Once you have downloaded an issue, you can read it offline – there's no need for an internet or data connection.

The Pipe and Profile Extrusion app has already been downloaded by more than 5,400 readers in over 80 countries. Why not try it yourself? The app is available in Apple's App Store, iTunes and Google Play. Just search for 'AMI Plastics', or simply click on the relevant button below.

Download on the App Store

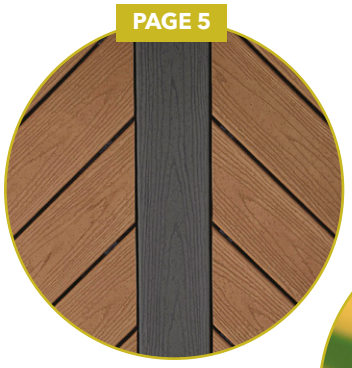
GET IT ON Google Play

The Pipe and Profile Extrusion app is sponsored by

BOREALIS

Borouge

Pipe and Profile EXTRUSION


PAGE 5


PAGE 13

5 Industry news
Continental acquires Italian hose maker; Inter Primo adds profiles expertise; Trex invests $200m to expand output; VDMA expects 10% sales fall; North America machine sales dip in Q1

13 PVC additives take green line
Developments in PVC stabilisation aim to improve performance while minimising environmental concerns. Peter Mapleston reviews the latest introductions

23 Plastics find their place in the offshore sector
Reinforced thermoplastic pipes, polyolefin and polyamide liners and PVDF grades are all finding greater use in the oil and gas industry. Lou Reade reports


PAGE 23

31 Getting prepared for K2019
We look ahead to the plastics industry's essential event – and provide useful links to help you get the most from your visit

35 Extruder technology: digital data in control
In the lead-up to K2019, we preview some of the extruder innovations that will be on show there – including a number of digital and control technologies


PAGE 31

PAGE 35

43 Technology: Materials

44 Technology: Machinery

48 Extruder of the month: Valrom

50 Dates for your diary

COMING NEXT ISSUE

› Medical tubing › Window profile developments › Downstream equipment › K2019 show preview

CONTACT US

CLICK HERE TO MAKE SURE YOU GET YOUR COPY

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: Lou Reade
lou@pipeandprofile.com

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

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

DOWNLOAD MEDIA DATA

Profiles

Cologne / 2019

Advances in materials and technology for optimised production of plastic profiles for construction

12-13 November 2019
Cologne Marriott Hotel, Cologne, Germany

SPECIAL OFFER
Save **€200** if you register before 6th September 2019

Media supporter:

Pipe and Profile EXTRUSION

Board plans pipeline conferences

AMI has established an advisory board to help develop its pipeline coating conferences, including Pipeline Coating, Pipeline Coating Houston and Field Joint Coating.

Members include: Houssam Al Din Sabry, manager of corrosion and inspection at ADNOC; Michele Ostraat, advanced materials leader at Aramco Services; Somaieh Salehpour, general manager of Canusa-CPS Shawcor; Jeffrey Rogozinksi, global product director for protective and marine coatings at Sherwin-Williams; Mike Surkein, principal at Surkein Corrosion; Thomas Stark, application marketing manager for oil and gas at Borealis; Philip Tooth, coating consultant at Tooth Pipeline Services; and independent consultant Samuel Thomas.

The board is already developing the programme for **Pipeline Coating 2020**, which takes place in Vienna, Austria in February 2020.

Continental expands with Italian hose acquisition

Tyre manufacturer Continental has expanded its industrial hose business by acquiring Italy's Merlett, which makes flexible thermoplastic hoses.

The acquisition will see Continental expand its materials expertise beyond rubber into high-performance thermoplastics. It includes the purchase all Merlett's activities, including three manufacturing plants in Italy and Switzerland, a network of sales offices in 12 European countries and almost 500 employees.

Completion of the deal is subject to clearance by the anti-trust authorities. Terms have not been revealed.

"Smart hose solutions will help our customers and industrial operators improve production efficiency and economic effectiveness – and thermoplastic know-how is key to doing so," said Andreas Gerstenberger, head of Continental's industrial fluid solutions business unit.

Gerstenberger: "Smart hose solutions will help our customers improve production efficiency"

Compared to rubber, thermoplastic hoses are lighter though still flexible. They are also anti-static, oil resistant and resistant to low temperatures.

"Merlett has outstanding expertise in engineering, processing and handling thermoplastics," Gerstenberger added. "The performance of thermoplastic materials is increasing, which is broadening the long-term base for potential future sensor applications."

Merlett was founded in 1952 by the Tamborini family. It designs, manufactures and distributes flexible plastics hoses for the agriculture, industrial, construction, transport and food industries.

› **www.contitech.de**

Private equity firm buys UPS

Private equity firm Industrial Opportunity Partners (IOP) has acquired HDPE pipe manufacturer United Poly Systems (UPS).

UPS makes both HDPE pressure pipe for fluid transmission and HDPE duct/conduit pipe for cable and electrical transmission applications. It has two manufacturing facilities in the USA. The existing UPS management team will remain in place, while IOP operating principal Norm Young will become the company's new chairman.

› **www.unitedpolysystems.com**

Borouge boosts black PE for pressure pipe

Borouge is to increase production of pre-compounded black polyethylene (PE) for pressure pipe applications in Asia.

It will do this by investing in a new production unit at its Ruwais complex in the United Arab Emirates, which is expected to be finished in 2020. The company has also confirmed the next expansion phase of the complex.

The decision to expand capacity comes in response to the revision of PE water pipe standards – by China's Water Standards Committee – promoting the use of pre-compounded materials for piping applications.

The investment will address rising demand for the materials, as many cities in China and other emerging economies continue to modernise their utility infrastructures.

"The use of pre-compounded black PE will enable pipe manufacturers to produce superior quality pipes that help ensure the safe operation of distribution networks and minimise any losses of the products that flow through those pipes," said Wim Roels, CEO of Singapore-based Borouge.

› **www.borouge.com**

Takeover helps Inter Primo expand in custom profiles

Danish profiles extruder Inter Primo has bought Essentra Extrusion – a UK-owned extruder that is based in the Netherlands.

Inter Primo makes a variety of standard profiles – such as gaskets for doors and windows – as well as customised products and medical tubing. Essentra focuses on custom profiles, for markets including construction, agriculture and water treatment.

"Essentra fits into our organisation as it is very similar to Inter Primo," said Claus Tønnesen, managing director of Inter Primo. "Consolidations characterise the plastic market, and it is a necessity to grow in order to keep up with an increasingly demanding market – both in terms of technology and sustainability."

Tønnesen: "Essentra fits into Inter Primo because it is very similar"

He said the acquisition made Inter Primo "one of Northern Europe's largest companies in customised plastic extrusion" and would strengthen its worldwide position.

Inter Primo has a turnover of around €150 million (US$169m) and 1,100 employees at 14 production facilities distributed across Europe, plus one in China. Essentra has an annual turnover of around €37m (US$42m). It employs around 200 people and runs 75 extrusion lines.

Han Schootstra, managing director of Essentra, said: "We can now focus more on extrusion, and I am confident the new ownership will result in a win-win situation for both the customer and us."

› **www.primo.com**

› **www.essentraextrusion.com**

NEWS IN BRIEF...

Matthias Schoenberg will become the new chairman and CEO of **Simona**, from August this year, replacing Wolfgang Moyses. Schoenberg was most recently vice president at Axalta Coating Systems, and before that had been CEO of ContiTech Fluid Technology.
www.simona.de

Plastship is a new trading and service platform for buyers and sellers of regrind, re-granulate and recyclates. It is available in German and English and led by managing directors Andreas Bastian and Konstantin Humm. The principal shareholder is RIGK.
www.plastship.com

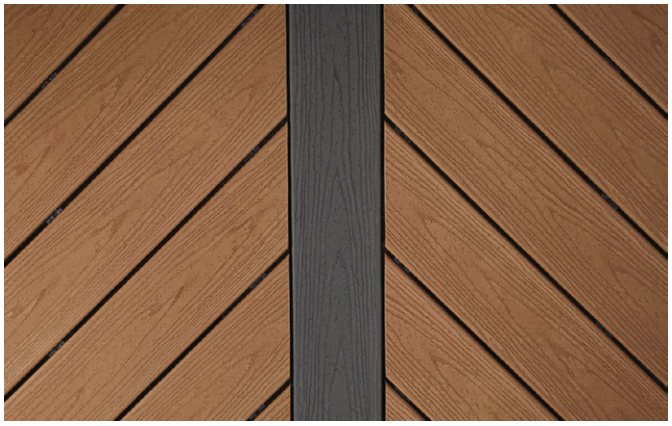
Trex says $200m investment in new plant will increase production capacity by 70%

US-based plastic decking manufacturer Trex will invest around US$200 million over the next two years, to increase its production capacity.

The company will build a new decking facility at its existing Virginia site – to come online in early 2021 – while installing extra production lines at its Nevada site during this year and next year.

"When completed, these investments will increase our capacity by approximately 70%," said James Cline, president and CEO of Trex.

Production rates at both facilities have reached planned levels, and operating efficiency improvements are already underway, said the company. The investment will allow Trex to increase production output for future projected growth related to its strategy of converting wood demand into its composite decking.



Trex says that demand for its products has led to the investment

"Demand trends indicate the conversion from wood has accelerated at a faster pace than expected with our recent introduction of the Enhance decking products," said Cline.

"This has required that we accelerate our planned capacity expansion by one year. We are making the investments to ensure the quality and availability of the entire portfolio of Trex decking and railing products."

› **www.trex.com**

Batch & Continuous Mixing That **Delivers More**

- Easy to clean and maintain
- Excellent heat transfer
- Parts and service available for life
- Vacuum- and pressure-rated

B&P Littleford

989-757-1300 | bplittleford.com

Visit us at KFair - Stand 8BD27!

VDMA expects 10% decline in machinery sales for 2019

German plastics machinery makers are bracing themselves for a sales decline of at least 10% in 2019.

VDMA, the trade body that represents manufacturers, says that first-quarter orders are already down by 10%, compared with the same period last year. It says that factors such as an automotive downturn, the China-US trade conflict and a poor 'image' for plastics are contributing to the dip.

"Investments [in automotive] are virtually at a standstill," said Thorsten Kuhmann, managing director of the association.

Overall, extrusion machinery accounted for 15.4% of total production – a slight rise from the previous year's 14.9%.

Overall sales for 2018 rose by 2% to €7.9bn (US$8.8bn), though at the same time new orders fell by 1%. Exports rose by 1.5% for the year, to more than €5.4bn (US$6.0bn), though this was offset by an 11% decline in sales to other Eurozone countries.

China imported €853m (US$954m) of German machinery in 2017. This 19% increase made it the top

Kuhmann: "Investments in automotive are virtually at a standstill"

export market in place of the USA – which bought 3% less machinery than in 2017 for a total of €820m (US$917m). The two countries each account for around 15% of Germany's exports. The next three export markets are Poland, Italy and Mexico, which each account for around 4.5%.

Ulrich Reifenhäuser, chairman of the association, was upbeat about the results.

"The growth rate of 3% that was originally predicted for 2018 could not be reached," he said. "Nevertheless, we are pleased about the positive results – as towards the end of the year, deterioration of the market became already apparent."

VDMA members have seen staff numbers at their Chinese subsidiaries grow steadily over the last six years, according to a survey.

Most respondents have a staff size of above 100 employees – up from 10-50 employees in 2013 and 2015.

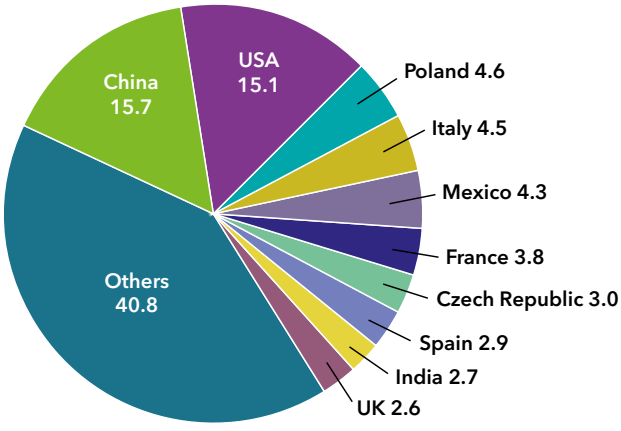
The survey – carried out by Fiducia Executive Search in cooperation with VDMA, and launched at Chinaplas – tracks salary, recruitment, retention, and HR trends in China among member companies.

As well as growing staff size, the findings also show a staff turnover rate of less than 5% (compared to an industry average of 21%) plus an increase in the use of mobile marketing for recruitment.

"Companies with in-house human resources (HR) who look after HR development and retention programmes achieve higher employee satisfaction and retention," said Thaddaeus Mueller, executive search director at Fiducia.

Another finding was an overall increase in salaries for both blue- and white-collar workers since 2017, which can be linked to higher living costs, more recruitment competition – especially from domestic companies – and a general increase in minimum salary requirements.

› **http://kug.vdma.org**



German machinery exports by destination, 2018 (%)
Source: VDMA

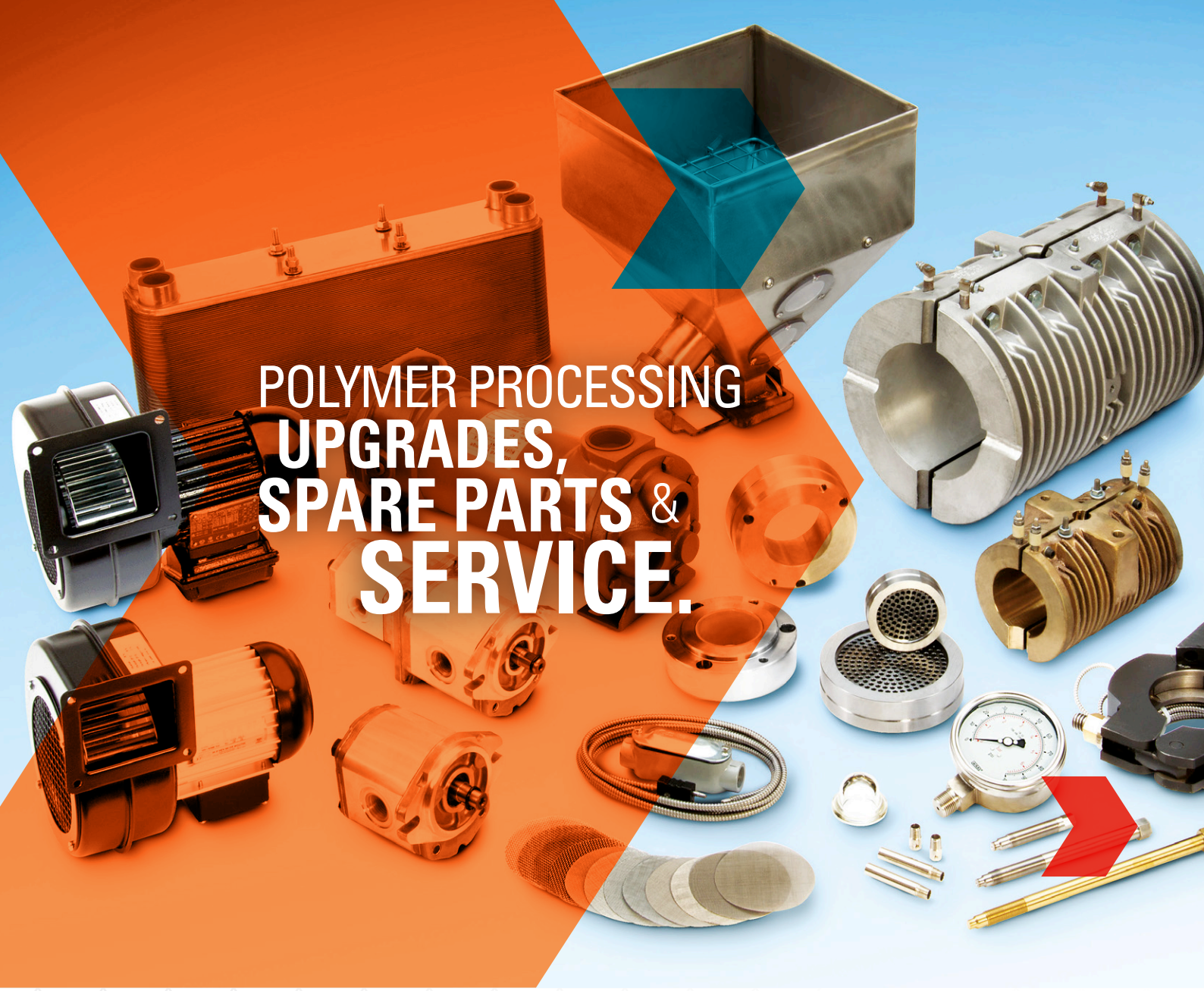
Grant aids Netafim pipe recycling scheme

Plastic irrigation tube producer Netafim has received a $2.01m grant to expand its closed loop recycling operation in California, US. The grant from the California Department of Resources Recycling and Recovery allows Netafim USA to recycle an additional 9,612 tons per year of used irrigation tubing.

Netafim USA said it started using recycled content in its driplines as a way to meet US green building rating and certification requirements.

After opening its California-based recycling facility in 2007, the company said it made investments in research and testing.

› **www.netafimusa.com**



POLYMER PROCESSING UPGRADES, SPARE PARTS & SERVICE.

2019
16–23 October
Düsseldorf
Germany

Visit us in hall 16 / A43

TAILORED TO YOUR EXACT NEEDS.

Looking to upgrade existing equipment? Eager to improve your current extrusion process? We offer modernization packages that deliver results with fast turnaround. These upgrades include AC and servo drives, process controls and patented screw designs. We also provide spare parts and services to keep production equipment operating at peak performance. To optimize uptime, our service technicians are available 24 hours a day, seven days a week.

DAVIS-STANDARD®
Where your ideas take shape.

MAILLEFER
A Davis-Standard Company

BE
BRAMPTON ENGINEERING
BETTER PROCESS. BETTER FILM.
A Davis-Standard Company

TSL
Thermoforming Systems LLC
A Davis-Standard Company

Medical Tubing

Minneapolis / 2019

SPECIAL OFFER
Save **$500** when you register before July 19, 2019

November 5-6, 2019, Minneapolis Marriott City Center, Minneapolis, Minnesota, USA

Discover new developments in polymeric medical tubing and catheters

Headline Sponsor

GIMAC

Join AMI in Minneapolis on November 5-6 for Medical Tubing 2019. Leading experts will address the latest tubing and catheter developments for a wide range of medical requirements including intravenous, infusion, dialysis, respiratory, feeding, and drainage applications. It will also examine the latest standards and certification requirements in this heavily regulated sector.

The program will also cover how extrusion technologies are being developed and refined to meet complex tubing configurations including multi-layer, multi-lumen and micro-bore designs.

Medical Tubing 2019 will provide excellent networking opportunities with key players from throughout the medical tubing supply chain.

Sponsored by:

DAVIS-STANDARD
Where your ideas take shape.

Media supporters:

Medical Device Developments
Compounding WORLD
Pipe and Profile EXTRUSION

Join us and be part of the event!

To register as an exhibitor or delegate and to get more information on sponsorship packages, please contact the Conference Coordinator, Stephanie Hume on

Tel: +1 610 478 0800 | **Email: stephanie.hume@ami.international**

North America: machinery sales fall in Q1 of 2019

The delivery value of primary plastics machinery in North America declined in the first quarter of 2019, according to the statistics compiled and reported by the Plastics Industry Association's Committee on Equipment Statistics (CES).

Although 2018 ended with strong plastics machinery deliveries, 2019 has fallen behind. The preliminary estimate of the value from reporting companies totalled US$273 million – which was nearly 28% lower than the fourth quarter of 2018.

The value of deliveries of single- and twin-screw extrusion equipment deliveries fell by nearly 25% and 46%, respectively. (By comparison, injection moulding deliveries fell by more than 26% over the same period.)

However, compared with the equivalent quarter in 2018, the value of deliveries for single- and twin-screw extruders rose by 20% and 8%, respectively.

"First quarter data usually comes in soft, but the declines reflect the expectation of weaker US and global economic growth," said Perc Pineda, chief economist at the association. "Price effects were also at play in the first quarter. The producer price index on industrial machinery manufacturing has been on a decline from its peak in the third quarter of last year."

In CES' quarterly survey of plastics machinery suppliers,

Pineda: "Declines reflect the expectation of weaker US and global economic growth"

asking about present market conditions and expectations for the future, 70% of the respondents expect conditions to either improve or hold steady in the coming quarter. Over the next 12 months, 60% expect the market to be steady-to-better.

Exports reached US$363m – which was short of the US$417m exports in the fourth quarter of 2018.

Exports to Canada and Mexico in the first quarter were around $78m and $73m, respectively, ensuring that they remained the largest US export markets.

"Demand in the plastics industry is expected to remain positive against the backdrop of slower US economic growth this year," said Pineda. "However, plastics machinery makers should also consider that weaker global economic conditions will have knock-on effects on the industry."

› **www.plasticsindustry.org**

COMPOUNDING WORLD EXPO

PLASTICS EXTRUSION WORLD EXPO

PLASTICS RECYCLING WORLD EXPO

POLYMER TESTING WORLD EXPO

3 - 4 June 2020
Messe Essen, Germany

Grow your business in the European plastics compounding, extrusion, recycling & polymer testing markets

2018 highlights

180+ exhibitors // **4,000+** visitors // **91%** attendees from Europe

Attendees had a combined budget of **€4.6bn+**

Over 80% booths rebooked - don't miss out!

New in 2020! Plastics Extrusion World Expo and Polymer Testing World Expo

CLICK HERE TO BOOK YOUR BOOTH TODAY

exhibition_sales@ami.international
+44 (0) 117 924 9442
www.ami.international/exhibitions

Proudly supported by:

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

PHOTO: SHUTTERSTOCK

Developments in PVC stabilisation aim to improve performance while minimising environmental concerns. ***Peter Mapleston*** *reviews the latest introductions*

PVC additives take green line

All around the world, the trend continues to develop and commercialise additives for PVC that are not only more effective, but which also have less potential to create problems for health and the environment. When it comes to stabilisers, that essentially means alternatives to lead-based systems, but some additive suppliers are also working on new alternatives to tin-based systems.

In the past, some concern has been raised about tin stabilisers with, for example, the Vinyl Council of Canada noting in a guideline last updated in 2015 that "certain tin stabiliser products may cause harmful effects to aquatic organisms if allowed to enter the aquatic environment." However, tin stabilisers are effective and remain popular, especially in the US, and new generations continue to be developed. There is currently no indication that tin stabilisers for PVC could be put under additional regulatory control in any global market.

Galata Chemicals (which sprang out of Chemtura's PVC additives business back in 2010 and is now owned by India's Artek Surfin Chemicals) recently introduced a range of solid organotin stabilisers intended for use in extruded profiles and sheets as well as injection moulded fittings. Peter Frenkel, the company's vice president of technology, says stabilisers in the new Mark 7000 and 9000 series can be charged and handled using manufacturing capabilities typically used for other solid stabilisers, including lead stabilisers, heavy metal-free stabilisers and calcium-zinc stabilisers.

Mark 7075 demonstrates high efficiency when used by itself or as a component of solid stabiliser one-packs, Frenkel says. "It enables increasing Vicat temperature by up to 5°C in customers' compounds." Incorporation of these solid stabilisers into rigid PVC compounds may require lubrication adjustments, according to the company.

Frenkel says that, in an effort to actively support cost-effective removal of lead stabilisers from pipe compounds in India and China, Galata Chemicals has offered NSF (National Sanitation Foundation)-approved liquid organotin stabilisers, such as Mark 1939 and Mark 1942, as well as solid Mark 7075. "These and other liquid organotins were successfully qualified and are already in use at several major pipe manufactures in the Asia Pacific region," he says.

"In comparison with lead- and even calcium-zinc stabilisers, use of liquid organotin stabiliser systems in pipes made it possible to achieve higher

Main image: The trend in PVC stabilisation is towards systems with more favourable environmental profiles

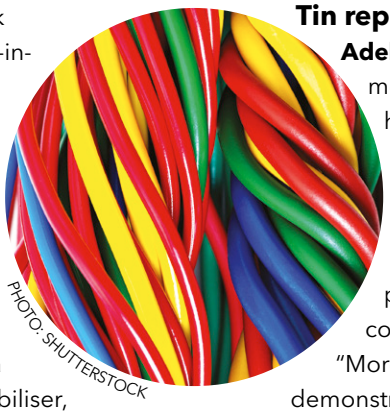


PHOTO: SHUTTERSTOCK

Right: Adeka sees a trend to Ca-Zn stabilisation in the cable industry

pipe throughput and increased crack resistance, with similar or better cost-in-use, and consistent with the previously published results. Use of solid organotin stabilisers resulted in substantial increase in heat stability and the decomposition time of the pipe compounds."

Food contact options

Galata has also recently developed a thioglycolate-free organotin heat stabiliser, which Frenkel says addresses growing customer needs in the EU for stabilisers suitable for food contact and which are capable of imparting high levels of heat stabilising performance and transparency "comparable to that of the industry staple, Mark 1984E." The new stabiliser is said to work well in several critical applications, including extruded and blow-moulded films and foamed sheet compounds.

Three years ago, Galata acquired Axiall Corp's Solucor additives business, with production in Canada. Frenkel says that, building on this buy, Galata has developed and expanded its production capabilities for manufacturing styrene-acrylonitrile (SAN) process aids, used in PVC (and also in polycarbonate and various styrenics) to improve melt strength and flow.

Latest additions to the range are Blendex 8633 and Blendex 8635, which now sit alongside existing grades Blendex 866 and Blendex 869. The new SAN grades are said to demonstrate faster fusion characteristics (Figure 1) while exhibiting lower equilibrium torque and maintaining or improving upon the compound melt strength imparted by conventional methyl methacrylate-based process aids, which function in a similar way.

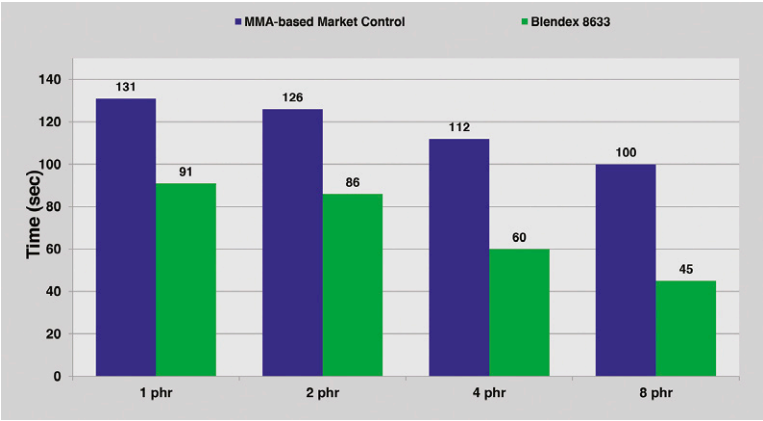


Figure 1: Comparison of fusion times (165°C, 35rpm, 60 g) of Galata's Blendex 8633 over a market control. The Blendex product shows more effective fusion promotion at all tested usage levels
Source: Galata Chemicals

Tin replacement

Adeka points to its long-time involvement in the development of heavy-metal free stabilisers. It has developed a new system for replacement of tin stabilisers in rigid applications. The ADK Stab RX-400 series is claimed to provide excellent transparency, colour retention and heat stability. "Moreover, the lubricity of this system demonstrates similar behaviour to tin stabilisers and therefore allows customers to replace and switch easily," the company says.

Many PVC products for long-life applications – such as flooring, film, tarpaulin, wire and cable, and profiles – are being developed according to environmentally friendly concepts, says Adeka. "For wire and cable applications, producers are preferring calcium-zinc stabilisers over lead stabilisers." It is worth noting that lead stabilisers are still quite common outside the European Union, where they were finally phased out in 2015, but across the globe there is an ongoing tendency to use heavy metal-free alternatives. To this end, Adeka has developed a series of highly filled Ca-Zn powder stabilisers – the ADK Stab RUP series. They provide "excellent heat stability, heat aging properties and superior mechanical properties all with good colour retention."

Transparent solutions

Add-Chem has been working for some time on possible alternatives to tin stabilisers for transparent applications that require high thermal stability. The photographs in Figure 2 show the good transparency it has been able to obtain while the images in Figure 3 highlight the good Congo Red values (Congo Red paper changes its colour when it comes in contact with halogen gases released by PVC and its compounds on heating at higher temperatures.)

Recent stabiliser developments at **Valtris Specialty Chemicals** have also focused on reducing their environmental impact, with a new line of liquid and solid stabilisers developed that eliminate VOCs and other regulated products. Therm-Chek VT 275 is described as a high efficiency calcium-zinc stabiliser with excellent long-term colour hold, excellent clarity and heat stability that reduces VOCs by over 90% compared with traditional barium-zinc heat stabilisers. "Valtris has a complete line of stabilisers for all applications, free of regulated formulants such as SVHCs, phenol and 2-EH," says a representative. ›

you don't have to choose

You don't have to choose between productivity and environmental sustainability, they are both possible with our two important innovations:

Swarfless cut and chamfer technology for PVC pipes that saves raw materials, eliminates recycling, reduces maintenance costs, and assures a clean and noiseless environment.

Electric belling machines with short-wave infrared ovens that are active only during the heating phase and for the time needed to reach the final set temperature of the material, thus reducing energy consumption and avoiding scrap material.

Go green with us

SICA®

Plastic pipe processing machinery

www.sica-italy.com
tel +39 0544 88711 fax +39 0544 81340
info@sica-italy.com

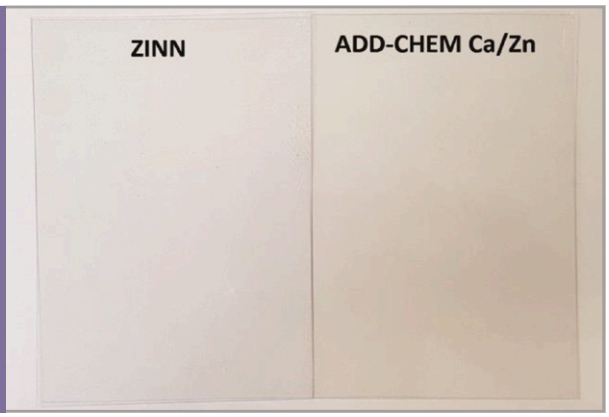


Figure 2: Clear PVC stabilised with tin (left) and a Ca-Zn (right) stabilisation system from Add-Chem

Source: Add-Chem

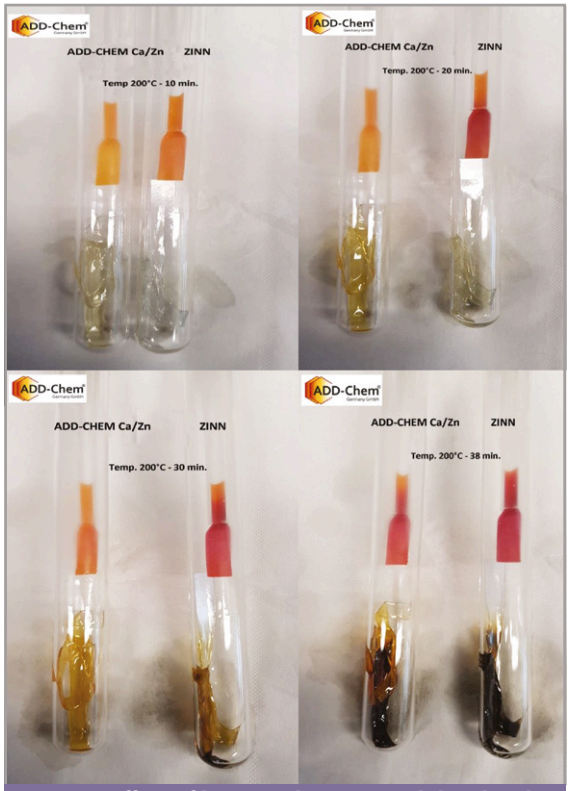


Figure 3: Effect of heat on clear PVC stabilised with Add-Chem's Ca-Zn stabiliser compared with a tin alternative after 10, 20, 30 and 38 minutes at 200°C (the colour change of the Congo Red paper indicates halogen release)

Source: Add-Chem

Valtris also offers what it says are innovative products for extrusion processors to meet the demands of increased throughput for extrusion applications. Therm-Chek VT 290 was developed to allow for high extrusion speeds while preserving the integrity of the vinyl insulation. This product balances lubrication and stabilisation while maintaining electrical properties.

The company also obtained NSF approval of a new tin stabiliser, Akcrostab T-5311P, for PVC pipe applications, expanding its tin stabiliser portfolio for this market sector. Beyond pipes, Valtris offers a family of tin stabiliser products with varying levels of tin for PVC profile, caps and stocks, and other applications.

In its lubricants offering, Valtris has launched a new stearic acid grade, Petrac 290 VEG. This is derived from a mixture of palm oil and soybean oil, and so free of any animal-derived content. "This adds to the family of Petrac Lubricant products we already offer, including animal-derived stearic acid grades, oxidised polyethylene, and waxes," says the company's representative.

Cable formulations

Songwon says it can offer a full range of Ca-Zn stabilisers for all applications, including the most demanding such as high-temperature cables and transparent cables. It says its products combine good ageing properties, high thermal stability with low water absorption and can be trimmed to the specific customer requirements.

Songstab stabilisers BP-90E and BP 490 were developed for light pigmented cable formulations, providing stability for compounds in the temperature ranges 90-105°C and 105-125°C. "They give high Congo Red values, have excellent electrical properties and absorb very little water," says the company. Songstab BP-39AC is intended for transparent cable compounds, also conferring what is described as "outstanding" heat stability and

Zumbach

SWISS PRIME MEASURING SINCE 1957

Material Saving is no Magic

With Wall Thickness and Diameter under Control

2019

16 – 23 Oct., 2019
Düsseldorf, Germany
Booth # 10E41

www.zumbach.com • sales@zumbach.ch

giving high Congo Red values.

Turning to indoor applications, Songwon says tighter regulations regarding VOC emissions are challenging for plasticised PVC applications. The tendency is to move away from liquid stabilisers to solid mixed metal stabilisers, but sometimes they can present issues with regard to dispersion and printability, the company says. It has products both in solid and liquid Ba-Zn and Ca-Zn to meet customers' demands.

Songstab CZ-73P (solid Ca-Zn for calendering, extrusion and spread coating applications) and Songstab BZ-900P (liquid Ba-Zn for spread coating) are said to confer outstanding heat and colour properties while reducing emissions in flooring, wallpaper and decorative sheet applications.

Asia developments

Songwon was present at Chinaplas in Guangzhou in May, promoting its ambition to build a leading position in China while serving the specific needs of the local market. Along with various new offerings for polyolefins, it also showcased its strength in PVC additives.

Also in Asia, **Baerlocher** announced in February it was strengthening its presence there with a further "significant" expansion in India. It will spend $30m at its Indian subsidiary, doubling existing capacity by 2021, with phase one due for completion around the middle of this year. Baerlocher is already India's largest PVC stabiliser producer. It says the new investment will improve choice for convertors "to enable their transition towards sustainable calcium-based stabiliser systems for all PVC applications." Metal stearates production will be further expanded as well as warehousing facilities and a state-of-the- art research and development laboratory will be established.

"With the demand for PVC in India growing annually by 7-8%, driven by growth in agricultural and infrastructure sectors, this investment shows our commitment to our customers and supports the country's 'Make in India' programme," says Jayen Modi, managing director of Baerlocher India.

Modi adds: "With our new capacity in 2019, we will remain as a reliable supplier of non-dusting lead stabilisers and liquid mixed-metal stabilisers with room to grow further in these sectors. However, a range of exciting new product forms for calcium-based systems will be available to our customers for the first time in mid-2019." Baerlocher will add new production lines for metal stearates coming onstream in 2021 to serve captive demand for PVC stabilisers and to support sales of metal soaps to other industries.

The company is also expanding its manufacturing hub near Kuala Lumpur, Malaysia, with an additional 10,000 tonne/yr production line for metal stearates, a new warehouse and an office facility. The company produces PVC stabilisers and additives for polyolefins on the site, along with zinc and calcium stearates. Baerlocher Malaysia serves the ASEAN markets, South Korea, Japan, Australia and the Middle East.

Bio-based offerings

Emery Oleochemicals' Green Polymer Additives (GPA) business unit develops high-performance polymer additives, including a wide range of lubricants particularly suitable for PVC applications. Most of them, branded Loxiol, are produced from bio-based materials.

The company notes that the growing global trend to minimise the consumption of fossil resources and to reduce carbon footprints is leading to a constant increase in demand for sustainable, renewable, bio-based or "green" products– even when additives are designed for a non-bio-based polymer such as PVC. "In line with this, one of the targets of the VinylPlus program is to increase the use of renewable raw materials in PVC production by establishing a long-term framework for the sustainable development of the industry," it says (VinylPlus is the ten-year 'Voluntary Commitment of the European PVC industry set up in 2011).

Emery's GPA business has introduced bio-based alternatives to hydrocarbons such as paraffin and Fischer-Tropsch waxes, which serve as external

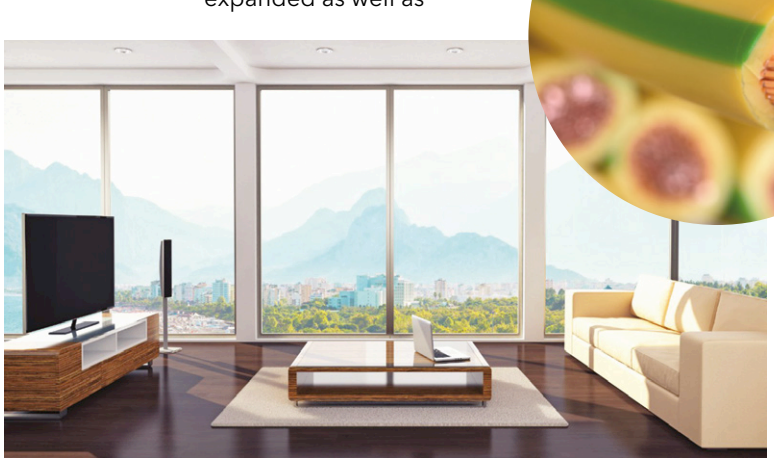


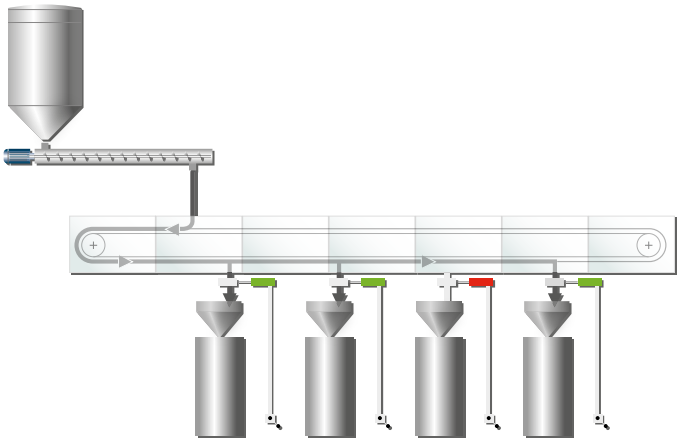
PHOTO: SONGWON

Above: Songstab CZ-73P and BZ-900P provide good heat and colour performance together with reduced emissions for flooring and wallpaper applications. Inset: Songstab BP-90E and BP 490 stabilisers are developed for light pigmented cable formulations

Automation systems for plastic materials handling

Smart Dry Blend Conveying

- High conveying & dosing capacity
- No dust generation
- No products segregation
- Low maintenance
- Low installation space
- Low running costs



Stand
9B60

penta.piovan.com

Penta
Piovan Group


PHOTO: SHUTTERSTOCK

Calcium-based stabilisers are widely used in PVC soil and sewer pipes and fittings

PVC stabilisers – a snapshot

A number of different stabiliser technologies are used globally. This brief guide, courtesy of ESPA, looks at the most common types and identifies where they are used. ESPA (the European Stabiliser Producers Association) is a division of CEFIC and members include Akdeniz Kimya, Asua Products, Baerlocher Chemson Polymer, Chemtura, Galata Chemicals, IKA Innovative Kunststoffaufbereitung, PMC Organometallix, Reagens and Valtris Specialty Chemicals.

Calcium-based stabilisers

Calcium-based stabilisers (including Ca-Zn) are now largely used in wires and cables, in window and technical profiles (also foamed ones), and in any type of pipe (such as soil and sewer pipes, foam core pipes, pressure pipes, corrugated pipes, land drainage pipes and cable ducting) as well as the corresponding fittings.

Calcium-based stabilisers have also been introduced in PVC rigid calendering film production where improved organoleptic characteristics are required, for instance as alternatives to tin mercaptides in transparent food packaging applications or as an alternative to tin carboxylates in PVC blown films, shrinkable and for candy wrap. Similarly, calcium-based stabilisers are now an alternative to Liquid Mixed Metals (LMM) for several flexible applications, especially for indoor ones where stringent air quality requirements are in place.

Tin stabilisers

In North America, tin-based systems are used for almost all rigid PVC applications; in Europe the main use is for rigid, transparent applications where rigorous processing conditions require an outstanding stabilisation.

In addition to maintaining high transparency, tin stabilisers provide a very good early colour (no yellowing) and very good colour retention (delay of yellowing). Tin stabilisers also provide very good processability with high throughput and no plate-out and are approved for use in food contact applications and potable water applications. Some tin stabilisers are approved for use in rigid medical applications.

Liquid stabilisers

Liquid mixed metal stabilisers are used in numerous PVC flexible applications. Based on barium, zinc, calcium, magnesium or potassium carboxylates, they generally require the addition of co-stabilisers, antioxidants and organo-phosphites to provide optimum performance. Liquid Ba-Zn and Ca-Zn stabilisers have successfully replaced cadmium-based stabilisers in many PVC semi-rigid and flexible applications.

lubricants in PVC. Dr Christian Müller, global technical market manager at the company, says: "These alternatives, which support the VinylPlus program, not only show comparable performance to conventional additives in PVC processing, they also deliver advantages in availability, storage, handling and application characteristics as well as sustainability."

All bio-based molecules show polar functions in their structures. "At first, it might not be obvious how these additives are able to show the same functionality as perfectly non-polar hydrocarbon waxes," says Müller. "However, the solution is provided by proper design of the additive molecules which makes them appear as non-polar even though they have a polar functionality."

Tailored for a specific polymer application, bio-based plastic additives from Emery are not just a passing trend, Müller says. "They are backed by over 60 years of technical expertise and plastics industry knowledge."

Emery was founded in the US almost 180 years ago but is now a Malaysian/Thai joint venture operation. Its GPA business has a Global Technical Center of Excellence in Germany and is also supported by product and application development labs in the US and Japan.

Below: PVC window profile compounds are a target market for Emery's bio-based additives


PHOTO: EMERY OLEOCHEMICALS

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.galatachemicals.com**
- **www.adeka.co.jp/en/**
- **http://addchemind.com/**
- **www.valtris.com**
- **www.songwon.com**
- **www.baerlocher.com**
- **www.emeryoleo.com**

We help you reach the top

2019
16-23 October
Düsseldorf
Germany

VISIT US

Hall 8A
Stand G41

global colors
MASTERBATCHES

Plastika Kritis S.A.	**Global Colors Polska**	**Romcolor 2000**	**Global Colors o.o.o.**	**Senkroma S.A.**
www.plastikakritis.com	www.globalcolors.pl	www.romcolor.ro	www.globalcolors.ru	www.senkroma.com.tr
GREECE	POLAND	ROMANIA	RUSSIA	TURKEY

www.global-colors.net

Pipeline Coating

Houston / 2019

The forum for steel pipeline coatings and protection

November 5 - 6, 2019
Hilton Houston Post Oak, Houston, Texas, United States

SPECIAL OFFER
Save **$300** when you register before September 6, 2019

Sponsored by:

SHAWCOR

Media supporter:

Pipe and Profile EXTRUSION

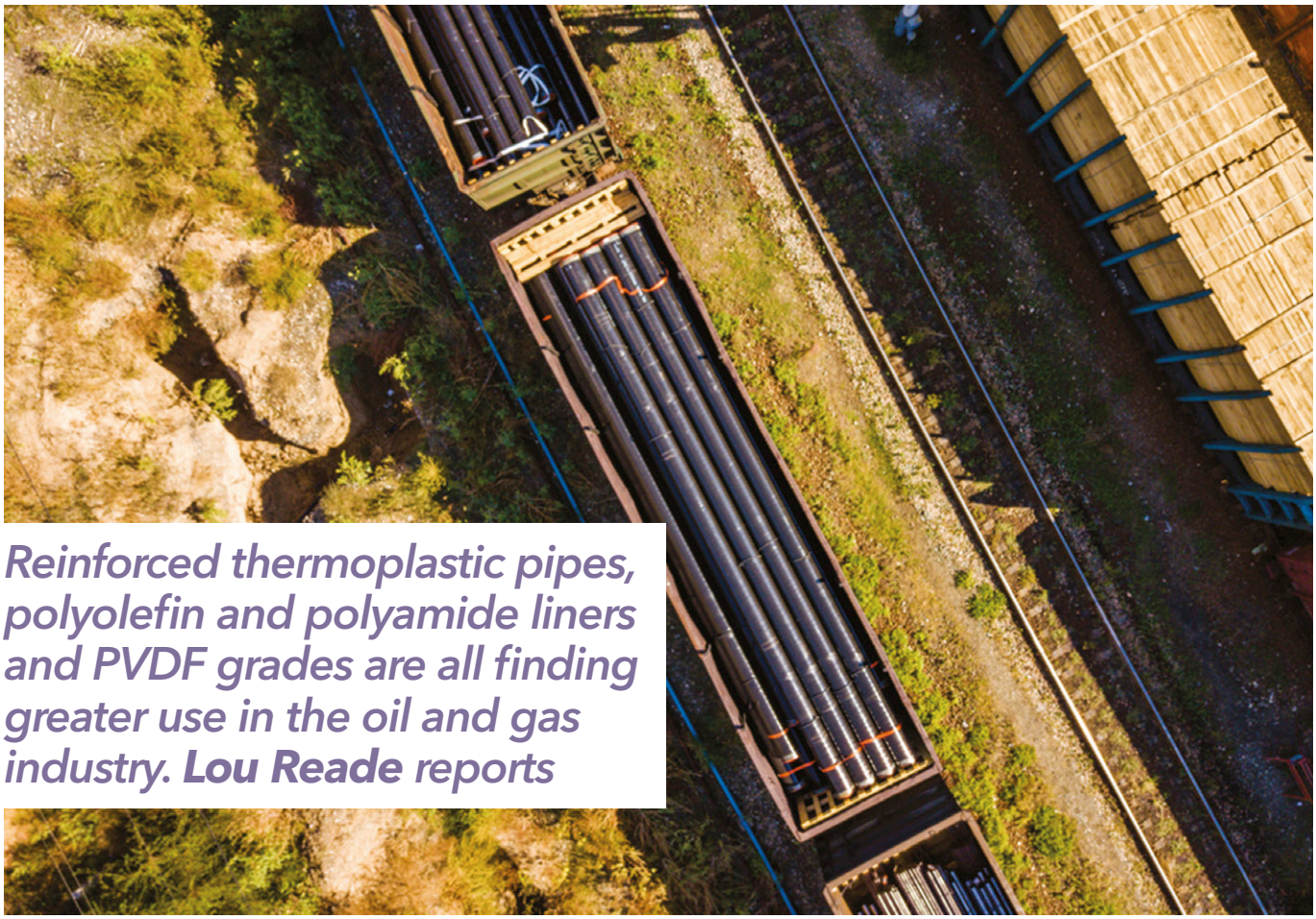


PHOTO: SHUTTERSTOCK

Reinforced thermoplastic pipes, polyolefin and polyamide liners and PVDF grades are all finding greater use in the oil and gas industry. Lou Reade reports

Plastics find their place in the offshore sector

The offshore industry has traditionally been a place for steel – but the lightness, flexibility and corrosion resistance of polymers has seen them make more inroads into the sector.

At last year's *Oil & Gas Non-Metallics* conference in London – organised by **AMI** – **Saudi Aramco** has carried out a carbon footprint analysis of composite pipes in hydrocarbon flowline applications – and found them to be superior to carbon steel pipe.

Abderrazak Traidia, senior research scientist at the company, told delegates that spoolable reinforced thermoplastic pipe (RTP) was already three times more economical than carbon steel, due partly to its ability to resist corrosion.

The environmental analysis included factors such as materials, manufacturing methods, transportation – such as a comparison of shipping steel pipe from Japan, versus glass-reinforced composite pipe from the USA – and installation.

Overall, the RTP pipe reduced carbon intensity by 33%, and embodied energy by 4%. However, this did not take corrosion management into account.

The company extended the study to other types of composite pipe, using carbon fibre, for instance. It found that these had higher carbon intensity and embodied energy than carbon steel pipe. This is mainly due to the energy intensity of the process to make carbon fibre.

Future work will include studying the impact of corrosion mitigation in carbon steel and assessing products from other companies.

Main image: Saudi Aramco's carbon footprint analysis for composite pipe included factors such as the effect of transportation

Rigorous testing

Mohammed Bashar, applications materials engineer at **Shawcor CPS**, explained how the company tested its FlexPipe spoolable pipe for fluid compatibility, at a customer's request. ›

Above: Evonik's Vestamid is a commonly used material in the offshore industry

The testing was based on a customer request to operate the pipe at a minimum of 30% aromatic crude oil. For this, samples were exposed to three different chemical compositions of synthetically prepared crude oil – containing 0%, 30% and 50% aromatic hydrocarbon.

The testing had to ensure that the material retained its integrity and fitness for purpose. Samples underwent gravimetric analysis, tensile testing, FTIR spectroscopy, DSC and TGA.

Full-scale pipe testing involved soaking and saturating the test pipe with a 50% aromatic and cycloaliphatic hydrocarbon mixture at 82°C, followed by pipe performance testing. Here, the pipe completed more than 1,000 hours at 4,200psi. In a second test, it completed 364 hours at 3,500psi and 107°C – and then survived a 24-hour leak test.

He cited two rigorous applications where Flowline pipe has been used: in a hot emulsion application in Australia, where it had to withstand 18-20% aromatic content, 750psi and 82°C; and, a zero flaring (temporary flowback) application in the Middle East – with 28% aromatic content, at 450psi and 71°C.

Pipe rehabilitation

Evonik said that its PA12 safety liners can help to rehabilitate old pipelines – especially those that operate at high temperature.

In one case, it was used in Canada within a 6in steel pipeline transferring sour gas at temperatures of around 50°C. It replaced a previous HDPE liner, which had collapsed due to permeation and swelling.

The PA12 liner had lower gas permeation, low swelling in hydrocarbons and no loss of mechanical strength, said Carsten Schuett, project manager for O&G composite development at Evonik Resource Efficiency.

"There was no degradation after 12 months in highly sour conditions," he said.

Safety liners have an active monitoring and leak detection system: a series of annular grooves along the liner surface carry air that is pressurised at 10-15psi – and monitored continuously. Any damage to the outer steel pipe will be detected – though the liner itself will prevent any leakage of material. The steel pipe can then be fixed, to maintain performance.

Offshore simulation

Ramin Moslemian, principal scientist at **DNV GL** in Norway, told delegates how modelling software is used to predict the lifetime of polymer and composite pipes in the oil and gas industry.

While the industry has historically relied on steel pipe, problems of corrosion and heavy weight has led it to use alternative materials such as polymers and composites – which are not in danger of corroding but may go through different types of ageing processes. For instance, polymers may undergo environmental ageing through leaching of additives or chemical degradation, as well as through temperature effects. Typical problems include failures in PVDF or nylon liners, or PE liner collapse in rehabilitated pipes.

"For composites, ageing is more complex due to the possibility of ageing in matrix, fibres and their interface," he said.

The various mechanisms behind failure can be modelled in order to determine the likely effect of each on pipe life and performance. However, using only experimental data offers "limited possibilities" and is both costly and time consuming, he said.

"Models which are based on the physical understanding of various degradation mechanisms can enhance our understanding while reducing the risk and cost of utilising polymers and composites in the oil and gas industry," said Moslemian. "Such models can be enhanced if they are implemented in a probabilistic framework which uses innovative methodologies including data analytics and machine learning."

This kind of 'digital framework' uses

experimental data, finite element modelling and 'expert belief' – in combination with machine learning algorithms – to build an accurate prediction of behaviour, he said.

In the longer term, this work will be used to create a 'digital twin' of polymer and composite parts, which can be used in their design, qualification and integrity management, he said.

Smart coatings

Canada-based **Direct C** has used smart coatings to monitor structural health – and detect leaks – in composite and steel pipe systems.

"Current leak detection is not hitting the mark," said Stephen Edmondson, chief science officer at the company.

Current external systems can detect leaks with high accuracy – in terms of location – but are plagued by low reliability (of false alarms), he said.

"The industry seeks cost-effective, accurate and direct sensing of small leaks – with low or zero false alarms," he said.

Direct C has developed a coating that incorporates carbon nanotubes. This acts as a hydrocarbon sensor: if the polymer swells, after absorbing hydrocarbon from a leak, the resistance increases. The sensor can determine between hydrocarbon types (light, medium and heavy), as well as monitoring physical changes such as elongation.

The system can overcome potential false positive results, such as high temperature and pressure or a sensor power failure.

"There is only one route to a false positive: a chemical that generates swelling at the same rate of oil," he said.

Sensors are available in off-pipe and on-pipe versions. The company is also developing structural health monitoring systems to enable end-of-life predictions for composite pipe systems.

Below: Plastic materials are becoming more commonly used in the oil and gas sector

PHOTO: SHUTTERSTOCK

Expanded use

At the recent *Polymers for Oil & Gas Engineering* conference, held in Kuala Lumpur in Malaysia, KH Lou, application marketing manager at **Borouge** in Singapore, explained how his company has expanded the use of polyolefins in the oil and gas sector.

In addition to coating applications for steel pipe, polyolefins are finding wider use for a range of systems, including: standalone oil and water flowlines; in firefighting systems; for pre-insulated piping; as HDPE liners; for production tubing linings; for reinforced thermoplastics; and for cooling water systems.

In one example, a PE100 pipeline was used for a water-crude oil mixture in Oman – which caused steel pipe to corrode within two years. The 19km of PE pipe – working at 50°C and 10-14 bar – was expected to have a lifetime of at least 15 years.

There are also a number of emerging developments. These include high temperature liners, liners with superior permeation properties, downhole piping solutions and fire-resistant polyolefins.

There has already been a successful trial of PP-R and PE-RT for linings with United Pipeline, he said.

"We are working with regional partners to offer these solutions to end users," he told delegates.

ESC testing

Michail Kalloudis, technical manager at testing company **Impact Solutions**, explained how environmental stress cracking (ESC) resistance tests are used to make lifetime assessments of thermoplastic pipe for oil and gas applications.

ESC is the premature cracking of a polymer caused by a combination of stress and its contact environment. After a localised stress creates a small defect in the material, this can spread until failure occurs.

The ESC process is different for every resin. When combined with other problems – such as creep rupture – it can reduce the lifetime of plastic pipe.

"Semi-crystalline polyers such as PE show brittle fracture under stress if exposed to stress cracking agents," he told delegates.

Determining ESC resistance can help to assess the likely lifetime of a pipe. There are a number of tests and standards to do this, including various types of full notch creep tests (FNCTs) – including a much faster 'accelerated' version. At the same time, strain hardening and the cyclic cracked round bar method can help to reduce the time needed for testing. ›

Conductive Plastics

Vienna / 2019

5-6 November 2019 Austria Trend Hotel Savoyen, Vienna, Austria

CLICK HERE FOR DETAILS

Developing technologies and applications for electrically and thermally conductive plastics

The Conductive Plastics 2019 conference is the place to learn about the latest developments in the formulation, processing and application of electrically and thermally conductive thermoplastics.

Aimed at OEM engineers, product designers, processors, compounders and additive producers, this established international event will explore the wide range of additive technologies available to developers of electrical and/or thermally conductive plastics and parts. Attendees will hear from experts how to optimise the formulation and properties of conductive plastics and components and learn about the critical influence of processing and part design on performance.

Media supporters:

Compounding WORLD Injection WORLD

Join us and be part of the event!

To register as an exhibitor or delegate and to get more information on sponsorship packages, please contact the organiser Grace Midgley on

Tel: +44 (0) 117 314 8111 | **Email: grace.midgley@ami.international**

AMI

Bringing the plastics industry together

@Contact_AMI #AMIConductive

Above: Solvay's Solef 90615/2002 PVDF is used for high temperature, high pressure pipe, and as liners for steel pipe

Reinforced selection

John Wright, president of US-based **Specialty RTP**, explained how reinforced thermoplastic pipe (RTP) must be selected properly in order to be used in 'severe' oilfield environments.

"Non-metallic materials have advantages and limitations in the same way as metal and alloys," he said.

For instance, both have temperature limitations and are subject to chemical attack, he said.

A liner material for a pipe will need chemical resistance, good permeation properties, cyclic and static strength, and temperature resistance.

In terms of chemical resistance, a material will have to withstand acid gases (such as hydrogen sulphide), aromatic hydrocarbons and extremes of pH.

Overall, he said that an operator must look for several factors when choosing RTPs.

A liner will require: chemical compatibility of the mixture; hydrolysis or swell resistance; and good permeation properties. In terms of reinforcement, materials need static and cyclic load strength, and chemical compatibility. And, a protective jacket requires abrasion resistance and chemical compatibility, he said.

Flexible performer

At the *Oil & Gas Polymer Engineering* event in Houston, Texas in June, Corinne Duffié, thermoplastic composites oil and gas programme manager at **Solvay Composite Materials**, presented details of new materials for high temperature, high pressure applications.

Its HTHP Solef grades of PVDF are designed for use in flexible pipes. An established grade, Solef 60512, is qualified for oilfield applications up to 130°C and 1,000 bar – while the new 90615/2002 grade targets qualifications up to 150°C and 1,500 bar.

The new grade has been subjected to various tests, including rapid gas decompression tests. Samples showed good RGD resistance at 1,500 bar – with no internal or external blistering seen.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.ami.international**
- **www.saudiaramco.com**
- **www.shawcor.com**
- **www.direct-c.ca**
- **www.evonik.com**
- **www.dnvgl.com**
- **www.borouge.com**
- **www.impact-solutions.co.uk**
- **www.specialtyrtp.com**
- **www.solvay.com**

Polymer Foam

Hamburg / 2019

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

26-27 November 2019
Maritim Hotel, Hamburg, Germany

SPECIAL OFFER
Save **€200** when you register before 6th September 2019

Sponsored by:

BOREALIS

Borouge

Media supporter:

EPU EUROPEAN POLYURETHANE JOURNAL

Compounding WORLD

Polymer Testing & Analysis

Düsseldorf / 2019

Exploring innovations in testing, characterisation and analysis of polymer materials and products

18-19 September 2019
Nikko Hotel, Düsseldorf, Germany

Media supporters:

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

Let the countdown to K2019 begin! Here, and on the following pages, we take a look ahead to the global plastics industry's essential event – and provide useful links to help you get the most from your visit

Getting ready for K2019

The world's largest plastics trade fair is now less than three months away; K2019 will take place at the Messe Dusseldorf show ground in Germany on 16-23 October 2019.

The show will fill all 18 halls of the venue – where more than 3,000 exhibitors from more than 60 countries will promote their raw materials, additives, semi-finished products, machinery, ancillary equipment and services to the plastics industry.

Regular K visitors may wonder about the 18 halls, which is one less than in 2016. The explanation is that Hall 2 has disappeared, subsumed into a new and much larger Hall 1 that now covers 12,000m^2. The southern entrance is also being updated but will not be quite ready for K.

Attendance in 2016 was slightly up on the previous event in 2013 – by around 14,000 visitors to 232,053. Messe Dusseldorf will be hoping for further growth although the plastics market is certainly less buoyant than three years ago.

One of the big challenges facing the sector is sustainability, so expect to see much around recycling, waste management and the Circular Economy throughout the exhibition. Other key themes will include digitalisation in the form of Industry 4.0 smart technologies and additive manufacturing.

The Science Campus, designed to allow business to exchange ideas and information with academia, will also make a return to this year's event.

Pipe & Profile Extrusion magazine at the show

Pipe & Profile Extrusion will be exhibiting at K2019 on stand C11 in Hall 7. By paying a visit, you can find out more about all of our digital plastics magazines and apps.

The stand is run by our parent company AMI, which will be showcasing its latest industry directories and market reports, as well as providing information on our many conferences and the new Plastics Extrusion World Expo 2020.

In the run up to the K2019 event, *Pipe & Profile Extrusion* will be publishing detailed previews of the innovations that will be on show.

Look out for the K Preview Issue in September and the K Show Special in October. You can follow the news as it happens on our Twitter feed **@Plasticsworld** and we will also be reviewing the event in detail in our November/December edition.

If you are exhibiting at K, then please let us know about the new products you will be showing. Send your press releases to the editor, Lou Reade at **lou@pipeandprofile.com**. Full details of our special coverage of K can be found in our **media pack**.

Dates: 16-23 October 2019 **Venue:** Dusseldorf Fairground, Dusseldorf, Germany
Hours: 10:00 to 18:30 daily **Organiser:** Messe Dusseldorf **Website:** www.k-online.de

Click for information

Use our hand-picked selection of weblinks to make sure you have a productive and enjoyable visit to K2019

BUY YOUR TICKETS

Purchasing your tickets online in advance can save you up to €47. A three-day ticket bought online costs €108 instead of €155 when purchased at the exhibition. One-day tickets are €49 in advance or €75 at the show. Order your tickets now by clicking **here**

GET K ON YOUR SMARTPHONE

Lots of useful K 2019 data is now available on your smartphone or tablet, including exhibitor and product databases, exhibition plans, travel information, hotel listings, city guides and restaurant reviews. To download the app, visit the page **here**, which has links to either the AppStore (for iPads and iPhones) or Google Play (for Android devices). There are also instructions for users of BlackBerry mobile devices.

BOOK YOUR HOTEL

Dusseldorf's hotels quickly fill up for the eight days of K and the best options go early. Find out what's still available and make your reservation as soon as possible at the official **website**

MAKE THE MOST OF DUSSELDORF

After a hard day at the show you will have earned some relaxation time. Make the most of your evenings in the city by checking out the restaurants, pubs, bars, culture and entertainment on offer.

This official guide has useful listings as well as guides to the sights and neighbourhoods: **http://bit.ly/DusseldorfGuide**

Also worth a look is the Wikitravel page on the city: **http://bit.ly/wikiguide**

And if the Altstadt and its 260 pubs get too crowded, try heading to the Media Harbour, for its modern architecture and venues, which include restaurants, bars and clubs. Find out more about the area's attractions here: **http://bit.ly/K2019mediaharbour**

ORGANISE YOUR TRAVEL

Dusseldorf is well connected and getting around the city is easy thanks to its excellent public transport network. And don't forget that your admission ticket for the exhibition allows you to use the local buses and trains for free. Full details of this offer can be found in the Messe Dusseldorf travel guide along with lots of information about travelling to and around the city. It also contains plenty of useful maps. Download the guide from **here**

CHECK OUT THE EXHIBITORS

With more than 3,000 exhibitors to choose from and a total exhibition area of more than 170,000m², it makes sense to plan your time at the show before you head off. The good news is that you can search for participating companies by name and by product using the daily-updated online K2019 database.

To search by company, click **here**

To search by products, click **here**

You can also locate companies using the interactive floorplan which can be found **here**

SOAK UP SOME CULTURE

There is more to Dusseldorf than K – it is the capital of North Rhine-Westphalia, after all. The city is home to more than 100 galleries and museums but the biggest is the Museum Kunstpalast, located in the centre of the city near Königsallee. During the fair, the Kunstpalast's special events include: a retrospective of Dortmund-born artist Norbert Tadeusz, including around 40 paintings and works on paper; and an exhibition of art created in the former East Germany.

Find out more here

TRY THE RETAIL EXPERIENCE

If retail is your thing – and especially designer goods – then Dusseldorf will not disappoint. Königsallee – known as 'Kö' to locals – includes many of Europe's leading fashion names and is likened with Knightsbridge in London or Fifth Avenue in New York. But neither of those locations can boast a setting to match the tree-lined man-made 'river' that runs through this premium shopping district. Catch the flavour here: **http://bit.ly/K2019konigsallee**

DON'T FORGET THE ALTBIER!

Regular K visitors will already know that Dusseldorf's local brew is the Altbier, a malty copper-coloured ale of around 4.5% strength produced using a special top-fermented lagering method. The name translates as 'old beer' but is actually derived from the Latin word 'altus', which means 'high' and refers to way the yeast rises during brewing. Try it out in one of the city's on-premise brew-pubs. Details of these and a short history of Altbier can be found here: **http://bit.ly/K2019altbier**

COMPOUNDING WORLD EXPO

PLASTICS EXTRUSION WORLD EXPO

PLASTICS RECYCLING WORLD EXPO

POLYMER TESTING WORLD EXPO

November 4 - 5, 2020
Huntington Convention Center
Cleveland, Ohio, USA

Connect with your target customers in a cost-effective and time-efficient way

Make sure you secure the best position!

CLICK HERE TO BOOK YOUR STAND TODAY

exhibition_sales@ami.international
+1 216 647 0018
www.ami.international/exhibitions

Proudly supported by:

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

Extruder technology: digital data in control

In the lead-up to K2019, we preview some of the extruder innovations that will be on show there – including a number of digital and control technologies

The advent of digitalisation continues to drive change within manufacturing. New ways to gather, analyse and store data can help to boost the performance of all types of process machinery – including extruders.

KraussMaffei says that all extrusion machinery – no matter its age – can be given a 'digital retrofit' to make it 'fit for Industry 4.0'.

The company's Digital & Service Solutions (DSS) business unit will showcase a retrofitted machine at this year's K2019 show.

"As of now, various bundles enable the networking and use of data for all machine generations and makes in the area of injection moulding," said the company. "Soon, extrusion technology will also be integrated into the common data ecosystem."

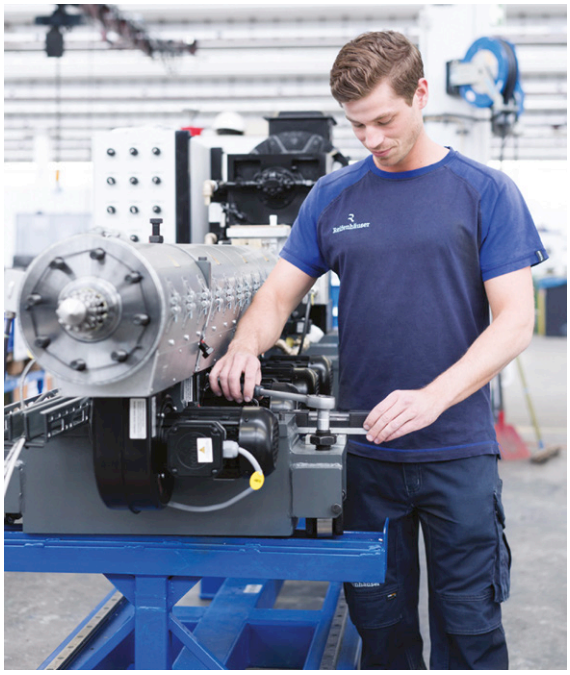
Industry 4.0 describes the way in which machinery can become more interconnected with its environment. For instance, fitting a variety of sensors to the machine – and instantly sharing the information from them – allows operators and managers to improve performance.

With its retrofit program, KraussMaffei says it creates the technical prerequisite for connectivity– across processes, generations and, later, even across manufacturers.

"Wherever data arises, it also needs to be stored," said the company. "This can take place entirely in the cloud – via a gateway computer – or near-network, by means of Edge computing."

Advantages include quality improvement,

Main image: DataXplorer is now available for all types of KraussMaffei machinery, including extruders



Right: Reifenhäuser Extrusion Systems (RES) offers to retrofit all types of extrusion machinery – not just its own

production control, and greater efficiency – thanks to the reduction of maintenance, energy, material and personnel costs.

"In the future, businesses will be competitive only if they have a networked system of production," said KraussMaffei.

KraussMaffei already offers tools such as the DataXplorer, which stores up to 500 signals per second as continuous curves, to reveal details about the production process. These signals can originate from sources such as the machine itself, from the tooling or from peripherals. DataXplorer opens the door to status and process monitoring for extrusion, said the company.

Because some companies do not want to get involved with data analysis, DSS offers the option to outsource specific analysis knowledge. Using the available information, experts can help to boost process optimisation, generate customer-specific reports and provide data-driven guidance in order to make better decisions.

Replacement service

Reifenhäuser has launched a new business unit – called Reifenhäuser Extrusion Systems (RES) – which offers to retrofit all types of extrusion machinery

This covers a number of product areas, including screws and barrels, extruders and extrusion tools. The company says that retrofitting can help to raise machine performance – in terms of energy efficiency and output, for instance.

"Why exchange your extruder or die for a new one if it's cheaper not to?" said Philip Neumann, sales director at Reifenhäuser. "We offer customised, yet affordable solutions to update existing lines to the latest state of the art."

For the first time, the company will supply its extrusion components for any extrusion line. They will be available to all customers – and not only to its own affiliates, it said.

Right: Battenfeld-Cincinnati's Alpha Plus extruder includes its BCtouch UX compact control system

Alpha upgrade

Battenfeld-Cincinnati has upgraded its Alpha extruder – launched at K2001 – with the Alpha Plus version, which includes its BCtouch UX compact control system.

The basic extruder remains the same, says the company: it is used as a universal extruder to make small technical profiles or small pipe, or as a co-extruder in other applications. It is compact, and suitable for use in production halls with limited space. Alpha extruders are available in sizes of 45, 60 and 75mm as standard models, with the option to incorporate a feed zone with either fine or coarse grooves.

The new control unit will be seen for the first time at K2019 this year. Until now, Alpha extruders were fitted with a relay control as standard. The new version includes the BCtouch UX compact control system, which is fitted as standard in all Battenfeld-Cincinnati extruders.

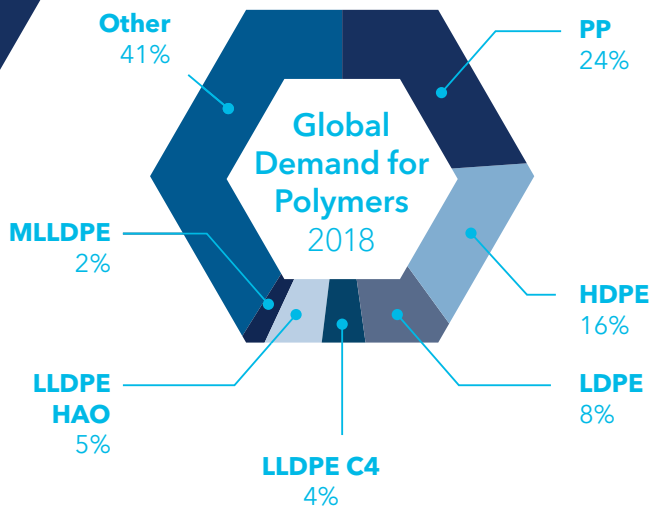
BCtouch UX has a simple, intuitive operation and optimised software, says the company. The compact version, used in Alpha Plus extruders, comes with a 12in screen to provide a clear overview of all the necessary features. Pop-ups for settings and data entries mean that the system can be operated with limited training. A high-performance temperature- monitoring module is integrated in the compact control system, which is

Polyolefin Additives 2019

12 - 14 November 2019
Imperial Riding School Renaissance Hotel, Vienna, Austria

Join the discussion at the Polyolefin Additives Conference. Meet with leading experts from across the supply chain to discuss and debate opportunities for growth in this vast industry.

SPECIAL OFFER!
REGISTER NOW FOR
€350 DISCOUNT
INPUT CODE
POA2019



© AMI Consulting

Session topics include:

- market overviews for the industry and regulations
- recycling and the circular economy
- the use of additives to enhance and optimise performance

Meet some of our expert speakers:

Mr. Domingos Rodrigues
Procurement and Sustainable Development Manager
GRAHAM PACKAGING INTERNATIONAL

Dr. Keith Keller
Research and Development Manager
Milliken

Mr. Hagen Hanel
Head of Plastics Recycling Innovation Center
APK

Dr. Hartmut Siebert
Technical Marketing Manager Packaging, Business Line Performance Additives
CLARIANT

Examining the demand for Polyolefins:

Polyolefins are one of the fastest growing areas of world polymer demand, claiming around 60% of all polymer usage.

There is also great opportunity for new application development as thermoplastics have to meet increasingly stringent performance criteria.

The performance of additives is therefore critical to market growth.

Learn about the latest developments in materials and additives at this conference.

DOWNLOAD THE FULL PROGRAMME HERE

www.ami.ltd/PolyolefinAdditives

AMI

Bringing the plastics industry together

critical for temperature-sensitive raw materials.

Two gravimetric dosing systems can be integrated in order to keep energy and material costs to a minimum. The Alpha Plus extruder combines a cost-effective and readily available standard extruder with an intuitive, easy-to-operate control system, says the company. As before, the version with relay control is available in the 'Alpha basic' variant. The modular structure of the newly developed control cabinet also makes it possible to retrofit the BCtouch UX compact at a later date.

As well as showing an Alpha Plus 60-25 B at the show, Battenfeld-Cincinnati will also demonstrate a SolEx NG 75-40D – a high-performance, single-screw extruder that offers high melt homogeneity, low melt temperatures and low energy consumption.

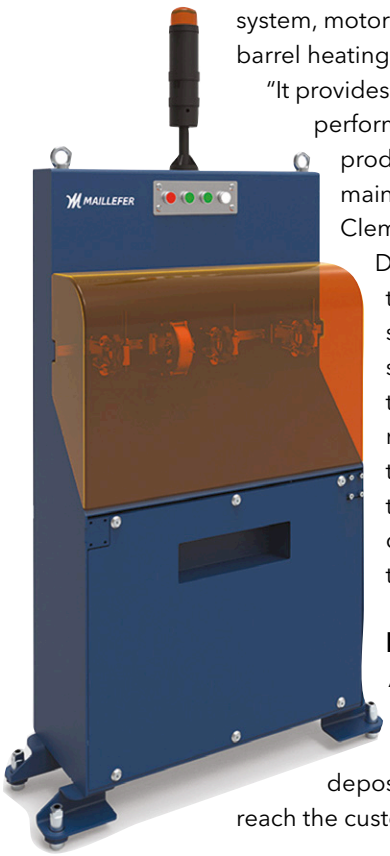
Extruder monitoring

At this year's Chinaplas, **Davis-Standard** showcased its DS Activ-Check system for continuous extruder monitoring.

The equipment – developed in response to increased demand for 'smart' technology – enables processors to take advantage of real-time preventative maintenance by providing early notifications of potential extruder failures. Machine operators are alerted to issues before they happen, preventing unnecessary downtime while also collecting valuable data. Key parameters monitored include extruder reducer, lubrication system, motor characteristics, the drive power unit, barrel heating and cooling.

"It provides data for processors to improve performance, including being able to plan production around scheduled maintenance activities," said John Clemens, director of extrusion controls at Davis-Standard. "Having the capability to monitor extrusion line variables such as mechanical and electrical system conditions is essential in order to bring products to market faster and minimise unplanned downtime. This technology will also allow customers to address a pending condition that could become a more serious issue in the future."

Below: Maillefer's TOA 32 helps identify die drool deposits within pipes



Detecting die drool

At the same time, its subsidiary **Maillefer** says that its TOA 32 detector helps identify die drool deposits within pipes – so that they never reach the customer. It is aimed at products such as blown fibre micro-ducts.

Die drool is a common phenomenon and originates on the extrusion die face. Molten plastic gradually accumulates, and eventually forms a deposit – which drops off into the product and is hidden within the tube. If it is not detected and removed, it leads to a sub-standard product that the customer will want replaced.

It can be included as part of a new line, or retrofitted, and offer precise fault alerts, said the company. It also includes a scrap separation feature.

At the same time, the company has three dedicated machines at its Swiss R&D centre, which are available for running trials.

The MXC extruders can be used to test various extruder functions including bleed tests, screw and barrel choice and temperature profile optimisation. Recommendations and consultation are provided for each.

Customers can choose from either an MXC 80-30D, 60-30D or 45-24D extruder, with corresponding tooling. For closer analysis, the 45-24D extruder is equipped with temperature gauges placed along the barrel's full length.

"We prepare the extruder configuration for you, and our specialists accompany you throughout the trial period – which typically lasts between one and three days," said Yves Zweifel, R&D/process manager at Maillefer.

Maillefer has also extended its consultation programme, to help customers improve performance. It has recently launched seven new 'packages' in various areas.

As well as extruder bleed tests and die drool (mentioned previously), the packages include a pilot irrigation line – to help accelerate product development in this area.

"This pilot line is ready for you to test your thin-wall micro-drip irrigation tube product – with options for stripe and skin – but you can also do accelerated trials for other single-layer pipe," said the company.

There are also options to add a sixth functional layer to automotive tubes, and extend micro-duct runs in order to reduce the number of joints.

"Consultation doesn't necessarily require new equipment, but it always involves sharing know-how," said the company.

CLICK ON THE LINKS FOR MORE INFORMATION:

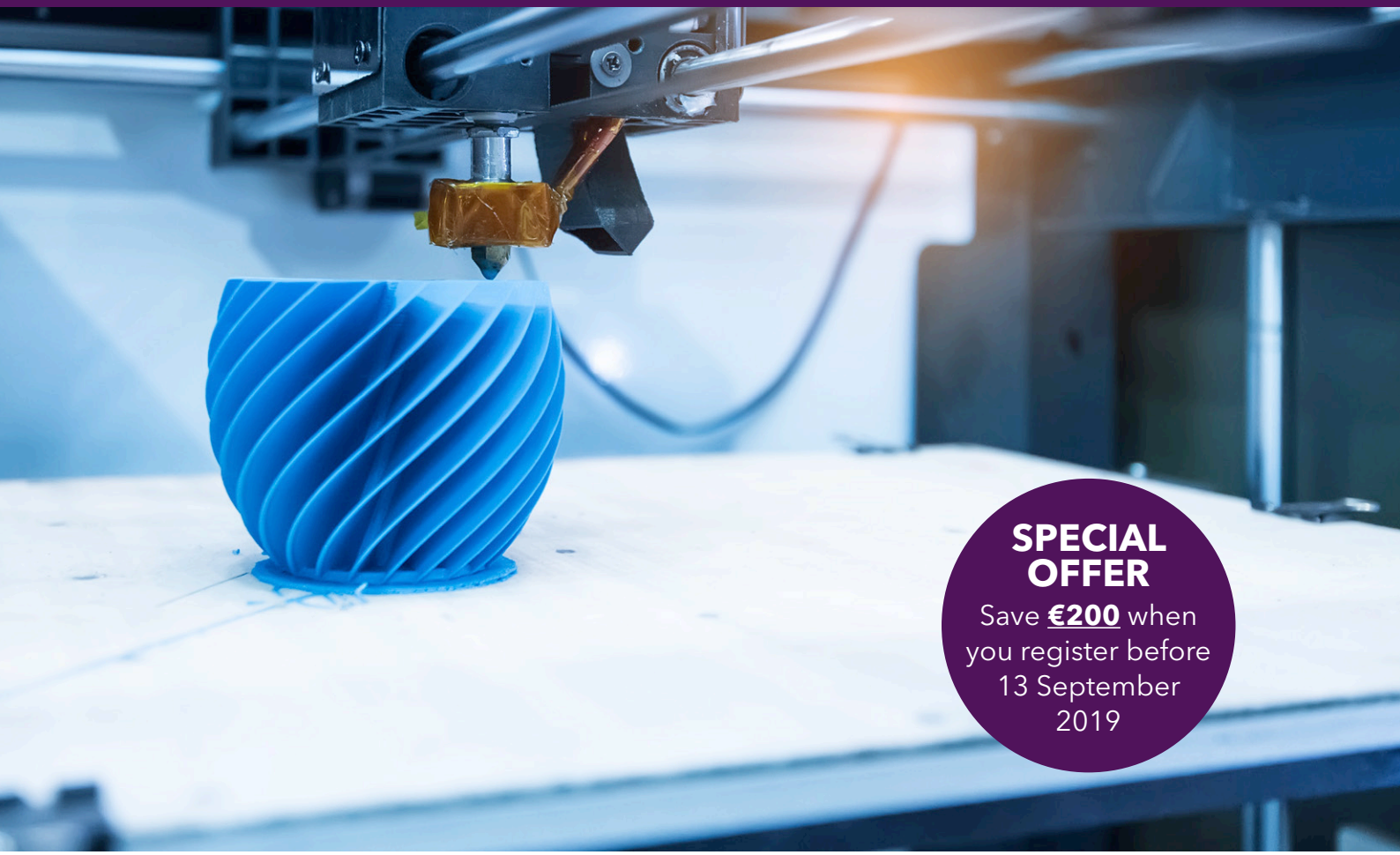
- **www.kraussmaffei.com**
- **www.reifenhauser.com**
- **www.battenfeld-cincinnati.com**
- **www.davis-standard.com**
- **www.maillefer.net**

Polymers for 3D Printing

Düsseldorf / 2019

Developing polymers and filaments for optimised 3D printing applications

11 - 12 December 2019,
Meliá Düsseldorf, Düsseldorf, Germany



SPECIAL OFFER
Save **€200** when you register before 13 September 2019

Media supporter:

Compounding WORLD Injection WORLD

Oil & Gas Non-Metallics

London / 2019

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

4-5 December 2019
Amba Hotel Marble Arch, London, UK

SPECIAL OFFER
Save **£200** if you register before 27th September 2019

Headline Sponsor

TEIJIN

Also sponsored by:

aramco

Media supporters:

InnovOil NEWSBASE Petroleum Africa Pipe and Profile EXTRUSION WorldOils

AMI

Bringing the plastics industry together.

@Contact_AMI #AMIOil

Oil & Gas Non-Metallics

London / 2019

Wednesday 4th December 2019

08:00 Registration and welcome coffee
09:00 Opening announcements

SESSION 1 – POLYMER OPPORTUNITIES IN OIL AND GAS

09:10 **Development of a computational design analysis tool for selection of downhole composite tubulars – a progress update**
Dr. Thibault Villette,
SAUDI ARAMCO, Saudi Arabia

09:40 **Application of polyimide seats in ball valves for cryogenic applications**
Ms. Lucie Noe,
DUPONT SPECIALTY PRODUCTS OPERATIONS SARL, Switzerland

SESSION 2 – INNOVATIONS IN HIGH PERFORMANCE POLYMERS

10:10 **Thermoplastic vulcanizates for offshore oil & gas applications**
Dr. Krishnan Iyer, Product Development Engineer, Polymer Technology,
EXXONMOBIL, United States

10:40 Coffee break

11:20 **Carbon fibre reinforced PA12 for deep sea TCP applications – material behaviour under service conditions**
Mr. Carsten Schuett, Sen. Project Manager Composite Development Oil & Gas,
EVONIK RESOURCE EFFICIENCY GmbH, Germany

11:50 **A new high temperature PEEK solution for HP/HT applications**
Mr. Mike O'Brien, Global Market Manager Oil and Gas,
SOLVAY SPECIALTY POLYMERS, United Kingdom

SESSION 3 – POLYMERIC SOLUTIONS FOR PIPE AND HOSE

12:20 **Case study - fast and cost effective rehabilitation of corrosion-damaged steel pipe using reinforced co-extruded thermoplastic pipes**
Dr. Liang Yu, Chief Technology Officer – Engineering Manager,
BHGE, United States

12:50 Lunch

14:20 **Subsea pipeline rehabilitation with composite repair systems – selection and examples**
Mr. Ludovic Poix,
3X ENGINEERING, Monaco

14:50 **Development of a novel low-cost and environmentally-friendly composite laminate system for oil and gas pipe repairs**
Dr. Michail Kalloudis, Technical Manager,
IMPACT SOLUTIONS, United Kingdom

15.20 PANEL DISCUSSION - Polymeric material trends and technical developments in the oil and gas industry

Mr. Nicolas Singling, Polymer, Insulation and Anticorrosion Coating Specialist,
SAIPEM SA, France

Dr. Ihsan Al-Taie, Chief Technologist,
SAUDI ARAMCO, Saudi Arabia

Mr. Thomas Epsztein, Composite Materials Project Manager,
TECHNIPFMC, France

Dr. Denis Melot, Coating, Polymer and Composite Specialist,
TOTAL, France

More panellists to be confirmed

16:20 Coffee break

SESSION 4 – TESTING AND QUALIFICATION OF POLYMERS FOR OIL AND GAS

17:00 **Testing hydrogen resistance of spoolable reinforced plastic piping systems**
Mr. Sjoerd Jansma, Material Consultant,
KIWA TECHNOLOGY, Netherlands

17:30 **Selection of high performance non-metallic materials for offshore oil and gas applications**
Dr. Frederic Vincent, Material Engineer for Offshore O&G Applications
Polymer & Material Sciences, PhD,
SBM OFFSHORE – SBM FRANCE SAS, France

18:00 **A new methodology for high temperature CD testing of high temperature anti-corrosion coatings**
Mr. Espen Ommundsen, Principal Researcher,
NORNER RESEARCH AS, Norway and
Mr. Jan Peder Hegdal, Product R&D Lead – Flow Assurance,
SHAWCOR, Norway

18:30 Networking Cocktail Reception

Thursday 5th December 2019

08:30 Welcome coffee
09:00 Opening announcements

SESSION 5 – PREDICTING AND EXTENDING COMPONENT LIFETIMES

09:10 **Predicting long-term strength of polymers and composites in water or oil at different temperatures based on extended viscoelastic theory**
Prof. Andreas T. Echtermeyer, Professor,
NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY (NTNU), Norway

09:40 **Environmental aging of thermoplastic composite materials for oil and gas applications**
Dr. Ramin Moslemian, Principal Scientist,
DNV GL, Norway

10:10 **Simulated service test - new lifetime estimation methodology for subsea insulation based on liquid silicone rubber**
Mr. Roman Vanecek, Technical Service and Development Specialist,
DOW SILICONES DEUTSCHLAND GmbH, Germany

10:40 Coffee break

11:20 **Life estimation and degradation evaluation of elastomer seals for oil and gas – a new JIP**
Dr. Alexandra Torgersen, Consultant/CEO,
ALEXANDRA TORGERSEN ENGINEERING AS, Norway

SESSION 6 – IMPROVING PERFORMANCE OF SEALING SYSTEMS

11:50 **Analysis of iso-thermal and cyclo-thermal compression stress relaxation behaviour of specialty elastomeric O-rings**
Dr. Ahmed Farid, Retained Consultant,
ARTIS, United Kingdom

12:20 Lunch

13:50 **Low temperature vulcanising elastomer systems for applications at extreme temperatures and pressures**
Mr. Adam Jackson, Technical Manager,
TRELLEBORG OFFSHORE, Norway

14:20 **Examination and research on applicability of polymeric seal materials in supercritical CO2 environments**
Mr. Nan Ding, Engineer,
CNPC TUBULAR GOODS RESEARCH INSTITUTE, China

14:50 **Analysis of HNBR elastomer extrusion resistance in seal packer applications**
Mrs. Marjan Hemstede – Van Urk, Technical Manager,
ARLANXEO PERFORMANCE ELASTOMERS, Netherlands

15:20 Coffee break and conference ends

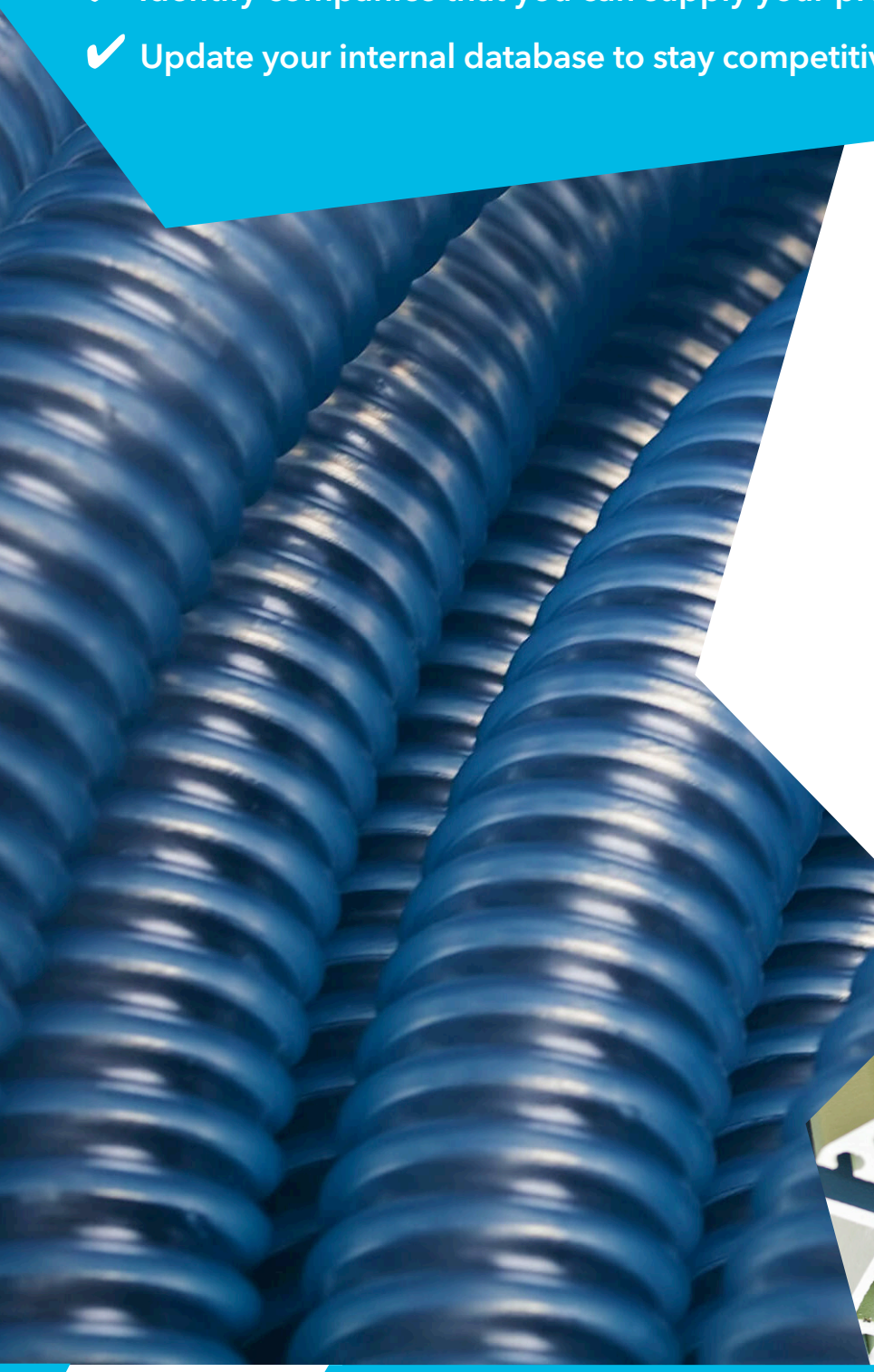
Conference Lanyards sponsored by: aramco

Conference Signage sponsored by: aramco

AMI reserves the right to alter the programme without notice.
The latest programme, including any new speakers, changes to the schedule, and any amendments to pricing and terms and conditions can be viewed on our website: www.ami.international

Thermoplastics Profile, Tube and Hose Extruder in Europe databases

- ✔ Research the trends and key players
- ✔ Identify companies that you can supply your products to
- ✔ Update your internal database to stay competitive



Access the following information for profile, tube and hose extrusion sites:

- Managerial contact details
- All polymers processed
  Rigid and flexible PVC, LDPE, PP, TPEs
- End use markets supplied/ products manufactured
- Number of extrusion lines
- Compounding details

Make sure you are updated on this niche market for 2019!

Get sample Excel data **HERE**

AMI

Bringing the plastics industry together.

POLYOLEFINS

Sibur collaborates with Norner and BASF on separate material projects

Russian petrochemicals and plastics company Sibur has signed two agreements to develop new materials: one with German giant BASF, the other with Norwegian research organisation Norner.

With Norner, it will cooperate in product development and polymer recycling at Sibur's PolyLab R&D centre. Norner has worked with Sibur on several projects during the last seven years. Under the new agreement, the two companies will jointly develop new product solutions and optimise polymer stabilising formulas. These will include new 'green' polymer grades, catalysis testing, and new chemical and technical recycling technologies.

"Partnering with Norner will take our polymer production to the next level and help us launch advanced grades in line with the highest environmental standards," said Sergey Komyshan, executive director at Sibur.

PolyLab develops polymers – for existing products, and for new products in various industries. Samples of new polyethylene (PE) and polypropylene (PP) grades will be transformed on its pilot manufacturing lines into pipes and other products.

Sibur will also work with BASF to develop 'innovative polymer solutions' at Polylab. The companies will use new digital technologies in production and R&D to develop a new range of polymers using BASF's plastic additives technology. In addition, BASF will provide its technical expertise to develop new technology tests at PolyLab.

They also plan to develop new high-performance additive solutions, focusing on highly demanding converting conditions for polymers and specifically targeting long term durable goods.

"At BASF, we are committed to developing additive solutions that perform economically and last longer," said Achim Sties, senior vice president of performance chemicals for Europe at BASF.

Pavel Lyakhovich, managing director of Sibur, added: "The new agreement unlocks new opportunities for all consumers of polymer products. We will develop modern synthetic materials that are advanced and sustainable."

› **www.sibur.ru**
› **www.norner.no**
› **www.basf.com**

PLASTICISERS

Non-phthalate plasticiser is part-renewable

Perstorp has developed a non-phthalate plasticiser called Pevalen Pro.

The material will initially be available with up to 40% renewable content – with plans to make it fully renewable in future. The company says this will give flexible PVC a lower carbon footprint. It adds that the renewable polyol ester also provides superior performance.

Jenny Klevås, global marketing and product manager for polyol ester plasticisers, said: "We believe that flexible PVC with Pevalen Pro offers precisely what brand owners and consumers are looking for: a high-performance product with a significantly better environmental footprint."

Perstorp says that Pevalen has high plasticising efficiency (as less material is required), faster processing (so less energy is needed), low volatility and high UV stability (which prevents premature ageing).

Pevalen Pro is a direct replacement for Pevalen, making it very easy to switch to. The renewable grades are made under the Mass Balance concept and backed by third-party ISCC Certification, says Perstorp.

› **www.perstorp.com**

EXTRUSION

KraussMaffei plans new extrusion equipment plant in Hanover for 2022

KraussMaffei is to build a new plant for extrusion technology in Hanover in Germany.

It plans to build a 55,000 sq m production hall and office complex, on an 80,000 sq m area in the Laatzen/Rethen Ost business park. Construction is scheduled to start this year and should be completed by the end of 2022. The new location will have a state-of-the-art technical centre, production and office facilities – and space for up to 750 employees

"We are delighted that, with this new building project, we have created the basis for further growth," said Matthias Sieverding, president of extrusion technology at KraussMaffei. "We consciously chose the Hanover region as the location in order to shape the future with our experienced employees."

The main feature of the new company headquarters will be an innovation centre with the latest extrusion technology. Extrusion experiments can be carried out on different systems under realistic production conditions, says the company. More than 20 machines – from a small laboratory system through to a production machine – will be available. There will also be special emphasis on technology for processing plastic waste.

In the new building, KraussMaffei will align its production with the principles of Industry 4.0. In Laatzen, it will set up a smart factory with networked production and data processing in real time, visualised processes and data evaluation. In production, the company says it will increase efficiency with modern machine tools, and reduce throughput times for extrusion components.

"This will also benefit our customers, as we will optimise delivery deadlines," said Sieverding.

› **www.kraussmaffeigroup.com**

ANCILLARIES

Large desiccant dryers with common touchscreen control

Conair says that its new D series of large desiccant dryers provides a wide range of features as standard.

With nominal throughputs of 600-5000 lbs/hr (272-2268 kg/hr), Conair says it is simplifying its large dryer offering. Every model is built around proven desiccant-wheel drying technology and a common touchscreen control interface.

"We believe that our standard D Series feature package will meet the needs of 90% of our drying customers," said AJ Zambanini, dryer product manager at Conair. "For those who need additional capabilities, the advanced options that remain have been pre-engineered to simplify ordering and speed delivery."

Conair's large-dryer launch follows its introduction last year of redesigned small and medium-sized portable dryers. Like these, the latest models feature the DC-C programmable electronic control, software, and interface developed specifically by Conair for drying applications. The standard DC-C Premium control system offers a 7in colour touchscreen user interface and a other features, including: temperature setback; dew-point monitoring and control; real-time trending; a library of customisable resin-drying recipes; and energy usage metering.

Also new in the D Series, Conair has enhanced the desiccant wheel system, adding more precise rotational control to ensure optimal desiccant heating, cooling, and drying performance.

It eliminates the instability and maintenance headaches associated with loose-desiccant dryers while producing extremely stable, low-dew point drying air, according to the company.

› **www.conairgroup.com**

Field Joint Coating 2019

Identifying & overcoming the challenges in coatings, rehabilitation and pipe maintenance

8 - 9 October 2019
Park Plaza Victoria, London, United Kingdom

SPECIAL OFFER
Save **£200** when you register before 19th July 2019

Sponsored by:

SHAWCOR

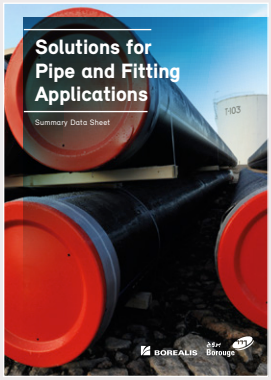
Media supporter:

Pipe and Profile EXTRUSION

Download these new product brochures

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

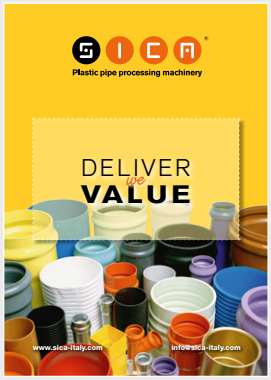
BOREALIS: PIPE POLYMERS



Borealis has been a key supplier to the pipe industry for more than 50 years. This six-page brochure details its full range of PE and PP pipe resins for production of pipes and fittings for a wide variety of infrastructure applications.

❯ CLICK HERE TO DOWNLOAD

SICA: PIPE PROCESSING



This brochure from Sica covers the company's full range of performance pipe finishing equipment including its novel TRS-W cutting and chamfering, Unibell electric belling and robotised packaging machines.

❯ CLICK HERE TO DOWNLOAD

ZUMBACH: MEASUREMENT CONTROL

This eight-page brochure details the main features of Zumbach's Wallmaster measurement and control system for improving product quality, process stability and data capture in plastic tube and pipe extrusion applications.

❯ CLICK HERE TO DOWNLOAD

HEXPOL: DRYFLEX TPE

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

UNICOR: PIPE CORRUGATION

This brand new 48-page brochure from Unicor provides detailed insight into the design, production, applications and advantages of corrugated pipes. It includes specification data on the company's wide range of pipe corrugation equipment.

❯ CLICK HERE TO DOWNLOAD

DAVIS-STANDARD: PIPE & PROFILE

Davis-Standard supplies a wide range of extruders and extrusion systems for pipe, profile and tubing applications, including medical tubing. This brochure details the range of equipment available and key performance benefits.

❯ 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

Learn more about AMI's upcoming conferences

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

MASTERBATCH 2019

AMI's Masterbatch conference has been the meeting point for this international industry since 1987. The 2019 event takes place in Vienna in Austria on 10-12 September and provides an unmissable learning and networking opportunity.

› CLICK HERE TO DOWNLOAD

POLYMERS IN FLOORING USA

The third North American Polymers in Flooring conference takes place on 17-18 September in Atlanta, GA, USA, providing a forum to explore the latest market trends and new developments in product design and production technology.

› CLICK HERE TO DOWNLOAD

POLYMER TESTING & ANALYSIS

The 4th edition of the Polymer Testing & Analysis conference, taking place on 18-19 September 2019 in Düsseldorf, Germany, will gather together laboratory staff, researchers and R&D professionals who develop, test and analyse new polymer materials.

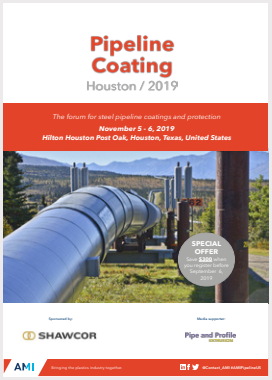
› CLICK HERE TO DOWNLOAD

COMPOUNDING WORLD ASIA

Find out more about the dynamics and developing technical and market demands of the Asian compounding industry at AMI's fifth Compounding World Asia conference. The event takes place in Bangkok, Thailand on 25-26 September.

› CLICK HERE TO DOWNLOAD

PIPELINE COATING HOUSTON 2019



AMI's fourth Pipeline Coating Houston conference takes place on 5-6 November 2019. It will bring together North American pipeline operators, contractors, pipe coaters, researchers and specifiers to discuss the latest sector trends and technologies.

› CLICK HERE TO DOWNLOAD

POLYOLEFIN ADDITIVES 2019

Taking place in Vienna in Austria on 12-14 November, attendees at Polyolefin Additives will learn more about the latest additive technology trends in the polyolefin resins market, including vital steps to implementing the circular economy.

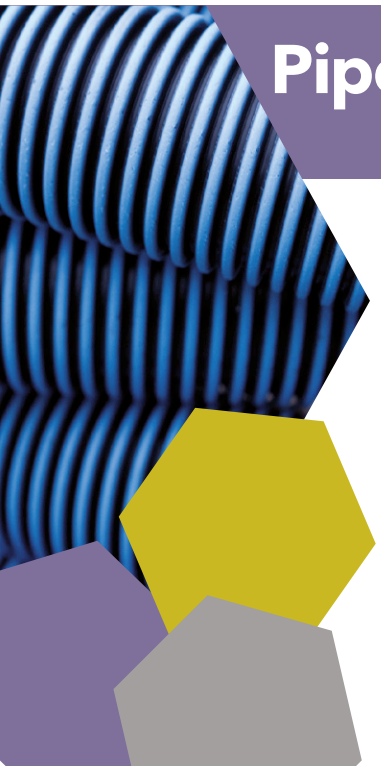
› CLICK HERE TO DOWNLOAD

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

Valrom

Head office:	Bucharest, Romania
CEO:	Catalin Coraci
Founded:	1996
Ownership:	Private
Turnover (2018):	Around €60 million
Employees:	Around 400
Profile:	Founded in 1996, Valrom is a specialist in plastic pipes and fittings for water and gas networks, for sewage systems, and for providing geothermal energy to houses. It uses the technology and expertise of its Italian parent company, Valsir. Its products are sold across the region, and it has outlets in countries including Moldova, Ukraine, Bulgaria, Slovakia and Greece. It says it is the largest regional producer of thermoplastic pipes and fittings.
Product lines:	The company's products are used either in infrastructure, or in buildings. In infrastructure, it supplies pipe for water (WaterKIT) and gas delivery (GasKIT), agricultural irrigation (AgriKIT), drainage (DrainKIT) and sewage (KompactKIT). In buildings, its products are used for drainage (EasyKIT and SafeKIT), plumbing (PexKIT) and for geothermal energy (SolairKIT). Pipes are made from a variety of materials, including HDPE, PP-R and PEX. At the same time, its WaterPRO pipe is used to transport drinking water. In total, it says its portfolio extends to more than 13,000 products.
Factory locations:	Valrom operates from three locations. It has two factories in Romania – in Bucharest, and nearby Pantelimon – as well a third factory in Vinitza, Ukraine. In addition to pipe, it also makes rotomoulded products.

To be considered for 'Extruder of the Month', contact the editor on lou@pipeandprofile.com



Pipe and Profile EXTRUSION FORTHCOMING FEATURES

The next issues of Pipe and Profile Extrusion magazine will have special reports on the following topics:

September 2019
Medical tubing
Window profile developments
Downstream equipment
K2019 show preview

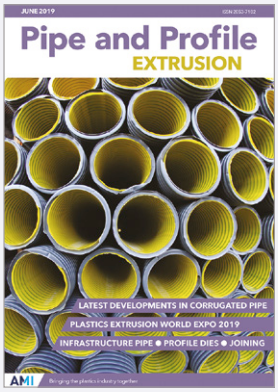
October 2019
PVC-O pipe
Pipe inspection technologies
Materials handling equipment
K2019 show issue

Editorial submissions should be sent to Lou Reade: lou@pipeandprofile.com

For information on advertising in these issues, please contact:
Claire Bishop: claire.bishop@ami.international Tel: +44 (0)1732 682948
Levent Tounjer: levent.tounjer@ami.international Tel: +44 (0)117 314 8183

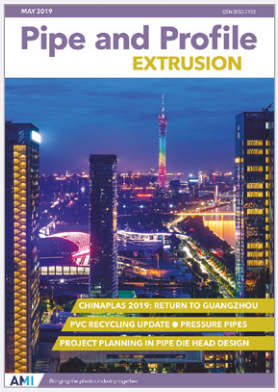
Keep informed: read our latest editions

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



Pipe and Profile
June 2019
The June issue of Pipe and Profile Extrusion includes features that cover infrastructure pipes, profile die control, pipe corrugators and pipe weld assessment. Plus it has a review of the Plastics Extrusion World Expo in Cleveland, US, in May.

› CLICK HERE TO VIEW

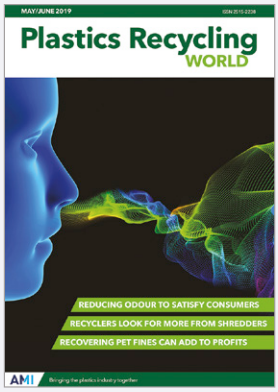


Pipe and Profile
May 2019
The May edition of Pipe and Profile Extrusion looks at the essential steps required when planning a new die design project. It also reviews the latest pressure pipe materials and recycling moves, plus previews the upcoming Chinaplas show.

› CLICK HERE TO VIEW

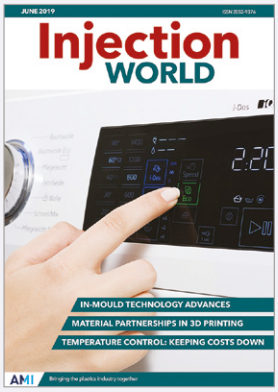
Compounding World
July 2019
The July edition of Compounding World takes a look at the development and application of antimicrobial additives. It also reviews the latest innovations in melt filters, colour measurement and feeding technology.

› CLICK HERE TO VIEW



Plastics Recycling World
May/June 2019
The May-June edition of Plastics Recycling World looks at how additives suppliers and machinery makers are tackling the issue of odours in post-consumer recyclate. Other features cover new shredder technology and processing rPET fines, plus Plastics Recycling World Expo.

› CLICK HERE TO VIEW



Injection World
June 2019
The June edition of Injection World magazine looks at the latest innovations in decorative and functional IML technologies. It also explores developments in additive manufacturing and temperature control.

› CLICK HERE TO VIEW

Film and Sheet
June 2019
The June edition of Film and Sheet Extrusion reviews the latest developments in plastic pouches. It also takes a look at the newest innovations in thermoforming machinery, printing technology and blown film dies.

› 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

2019	**2-4 September**	Interplastics-Kazan, Kazan, Tartarstan	www.k-globalgate.com
	18-21 September	T-Plas/Tiprex, Bangkok, Thailand	www.tplas.com
	16-23 October	K2019, Dusseldorf, Germany	www.k-online.com
	25-28 November	Plastivision Arabia, Sharjah	www.plastivision.ae
	27-29 November	Plastics & Rubber Vietnam	www.plasticsvietnam.com
2020	**13-16 January**	Saudi Plastics & Petrochem, Riyadh	www.saudipp.com
	16-20 January	Plastivision India, Mumbai, India	www.plastivision.org
	21-23 January	Swiss Plastics, Lucerne, Switzerland	www.swissplastics-expo.ch
	28-31 January	Interplastica, Moscow, Russia	www.interplastica.de
	9-11 March	Plast Alger, Algiers, Algeria	www.plastalger.com
	11-13 March	Expo Plasticos, Guadalajara, Mexico	www.expoplasticos.com.mx
	8-11 June	Argenplas, Buenos Aires, Argentina	www.argenplas.com.ar
	21-25 September	Colombiaplast, Bogota, Colombia	www.colombiaplast.org
	13-17 October	Fakuma, Friedrichshafen, Germany	www.fakuma-messe.de

AMI CONFERENCES

10-12 September 2019	Masterbatch, Vienna, Austria
18-19 September 2019	Polymer Testing & Analysis, Dusseldorf, Germany
5-6 November 2019	Medical Tubing, Minneapolis, USA
12-13 November 2019	Profiles, Cologne, Germany
12-14 November 2019	Polyolefin Additives, Vienna, Austria
4-5 December 2019	Oil & Gas Non-Metallics, London, UK
24-25 March 2020	PVC Formulation, Cleveland, USA
2-3 June 2020	Profiles, Cleveland, USA
2-3 June 2020	Oil & Gas Polymer Engineering, Houston, USA
17-18 June 2020	Medical Tubing, 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.pipeandprofile.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.