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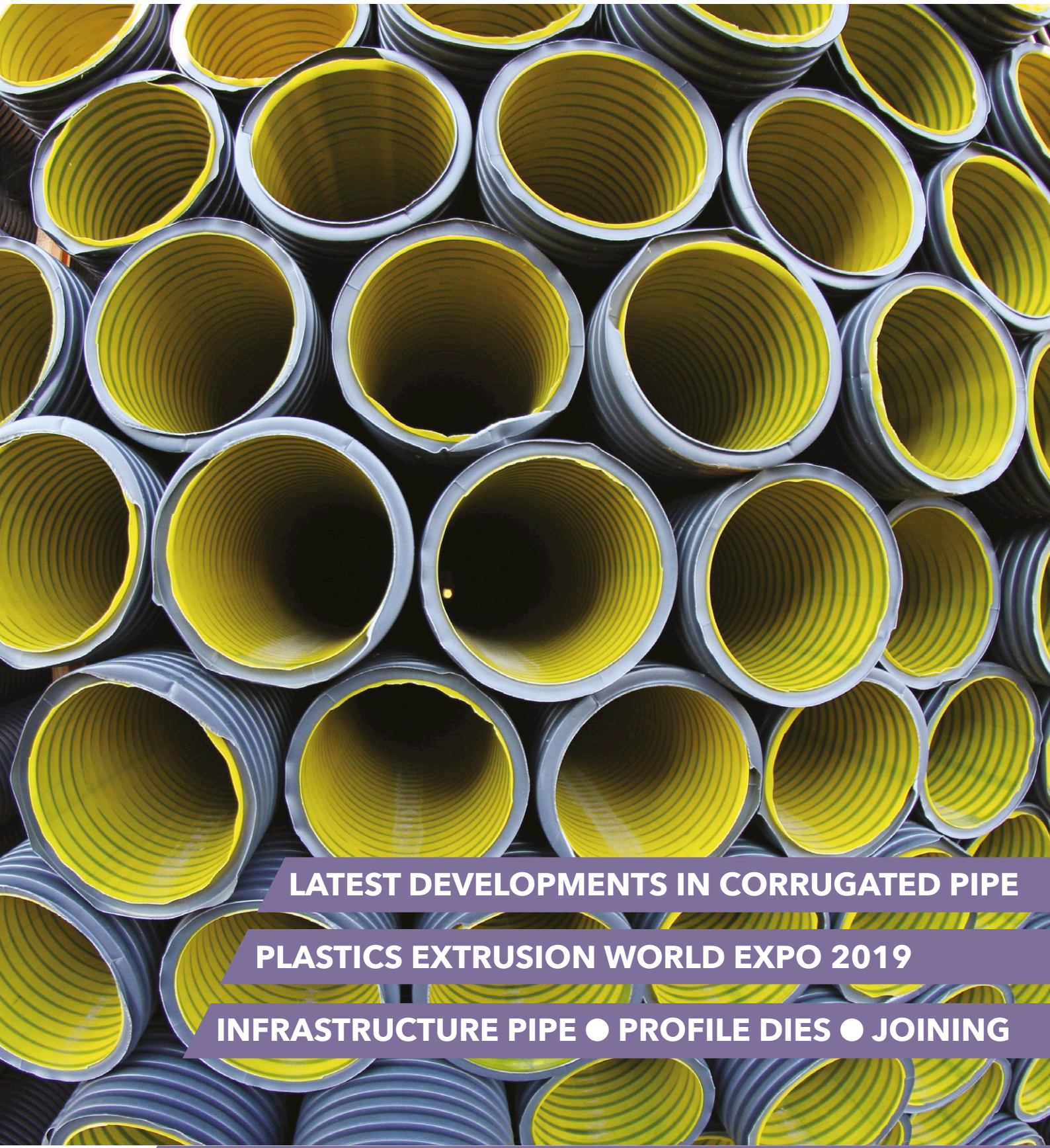

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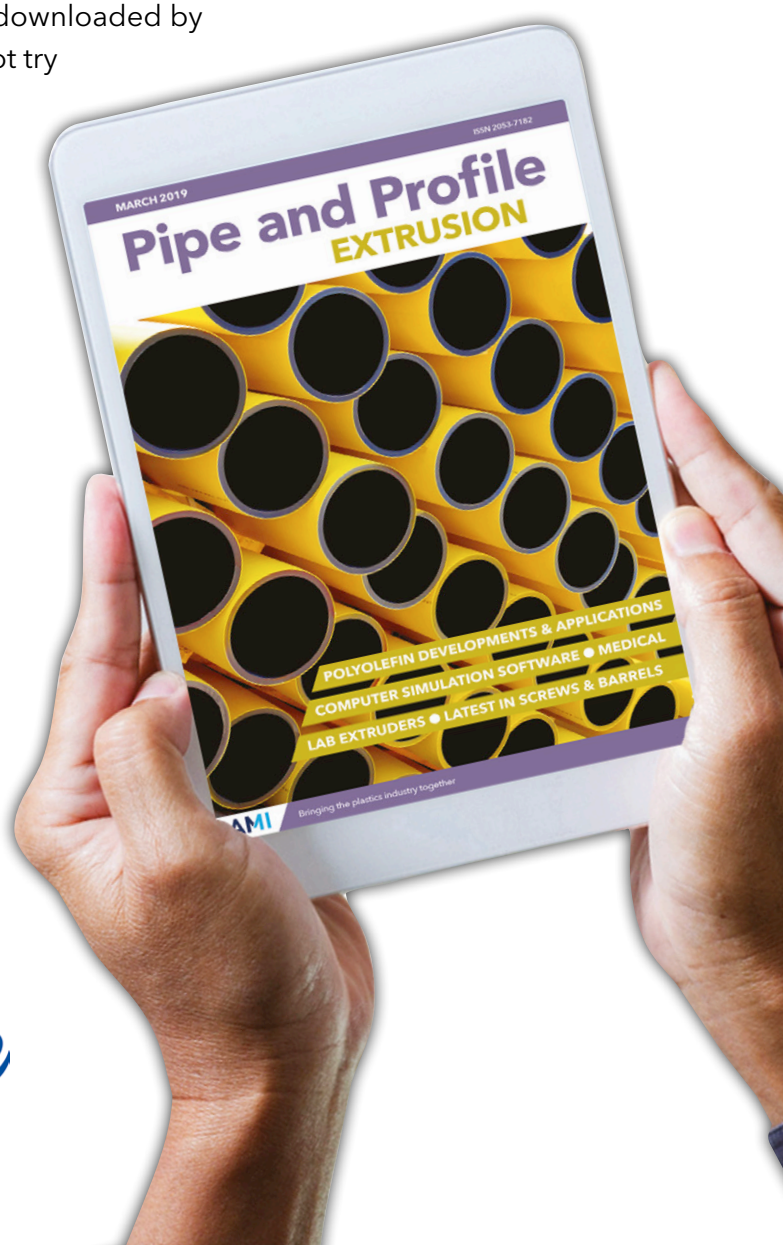

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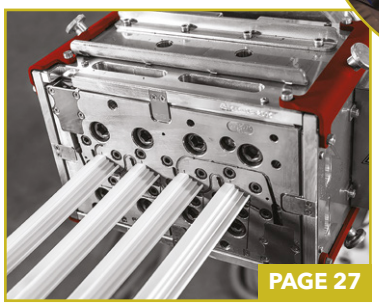

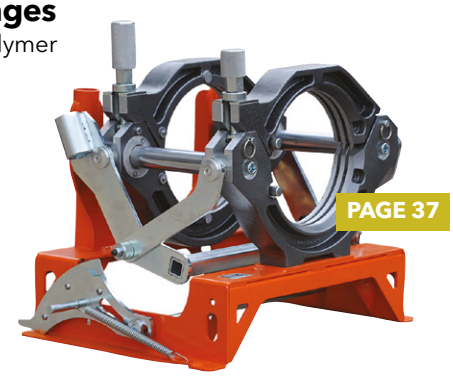

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Compounding WORLD

ADS posts higher sales and profits

Advanced Drainage Systems (ADS) increased full-year sales and profits, driven by strong fourth-quarter results.

The company grew sales by more than 4% to nearly US$1.4bn, while profits rose more than 25% to exceed US$81m.

In the final quarter, sales and profits rose 9% and 139%, respectively.

Scott Barbour, president and CEO, said: "The strength in our fourth quarter results reflect increased volume across our key geographies for both pipe and allied products, favourable pricing and operational efficiency in manufacturing and transportation."

Domestic sales rose in line with total sales, driven by solid construction market demand.

International sales – a relatively small portion of the business – rose nearly 3% to more than US$160m.

ADS expects sales of US$1.425-1.475bn – a growth of around 3-6%.

"Looking ahead to fiscal 2020, we will continue to deliver on our three-year growth plan – capitalising on our leadership position and strength in our end markets to drive growth," said Barbour.

› **www.ads-pipe.com**

Private sale for Lakeland

US-based custom plastic extruder Lakeland Plastics has been bought by a private investor.

The firm, and its sister company – HDPE fencing producer Derby Fence – are both based in Mundelein, Illinois. The unnamed buyer is based in Chicago. The acquisition closed in April.

Lakeland's expertise extrusion design and tooling, profile extrusion, crosshead extrusion coating, rod and tube extrusion and co-extrusion.

The sale was handles by mergers and acquisitions firm Generational Capital Markets.

"Lakeland is a successful multi-generational family-owned business," said Phil Pizzurro, managing director of M&A at the firm. "We were fortunate to find a family with a vision to keep its employees and culture intact, while positioning the company to achieve long-term future growth."

Open house at new Collin site

Collin Lab & Pilot Solutions held a technology open house event in the opening week of its new location in Maitenbeth, Germany. The facility has production space of 4,000 m² and office space of 2,500 m².

In the new premises, the Collin team demonstrated its range of products by way of technical lectures from experts and live machine demonstrations in the technical centre. There were 900 guests at the open house to mark the site opening.

About 250 customers, suppliers and media representatives from around the world participated in the Collin Technology Days, the company said. "Customers from Peru and Australia had probably the longest journey," said Friedrich Kastner, CEO & Managing Partner at Collin Lab & Pilot Solutions. "We are overwhelmed by the enormous interest and rush caused by our opening and the Technology Days."

Above: Ribbon-cutting ceremony at the official opening of Collin Lab & Pilot Solutions' new Maitenbeth site

The culmination of the week was the ribbon-cutting ceremony.

› **www.collin-solutions.com**

MCM invests to expand capacity

MCM Plastics, a US-based producer of 'residual' PVC resin, will make a US$2.7 million investment at its plant in Holden, Louisiana.

The investment will allow the company to expand the 100,000 sq ft facility – with an extra 25,000 sq ft of warehouse space, plus two new dryers. The move will retain 15 jobs and create another 19 (five direct, 14 indirect).

MCM takes so-called 'pond resin' – a by-product made during PVC production – from major producers. It then dries this resin, screens it to the proper size, and uses it in formulations for products such as PVC pipe.

The company, established in 1988, is based in Houston, Texas – where it also has a production plant.

"In the last couple of years, we have seen growth in the amount of resin processed by both our Houston and Holden facilities," said Richard Morris, president of MCM Plastics.

Ocean Plastics to relaunch smaller clean-up system

Ocean Plastics, which has developed a self-powered system to remove plastic debris from the sea, has created a redesigned version – after the original failed in service.

The company first deployed its system into the Pacific Ocean last September but was forced to bring it back to shore in December when it developed a crack, which caused a section to break off.

The system is effectively an enormous U-shaped plastic pipe, which scoops up plastics from the sea as it moves around under the influence of the wind and tides.

The new version, which the company hopes to relaunch next month, is around one-third the size of the original. One key factor was to simplify the HDPE pipe that forms the main bulk of the system – ensuring that it has minimal fluctuations in wall thickness.

Ocean Plastics has redesigned its system that recovers plastics from the sea

The design has been simplified in other ways. First, the screen that catches underwater debris is now attached with slings rather than a rail – as this was the cause of the fatigue. Also, stabiliser frames have been removed. This also reduces loads on the pipe.

The new design will also be more modular.

"We will be able to make significant changes while offshore, preventing us from having to return to land – which is a time prohibitive process," said the company.

This approach will speed up design iterations, it added.

› **www.theoceancleanup.com**

Changes at Teppfa in Europe

Fausto Bejarano, divisional CEO for EMEA at Aliaxis, has become the new president of The European Plastic Pipes and Fittings Association (Teppfa).

He succeeds Maarten Roef, CEO and president of building & infrastructure at Wavin, in the two-year post.

At the same time, the organisation has expanded its membership base, with four new members joining at the 2019 general assembly

The new members are: LK Group, whose products include PEX pipe; Italian pipe manufacturer Nupi Industries; Irish trade body IPPMA; and ECVM, the European Council of Vinyl Manufacturers (part of PlasticsEurope).

› **www.teppfa.eu**

DS expands China plant

Davis-Standard has expanded its Suzhou facility

Davis-Standard's subsidiary in China has expanded its manufacturing capabilities. The company, based in Suzhou, has added an extra 35,000 sq ft (3,251 sq m) facility near its existing facility – which will house control panel assembly and provide warehousing. This reflects Davis- Standard's growing extrusion coating business and long-term strategy in the region.

"The additional space will allow us to build more extrusion coating lines at our main plant while supporting other machine services – including faster delivery," said Jinsong Lin, general manager at Suzhou. "The increased manufacturing capacity is a reflection of our growth over the past few years."

Suzhou is where the company makes machinery including extruders and electrical control panels for production of medical tubing in Asia – an important sector for Davis-Standard. The facility in Suzhou also houses an R&D centre, which has technology to test products including FPVC tubing for IV and fluid delivery.

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VinylPlus moves closer to its PVC recycling target for 2020

The voluntary commitment by the PVC industry is now just 8% short of its 2020 recycling target – but has since set new goals for the future

VinylPlus, the voluntary recycling commitment of the European PVC industry, has again raised the amount of material it recovers and recycles.

In 2018, the industry recycled nearly 740,000 tonnes of PVC – a rise of more than 15% compared to 2017. This puts it 92% towards its target of recycling 800,000 tonnes/year of PVC by 2020.

The **results** were presented at the recent VinylPlus Sustainability Forum in Prague, Czech Republic.

"VinylPlus continues to be a frontrunner for the circular economy," said Brigitte Dero, general manager of VinylPlus. "We are making continuous progress towards our sustainability goals amid the development of EU policies impacting the plastics sector."

Higher targets

VinylPlus has since set new targets of recycling 900,000 tonnes/year by 2025, and 1 million tonnes/year by 2030 – which would be in line with the European Commission's objective of 10m tonnes for the plastics industry.

Stefan Sommer, chairman of VinylPlus, added: "To achieve further success, we will need to intensify cooperation with our partners and may need to identify new ones. A balanced and harmonised legislative framework for the recycling of plastics is essential to secure our contribution to the circular economy and to achieve our new recycling target."

Dero: "VinylPlus continues to be a frontrunner for the circular economy"

During the event, four profile manufacturers (Deceuninck, Finstral, Salamander Industrie Produkte and Internorm) were awarded the VinylPlus Product Label, which assesses PVC building and construction products on a variety of sustainability criteria. Eight profile manufacturers have now been awarded the Product Label – for 43 profile systems made in 13 European sites across 11 countries.

Profile building

Window profiles and related building products account for the bulk of recycled PVC, with more than 326,000 tonnes – which was 44% of the total last year. In 2018, recovery of these types of products grew by nearly 8%.

EPPA, the association for PVC window profile manufacturers in Europe, has also extended its Hybrid Project, which aims to classify and improve the recyclability of PVC hybrid profiles. It has now developed guidelines on how to increase the recyclability of hybrid materials in window profiles. EPPA is working with the European standardisation organisation to finalise its proposed standard for *Controlled-Loop PVC Window Recycling* – into which results from the Hybrid Project will be directly integrated.

Recycling of pipes and fittings increased slightly (by around 2%) to nearly 83,000 tonnes last year.

Ongoing projects

Other recycling projects that progressed in 2018 included Oreade, Resysta and RecoMed.

Oreade is a chemical recycling project that targets PVC waste streams that cannot be handled by mechanical recycling. It involves both energy recovery and chemical recycling. Following small-scale test trials in 2017 and 2018, a large-scale trial – involving 2,000 tonnes of PVC – will be run during 2019.

The Resysta consortium produces a recyclable wood-like material based on PVC and rice husks. In 2018, it ramped up its activities in order to promote new uses such as its UPB board.

RecoMed is a medical PVC recovery scheme in the UK involving 28 hospitals – with 27 more ready to join. To date it has recovered around 12,000 tonnes of PVC, including tubing.

› **www.vinylplus.eu**

PVC recycling in Europe by type, 2018

Type of PVC	Tonnes recycled in 2017	Tonnes recycled in 2018
Coated fabrics	9,034	9,573
Flooring	3,051	2,387
Profiles (including window profiles)	302,824	326,276
Pipes/fittings	80,925	82,635
Flexible PVC/films	117,905	167,148
Cables	125,909	151,506
TOTAL	**639,648**	**739,525**

Source: VinylPlus

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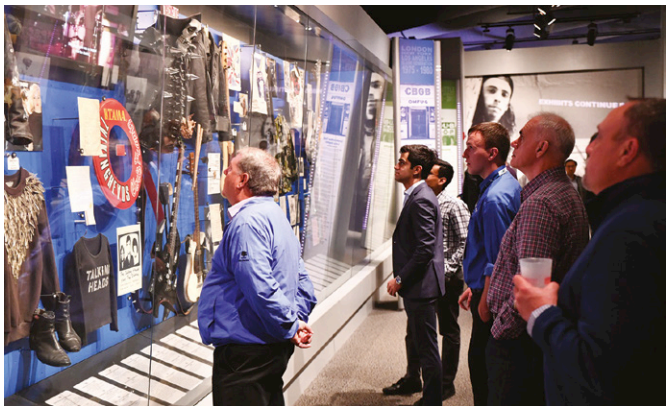
Network event draws a crowd



AMI's three co-located plastics show in Cleveland earlier this month attracted more than 4,000 visitors – while the event's networking party proved similarly popular.

The networking event, held at the Rock & Roll Hall of Fame, attracted more than 1,000 people – who saw everything from rare Woodstock photos (on the event's 50th anniversary) and rock-themed pinball machines, to guitars owned by Kurt Cobain and Jerry Garcia.

The three plastics shows – plus a fourth on plastics testing and analysis – will next run in Essen, Germany in June 2020, then return to Cleveland in November 2020.

Our review of this year's event begins on **page 21**.

› **www.ami.international**

Trex expands its film recycling programme

US decking specialist Trex is to expand its plastic film collection and recycling programme.

The company has branded the long-standing scheme NexTrex, and is looking to expand the 32,000 stores from which it currently collects waste plastic film.

Through the programme, Trex compensates partners for collecting recycled plastic material. After collection, the plastic material is sent to local distribution centres, then sorted and shipped to Trex's two North American manufacturing facilities, for incorporation into its products.

"NexTrex is an integral component of our sourcing efforts, and we're thrilled by the growing interest and participation by retailers across the country," said Dave Heglas, senior director of material management at Trex. "Through NexTrex, we collected more than 130m lbs of recycled plastic from retailers in 2018."

› **www.trex.com**

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Building a future: infrastructure pipe

Infrastructure pipe takes a number of forms – from gas transport to drinking water supply – and relies on a range of materials. ***Lou Reade*** *reports*

Many pipe systems are already in place, but not all of them are ageing well – meaning that replacement systems are needed. These are often inserted into the existing pipe network, which saves the time and money of a brand new installation.

UK-based Northern Gas Networks (NGN) recently used durable polyethylene (PE) pipe from **Radius Systems** to replace an ageing gas main – with minimal disruption to local residents.

The project involved replacing 250m of a metal main in Keighley – which would usually have involved digging metres of open trench to give access to it. The site, at a busy junction, included a three-way traffic light system, so would have caused major disruption to traffic. Part of the site incorporated the historic Keighley and Worth Valley steam railway line, which could have added significant engineering complexities and additional time onto the project – as the pipe runs along the top of a 19th century bridge.

In order to ensure no damage to the bridge, NGN chose to use the Radius Systems pipe insertion solution rather than the open trench technique. Traditional insertion involves pushing or pulling a new, smaller pipe into the main, which reduces the capacity of the new main. However, Radius' Subline DR rehabilitation technology inserts reduced-diameter pipe – then uses pressurised cold water to bring it back to its original diameter. This causes it to form a close fit against the bore of the original mains pipe, providing maximum capacity within the pipeline.

An automated unit, designed as part of this development with NGN, carries out the reversion process, pumping water into the new pipeline and recycling it through a self-contained closed system.

Richard Hynes-Cooper, head of innovation at NGN, said: "It's a really clever solution and one that allows us to reduce the length of the project, save costs, and minimise disruption to customers."

Dave Sykes, head of operations at RadiusPlus – the company's pipeline engineering division, added: "The trial was a success and the development of an off-the shelf, reduced-diameter coiled pipe and equipment has saved NGN a considerable amount of time and cost on this project." ›

Main image: NGN used Subline DR technology from Radius to rehabilitate an ageing gas main

Above: Evonik says new rules could help gas distributors save on material costs

New gas rules

The **Pipeline and Hazardous Materials Safety Administration** (PHMSA) – part of the US Department of Transportation – has amended its Federal Pipeline Safety Regulations for plastic piping systems used in the transportation of natural or other gas.

The update – known as a Final Rule – is intended to improve safety and allow for greater use of plastic pipe in this area.

"Advances in plastic pipe design and manufacturing have resulted in products that are much safer today than they were 20 years ago," said PHMSA administrator Skip Elliott. "These regulatory updates will significantly contribute to advancing public safety."

The updates take into account the changing technologies and issues affecting plastic pipe. They address concerns with installation and operational safety issues associated with plastic pipe, as observed by federal and state inspectors during routine field activities, he said.

Additionally, several industry petitions received by PHMSA requested that the agency consider regulatory updates for plastic pipe that align with new innovations in manufacturing and design, as well as current best practices in plastic pipe installation.

The Final Rule will only apply to new, repaired and replaced pipelines. Updates include: an increased design factor for polyethylene pipe; and updated standards governing the pipelines made of polyamide 11 and 12.

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Evonik – whose Vestamid PA12 is already widely used in the industry – says the decision could lead to substantial savings.

"We are very excited about this announcement," said Doug Weishaar, business development manager of Evonik's high performance polymers division. "The addition of polyamide 12 to the federal code provides new material options for local natural gas distributors seeking to install new, repaired, or replaced pipelines operating at up to 250 psig."

As a result of the final rule's updated changes, the cost of materials to produce new pipe is estimated to be reduced by 10%, resulting in annual material cost savings of around US$32 million for transmission, gathering, and distribution operators, said PHMSA.

Water barrier

High pressure SLA barrier pipe from **Egeplast** was recently installed into contaminated soil under the river Göta älv in Gothenburg, Sweden using the horizontal directional drilling (HDD) method. The pipe supplies drinking water to the island of Hisingen. Building the pipeline involved creating an underpass over a total length of around 560m under the river. This was complex, because of complicated geological conditions with contaminated mud and a drilling at a depth of more than 30m.

SLA barrier pipe was chosen, with dimensions of 630 x 70.3mm SDR 9. It prevents any permeation by hazardous substances. The pipe has an inner layer of PE100-RC, outer protective layer of PEplus and a metallic permeation barrier – which allows for permanent protection of sensitive media and their environment. In addition, its electrical properties provide optional pipeline detection and inspection for intactness before and after installation.

The pipes were connected via butt welding. Prior to insertion, the integrity of the pipe string to be inserted was examined by means of a puncture test using a high voltage tester. Once the test result was positive, insertion of the pipe string was initiated.

Conference highlights

Delegates at the recent *Plastic Pipes in Infrastructure* conference in Germany, organised by **AMI**, learnt a lot about the effects on chlorinated chemicals on pipe – and ways of testing it.

Benjamin Rabaud, materials cluster manager at **Suez**, said that chlorinated chemicals have an ageing effect on pipe – including cracking of the inner pipe wall and blistering of the inner surface.

The effects can be serious, he said – pointing out the chlorine dioxide caused very high degradation in 30% of HDPE in tests.

"For some water networks, a 50-year life expectancy is questioned," he said.

While networks in northern Europe fared much better (with chlorine and ammonium chloride causing only "moderate degradation" in 4% of samples), he said that sustainable growth of plastic pipe water networks required new types of material: while a pipe made from 'best quality' standard PE resin had twice the projected lifetime of one made from the 'worst standard resin', he said that a grade with 'chlorine resistance' showed a 425% improvement.

"HDPE with disinfectant resistance should be implemented for demanding networks," he said.

Chlorine testing

Several speakers addressed the issue of chlorine testing. Marton Bredacs, a researcher at the

Designing for storm water management

US-based pipe manufacturer **ADS** has developed an enhanced version of its online design application for installing underground storm water management systems.

ADS Design Tool 2.0, available free on the company's website, helps customers incorporate site-specific information and create customised system layouts. The result is a system that can be immediately utilised in project documents.

"Our Design Tool 2.0 is more efficient and accurate than anything else on the market today," said Greg Spires, general manager of ADS subsidiary StormTech, which makes storm chambers.

The tool also allows customers to evaluate the feasibility of above ground pond replacement, alternative underground products, land values and usage, regulatory compliance, rainwater harvesting, stormwater quality, green infrastructure applications and more.

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Above: Egeplast's SLA barrier pipe was recently installed into contaminated soil in Sweden using the HDD method

Polymer Competence Centre Leoben (PCCL) in Austria, told delegates of a preliminary model to assess the effect of chlorine dioxide on the lifetime of PE pipe grades.

These types of chemicals cause effects such as surface embrittlement, which causes cracking and later failure.

"The goal is to determine the effect of ClO_2 on crack initiation time depth," he said.

In tests, samples were exposed to Cl02 and tested using the cracked round bar (CRB) and compact tension tests – as well as by essential work of fracture (EWF). They were also studied with electron microscopy.

Bredacs said that the advantages of the new model included a reasonable testing time – of a few months – that was ideal for material ranking and development. It also allowed extrapolation to relevant conditions.

The EWF technique showed promising preliminary results, he said, and could lead to more accurate material ranking.

Prediction model

Isabelle Berger, also a researcher at PCCL, explained a lifetime prediction model for polyethylene electrofusion (EF) sockets.

The research – performed with colleagues from **Agru** and **Georg Fischer Piping Systems** – made a fracture mechanics lifetime prediction based on brittle failure behaviour of EF sockets made of PE. Various internal pressure tests on EF sockets were conducted under elevated test conditions with focus on generating quasi-brittle failure curves and investigating characteristics of crack initiation and SCG.

The results showed that with a linear elastic fracture mechanics (LEFM) approach, a reliable prediction of minimum lifetimes of EF sockets for internal pressure loading situations and application-oriented installation situations was possible.

The results showed that, at sufficiently high temperatures and internal pressures, EF sockets failed by quasi-brittle SCG. However, a more systematic evaluation of crack characteristics revealed that cracks are initiated simultaneously in the cold welding zone and the heating wire cavity – merging together at a later stage of crack propagation.

Faster testing

Juergen Wuest, deputy managing director of the German Plastics Center (**SKZ**), explained an energy- and time-saving method for qualifying PE pipe grades for long term applications at 40°C, using a high pressure autoclave test (HPAT).

While a typical oven test takes more than 5,000 hours, a typical HPAT test will take around 1,000 hours, he said – and uses around one-seventh of the energy.

An HPAT test is typically carried out at high temperatures (60-90°C) in an aqueous medium of variable pH. The sample ages due to the high temperature, and the presence of oxygen. Samples are removed after specific exposure periods, and subjected to tensile testing. Results are extrapolated to 'normal' conditions – such as 40°C and atmospheric pressure.

"With oven ageing, no estimation is possible after four years, as the test is still running," he said. "With HPAT, the lifetime estimation with activation energies meets the literature values in an acceptable time."

■ The Plastic Pipes in Infrastructureconference, organised by AMI,ran in Dusseldorf, Germany on 9-10 April 2019. Papers from the event are available from the **conference website**. For more details on next year's conference – including details of how to present a paper or sponsor the event – contact conference organiser Sophie Harrisson (**sophie.harrisson@ami.international**) on +44 (0) 117 314 8111.

CLICK ON THE LINKS FOR MORE INFORMATION:

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Plastics Recycling Technology

2019

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18 - 19 June 2019
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AMI's three co-located plastics events – held in Cleveland, USA last month – saw more than 4,000 visitors attend over two days

Closing the curtain on Cleveland plastic debut

Last month's trio of plastics events held in Cleveland, USA attracted more than 4,000 visitors.

Compounding World Expo, Plastics Recycling World Expo and Plastics Extrusion World Expo – held on 8-9 May 2019, and organised by AMI – welcomed 4,375 visitors, and hosted 261 exhibitors.

"The focused nature of the expos worked well for visitors," said Andy Beevers, events director at AMI. "They could meet with key suppliers and participate in highly relevant conference sessions all under one roof."

The five conference theatres at the event – including one on pipe and profile extrusion – were well attended. They hosted a series of market and technology presentations, training seminars and business debates. In addition, the networking party at the Rock and Hall of Fame proved very popular, attracting more than 1,000 people.

Most visitors came from North America, with 92% from the USA, Canada and Mexico. However, the event also attracted visitors from across South America and further afield, including Belgium, China, Germany, India, Japan, South Korea and Vietnam.

Steve DeSpain, president and general manager at Reifenhäuser Inc, an exhibitor in the Plastics Extrusion World Expo, said: "The expo has been well attended – and presenting in the conference theatre led a lot of people to our stand."

Conference highlights

Kristin Meyers, senior industry manager for extrusion at **PolyOne**, told delegates about the growing trend towards specifying dark colours for outdoor architectural applications – from decking to window profiles.

However, underlying the trend are a series of challenges – not least the need to maintain colour and dimensional stability in the face of higher solar heat build up.

She explained how the company's Geon Bold portfolio of PVC products help to resist high temperatures using its 'cool pigment' black – which

Main image: More than 4,000 visitors attended the Cleveland event

Right: Yuya Sakamoto of Sekusui told delegates how C-PVC material can be used to make transparent pipe fittings

can reduce surface temperatures by around 30%.

"When choosing a PVC alloys for external applications, it's not one size fits all," she said. "It's essential to select the proper grade suited for your application."

A more recent advance is the use of C-PVC substrates to add dimensional stability to window profiles. The material bonds to a number of capstock polymers, including PVC alloys. It processes at temperatures similar to those of PVC, which simplifies manufacturing.

Transparent advantage

Sticking with C-PVC, Yuya Sakamoto, account manager for Durastream C-PVC compounds at **Sekusui**, told delegates how the material can be used to make transparent pipe fittings – to overcome installation issues.

He said that many major causes of failure in installed pipes – such as wrong use of solvent cement, inadequate use of clamps, or inability to allow for thermal expansion – might be improved using visual confirmation. However, many of the defects will be 'hidden' during the installation process.

C-PVC has a higher heat performance than standard PVC, and – despite not being easy – it can be made in transparent versions by using the heat chlorination method. With transparent fittings, many typical installation errors can be spotted instantly.

He pointed to an example from Japan – where these types of fittings were used within a sprinkler system in a 37-storey building.

"Transparent fittings help ease the maintenance procedure due to better visibility," he said.

Upgrade strategy

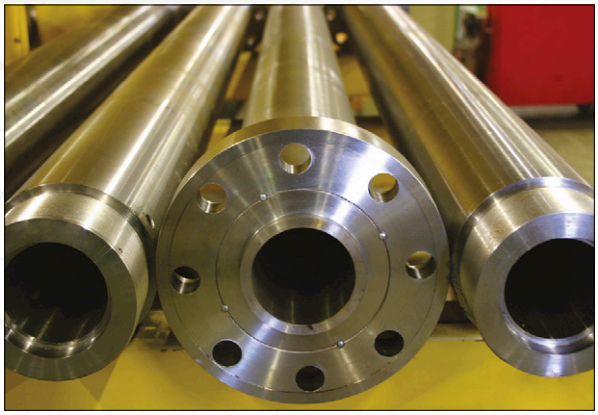
Converters are under constant pressure to boost throughput and quality – satisfying their customers while boosting profitability. This is commonly achieved by investing in new equipment – but it is not always easy to justify large capital expenditure to senior managers.

Dan Barlow, president of **Integrated Control Tech**, took delegates through some of the steps behind upgrading extruders and control systems.

The first step was to assess the risk for each line. After determining how many days each line was down over the last 12 months, he said it was necessary to project that forward based on risk. So, if the level of risk is 20%, a line that spent 15 days down over the past year will spend 18 days down over the coming year.

"The greater the risk, the more likely this will increase," he said.

At the same time, the profitability of a single line is likely to be 4-10%, and this will drop if there is



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Above: The 'future of pipes' panel discussion was well attended

any downtime. If the cost of downtime of a single line exceeds 4-10% of product sales, the line needs to be upgraded immediately – or retired, he said.

Forms available on the company's website help to assess both a new control system and vendor – which will help in the final selection.

The goal is to weigh the price with the vendor's qualifications and the relevant systems feature – then make a recommendation to management.

"Your recommendation needs to be such that you would bet your job on the selection," he said.

Bonding solution

Donald Meyers, CEO of **Tech-Bond Solutions**, demonstrated his company's method of bonding 'difficult' substrates – including plastics – to one another. He stressed that the technique does not 'glue' surfaces to one another, but 'bonds' them.

The method involves several elements – including an adhesion promoter, solvent-based activator/accelerator, and a structural cyanoacrylate. Once these have been applied in a specific order, heat is applied – taking the temperature to 118-120°C.

He said the bond is very strong and can join aluminium to polycarbonate, for example.

He has a devised a process called Tech Patches – which is patent-pending – that fixes silicone patches firmly over holes or cracks as a way of repairing them. One potential use of the technique is in plastic pipes, where a silicone patch would form a quick fix.

"Tech Patches have been field tested," he said.

Panel discussions

One of the four discussion sessions in the Pipe and Profile Theatre at PEWE dealt with the future of plastic pipe.

Panellists at the session were: David Fink, senior vice president at WL Plastics; Arturo Valencia, director of research and development at Dura-Line; and Tony Radoszewski, president of the Plastics Pipe Institute.

Radoszewski said that corrugated pipe is helping to raise the sustainable performance of the industry, through its use of recycled materials.

"Today, our industry processes a minimum of 25% post-consumer recycled plastic and puts it into corrugated pipe," he said. "We take a product with a 60-to-90-day shelf life and convert it into one that has a hundred-year service life."

For Valencia, being sustainable in this way is important – but can be a challenge.

"We are also trying to use more recycled materials, but must still meet the standards of our customers," he said. "We are investing a lot in R&D to solve this.

Fink pointed to a separate industry challenge – that of an ageing workforce.

"We have an ageing baby boomer population and a lot of the expertise is going to sunset in the next few years," he said. "The challenge is to educate the next generation – not just within our industry, but among the specifiers and end users of plastics. The advantage is that the newer generation will have grown up with plastic, so are more accepting of it."

There have also been huge leaps forward in technology, he said, allowing plastics to compete more strongly with alternative materials.

"The extruders we buy today can do twice as much as those we bought 20 years ago," he said. "In addition, new equipment and materials allow us to be far more cost competitive with alternative materials like steels and concrete. Tracing and traceability is also key: understanding what you have in the ground – and where you have it."

Valencia added that modern technology has changed the way that converters work.

"Lines are completely automated and run at very high speed," he said. "We have closed loop control to change diameters without stopping the line. We are removing heat from pipes – and using the heat to dry materials, or heat offices."

Next stop – Germany

All three expos are over for this year. However, all of them – plus a fourth, covering plastics testing and analysis – will next run in Messe Essen in Germany on 3-4 June 2020. The inaugural event at this venue, in June 2018, attracted 184 exhibitors and 4,024 visitors.

Beyond that, all four expos will return to Cleveland on 4-5 November 2020. For information on exhibiting at these events, contact the expo sales team (**exhibition_sales@ami.international**) on +44 (0)117 924 9442.

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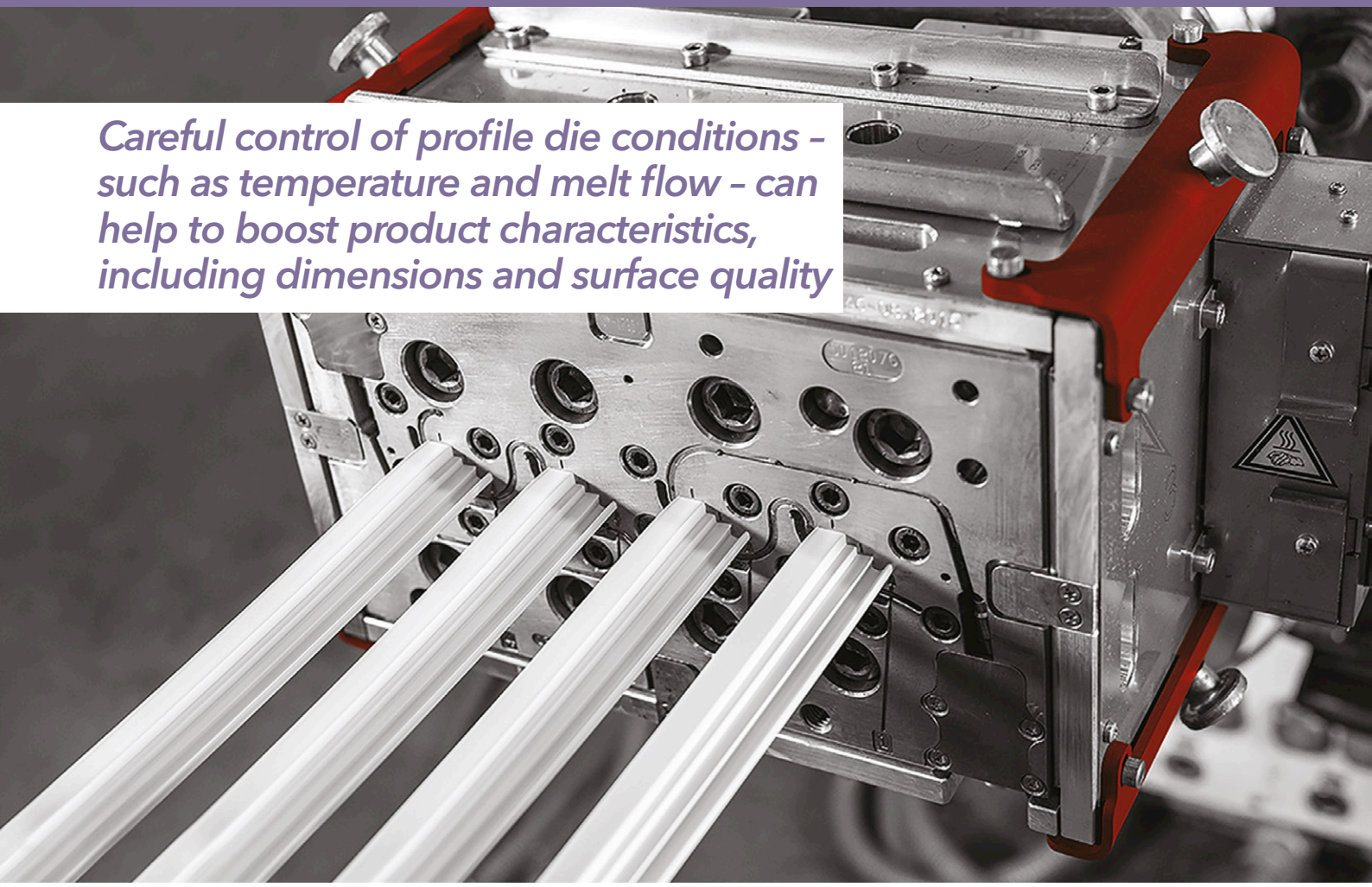


Careful control of profile die conditions – such as temperature and melt flow – can help to boost product characteristics, including dimensions and surface quality

Taking control of die output

Sophisticated tooling helps to ensure higher product quality – and investing in it is a sign that a company (or a market) is on the rise.

Greiner Extrusion recently made its first Red Tooling sale to South America. Tecnoperfiles, a PVC profile extruder based in Argentina, is an existing Greiner customer, and recently invested in a Red Tooling system for co-extrusion.

This allowed the company to produce several new products, such as a new turn-and-tilt window system for a height of up to 3m (called Jumbo-Line), and two new sliding systems. Total capacity is around 5,000 tonnes/year, representing around 240,000 windows.

"Red Tooling allowed us to optimise our production and to drastically reduce our set-up and start- up times," said Pablo Longhi, plant manager at Tecnoperfiles.

PVC windows are still a relatively unknown quantity in Argentina – which Longhi says makes it difficult to explain their advantages to potential users. However, he says the market is beginning to grow rapidly – as energy saving is an important issue.

"We would like to switch our entire production to Red Tooling immediately, but this process has to be done step by step," he said. "The initial investment is higher, but it's worth it because of the cost-effectiveness."

Automatic control

At the same time, Greiner has developed its Flow Matic technology, which automatically controls the dimensions of profile sections.

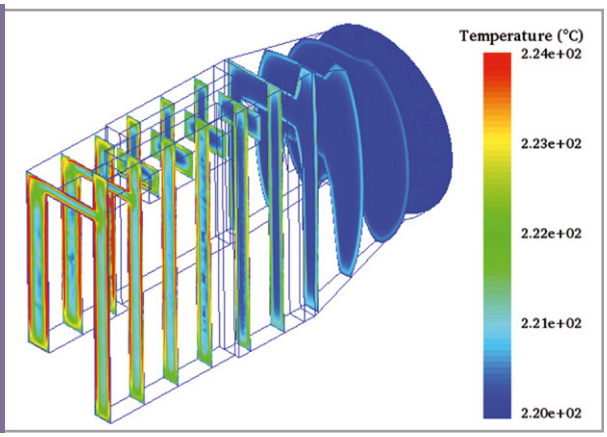
Based on its earlier Flow Control technology, it controls temperature and melt flow directly in the die by heating or cooling. It measures the filling level of individual profile sections and – with the Flow Control die function – builds up an automatic control loop.

"The reaction takes place in a few seconds," said the company. "This results in constant profile measurements even when fluctuations occur."

Separate to this, Greiner adds that its Layer Coex Plus technology allows higher amounts of regrind to be used in co-extruded profiles – which maintaining maximum processing safety.

"Compared to mono-extrusion with virgin PVC, the total cost saving is 18%," said the company. ›

Main image: Tecnoperfiles, a PVC profile extruder from Argentina, has bought its first Red Tooling system from Greiner



PolyXtrue software from Plastic Flow can now simulate extrudate cooling and shrinkage at the same time

Simulating shrinkage

US-based **Plastic Flow** says that the latest version of its PolyXtrue software can simulate both extrudate cooling and corresponding shrinkage at the same time. Ordinarily, two separate software packages are needed to simulate the flow inside the die and to predict extrudate cooling.

The new version includes the effect of shrinkage due to extrudate cooling as well as the effect of non-uniform exit velocity to predict the extrudate distortion and the shape of the final extruded product.

For accurate analysis of extrudate cooling, shrinkage, and distortion, the new version starts by treating the polymer as a melt near the die exit, but then transforms the analysis to treat the extrudate as a solid at lower temperatures away from the exit. This unified fluid-solid analysis of extrudate gives high accuracy in the predicted temperature and distortion of the extrudate. The algorithm for the post-die analysis has been revamped to simulate this coupled fluid-solid system while improving the computational speed of the software, says the company. Flow in the calibrator – as well as in the post-calibrator region – is also included in the analysis.

The new version continues to run as an add-in inside SolidWorks and Inventor. The OptiXtrue software allows automatic optimisation of extrusion dies by parameterising the critical die dimensions in either of the two geometric modelling software packages. Many other important features from previous versions of PolyXtrue – such as accurate prediction of layer structure in the final product, and accelerated computation speed using a computer's Graphics Processing Unit (GPU) – have been improved in the new version.

The graphical user interface (GUI) of the software has been updated with new features that make it more effective and more user friendly. Some new features of the PolyXtrue GUI include:

- Generating the geometry of the flow channel in the die from the die plate geometry;
- Splitting flow channel geometry into multiple volumes, to allow local refinement of the finite element mesh for an accurate simulation;
- Generating profile step dies from a series of profile drawings in DWG or DXF format;
- Saving and restoring up to four camera views (viewing angle/zoom) to allow comparison of results from multiple simulations;
- A new graphing module that plots and compares multiple curves on the same graph, including those from previous simulations. It also allows curve names in the graph legend – include gridlines in the graph – to be changed;
- Improved troubleshooter dialogue for viewing and analysing geometry and mesh errors; and,
- Accurate control of cut-plane location to show transition points between die plates and die cavity, as well as making it easier to position the cut plane at the die exit.

Staying cool

At last year's *Profiles* conference in the USA, Robert Bessemer, senior technical advisor for downstream extrusion at **Conair**, explained the principles of closed-loop temperature control for profile tooling.

He said that the technique is commonly used in injection moulding – where controlled temperature 'zones' ensure that parts are not warped.

"In profiles, do we have uneven wall thickness and geometry that can affect heat transfer rates – and cause bow, warp and twist? Yes, we do," he said.

For this reason, he says that careful temperature control of profile dies can help to improve product quality.

Extrusion calibration tooling is typically controlled with a single chiller, and manual ball valves to control cooling flow (usually water) – which does not lend itself to repeatability.

He said that this tooling could be 'quadrant' temperature controlled – so that areas that produce thicker walls could be cooled more intensively.

"Water flow controls can also easily be added, to assist in repeatable water flow and temperature control of calibration tooling," he said.

The next *Profiles* conference – which is held in Pittsburgh, USA on 4-5 May and organised by **AMI** – includes a paper by John Perdikoulias, president of Compuplast International, on improving profile die design efficiency and maximising line speed.

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- **www.greinerextrusion.com**
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Corrugator manufacturers are adding to their portfolios, while pipe producers are using their technology in challenging projects – including a recent installation in Alaska

Pipe dreams: latest in pipe corrugators

Manufacturers of pipe corrugators are stepping up their offerings – with new capabilities including higher production speeds, new mould designs and advances in cooling.

At the K2019 exhibition later this year, for instance, **Corma** will introduce several new corrugation technologies.

It will add its new 40 series model of corrugators to its existing vertical construction corrugators. The latest series is built for high speed production. Increased output rates of 30% are possible due to a new longer forming section, new quick return system, run out assemblies, and an efficient cooling system.

Corma's new mould block technology works in tandem with the new 40 series. The optimised design offers efficient heat transfer due to a unique mould block shape and air cooling connections. The mould block size and shape is optimised to the pipe profile to be produced. Customers that use Corma 30 series corrugators can also use the new mould block design.

For very large corrugated plastic pipes, Corma has developed its Pulsating Corrugator. For pipes larger than 1,800mm outside diameter, pipe producers have traditionally been limited to spirally wound pipe solutions. The Pulsating Corrugator can produce annular ring corrugated pipes. Pipes can be made at outputs more than double that of spirally wound, welded pipes – and at less than half the weight for pipes produced at the same stiffness class, says Corma.

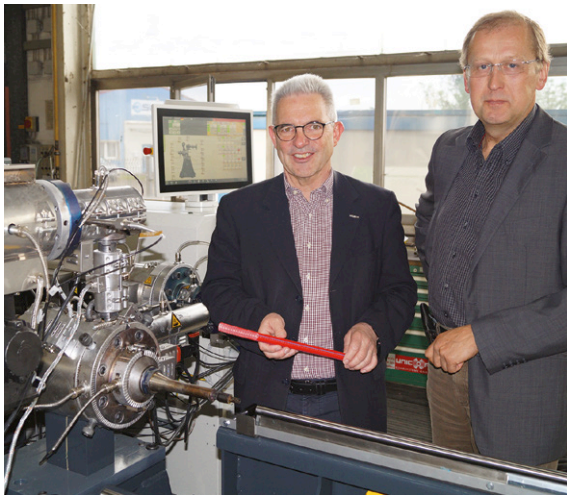
Finally, Corma's 'Super Coupling' uses an extended sleeve to create a robust seal between the pipe layers within the coupling. The extended sleeve of the Super Coupling maintains a full seal, reducing the chance of obstructions and maintains the strength and integrity of the joint.

Main image: Corma's Pulsating Corrugator makes pipes larger than 1,800mm outside diameter

Higher speed

Bellaform of Germany says that its BC 58 corrugator boasts high line speeds for pipe diameters up to 58mm.

The unit, which is driven by an AC servo motor,



Right: Unicor's Klaus Kaufmann (left) and Hubert Kossner with the company's new DWP 75 die head

produces pipes from 12mm outside diameter. It has a maximum mechanical speed of 47m/min, says the company, depending on material properties.

Modular set-up allows free choice of the number of forming jaws – from 40 pairs in the basic equipment, to up to 90 pairs as an optional expansion.

Temperature control and pre-heating of the forming jaws is controlled from an adjustment unit, while cooling is performed by optimised indirect water cooling.

Lubrication intervals can be adjusted centrally via a colour display/touch panel. The model also features an optional predictive maintenance module.

The BC58 can also be integrated into third-party systems.

Corrugated tooling

Unicor has further extended its tooling for corrugated pipe.

Its DWP 75 and TWP 75 are based on the same die-head principle. They produce triple-layer corrugated pipes in nominal sizes between 16 and 75mm, and corrugated composite pipe for the nominal sizes 20 to 75mm outside diameter in polyolefins.

Producing composite pipe in smaller diameters, which is now Unicor's main focus, led to a completely new development of the forming process and die geometries, it says.

As a result of the development, it can now produce composite pipes with diameter of just 20mm – from two different materials – in one industrial production step. A short start-up process and solid production parameters allow controlled wall-thickness variations, which boosts the production efficiency for new products. For this reason, the small diameter corrugated pipes can be successfully used to re-line gas house-connections and as empty-pipe installations in housing.

The company has also redesigned its UC36 corrugator, which was originally launched in 2014. It now uses a new drive unit, which contains two electrically synchronised servomotors. This concept has been used for some time in middle-sized corrugators (which have direct cooling). The advantage is that it allows the left and the right mould block chains to be synchronised electrically – which can prevent misalignment of the mould block halves during use.

An optimised curve geometry leads to higher running smoothness in high-performance corrugators, which means less wear and tear in the long-term, says Unicor.

High performance

ITIB Machinery of Italy says that its FV200 corrugator – for making single- and double-walled corrugated pipe – covers the full range of cable ducting pipes from 40mm to 200mm.

It keeps the same open structure, direct mould cooling and other features of its earlier FV250 model, but with a number of technical refinements, according to Carlo Cominelli, sales manager at ITIB.

Firstly, it overcomes the limitations of traditional corrugators – where the length of the dies limits the output, due to the high back pressure in the die-head. A short, open inlet area allows the use of short dies and a lower pressure – and so higher speeds. The outlet channel has also been shortened, which elongates the central forming channel – allowing higher cooling capacity. ›

Landmark year for Reiku

Reiku of Germany – which makes extruded tubing for cable protection – has celebrated 50 years in business.

The firm, founded in 1969, began by making zip-on plastic sheathing products. Now, its portfolio stretches to more than 8,000 items: last year, it says it processed more than 400 tonnes of plastics into nearly 2,400km of tubing.

"We create the best possible conditions for preventing damage to the cable," said co-managing director Peter Sailer.

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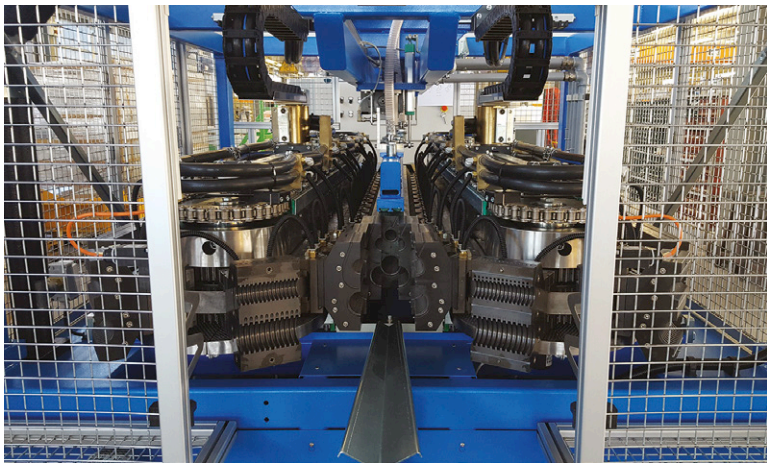

Above: ITIB's FV200 corrugator covers the full range of cable ducting pipes from 40mm to 200mm

The closed length of the mould chain is now 20% more than that of the FV250 corrugator, having a similar total chain length.

Rather than being cast, moulds are now machined directly from solid aluminium blocks on 5-axis CNC machines – giving better tolerance control. Each is fixed to its carrier by a single bolt for easy locking.

The cooling system has been improved: the water distributor and hoses are now above the mould chain, to ensure there is no contact with metal parts – to avoid friction and wear.

The FV200 has a maximum mechanical speed of 35m/min and an output of 800kg/h for HDPE double wall pipes (in the 50-pair mould version). A version with 38 pairs of moulds is also available, for pipe manufacturers looking to make a lower investment but who do not want to compromise on quality.

ITIB is also refining other models in its range: it is looking to increase the cooling efficiency of its small F32 and F65 corrugators, while planning a technical upgrade for its larger FV400 and FV700 models.

Power from snow

At this year's **Plastics Pipe Institute** (PPI) awards, the drainage division's top prize went to Pacific Corrugated – whose StormTite corrugated HDPE pipe was used to divert melting snow runoff away from the sea and into a hydropower-generating reservoir.

Right: Diverting melting snow runoff into a hydropower-generating reservoir, using pipe from Pacific Corrugated, helped boost energy generation

The project, at Terror Lake in Kodiak, Alaska, involved constructing a 1.2-mile tunnel from the pipe – and running it under Kodiak Island's National Wildlife Refuge. At the same time, the company's HDPE pipe was used to build cross-drain roadway culverts, improving vehicle access to the dam and tunnel locations.

The Terror Lake Upper Hidden Basin Diversion Project began in 2018 and will take two or three summers to complete. Once finished, the extra water flow will increase the amount of hydropower-generated electricity by around 33 million kilowatt-hours per year – adding around 25% more energy capacity to the facility.

Scrap for pipe

US-based **Green Line Polymers** (GLP) – a major recycler of polymer products in North America – last year installed "the largest recycling machine ever built" by Austria's **NGR**.

The line is a capable of recycling more than 4,000lbs (around 1.8 tonnes) of plastic scrap per hour. The recyclate will be used by GLP's parent company **ADS**, as a raw material building block for the next generation of corrugated piping products and water management solutions.

Previous to this, more than 41,000 ft of ADS corrugated HDPE pipe was installed as part of a storm water drainage system in South Carolina.

The large diameter, watertight pipe was chosen for the project because it met AASHTO M294 requirements, has a long projected life and could be delivered to the site on a just-in-time basis.

The project involves creating a new interchange within the current interchange by staging construction of new lanes, ramps, and bridges while maintaining traffic. Ten new bridges including two flyovers, rehabilitation of two existing bridge structures, and modifications to the substructure of one existing bridge are also part of this new interchange system.

The project, which was a winner at last year's PPI awards, originally called for reinforced concrete pipe (RCP) – while HDPE was only considered for a small portion of the project.

"A decision was made, however, to move to HDPE for the vast majority of the job, after the contractor realized that it could be delivered on time and with high quality," said Daniel Currence,

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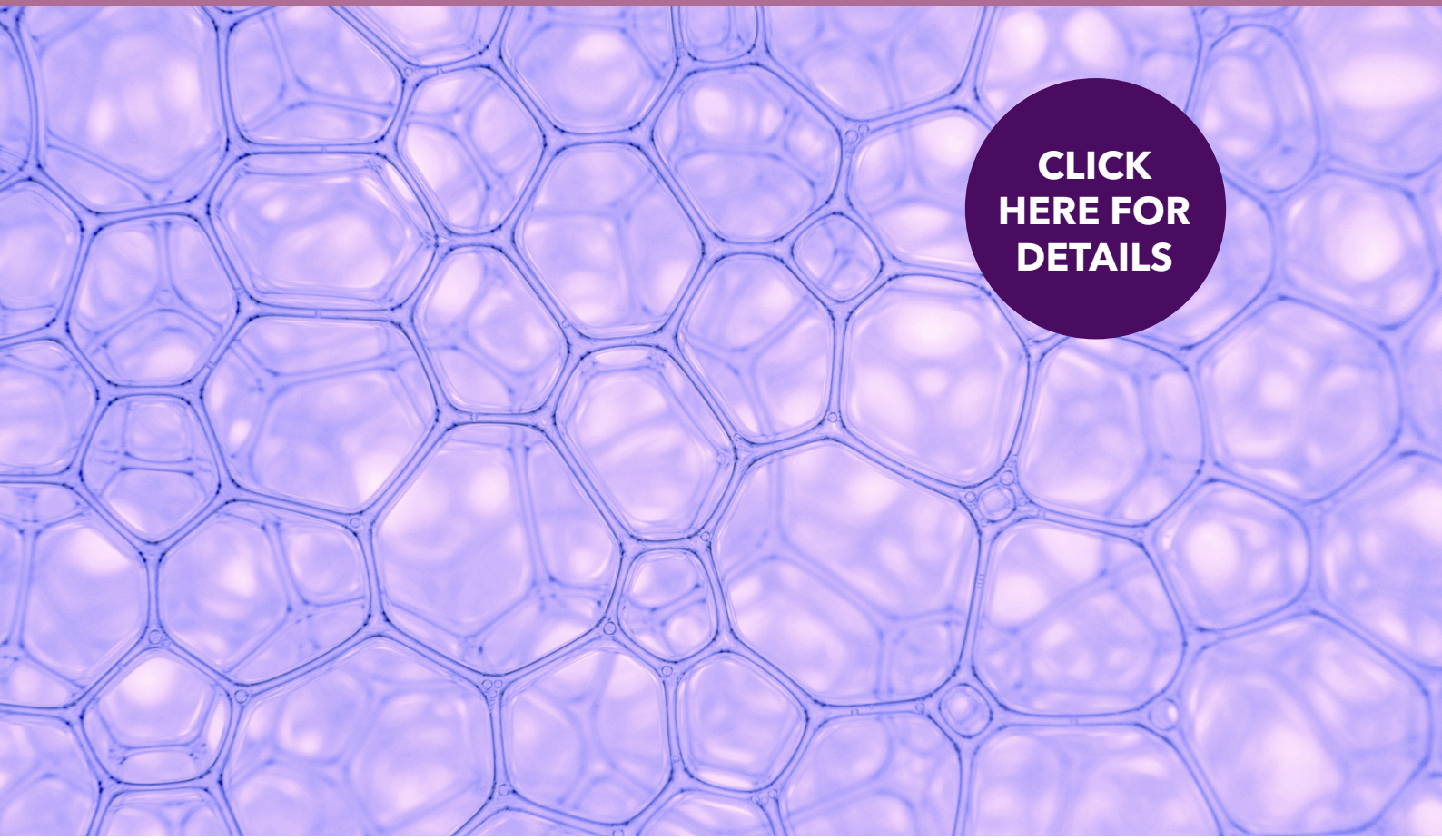

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Above: Seven miles of ADS corrugated PP pipe has been installed on new express lane toll roads in Florida

director of engineering for the corrugated plastic pipe division of PPI.

The change allowed the contractor to get the correct pipe on a just-in-time basis – exactly where it was needed. The low weight of the pipe meant it could be installed about twice as fast as RCP, which lowered the total installed cost.

Storming performance

ADS corrugated pipe also played a central role on new express lane toll roads in Florida – where seven miles of corrugated polypropylene (PP) storm pipe was installed for one new section.

The pipe, called HP Storm, ranged in size from 18 to 36in diameter, enabled the work to be done quickly while reducing costs, and provided a system with a designated 100-year Design Service Life (DSL).

The specification for the stormwater drainage system called for pipe that would have a water-tight joint between sections and a 100-year design service life – as well as fitting the budget and meeting FDOT requirements including post-installation inspection.

Pipe alternatives in FDOT specifications include reinforced concrete pipe (RCP) and two types of corrugated thermoplastic pipe – HDPE and PP.

"Polypropylene pipe is stiffer, which means the pipeline consistently passes Florida DOT's mandate that all projects undergo a laser profile inspection that checks for joint gaps, cracks, and ovality of the pipe," said Currence.

HP Storm couples PP resin technology with a dual-wall profile design for high performance and durability. The smooth interior wall offers extra strength and flow. The pipe has an extended, reinforced bell with a polymer composite band and dual gaskets that add an additional factor of safety within each joint.

According to FDOT documents, polypropylene pipe passed the needed testing to be accepted for 100-year side drain, cross drain and storm sewer applications.

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Welding can be a weak point that undermines pipe lifetimes, but better techniques to assess quality can help to solve the problem

Joint health: assessing pipe weld quality

Plastic pipes typically have service lives of 50 years or more – but must be welded correctly for this to happen. However, joins are a potential weak link: when a plastic pipe fails, it is most often down to this rather than issues such as sub-standard material.

At the recent *Plastic Pipes in Infrastructure* conference, Mike Kalloudis, technical manager at **Impact Solutions**, explained how quality control and quality assurance measures help to cut pipe failures.

"Although a lot of research has been done into the production of PE pipe materials, bad QA/QC processes can threaten the pipelines," he said.

Of course, sometimes the material can be at fault: in one case, he pointed to how five out of eight samples failed pipe tensile testing – due to carbon black agglomerates, which affected pipe elongation.

However, he said that even in pipes and materials are of good quality, they can be undermined by poor welding. Poor techniques such as mud welding, cold fusion/underheating and misalignment can shorten service lifetimes.

"Industry studies have reported that as many as 20% of all welds will fail prematurely," he said. "A good weld should last as long as the pipe material itself."

He said most problems were down to poor training, and poor process – with material defects accounting for just one in 10,000 failures.

He added that new non-destructive QA methods were required to assess electrofusion welds. Some of these are already being developed – such as a new method by Exova, which is under laboratory assessment, he said.

Sealing the deal

Another important element of pipe joining is the pipe seal. At the same event, Julian West, product manager at **Trelleborg Pipe Seals**, told delegates about the development of elastomeric joints for pipes – and how long-term stress relaxation testing can be used to predict service life.

"Most PVC-U joint housings can be considered as 'rigid'," he said. "However, care must be taken when designing joints for pipes from less rigid materials – especially when they are of a structured wall design."

He took delegates through a series of stress relaxation tests that had been carried out on a variety of elastomeric joints – which helped to predict their lifetimes. High performance compounds showed a high polymer content, low compression set and good cross-link density, he said.

"This information will be used to study existing pipe joints and predict service life of the systems in use today," he said.

This will allow the company to better understand the durability of existing joints – and reveal valuable information for designing new systems, he added.

Lightweight fusion

Ritmo of Italy has developed the Delta 200 M manual butt fusion welder, for HDPE and PP pipes of 63-200mm in diameter.

The company says that its main benefits are its light weight, small dimensions and versatility.

The model weighs just 30kg and has dimensions of 529 x 499 x 1100mm. Its working temperature is 180-280°C. It has two clamps, plus an extractable

Main image: Ritmo's lightweight Delta 200 M manual butt fusion welder is for 63-200mm HDPE and PP pipes

Right: Installing water pipe in a new hotel in Florida involved an array of joining technologies from McElroy

electric milling cutter – with a safety micro-switch. In addition, it features an extractable heating plate with an independent thermometer – to see the real working temperature – and an electronic Digital Dragon thermoregulator with display.

It also has a locking device clamps aligner that helps the operator apply the necessary welding force.

The Digital Dragon is a high precision electronic thermoregulator (±1°C accuracy) with digital display and regulating buttons. This new system includes LED indicators to check if the machine is working normally – picking up errors such as temperature anomalies.

Options include: clamp inserts from 63-180mm diameter; lateral support; a trolley for machine transportation and support; and, rollers.

Hotel pipework

Pipe joining was an unseen contributor to the recent expansion of the Seminole Hard Rock Hotel & Casino in Florida, USA.

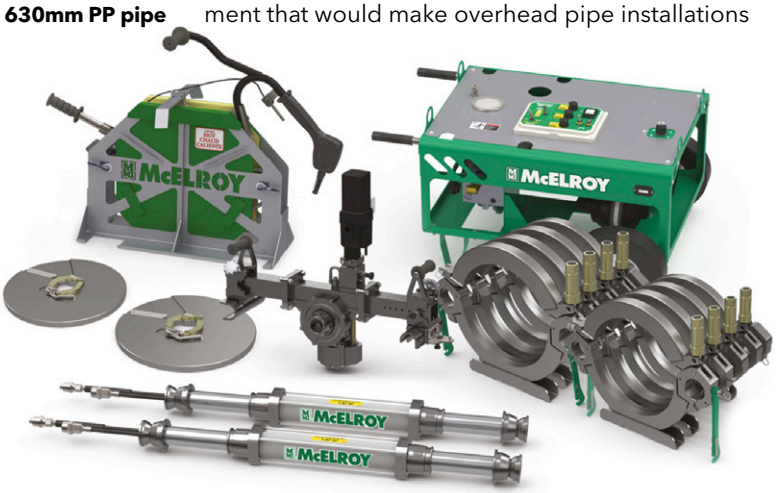
The expansion, which includes a guitar-shaped hotel tower, included piping installation for the casino's heated and chilled water systems.

Installer Kirlin needed to build and fit a piping system to connect a central chiller plant to all the casino's outlying buildings. After originally considering carbon steel, it chose **Aquatherm** PP-R pipe, which was much lighter than metal pipe, so allowed much faster and easier installation.

To overcome another challenge – fusing 24in diameter pipe in tight spaces – the company invested in a prototype butt fusion machine from **McElroy**. After field testing on this project and others, the prototype became the Acrobat 630 featuring the QuikFit carriage.

Below: McElroy offers a range of Acrobat machines that fuse 355-630mm PP pipe

McElroy offers a range of Acrobat machines, which fuse 355-630mm (14-24in) PP pipe. They were developed in response to industry demands for lightweight, large-diameter butt fusion equipment that would make overhead pipe installations safer and more efficient.



"This will provide a solution – through a modular, single-size jaw design – that will make a huge difference in how large-diameter PP pipe is installed," said Paul Donaldson, manager of mechanical engineering at McElroy.

The Acrobat with QuikFit carriage breaks down into multiple components. The ability to assemble the upper and lower jaws of the carriage around the pipe by hand eliminates the need for extra equipment and manpower that would be required to lift and fit an entire carriage into a cramped space. The carriage is half the weight of alternative machines and can be arranged in 4-, 3- and 2-jaw configurations for an even smaller footprint, says the company.

In the Seminole hotel project, most of the fusions on the 24in pipe were overhead and between walls, so most were done in the air on a scissor lift. However, rather than having to lift the fusion machine's whole carriage, Kirlin's crews could remove the top jaws and place the cylinder assemblies, lower jaws and guide rods onto the pipe first. The top jaws and other components were then assembled around the pipe by hand.

For smaller pipe, Kirlin used two Acrobat 250 models, which butt fuse up to 8in pipe. For socket fusion, it used hand tools and leased several McElroy Spider 125s.

In all, the project used about 7 miles of Aquatherm Blue Pipe in various sizes, and about 3,000 ft of Green Pipe SDR 11 and SDR 7.4 MF for the domestic water mains in the casino expansion.

CLICK ON THE LINKS FOR MORE INFORMATION:

- **www.impact-solutions.co.uk**
- **www.trelleborg.com**
- **www.ritmo.it**
- **www.aquatherm.com**
- **www.mcelroy.com**

AMI's annual Polymer Testing & Analysis conference brings key professionals and stakeholders to Düsseldorf, Germany, for knowledge-sharing, networking and more. Here we preview the speaker programme

Polymer testing: meeting diverse challenges

Now established as an important international meeting place for the polymer science community, AMI's Polymer Testing & Analysis conference brings together scientists, laboratory staff, researchers and R&D professionals who develop, test and analyse polymer materials, formulations and products. The event provides a unique opportunity to discover and debate the latest innovations in testing, characterisation and analysis techniques specifically for plastics materials and products.

The fourth annual edition of Polymer Testing & Analysis takes place on 18-19 September 2019 at the Hotel Nikko in Düsseldorf, Germany. The two-day conference provides a unique opportunity to explore and debate the innovations and challenges facing the industry – including end-user demands on product size, strength and functionality, and regulatory requirements for material safety and environmental impact. Together these are creating tough challenges for materials suppliers, designers, specifiers and processors.

The speaker programme includes representatives from leading test organisations, academic institutions, equipment suppliers, plastics material suppliers, and end-users. A wide range of topics include assessment for packaging applications, biodegradable and recycled plastic materials, raw material testing, failure diagnosis, elemental analysis, surface properties and appearance, emissions, composite materials, organic and inorganic mass spectrometry, amongst others.

Here we preview the event, with a closer look at the line-up of expert speakers.

The opening talk of Polymer Testing & Analysis 2019 is delivered by **Ulf Reinhardt**, Managing Director at **Lauda Scientific** in Germany. Dr Reinhardt opens the conference with a talk examining failure analysis by solution viscometry. This is followed by **Michael J. Gray**, CEO and Founder of **Actus Analytical** in the US whose presentation

Expert speakers at Polymer Testing & Analysis include (left to right): Felix Schmollgruber from X-Rite Europe, Martina Lindner from Fraunhofer IVV, Emmeline Aves from Impact Solutions, Dirk Wissmann from Spectro Analytical Instruments, Adrian Boborodea from Certech and Ute Potyka from Shimadzu Europe

looks at new testing technologies to ease compliance with global orthophthalate regulations. The third paper in the session focuses on automation and AI for material development and testing, and is delivered by **Khaled Boqaileh**, CEO of **Labs-Cubed** in Canada.

Surface properties

The next session features **Alois K. Schlarb**, Chair of Composite Engineering (CCe) at the **Technische Universität Kaiserslautern (TUK)** in Germany as the conference investigates surface properties and appearance. Prof Schlarb looks at a modern approach for studying tribological properties of plastic/metal sliding pairs. Up next is **Martina Lindner**, Researcher in Materials Development at the **Fraunhofer Institute for Process Engineering and Packaging (IVV)** in Germany who discusses the mutual influence of surface roughness and hygroexpansion concerning the electrical resistivity of thin aluminium films. A paper on the next level of colour formulation for polymers utilising reflectance/transmission measurement for better performance is then delivered by **Felix Schmollgruber**, Head of Application Engineering EMEA at **X-Rite Europe** in Switzerland.

The conference's third session provides an opportunity for delegates to find out about advances taking place in the testing of sustainable materials. **Ichi Watanabe**, Marketing Manager at **Frontier Laboratories** in Japan, opens the session focusing on the detection of relevant RoHS regulated contaminations in various products made from recycled materials by Pyrolysis GC/MS. **Emmeline Aves**, Polymer Technical Specialist at **Impact Solutions** in the UK, then discusses basic testing and characterisation of biodegradable material properties and poses the question as to whether they really biodegrade. The third presentation, looking at quality control during the production of sophisticated plastic regranulates, is presented by **Harry Prunk**, Member of the Executive Board at **Sikora** in Germany.

The final session of day one starts with **Florian Wagner**, Research Associate at the **Katholieke Universiteit Leuven** in Belgium, who provides a quality assessment of the plastics recycling chain with a focus on innovative characterisation techniques for plastic flakes. **Hans-Dieter Plum**, Head of Mechanical Testing at the **Institut Für Kunststoffverarbeitung (IKV)** in Germany, then evaluates application-oriented long-term testing of plastic materials and components. The day finishes with **Guenter Beyer**, an independent Consultant at **Fire & Polymer** in Belgium, who discusses the characterisation of filler dispersion in nanocomposites.

To round off the day's proceedings, a networking drinks reception is held in the exhibition area, where delegates and speakers debate the conference so far and attendees can network with industry peers.

Applications

Day two of Polymer Testing & Analysis 2019 opens with **Adrian Boborodea**, Senior Analytical Scientist at **Certech** in Belgium, looking at an evaporative light scattering detector with linearised signal for high temperature gel permeation chromatography. The next talk is given by **Franky Puype**, a Researcher at the **Institute for Testing and Certification** in the Czech Republic, and explores the application of organic and inorganic mass spectrometry for polymer analysis. To close the session, developments in elemental analysis of polymers and plastics using XRF with a focus on testing for non-intentionally added substances and compliance screening is presented by **Dirk Wissmann**, Senior Product Manager at **Spectro Analytical Instruments** in Germany.

Session two starts with a look at testing the resistance of thermoplastic piping systems to hydrogen presented by **Sjoerd Jansma**, Material Consultant from **Kiwa Technology** in the Netherlands. This is followed by **Daniel Friedrich**, Lecturer and Researcher at the **Baden-Württemberg Cooperative State University/Compolytics** in Germany, who offers a comparison of naturally and artificially weathered wood-polymer composites following an algorithm-based approach. **Carsten Grossmann**, Project Engineer at the **Kunststoff-Institut Lüdenscheid** in Germany, then discusses emission from tools during the process of plastic forming.

The final session of the conference showcases the latest advances in the assessment of polymers for packaging applications. **Sven Sängerlaub**, Business Development Manager Packaging at **Fraunhofer IVV** in Germany, presents his research on utilising shelf life modelling to define the required polymer properties for multilayer packaging. A paper looking towards de-formulation of a biodegradable packaging thin foil with unknown composition using a pyrolysis GC-MS related method map is then delivered by **Ute Potyka**, Product Specialist GCMS & LCMS at **Shimadzu Europe** in Germany. Closing the conference will be **Sofía Collazo Bigliardi**, Food Contact and Packaging from **Aimplas** in Spain, who looks at European legislation on plastic materials intended to come into contact with food, with a special focus on bioplastics.

About Polymer Testing & Analysis conference

The fourth edition of Polymer Testing & Analysis takes place on 18-19 September 2019 at the Hotel Nikko in Düsseldorf, Germany. It follows on from previous events in creating an ideal knowledge exchange platform that allows attendees to learn from the thought leaders in this sector and network with their scientific, and industry, peers. In addition to the formal conference sessions, the event provides extensive networking opportunities throughout the informal breaks, including access to the table top exhibition area and complementary cocktail reception at the end of the first day. To find out more about attending the conference, taking a table-top exhibition space, or becoming a conference sponsor, visit the **conference website** or contact Conference Organiser Alexandra Fish: **alexandra.fish@ami.international** Tel: +44 (0) 117 314 8113.

Polymers in Cables

2019

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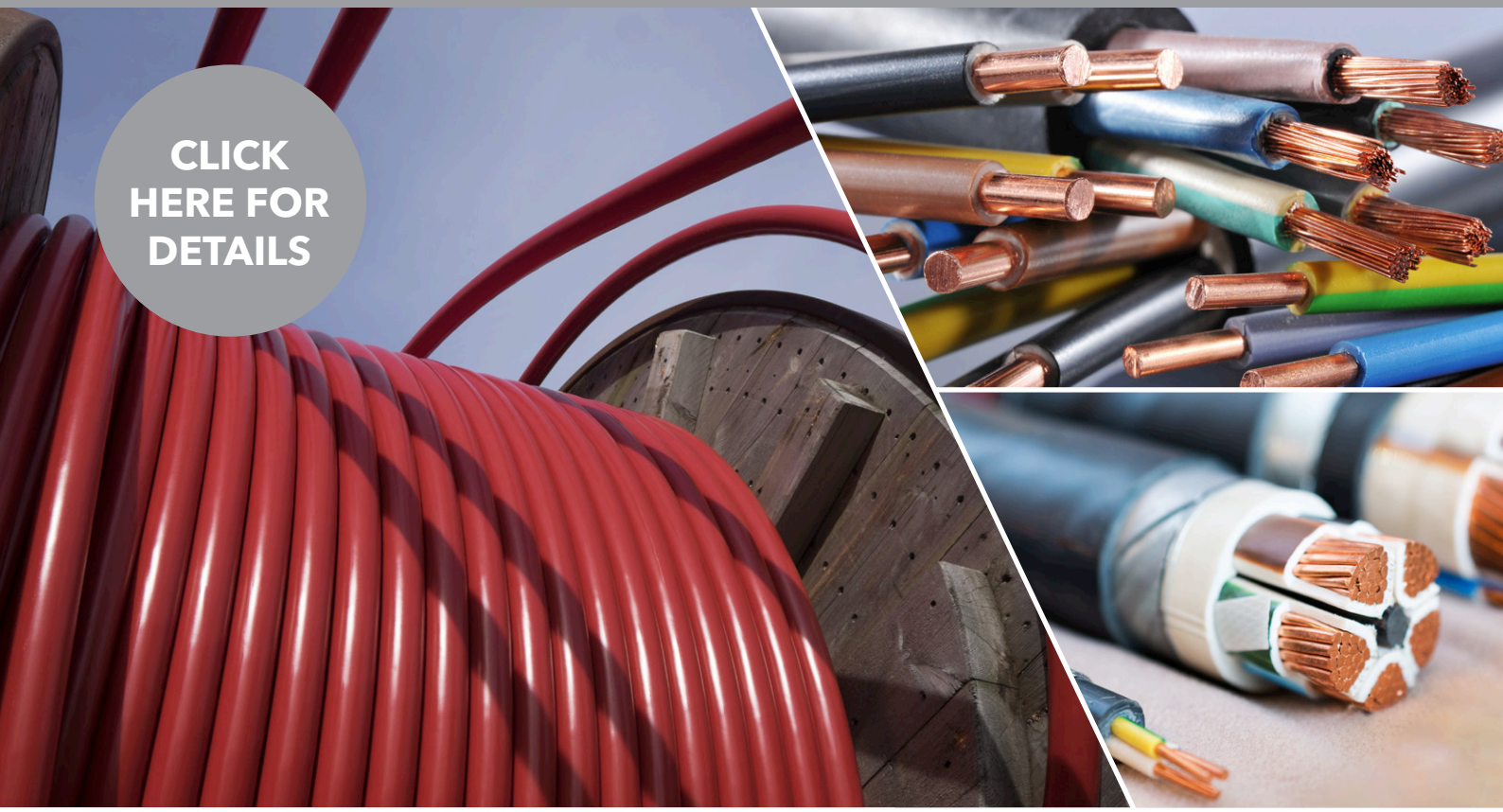

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RECYCLING

Liquid additive reduces polymer degradation

A new liquid additive from Riverdale Global claims to reduce the polymer degradation that takes place during melt processing.

This boosts physical property retention in regrind compared with unmodified material.

Its Restore additive has shown positive results with recycled commodity resins such as polyolefins, according to Jared Arbeter, technical sales manager at the company.

For example, reground polypropylene homopolymer with the additive showed 65% greater Izod impact strength than unmodified regrin. Improvements have also been seen with PP copolymer and HDPE, said the company.

The additive can be used alone or in a blend with Riverdale's liquid colours. Typical usage rates are in the 0.1 to 0.5% range. Processors can use the additive to enhance the physical properties of virgin materials, though the most dramatic results are seen in recycling.

"Recyclers can obtain physical properties much closer to those of virgin polymer than with unmodified regrind," said Arbeter. "This expands end-use possibilities for recycled material, opening new applications in moulded or extruded products."

› **www.riverdaleglobal.com**

POLYPROPYLENE

Braskem signs up PP distributor

Polymer distributor PolyQuest has become Braskem's distribution partner in the USA for polypropylene.

The move comes as Braskem nears completion of its Delta line – a new PP production plant beside its facility in La Porte, Texas. The Delta line will have a production capacity of 450,000 tonnes/year and is scheduled to open in early 2020.

Both companies also have experience in PP recycling.

"We look forward to leveraging our expertise in PP recycling and closed-loop technologies with PolyQuest's established US recycling facilities," said Mark Nikolich, CEO of Braskem America.

› **www.braskem.com**

STABILISERS

Capacity boost in Malaysia

Baerlocher has invested more than US$10m in a new metal stearate production line at its facility in Seremban, Malaysia.

Here, the company produces PVC stabilisers and additives for polyolefins, along with zinc and calcium stearates. It supplies to the ASEAN markets, South Korea, Japan, Australia and the Middle East.

As well as boosting production by 10,000 tonnes/year, the investment will add warehousing and office space at the site.

"With the higher demand and market share increasing year by year, we foresee an upturn in production," said Sethu Palaniappan, managing director of Baerlocher Malaysia.

"We are well prepared for further growth."

› **www.baerlocher.com**

ADDITIVES

Mexichem makes UK compound expansion

Mexichem Specialty Compounds (MSC) has installed a new production line at its facility in Melton Mowbray in the UK – increasing production capacity by an additional 10,000 tonnes per year.

The expansion will effectively double capacity for speciality materials such as its Megolon compounds, which are widely used in wire and cable applications.

"The complexity and specialisation required to run these leading-edge materials requires certain competences," said Daniel DeLisle, general manager of MSC. "We are committed to focusing on the future innovation of these material types."

MSC operates from five facilities, and last year acquired Sylvin Technologies of the USA.

› **www.mexichemspecialtycompounds.com**

PIPE EXTRUSION

KM confirms three extrusion machinery orders from Russia

KraussMaffei Berstorff has recently confirmed three orders from Russia, for extrusion machinery.

Sibur, a major raw material manufacturer, has ordered a lab system to make polyolefin pipes in its application development centre. The line is mainly for studying and further developing the process behaviour of PO and PP formulations as well as the properties of the end products – within the plants owned by Sibur.

It produces single-layer HDPE, PP-R and PP-B pipes in 32 to 110mm diameters using the KME 38-30 B/R single-screw extruder and the KM RKW 32-110 tube die.

Meanwhile, St. Petersburg-based pipe manufacturer Nordpipe has placed a follow-up order for machines that make three-layer polyolefin pipes.

"Our goal is a maximum improvement in product quality by consistent development," said A.A. Prozorovsky, managing director of Nordpipe. "We can only achieve this using a state-of-the-art, high-technology machine pool."

The multi-layered PE 100 RC pipes are highly resistant to the development of cracks, which increases their service life.

Technonikol has produced gutter strips on KM machinery

At the same time, Technonikol will use a coextrusion line to make drainage systems. A complete coextrusion line makes two different products: a rainwater pipe and a gutter strip.

"The twin-screw extruders from KraussMaffei Berstorff guarantee optimum melt quality for our application – and thus a premium finished product," said Andrey Sinyakov, project manager of Technonikol. "In addition, the attractive price/performance ratio was a crucial point."

› **www.kraussmaffeiberstorff.com**

MATERIALS HANDLING

Winners honoured at Motan awards

Motan announced the winners of its biennial innovation awards at Fakuma last year – with the winner scooping €10,000. Reinhard Herro was awarded the top prize for his 'gravimetric suction box' – a new system for throughput detection with batch traceability for pneumatic conveying systems.

It measures all material throughputs directly at the material source and so replaces the usual measuring procedure at the consuming unit – typically a material loader. Using a gravimetric dispenser integrated in the suction box, each batch of material is weighed individually before conveying – then automatically assigned to a designated machine. With only one measuring system, it is now possible to measure and control the material throughputs of many consuming units. In addition, the gravimetric suction box opens up new possibilities for the control and monitoring of pneumatic conveying systems, as many processes are automated. For instance, the optimum filling quantity for material loaders is automatically generated, and overfilling is prevented.

The second prize of €6,000 went to Phillip Mählmeyer, for his app that retrieves status information quickly and accurately.

It uses clear, machine-readable codes (QR codes) attached to the aggregates, which visualise the required data on a mobile device. Each operator can then query status information easily, and also control the associated processes: using a mobile device, mechanical adjustments, calibrations and service work can be carried out directly at the machine. A major advantage of the app is that it lowers the installation effort and costs compared to other systems.

The third prize of €4,000 was awarded to Bernd Michael, for his Metro-Lay system – which allows material feedlines to be laid in a very efficient way.

› **www.motan-colortronic.com**

NEW from AMI Consulting

Polymeric Materials in the Global Cable Industry 2019

A qualitative and numerical appraisal of the global cables market, which provides:

- Cable industry trends (global, regional and leading countries)
- Total consumption of polymeric material in cables production (tonnes; global, regional and all countries)
- Total consumption of polymeric material in cables production by polymeric material
- Total consumption of polymeric material in cables production by end-use application
- Total consumption of polymeric material related to cable demand/use
- Top 10 manufacturers by region
- Top 5 manufacturers of leading countries

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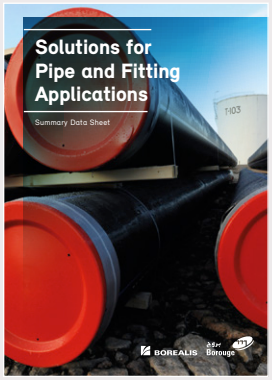
BOREALIS: PIPE POLYMERS



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.

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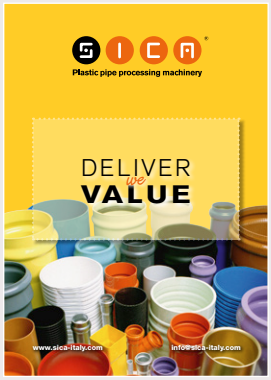
SICA: PIPE PROCESSING



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.

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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.

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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.

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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.

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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.

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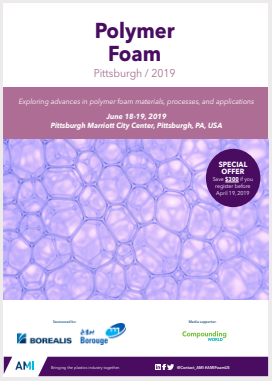
If you would like your brochure to be included on this page, please contact Claire Bishop claire.bishop@ami.international. Tel: +44 (0)1732 682948

Learn more about AMI's upcoming conferences

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

POLYMER FOAM USA 2019



The seventh edition of AMI's Polymer Foam USA conference takes place on 18-19 June 2019 in Pittsburgh in the US. This international event examines the latest foaming technologies and applications in thermoplastics and elastomers.

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PLASTICS RECYCLING TECHNOLOGY

AMI's second Plastics Recycling Technology conference takes place in Berlin in Germany on 18-19 June 2019, bringing together key players and industry experts to explore how technology will enable increased plastic recycling rates.

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MEDICAL TUBING 2019

The vital role of polymers in the healthcare sector will be examined at AMI's third Medical Tubing conference in Berlin in Germany on 25-26 June 2019. Learn about the latest industry demands, regulations, materials and processing innovations.

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COMPOSITES IN RAIL

This brand new event takes place in Berlin in Germany on 25-26 June 2019. With environmental issues very much on the rail industry agenda, it will allow all in the composite supply chain to explore technical solutions and future opportunities.

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POLYMERS IN FLOORING USA

AMI's 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.

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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 materials scientists, laboratory staff, researchers and R&D professionals who develop, test and analyse new polymer materials.

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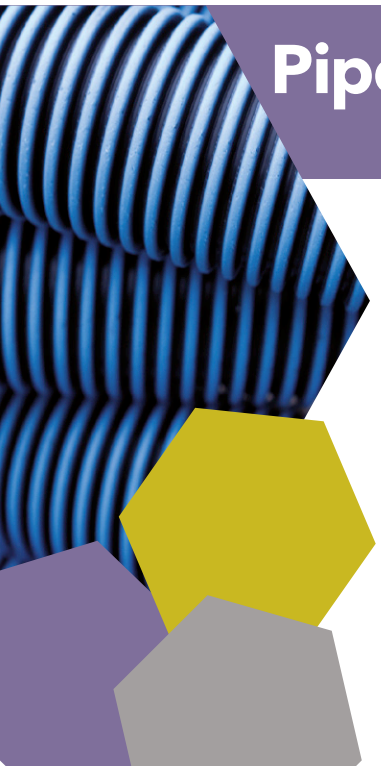
To see our full line-up of more than 50 plastics industry events over the next 12 months, please visit www.ami.international/events

Nordpipe

Head office:	St Petersburg, Russia
CEO:	Aleksandr Aleksandrovich Prozorovsky
Founded:	2007
Ownership:	Public (joint stock company)
Profile:	Nordpipe, established in 2007, produces HDPE pipe for a range of applications, including domestic water supply and underground gas supply and cable protection, as well as corrugated pipe for sewage. It offers everything from pipe design and production through to delivery and installation. More recently, the company has begun producing multi-layer pipe with higher mechanical properties.
Product lines:	Nordpipe produces HDPE pipe in various brands, with diameters of 20 to 630mm. These include PE100 RC pipes for water supply (which can be supplied on 50 or 100m coils), cable protection pipes with smooth inner surfaces, corrugated sewage pipes (and fittings) and gas pipes with enhanced crack resistance. In 2015, it began producing its Powerpipe series of multi-layer pipe – including its Powerpipe 3, which includes a "protective coating of mineral composition based on polypropylene".
Factory location:	The company's factory is located in St Petersburg, in the north-west of Russia. Nordpipe recently took delivery of a new three-layer line from KraussMaffei Berstorff of Germany, in order to make PE 100 RC pipe with high crack resistance. Overall, the company's output is around 12,000 tonnes/year of pipe, which is used mainly in Russia by more than 500 different customers. The company says that is also uses equipment from Amut, Piovan and Ritmo. Its recent projects include a new football stadium on Krestovsky Island, and the Expoforum convention centre in St Petersburg.

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:

July/August 2019
PVC stabilisers
Oil & gas industry
Extruder technology
K2019 visitor guide

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

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

For information on advertising in these issues, please contact:
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Keep informed: read our latest editions

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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.

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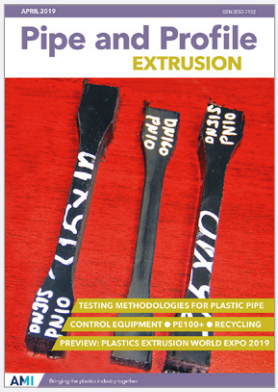

Pipe and Profile
April 2019
The April edition of Pipe and Profile Extrusion magazine looks at developments in pipe testing and regulation. It also explores the latest innovations in process control and material recycling and highlights some new PE100 resin applications.

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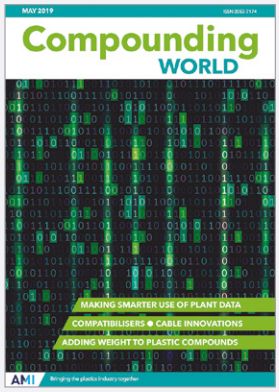

Compounding World
May 2019
In the May edition of Compounding World, there are features about smart use of plant data, compatibilisers, cable compounds, and high density plastics. Plus, a preview of the Chinaplas 2019 exhibition and AMI's Compounding World Congress.

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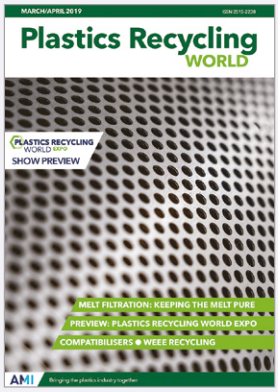

Plastics Recycling World
March/April 2019
The March/April edition of Plastics Recycling World examines the latest developments in melt filters and details innovations in WEEE recycling and polymer compatibiliaation. Plus, we preview next month's Plastics Recycling World Expo in the US.

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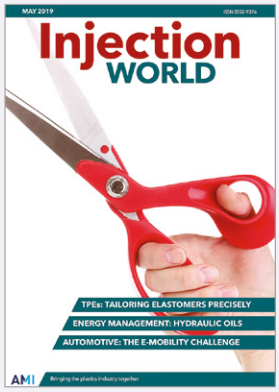

Injection World
May 2019
The May edition of Injection World magazine examines some of the ways moulders can reduce their energy bills. It also looks at lightweight solutions for e-mobility applications and developments in high performance TPEs.

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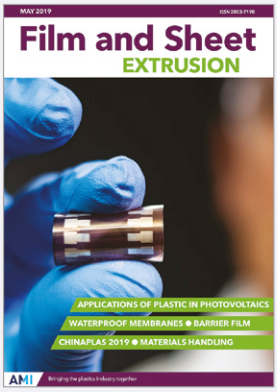

Film and Sheet
May 2019
The May issue of Film and Sheet Extrusion looks at the vital role played by extruded plastics in photovoltaic energy. The other features cover barrier film, waterproof membranes and materials handling, plus a preview of Chinaplas 2019.

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

GLOBAL EXHIBITION GUIDE

2019	**19-22 June**	Interplas Thailand, Bangkok	www.interplasthailand.com
	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
	13-17 October	Fakuma, Friedrichshafen, Germany	www.fakuma-messe.de

AMI CONFERENCES

18-19 June 2019	Polymer Foam, Pittsburgh, PA, USA
18-19 June 2019	Plastics Recycling Technology, Dusseldorf, Germany
25-26 June 2019	Medical Tubing, Berlin, Germany
18-19 September 2019	Polymer Testing & Analysis, Dusseldorf, Germany
12-13 November 2019	Profiles, Cologne, Germany
12-14 November 2019	Polyolefin Additives, Vienna, Austria

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

www.ami.international

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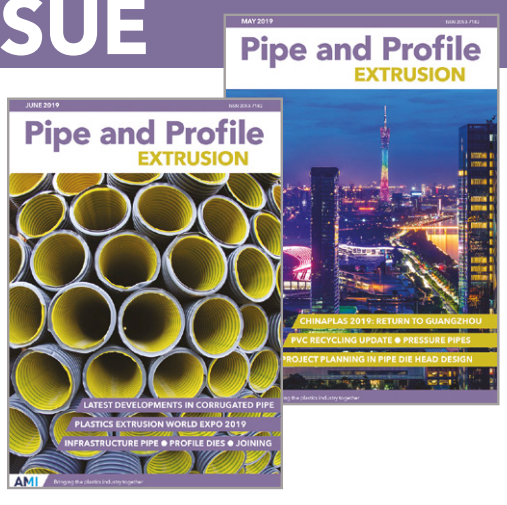

Medical Tubing

Berlin / 2019

Headline Sponsor

GIMAC

The international conference on polymeric medical tubing and catheters, covering design, materials, production and applications

25 - 26 June 2019
Meliá Berlin, Berlin, Germany

Image Courtesy of: Spectrum Plastics Group

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Compounding WORLD

Medical Tubing

Berlin / 2019

Global demand in medical tubing and catheters is growing for a variety of reasons, including an aging population, moves towards minimally invasive medical procedures and emerging economies with growing populations.

Some of the challenges facing the industry are technology innovation and customization of business models to suit both developed and developing healthcare markets. On the production side, materials selection can be difficult due to the variety of polymer options available. Moving forward, the industry needs to focus on key challenges including adoption of new regulations and optimization of processes.

AMI's successful Medical Tubing conference returns for its third European edition. This event brings together key players and international industry experts from across the supply chain to explore opportunities, technical advances, threats and challenges facing medical device manufacturers as well as the wider supply chain.

Expert speakers give both technical and commercial insights. Discussions cover design of medical devices, material requirements, technology trends in applications and extrusion, advances in medical grade materials as well as quality assurance of medical devices. Experts also help you prepare for the MDR by reviewing facts and answering your questions.

This is the only international conference focused on the production of medical tubing and catheters involving the entire value chain. Meet like-minded experts, stay ahead of the curve, build your network and hear insights from key players, all in one place.

> ***That's the place where the 'small world' of medical tubing extrusion meets!***
>
> Director BU Tubing, Raumedic AG

Headline Sponsor

For 35 years, Gimac has been developing special processes, machines and systems for plastic polymers extrusion. Distinguished by loyalty, passion and competence, Gimac dedicate a lot of attention to autonomous development and research of new techniques and technologies as well as to the acknowledgement of project boundaries. This is what allows Gimac to convey experience and competence into the development of competitive tools for their customers. From Coextrusion, Multilumen, variable flexibility or combinations of the same to precision, small dimensions or high speed Gimac is the right partner for innovation and business development processes.

For more information visit **www.gimac.com**

Five good reasons to attend:

- **Discover recent developments in plastics, catheter and tubing design and processing**
- **Understand how leading medical device manufacturers make important decisions (including materials selection)**
- **Benefit from different formats designed to give you in-depth advice on technical advances and direct interaction with speakers on key topics like regulatory changes**
- **Build your network by meeting key players from throughout the medical tubing and catheter supply chain**
- **Get up close to well-connected leading industry experts and ask your questions**

Ways to get involved:

ATTEND

Register before 26th April 2019 and pay €1040* saving €200 on the full price of €1240*. There are additional discounts for group bookings. The registration fee includes attendance at all conference sessions, the Networking Cocktail Reception, lunch and refreshment breaks on both days and a set of conference proceedings.

SPONSOR

A variety of sponsorship opportunities are available at this conference to help promote your company's products and services to this highly targeted international audience. Contact the Conference Hotline for further information.

EXHIBIT

Make it easy to engage with the audience at this busy event with your own highly visible exhibition space. Bring your own display stand and / or banners and use the space to showcase your company's products and services and make a lasting impact. The exhibition runs throughout the conference by the main meeting room and is host to the networking functions.

Space is limited so to avoid disappointment please register for this service as soon as possible.

* VAT may apply

CONFERENCE HOTLINE

Contact: Lorna Grey, Conference Organiser
Tel: +44 (0) 117 314 8111
Email: lorna.grey@ami.international

SAVE €200
Register before 26th April 2019

Medical Tubing

Berlin / 2019

Tuesday 25th June 2019

08:30 Registration and welcome coffee
09:30 Opening announcements

SESSION 1 – ENHANCING THE DESIGN OF YOUR NEXT TUBING OR CATHETER PROJECT

09:40 **Defining your tubing needs – from material selection to required tubing features**
Mr. Rüdiger Gall, General Manager,
FREUDENBERG MEDICAL EUROPE GmbH, Germany

10:10 **Designing complex, minimally invasive catheters – a device designer shares his experience**
Mr. Ido Sadan, Medical Device R&D Engineer and Designer,
CORAMAZE TECHNOLOGIES Ltd., Israel

10:40 Morning coffee

SESSION 2 – MEDICAL DEVICE MANUFACTURER'S REQUIREMENTS

11:20 **Panel discussion: Discussing material requirements for medical tubing and catheters; the manufacturers perspective**
Mr. Brian Dillon, Principal Polymer Engineer,
BOSTON SCIENTIFIC, Ireland

More panellists to be confirmed

12:50 Lunch

SESSION 3 – EXPLORING TRENDS AND TECHNOLOGY ADVANCES FOR VARIOUS APPLICATIONS

14:20 **Micro wires: CoExtrusion with wires**
Mr. Daniel Riechelmann, Product Manager Application Technology,
RAUMEDIC AG, Germany

14:50 **Technological advances in low-profile delivery systems**
Mr. Steve Maxson, VP of Sales – Vascular Technologies,
SPECTRUM PLASTICS GROUP, United States

15:20 Coffee break

SESSION 4 – COUNTDOWN TO THE EUROPEAN MEDICAL DEVICE REGULATION: YOUR QUESTIONS ANSWERED

16:00 **Highlighting and implementing changes under the MDR**
Mr. Petr Smidl, President,
CZEDMA – CZECH ASSOCATION OF MANUFACTURERS AND SUPPLIERS OF IN VITRO DIAGNOSTICS, Czech Republic

16:25 **What impact does the MDR have for medical device and component manufacturers**
Dr. Karel Volenec, Owner and Head of R&D Dpt. and Chairman of Association of Manufacturers and Suppliers of Medical Devices (AVDZP),
ELLA-CS s.r.o., Czech Republic

16:50 **Roundtable discussion and Q&A**
This interactive session gives attendees the opportunity to direct the narrative by discussing concerns, implications and opportunities regarding the MDR in small groups. Attendees can then quiz the experts on stage and hear their views.

17:30 Networking Cocktail Reception sponsored by: AMERICAN KUNHE

Wednesday 26th June 2019

08:30 Welcome coffee
09:00 Opening announcements

SESSION 5 – IMPROVING EXTRUSION OF CATHETERS AND TUBING

09:10 **Let's talk about extrusion process improvement: process and final properties**
Mr. Simone Maccagnan, Business Development Manager,
GIMAC, Italy

09:40 **The influence of extrusion processing on the properties of poly (L-lactic acid) tubing for medical applications**
Mr. Brian Dillon, Principal Polymer Engineer,
BOSTON SCIENTIFIC, Ireland

10:10 **Impact of transitional extrusions on device design, manufacturing integration and properties**
Dr. Stephen Davis, Scientist,
EXGINEERING, Switzerland

10:40 Morning coffee

SESSION 6 – INVESTIGATING MATERIAL DEVELOPMENTS: THE VIABILITY OF PVC ALTERNATIVES

11:20 **Discovering trends in silicones extrusion for medical devices, including a review of the global supply situation**
Mr. Dan Sanchez, Product Manager,
TRELLEBORG SEALING SOLUTIONS, Germany

11:50 **Exploring opportunities for medical mono- or multilayer tube extrusion with new S-TPE grades**
Mr. Bernd Elbert, Business Development Manager Styrenic Specialities Healthcare & Packaging,
INEOS STYROLUTION EUROPE GmbH, Germany

12:20 **PO solution as alternative for traditional materials – reviewing the material characteristics and processing aspects**
Dr. Ankur Rastogi, Application Development & Technical Service PB-1 Specialities,
BASELL POLYOLEFINE GmbH, Germany and
Dr. Daniel Schläfli, R&D Project Leader and Patent Manager,
MAILLEFER SA, Switzerland

12:50 **Insights from a Chinese PVC compounder: reviewing medical grade PVC in the context of Chinese and Asian regulations; exploring market and technology trends**
Mr. Mingjia Tang, General Manager Assistant,
SHENZEN HOPEFINDER POLYMER SCI. & TECH. COMPANY, China

13:20 Lunch

SESSION 7 – QUALITY ASSURANCE, TESTING AND SPECIFICATION OF MEDICAL GRADE MATERIALS AND MEDICAL DEVICES

14:50 **Test specifications for medical tubing – exploring relevant characteristics beyond the standard**
Ms. Liesa Gläß, Product Engineer, Material Scientist,
B. BRAUN MEDICAL AG, Switzerland

15:20 **Dos and don'ts for the best quality assurance in your medical device**
Mr. Joan Besolí, Head of Molding and Extrusion Department,
iVASCULAR, Spain

15:50 **Reviewing medical grade materials, achieving material purity and process stability for medical tubing**
Mr. Christian Schalich, Head of Sales – Business Unit Hose & Tube,
SIKORA AG, Germany

16:20 Afternoon tea and conference ends

Conference signage sponsored by: SPECTRUM PLASTICS GROUP

Conference presentation download sponsored by: eXgineering

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*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***

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Register online

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DELEGATE/EXHIBITOR DETAILS

Title: Mr/Mrs/Dr/Other: _____
First name: _____
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Signature: _____ Date: _____

Please confirm that you agree to your name being published alongside your company name and job title on the delegate list.

❑ *Yes* ❑ *No*

By registering for this event (please tick these boxes);

❑ *I agree to AMI's Privacy Policy (www.ami.international/about/legal)*
❑ *I agree to AMI's Terms & Conditions (www.ami.international/about/tac)*

PARTICIPATION

	Price	VAT	Total
❑ Early Booking Delegate Admission Fee[1]: (Until 26th April 2019)	€1,040.00	19%	€1,237.60
❑ Delegate Admission Fee[1]: (From 27th April 2019)	€1,240.00	19%	€1,475.60
❑ Exhibition Space: (UK Companies)[3]	€1,825.00	20%	€2,190.00
❑ Exhibition Space: (Non-UK Companies)[4]	€1,825.00	0%	€1,825.00

Total: _____

[1] Subject to German VAT at 19%. [2] Reverse Charge. [3] Subject to UK VAT at 20%. [4] Reverse Charge for companies from other EU countries, 0% for Non-EU companies.

METHOD OF PAYMENT

You will be sent an invoice in 7-14 working days.

❑ ***Pay by credit card by registering online:***
We accept: Visa / Mastercard
Alternatively, please provide your contact details and we will send you a link to a secure payment gateway via email.
Name: _____
Email: _____

❑ ***Bank transfer quoting:*** 'Your invoice and A/C No.'
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Account number: **06814077** Bank no. **556138**
IBAN: **GB63 NWBK 6072 0306 8140 77** SWIFT: **NWBKGB2L**

MEDICAL TUBING 2019 CONFERENCE INFORMATION

25-26 June 2019
Meliá Berlin
Friedrichstraße 103
10117 Berlin
Germany
Tel: +49 302 060 790 0
Fax: +49 302 060 790 444

HOTEL ACCOMMODATION

Delegates are responsible for booking their own accommodation. We have negotiated a room rate of €161 for a single room and €185 for a double (tax, breakfast and Wi-Fi included) at the Meliá Berlin in Berlin until 29th April 2019.

Please make your reservation using the direct hyperlink which can be found on our website www.ami.international/events (click on 'Medical Tubing 2019' followed by Accommodation). To contact the Reservations Department directly, please call +49 302 060 790 0

PARTICIPATION OPPORTUNITIES

Delegate registration: includes attendance at all conference sessions, a set of conference proceedings, entrance into the Networking Cocktail Reception, lunch and coffee breaks.

Sponsor this event: maximise your company profile before, during and after the event by becoming a sponsor. For further information, please contact the Conference Organiser

Exhibition space: an excellent way to enhance your business opportunities and make it easy for delegates to find you! Includes:

- entry for one representative from your company
- one exhibition space in the networking area
- your company profile in the conference proceedings
- new and existing product display
- handing out brochures and promotional items from your stand

Spaces are allocated on a first-come-first-served basis and sell quickly.

Group discounts: when registering as a group you may be entitled to discounts. Contact the Conference Organiser for more information.

Networking Cocktail Reception

A networking cocktail reception will be held on the first evening. This offers an excellent opportunity for delegates to meet with speakers and other colleagues. All delegates are invited to attend and admission is included in the delegate fee.

CANCELLATIONS

Full refunds, less a cancellation charge of €300 will be made on cancellations received prior to 25th April 2019. Thereafter we regret that no refunds can be made. Delegates may be substituted at any time. Please note that refunds will not be given on exhibition spaces or sponsorship packages.

CONFERENCE HOTLINE

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