

# Pipe and Profile **EXTRUSION**



**LIFE LINES: INNOVATION IN MEDICAL TUBING**

**LATEST ADVANCES IN TOOLS & DIES FOR PIPE**

**UPDATE ON PRESSURE PIPE ● WELDING & JOINING**



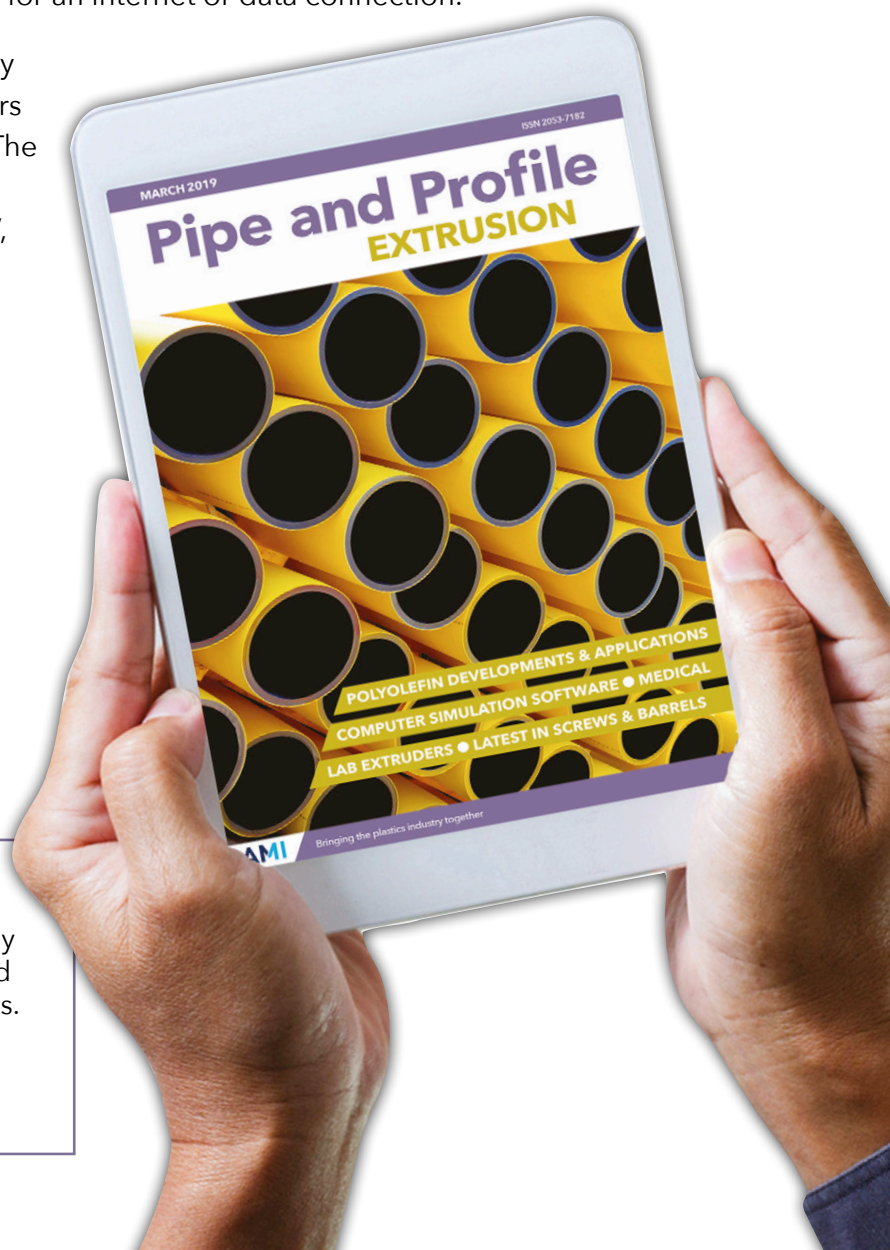
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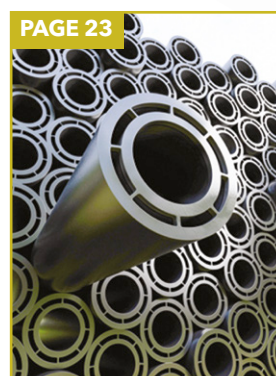
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# Aliaxis reports flat sales but healthy profit growth for 2019

Belgian pipe manufacturer Aliaxis reported flat sales in 2019 – though profit growth was healthy.

The company posted sales of more than €3.1 billion (US\$3.3bn) in 2019, an increase of less than 1% compared to the previous year. It said that strong performances in India and the USA were offset by lower results in Asia and South America.

The strength of the US dollar and Indian rupee against the Euro helped to boost sales performance by 1.5%.

"Last year saw significant growth in our key geographies such as India and the US, supported by a number of growth investments," said Laurent Lenoir, CEO of Aliaxis. "This was undermined by lower results in Asia-Pacific and Latin America."

Despite stagnant sales, profitability (EBITDA) rose by 6% to €440 million (US\$469m). This figure including two adjusted items – related to earlier divestments and ongoing restructuring. Without the exceptional items, EBIT alone fell by nearly 3% to €300m (US\$320m) in 2019.

In the EMEA region, the building segment performed well – with strong performances in France, Spain and Italy offset by weaker conditions in the UK and Germany. However, UK and German sales were key to the success of the infrastructure segment.

"Our industry segment faced a contrasted performance," said the company. "France and Spain (irrigation) performed very well behind sustained demand, while domestic German demand remained soft."



**Lenoir: "Significant growth in key geographies such as India and the USA"**

In the Americas, a record year in the USA was partially offset by a weak performance in Canada. During 2019, Aliaxis acquired US-based Silverline Plastics – which has four production plants – for €134m (US\$143m).

Latin America performed weakly, and Aliaxis ended

the year by withdrawing its distribution operation in Brazil and exiting the competitive Mexican market.

In Asia-Pacific, Australia experienced a slowdown and New Zealand was flat. However, in India, the company achieved "another record year of sales in spite of the weaker agricultural season", with growth fuelled by housing-related initiatives.

In March of this year the company sold its US distribution subsidiary, Harrington Industrial Plastics, to private equity firm Nautic (see separate story on this page).

On Coronavirus, the company said: "We are monitoring the situation closely and taking all contingency measures to protect our business, employees and customers."

➤ [www.aliaxis.com](http://www.aliaxis.com)

## Equity firm buys pipe distributor

US private equity firm Nautic Partners has become the new owner of pipe distributor Harrington Industrial Plastics, in partnership with the company's management.

Founded in 1959, Harrington distributes corrosion-resistant products for industrial fluids and high purity applications. It employs around 550 people in 55 branches across the USA. Its products are used in many end markets, including water treatment, chemicals and food and beverage production. It focuses on corrosive applications that generally need

speciality products.

"We are delighted to have found a like-minded partner in Nautic," said Eben Lenderking, CEO of Harrington. "We have been growing at rates well above the market for several years. We look forward to working in close partnership with Nautic to continue our strong growth."

Harrington has a strong competitive position in a fragmented market, which has resulted in strong customer retention and satisfaction, he said.

Chris Pierce, a managing director of Nautic, added: "Harrington has an

experienced management team that has accelerated growth in recent years. We are thrilled to partner with them to support continued organic growth, as well as pursue selective acquisitions. Additionally, we're excited to add another investment to our distribution portfolio within Nautic's industrials group."

Aliaxis CEO Laurent Lenoir added: "Harrington has achieved new levels of profitability, and become a market leading distribution company."

➤ [www.hipco.com](http://www.hipco.com)

➤ [www.nautic.com](http://www.nautic.com)

# Tessenderlo's pipe extrusion division helps lift 2019 results

Dyka Group – the extrusion business within Belgian industrial group Tessenderlo – helped to raise performance within the industrial solutions division.

Full-year sales in this part of the business grew by just over 1% to €526 million (US\$561m) “mainly thanks to the contribution of Dyka Group, which benefited from favourable market circumstances”, said the company.

The Dyka Group – which comprises pipe companies Dyka, BT Nyloplast and JD Pipes – helped to boost profits, due to both higher volumes and increased production efficiency, as a

result of earlier investments.

In December 2019, Dyka said it was looking to acquire a production plant in La Chapelle-Saint-Ursin (France) from Rehau of Germany. The transaction is scheduled to be completed by May 2020.

“This will further strengthen the position of Dyka on the French market for wastewater plastic pipe systems,” said Gabriël Spruijt, executive vice president of Dyka Group. “Having a second site in France will enable us to realise growth in sewer and drainage pipes.”

Tessenderlo said that, despite the

Coronavirus pandemic, all its plants were running normally – other than a production disturbance at Dyka’s plant in Sainte-Austreberthe, France.

“Activities could be further impacted if too many employees are impacted by Covid-19, or if access to raw materials and auxiliary materials – or means of transportation – becomes more complicated,” the company added.

The group said it anticipated 2020 adjusted EBITDA would be higher than in 2019 – though this does not factor in any potential impact from Coronavirus, said the company.

➤ [www.dyka.com](http://www.dyka.com)



Details of the transaction were finalised via video conference

## Egeplast takes stake in Swedish pipemaker

Egeplast of Germany has bought a 75% stake in Swedish plastic pipes manufacturer Extena.

Treac, a family-controlled investment company, will retain a 25% stake in Extena. The purchase price has not been revealed.

Extena is a leading producer of infrastructure pipe. Founded in 1976, the company generated sales of around €17 million (US\$18m) in 2019 and employs around 40 people. Extena managing director, Peter Falk, will continue in his position.

➤ [www.egeplast.de](http://www.egeplast.de)

## Deceuninck shrinks in North America

Deceuninck has reduced its workforce by 30% in North America, in response to the Coronavirus pandemic.

The Belgian-owned profiles producer said the move affects its headquarters in Monroe, Ohio. Its facility in Fernley, Nevada, will not be affected.

“Over the last few weeks, we have entered a new

reality – the duration of which is unclear,” said Filip Geeraert, president & CEO of Deceuninck North America. “The demands that social distancing and other protective measures have placed on our operations and facility management, combined with a severe decline in order intake, led us to take these actions.”

Before the move, the company employed more than 650 people – meaning that around 200 have now left. The company had been expecting to ramp up volumes in expectation of strong growth in 2020.

Deceuninck says the changes will help safeguard the business for the future.

“As demand increases, we

will again adjust our team and operations to handle the growth,” said Geeraert.

Earlier this year, Deceuninck reported an overall dip in both sales and profits. Sales in North America grew by 3% in the period – but this was due to currency effects, as volumes in the region were down in 2019.

➤ [www.deceuninckna.com](http://www.deceuninckna.com)





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# Coronavirus causes Chinaplas cancellation

Chinaplas 2020 has been cancelled – having earlier been rescheduled from April to August of this year.

The next edition of the show will now take place on 13-16 April 2021, at the Shenzhen World Exhibition and Convention Center.

Adsale, the organiser of the show, said in a statement: "Since the occurrence of Covid-19, we have been

closely monitoring the situation. The virus is now largely under control in China but poses a high degree of uncertainty globally. China has now a formidable task of fighting against local rebound infections while preventing the next wave of outbreak from imported cases."

On 6 April 2020, the State Council of China issued a

circular on controlling further spread of the disease – which said that "all kinds of exhibitions have to be stopped for the time being", said Adsale.

Next year's event is being held in a new venue, having previously been scheduled to take place at the National Exhibition and Convention Center in Shanghai.

➤ [www.chinaplasonline.com](http://www.chinaplasonline.com)

## NEWS IN BRIEF...

US-based decking manufacturer **Trex** has completed its top management team, with the appointment of a new CFO. Dennis Schemm joins the company from a similar position at Continental Building Products. Trex's CFO position was vacated by Bryan Fairbanks, who becomes president and CEO on 29 April – replacing James Cline, who moves to become chairman.

[www.trex.com](http://www.trex.com)

The US-based **Plastic Pipe Institute** (PPI) has published a technical note on the use of chlorinated PVC (C-PVC) in piping systems for commercial buildings.

The technical note, TN-62, explains material properties and capabilities that should be considered when designing C-PVC systems for commercial building applications. It applies to applications including hot- and cold-water distribution (potable water plumbing), fire protection, chilled water and cooling systems.

[www.plasticpipe.org](http://www.plasticpipe.org)

# NSF opens new testing lab

US plastics testing specialist NSF International has moved two of its laboratories into a single 20,000 sq ft

space in Ypsilanti, Michigan.

The expanded location brings all its plastics testing and certification capabilities

together, including chemical and structural testing on plastic pipes.

The testing laboratories have been relocated from Aurora in Canada and from NSF's global headquarters in Ann Arbor, Michigan.

"By bringing our laboratories under one roof, we are offering greater ease to our clients, providing advanced plastic pipe, fitting and material testing," said Dave Purkiss, vice president of NSF's global water division.

➤ [www.nsf.org](http://www.nsf.org)



NSF's new laboratory expands its plastics testing capabilities

# ADS estimates healthy sales and profits

US pipe manufacturer Advanced Drainage Systems (ADS) has provided a business update ahead of its full-year financial results.

The company says it expects net sales for 2020 are expected to be around US\$1,674 million – a 21% increase on fiscal year 2019. If realised, it will exceed the company's earlier prediction (of US\$1.6-1.65bn).

At the same time, ADS expects adjusted EBITDA to exceed the higher end of its previously announced prediction of US\$345m.

To maintain a safe work environment and contain the spread of Covid-19, many ADS employees are now working from home, while non-essential travel and events have been cancelled.

It has also implemented a cost

reduction and efficiency programme, including reduced salaries for directors and executives, a recruitment freeze, and enforcing expense controls.

"While it is impossible to predict the future impact of Covid-19, current demand and business activity remains fairly stable overall," said Scott Barbour, president and CEO of ADS.

➤ [www.ads-pipe.com](http://www.ads-pipe.com)



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# Increased ventilator demand boosts need for medical tubing

US-based Graham Engineering says it is speeding up delivery of its Ultra extruders to cope with a surge in demand for ventilator tubing.

"In the past three weeks we have seen a strong uptick in orders and inquiries from businesses in North America and the Asia-Pacific looking

to add capacity for ventilator tubing," said David Madar, strategic medical market manager for the company.

Patients seriously ill with Covid-19 require ventilation – but existing stocks of the devices are typically too low to cope with the extra demand. Graham said that, in the USA alone, ventilator

demand could be 10 to 15 times pre-pandemic levels.

Ventilator tubing kits are supplied to hospitals as single-use breathing circuits. A key part of the circuit is corrugated tubing, typically made of medical grade PE or EVA.

➤ [www.grahamengineering.com](http://www.grahamengineering.com)

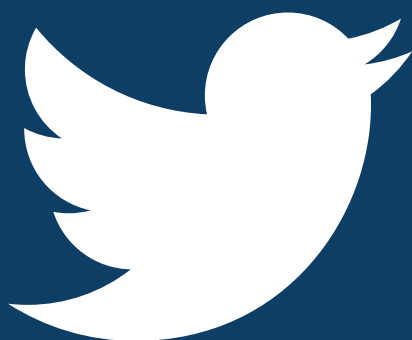


## Switching production

UK-based Naylor Group has switched part of its production to make piping products for a new temporary hospital. The UK has set up a number of 'field hospitals' – which are typically converted exhibition venues. Naylor has supplied ventilation duct for the Nightingale hospital – housed in the Excel exhibition centre in London. A report in The Business Desk said the product is being used to ventilate and temperature control the facility.

➤ [www.naylor.co.uk](http://www.naylor.co.uk)

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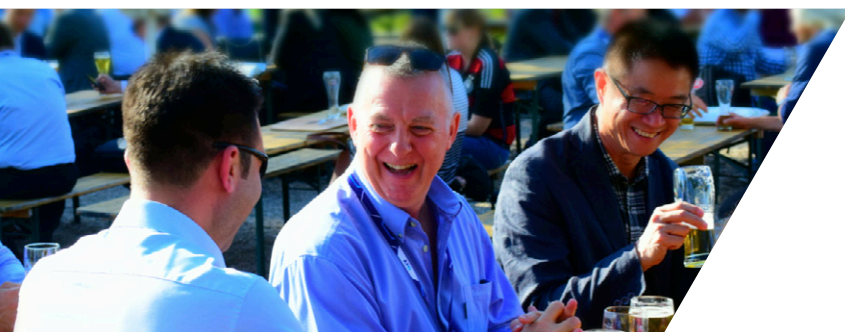


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*A race towards miniaturisation and a widening scope of alternative materials are some of the emerging themes in the medical tubing market*



# Life lines: latest in medical tubing

As surgery becomes more sophisticated, components such as medical tubing must move with it – becoming both smaller and more mechanically stable.

Delegates at AMI's recent *Medical Tubing* conference heard about a number of emerging applications, especially regarding alternative materials. Medical tubing requires materials with high mechanical properties – and few come higher than Peek.

Jonathan Jurgeitis, senior extrusion engineer for vascular technologies at **Apollo Medical Extrusion**, told delegates that crystallising Peek had a noticeable effect on extrusion performance.

The company carried out an experiment to test Peek crystallinity in extruded tubing. The material was extruded to either its amorphous or crystalline state.

"Semi-crystalline tubes will be crystallised in-line, and some amorphous tubes will be crystallised secondarily," he said.

The material used was Solvay's KetaSpire KT-820 NT, and the tube had an outer diameter of 0.06in and an inner diameter of 0.05in. Extrusion was carried out on a 0.75in high heat extruder, at

typical Peek processing temperatures. Amorphous tubes were quenched. Annealing was carried out at 175°C for 30 minutes.

The tubes were tested for crystallinity, tensile strength, elongation and flexural modulus. (Several properties that were not tested include density, thermal properties and chemical resistance.)

For tensile strength, the in-line crystallised grade showed a far higher result than either the amorphous or the secondary crystallised grades. Elongation at break was 192% – which was lower than for the other two samples. Maximum load was comparable with the secondary crystallised grade, but lower than the amorphous material. Tensile modules proved to be the highest.

Overall, Jurgeitis said the in-line crystallised sample had much higher elongation at yield, lower elongation percentage and higher tensile modulus.

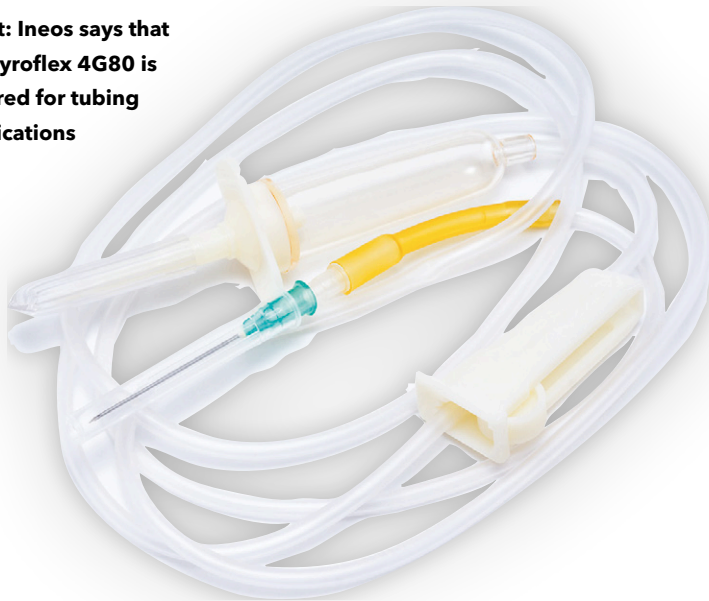
"Inline crystallisation gives better tensile properties than in the secondary process," he said.

Flexural results – such as flexural load modulus – were similar for both crystallisation methods, and higher than for amorphous.

Jurgeitis concluded that fully crystalline Peek

**Main image:**  
**Medical tubing must keep pace with the latest advances in medicine**

**Right: Ineos says that its Styroflex 4G80 is tailored for tubing applications**



“should be the standard” for a number of reasons – including higher heat stability, increased tensile and flexural properties and predictable performance.

### PU alternative

While PVC is the traditional material of choice for medical tubes, alternatives are available – including thermoplastic polyurethane (TPU).

Ajay Padsalgikay, senior principal scientist at **DSM Biomedical**, said that TPUs are a useful material for medical tubing – and that their surface properties play a key role in biocompatibility.

“Surface chemistry, roughness and surface energy play an important role in cell- material interactions,” he said. “These characteristics determine protein adsorption and dictate the subsequent inflammatory response.”

In order to control these properties, he said that careful processing of the material is needed – including correct drying, melt temperature, rheology, screw design, gels and downstream operations.

For instance, he said that insufficiently dried material can lead to reduced molecular weight and mechanical properties after extrusion.

“Moisture during extrusion can also cause streaks on the product and foaming of the melt,” he added.

Flow properties are also critical to the processing of TPUs, as viscosity affects how the material moves through the melt processing equipment. Many methods can be used to assess melt flow properties, which is vital in order to assess their likely behaviour, he said.

Screw design is also important: TPUs are sensitive to high shear, so low channel depths in the metering section, and aggressive mixing zones should be avoided, he said.

“Extrusion residence times and residence time distribution must be taken into consideration: proper equipment sizing is critical,” he said.

Gels can be a significant source of TPU tubing scrap – though for very small gels there is no evidence of having any impact on performance, he said. However, these cosmetic and visual defects are generally unacceptable.

Gels could be particles of unmelted polymer, agglomerates of hard block structures, or contaminants. They can be divided into two types – P-gels (caused during polymerisation, and present before extrusion begins); and E-gels (which are formed during the extrusion process).

“Gels caused by extrusion can be minimised by proper equipment design,” he said.

### Styrene benefits

Another alternative material – used widely elsewhere – is polystyrene (PS). **Ineos**, a leading producer of styrenics, says that its Styroflex 4G80 is tailored for tubing applications.

The material is a TPE based on styrene and butadiene (a hard-soft-hard block sequence SBS). This structure, says the company, gives it a range of key characteristics, including: kink resistance; high roller clamp performance; good bonding; and high clarity.

Ineos says that it also has good processability: it has a wide processing window (170-250°C) and is also around 20% less dense than competing materials – leading to lighter end products.

In physical tests, the material showed superior dynamic kink resistance, compared with another Styroflex grade.

Insty R&D also performed a test of its stability in an IV pump. Here, it was found to work successfully over the course of a 24-hour test. It also performed relatively well in a bonding study.

### Water facts

As well as using cutting edge materials, extruders must keep close control of the production methods they use.

Christian Herrild, director of growth strategies at US-based extruder **Teel Plastics**, explained the importance of water sensitivity during tube production.

Water is typically used to cool extruded pipe. Its high heat capacity means it is a very efficient coolant. It can also be used as lubrication in sizing devices

“There are three factors in controlling water sensitivity,” said Herrild. “Time, temperature and interaction with water.”



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**Right: Junkosha says that its peelable heat shrink tubing is available with inside diameters to 0.18mm**

Some of the main issues are concerned with soluble polymers, soluble additives and water-absorbing polymers, he said. In each case, an equilibrium constant (K) gives a measure of where a physical or chemical process comes to equilibrium, at a given temperature.

"K is constant for a given temperature - so when temperature changes, K will be different," he said.

The effect of temperature is exponential, and a rule says that a 10°C rise effectively doubles the rate of change - though Herrild says: "Be careful when applying this rule."

He says that procedures to control K can include speeding up the line - to ensure a shorter contact time - or using a spray rather than a water bath.

In one specific case, Teel was approached by a customer to compound an active ingredient into a polymer matrix. The polymer matrix was then extruded into a dosing form factor - which was required to have a very specific dose per unit

Teel's approach was to get the safety data sheet (SDS) and technical data sheet (TDS) on the additive and polymer, test the solubility, then perform lab-scale runs and test the results.

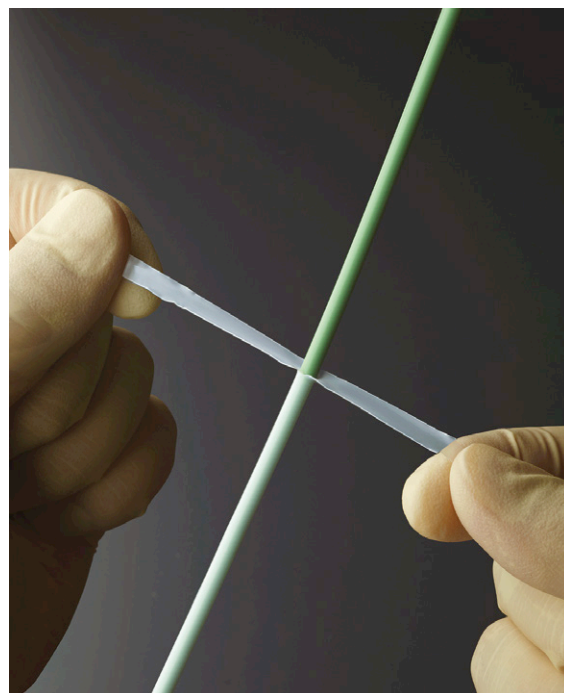
This process showed that the additive was not very water-soluble. In this case, as it dissolved it created an endothermic reaction - meaning that the water needed to be cold. From a process perspective, it meant having a short line, using cold water and running at a fast rate.

"Pre-development testing of materials and their interactions with water is critical to development," said Herrild. "Once a stable process is developed, lock it down to control the end product."

## Shrinking fast

Miniaturisation is a key trend within medical tubing - and this will require extra effort from extruders of medical tubing said Joe Rowan, president and CEO of **Junkosha USA**.

Catheters for neurovascular applications, for

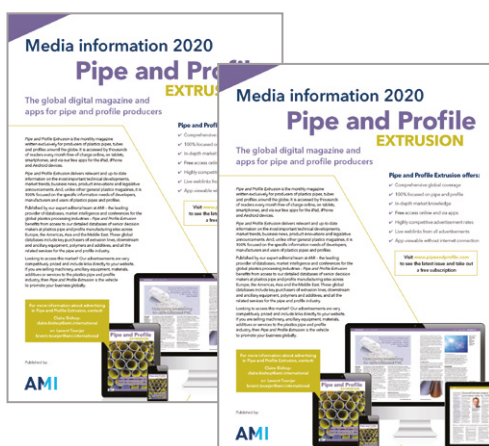


instance, require the use of smaller and smaller tubes in order to reduce pain and trauma. Developing such products goes hand in hand with "omni present customer needs" - including total cost of ownership, higher quality and a faster time to prototyping.

"And everything is secondary to patient safety," he said.

Rowan said the Junkosha helps to fulfil a number of 'unmet customer needs' with its products. One example he cites is peelable heat shrink tubing (PHST) - which he says is available with inside diameters down to 0.18mm. Another is tapered micro-catheters. Here, a tapered mandrel ensures that the end that is inserted into the body is slightly narrower than the 'proximal' end - making it easier to push in.

Junkosha has also made a series of micro-catheters with thinner walls - which "reduces the real estate within the lumen while maintaining strength and robustness".



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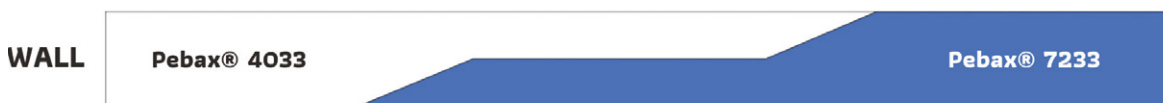
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Engineering says that transitional extrusion integrates dissimilar materials more smoothly, which can improve quality and reduce cost

### Transition extruded component



### Traditional assembly



Here, the company has applied its new concept of 'etched' PTFE liners, which have internal diameters down to 0.1mm.

### Transitional devices

Stephen Davis, a scientist at Switzerland-based **Engineering**, said that 'transitional extrusions' could improve the quality - and potentially reduce the cost - of extruded medical devices.

Transitional extrusion allows the 'blending' of two separate materials in an extruded product like a catheter tube. However, the integration between the two is smoother, he said, and avoids some disadvantages of the traditional 'segmented' approach.

"The goal of this technology is meant to generate a paradigm shift around the way catheters are designed," he said.

Part of the approach is to understand - and manipulate - the flow behaviour of the two different materials, he said. In Engineering's case, it was using two different medical grades of Pebax - 4033 and 7233.

Ordinarily, he said, the two Pebax tubes would be made separately, then aligned over a core and joined using butt welding. Here, the 'blended' tube can be made in a single process.

The ability to make the catheter tube in a single operation has several advantages, including: a wider variety in Shore D hardness between the materials; simpler production; greater bond strength between the two materials; and better pushability and kink resistance.

For instance, the bond strength of a tube made using the traditional (segmented) approach was around 5lbs, had low elongation and failed at the weld. Using the transitional approach, the strength was closer to 7lbs, and had high elongation.

The push force required for the transitional product was also smoother, he said.

Davis added that one advantage of this method included was that it allowed direct extrusion

through the braid.

"It's an enabler of complex design - optimising device performance based on material properties required rather than assembly limitations," he said.

### Flexible friend

**Arkema** - which manufactures Pebax - talked about advances in the material for medical applications.

Mohana Nagda, a business development engineer at Arkema Technical Polymers, told delegates that the elastomeric materials have a wide range of properties (such as hardness), so are appropriate for many catheter components.

A development grade, called 72R53, is aimed at medical tubing and balloon catheters, she said. In comparison with an established grade - 7233 - it boasted a higher modulus, higher yield stress and strain - and thus a better mechanical performance for balloon catheters.

"For multi-layer catheters, 72R53 - which is PA11-based - will have a good adhesion with PA12-based layers," she said.

Another PA-11 based material, Rilsan Besno Med (which is bio-based), showed superior modulus and a burst pressure almost twice that of Pebax grades.

■ AMI's forthcoming *Medical Tubing & Catheters* conference takes place in San Diego, USA on 23-24 September 2020. For more details, visit the [conference website](#), or contact event organiser Lorna Grey ([lorna.grey@ami.international](mailto:lorna.grey@ami.international)) on +1 610 478 0800.

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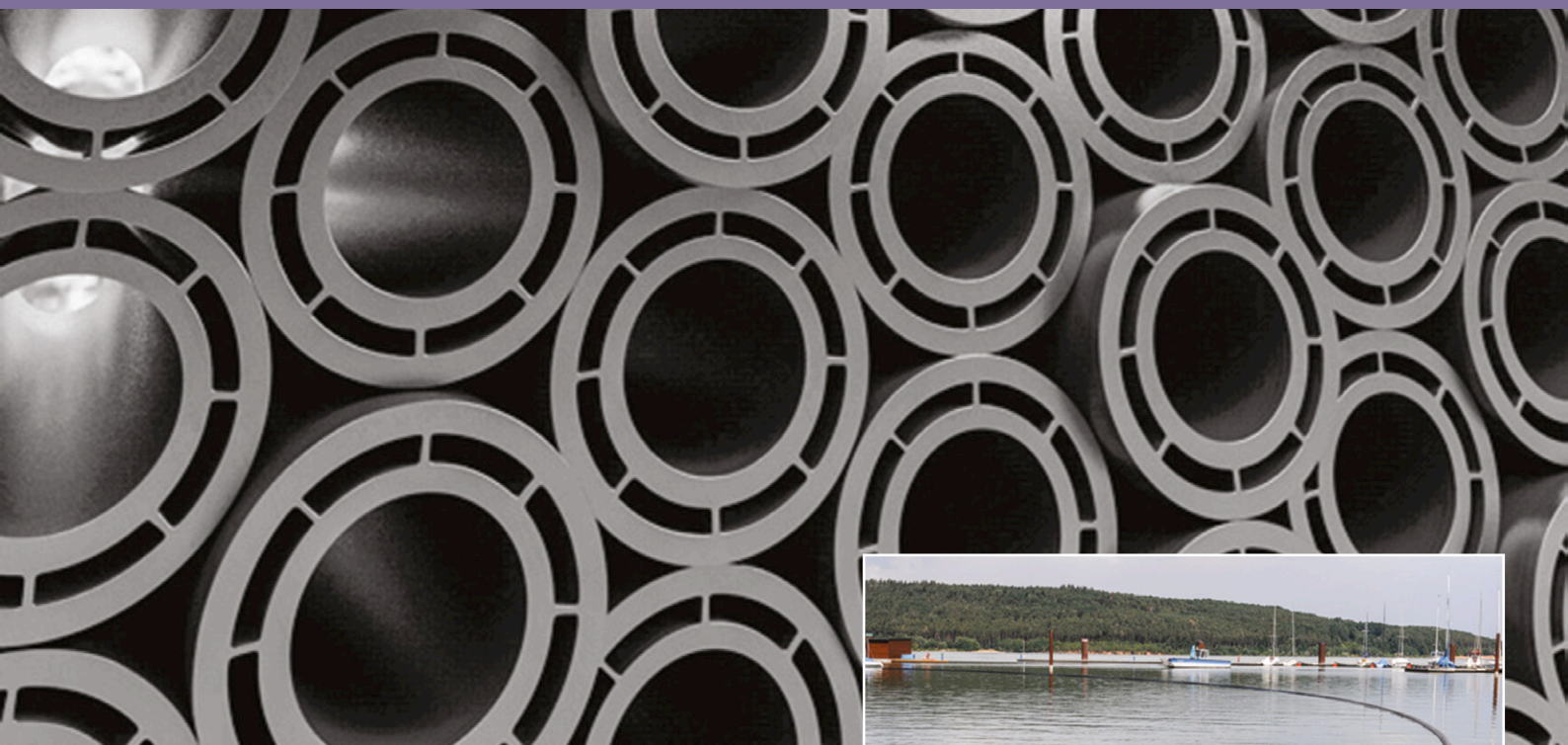


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*Pressure pipe systems – in a variety of plastic materials – have recently been used in applications as diverse as a drought-relief project and a large gas supply main*



# Resisting the force: latest in pressure pipe

Pressurising pipe helps to ensure that more fluid – be it gas, water or anything else – can be transferred more efficiently. While steel systems have the necessary burst pressure to allow high pressures, plastic pipe systems – in a variety of materials – are often specified due to their lightness and resistance to corrosion.

**Agru** of Austria recently supplied a double containment piping system for the sewage systems of ‘floating houses’ on the shores of a lake.

Wastewater from the houses, on the Brombachsee near Nuremberg, are transported to a tank on the mainland, via a wastewater pressure pipe laid in the lake. From here, the collected wastewater is forwarded to the sewage treatment plant.

Sewers in areas such as the Brombachsee must comply with special precautions. In this zone, pressure pipes with a very high-risk potential must be double containment systems. Another chal-

lenge was the rising and falling water levels. The pipes connected to the pontoons – which serve as a floating basement for the houses – reach to the mainland. Therefore, the pipeline had to be flexible enough to compensate for the difference in water levels, which can be up to 8m.

## Double containment

The answer was to use Agru’s Poly-Flo double containment piping system, which is made of PE 100-RC. The double-containment pipe is extruded as a mono strand, which offers high system security. Possible leaks on the inner pipe can be detected in the existing annulus by the leak detection system installed there. The outer pipe restrains the flow medium so that it cannot escape into the lake. Both walls of the double-walled system are monitored for leaks. The monitoring pressure is higher than any other internal or external wall applied

**Main image and inset: Agru’s double containment piping system, for a sewage system on a lake, is extruded as a mono strand for high system security**



**Above and right: Molecor's PVC-O pipe has been used to supply fresh water to Pernik in Bulgaria, after it suffered a severe drought**



pressure – so a pressure drop indicates leaks.

Continuously extruded webs simplify the alignment of the inner and outer pipes. An advantage of the continuously extruded webs is that the pipes can be separated at any point, if required. Due to the reduced component dimensions, a simple assembly is possible even in confined spaces.

The connection of the individual double pipe components was carried out using simultaneous welding – which was an advantage from both an economical and processing point of view. The double containment pipe is highly flexible, so the height difference between the transition point on the mainland and the pontoons can be overcome without extra fittings.

PE 100-RC was chosen because it has a higher resistance to slow crack growth than standard PE100. As well as resisting corrosion – from the surrounding seawater – the material also withstood wide temperature changes.

After assembly, the wastewater of all floating houses is pumped towards the main line. The main line of the Poly-Flo pipe – and the connecting lines – were welded onsite. Because there is a 10m wide public area between the lake and the wastewater reservoir on the mainland, horizontal directional drilling (HDD) was used to lay the pipe.

## Gas delivery

UK-based **GPS** recently produced a bespoke solution as part of a £3 million (US\$3.6m) project to construct a new gas mains pipeline. The line, underneath the River Foyle in Ireland, is one of the largest directional drilling gas projects ever undertaken in the country, said the company.

The 660-metre pipeline uses GPS' Excel PE100 grade.

The pipeline was needed in order to consolidate the supply of gas on the cityside of Derry – which was served by a single gas line. It offered security for the existing network, and catered for growing capacity. The project, now complete, provides gas to more than 10,000 households.

The pipeline needed to be a high quality, robust solution that could withstand the rigours of horizontal directional drilling (HDD) installation. Once commissioned, it then needed to maintain its performance when at the bottom of the 50m deep river.

Due to the concerns of the long-term structural stability of the pipeline, a thicker pipe than is normally used for the transportation of fuel gas was needed – with 355mm SDR 7.4 Orange PE pipe specified. As a size not previously used in the gas industry, GPS says it was the only manufacturer that could manufacture and test this specific pipe.

McCormack, the drilling contractor, drilled a 660mm diameter hole under the river bed in preparation for the pipe. The pipe was laid out on nearby school grounds and joined using butt fusion welding. Using school grounds put a short timeframe on the installation: it was moved into position over a weekend and pulled through the hole under the river in a continuous 10-hour operation overnight.

The pipe was produced in lengths of 13.5m – instead of the standard 12m – in order to reduce the number of deliveries needed, cut transport costs and reduce carbon emissions. It also reduced the number of butt fusion joints required, which speeded up installation.

## Relieving drought

**Molecor** of Spain – which produces oriented PVC (PVC-O) pipes, as well as the machinery to make them – recently supplied a city in Bulgaria with pressure pipe to supply drinking water, following a severe drought.

Pernik had suffered a serious drought since November 2019. A lack of rain – and the low water level in the Studena dam – threatened to leave 100,000 people without potable water.

In addition, the existing water system was





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**Above: Victrex Peek is used on Magma Global's M-Pipe TCP - and now on a new type of hybrid pipe**

experienced huge leakage problems – with an estimated 75% of the water from the dam being lost on the way to the city. The situation led the city authorities to implement new measures to ensure a water supply to the population – which was already suffering daily water cuts, with a supply for only six hours per day.

The answer was to build a 12.5km long pipeline from the Belmeken dam. It is made from Molecor's TOM PVC-O pipe, has a diameter of 630mm and a pressure range of 16, 20 and 25 bar. The line has a capacity of 300 litres/second.

The project began on 29 January 2020 and, with an installation rate of several kilometres per day, was finished on 13 March.

As well as their lightness – being around 50% less dense than PE or PVC, and up to 12 times less than cast iron – the PVC-O pipes were easy to join, which helped to eliminate leaks. Molecor adds that the pipes have a 15-40% higher hydraulic capacity than pipes of the same external diameter, made from other materials. This helps to reduce pumping costs.

The PVC-O pipes are resistant to water hammer and to sudden variations in flow and pressure – which helps to reduce the possibility of rupture and leakage. Low maintenance costs was a key advantage of the new line.

Molecor says that the service life of the pipes is more than 75 years – leading to huge resource savings in the long term.

### Pipe upgrade

**Aquatherm** has increased the pressure resistance of its blue pipe system – for heating and cooling applications – by making it from a different material.

Its blue pipe – in SDR 11 and SDR 17.6 – will now be made from its Fusiolen PP-RCT material, and renamed Aquatherm blue pipe MF RP.

“Piping products with increased pressure resistance are increasingly in demand in the heating and cooling market,” said the company.

The change is also accompanied by a new appearance: all Aquatherm blue pipe products will now be single-coloured blue – without green stripes in future.

The Fusiolen PP-RCT material is characterised by increased pressure resistance at higher temperatures. With the change, Aquatherm says its blue pipe will be a better fit for applications such as high-pressure risers, high-temperature heating and district heating and industrial process systems.

The material is classified as a polypropylene random copolymer with increased pressure resistance in accordance with ISO 15874. It meets stringent international and national standards for PP pressure piping, says Aquatherm. With the same outside diameter and wall thickness, pipes made of it can withstand higher pressures than standard PP-R pipes, especially at higher temperatures, says the company. The connection technology remains the same as it is for PP-R: the new pipe can be heat-fused to all Aquatherm green pipe fittings using the same fusion tools as PP-R pipe.

### Worth its salt

Most pipes for pressure applications are made from polyolefins, but engineering materials – such as Peek from **Victrex** – have also been used in specialist high pressure applications.

The material forms the basis of M-Pipe – a thermoplastic composite pipe (TCP) from Magma Global. The two companies, along with TechnipFMC, recently ran a seminar to explain how to combine polymeric materials with traditional flexible pipe to create ‘hybrid flexible pipes’ (HFPs).

“In flexibles, the loading on the polymeric components is low as it acts as an intermediate leakproof sheath,” said Geoff Small, head of technology for energy at Victrex. “In HFPs the role of the polymer is also to act as a protective liner/conduit – and most importantly as a matrix for the composite.”

M-Pipe and HFPs were recently qualified for use in Brazil's pre-salt region – an oil-rich reserve below both carbonate salt and water. They must withstand tough conditions, including high temperatures (up to 200°C) and pressures (up to 20ksi).

To overcome technical challenges and assess solutions for use in Brazil's pre-salt region, the composite materials selection needs thorough assessment, said Small. The region contains large reserves of high-quality light oil, but high levels of CO<sub>2</sub> (around 12%) and H<sub>2</sub>S – plus high tempera-





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tures and pressures – challenge the use of steel. The conditions mean that most conventional polymer/composite systems are at the limit of their performance.

An approach from Magma and Technip puts a conventional armour and sheath around a TCP to create the HFP. The idea is to extend strength to weight ratio, compared to a conventional flexible pipe. The HFP uses a Peek-based carbon fibre composite that offers high temperature and chemical resistance – including low permeation and a barrier against corrosion.

### Exploring plastics

Also in the field of oil exploration, the UK-based **Non-metallic Innovation Centre (NIC)** has joined forces with **SoluForce** of the Netherlands to carry out research that will expand the capabilities of plastic pipes in service.

R&D activities will focus on increasing the operating temperature and pressure that reinforced thermo-plastic (RTP) pipes can withstand when transporting hydrocarbons. The aim is to create a new, more affordable, spoolable composite pipe.

Combining high performance and cost competitiveness will help to make non-metallic pipes more prevalent across the oil and gas industry, say the partners. The long-term strategy is to reduce manufacturing costs whilst optimising the cost benefit of developed products.

Plastic pipes offers a number of potential benefits over metal pipes, including corrosion resistance to corrosion, light weight, flexibility, durability and reduced carbon footprints.

R&D will take place at the NIC's Cambridge base – in TWI's headquarters – and a prototype product will be made by SoluForce. NIC will carry out materials selection processes, investigate the potential use of recently developed and commercially available options, and evaluate the new pipe.

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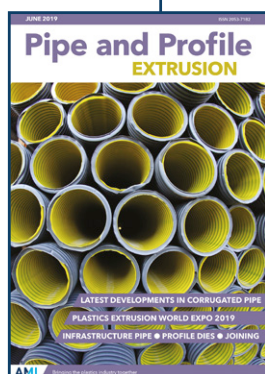
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# Tooled up: advances in pipe dies

*The latest applications in pipe dies include models that reduce scrap, boost line speed or allow automatic adjustment of dimensions on the fly*



Tooling is crucial to the smooth running of an extrusion operation – and as producers look to streamline and accelerate production, many will look to new designs of die to achieve this.

**Davis-Standard** has introduced its 3000A (automatic) crosshead for rubber hose applications.

The 3000A crosshead helps hose manufacturers reduce scrap and accelerate start-up times for smaller lots. This results in material savings, quick product changes, simpler maintenance and improved quality, says the company.

“Every component on the 3000A is engineered to improve processing while providing cost savings,” said Joe Wnuk, vice president of elastomer and profile systems at Davis-Standard.

“There are production advantages when it is used as part of a fully integrated and automated elastomer line, or when used separately as a second step in the manufacturing process. In many cases, the return on investment can be realised in less than a year.”

The proprietary crosshead incorporates an automatic, servo-driven concentricity adjustment system, in which the core tube/pin assembly is adjusted via joystick control. This helps the operator to minimise eccentricity, boost concentricity and reduce down-time during product changeovers.

In addition, the servo drives enable monitoring and adjustments throughout the run to account for variations between lots, between day and night production, and corrections for gum space adjustments. A hydraulic pump system is not needed, and the compact design does not require hoses.

Features such as a tapered mandrel and engineered flow paths ensure consistent flow through all speed ranges, says the company. The thrust bearing supported core tube/pin assembly enables wall thickness modification under pressure without interruption. Die adjusting screws are located in

removable inserts to protect the body from thread damage.

A larger surface area in the water jacket improves heat transfer efficiency. Models are available to accommodate 2in (50mm), 3in (76mm), 4.5in (102mm) and 5.5in (140mm) diameter braids.

“One of the best features of this automatic design is the precision adjustment, which contributes to material savings due to tighter tolerances within specifications,” said Wnuk. “This is especially valuable with frequent product and dimension changes, which are becoming more and more common.”

Davis-Standard’s aftermarket group can review existing lines to

**Main image and below: Davis-Standard’s 3000A crosshead helps hose manufacturers reduce scrap and cut start-up times for smaller lots**





**Right: Guill Tool has developed a new reciprocating head that automatically alters a tube's profile**

determine how the new crosshead could be incorporated. For instance, as well as being appropriate for new lines, the 3000A crosshead could replace existing Model 2000 crossheads.

### Crosshead selection

The 3000A crosshead was showcased at K2019, where Davis-Standard shared a stand with its subsidiary **Maillefer** – which showed, among other products, its ECH crossheads.

Maillefer offers a wide range of extrusion heads for pipe and tube manufacturing. These include the VLCH and ECH crossheads, and the TL and ELH longitudinal heads. They can be used in a variety of applications, such as single- or multi-layer, stripe or skin options, co-extrusion or tandem processes, and special connections and tooling configurations.

Most of the head designs support multi-layer co-extrusion. The ECH models boast high flexibility in layer positioning, superior flow distribution and ergonomic qualities, says the company. As an example, it cites the five-layer ECH 5/50. Its indexing feature allows for up to 120 different layer combinations. While the longitudinal TL and ELH families are optimised for single layer or striping extrusion, the larger VLCH crossheads are dedicated to the offshore flexible pipe application.

While some manufactures favour co-extrusion to unite the polymer flows within a multi-layer head, another option is tandem extrusion configurations. Here, subsequent layers are added further downstream in a second extrusion step. Specific single-layer TL and dual layer ELH and ECH crossheads respond well in these configurations, says Maillefer.

"We see such setups with certain tubes where polymer viscosities are quite different between layers," said the company. "A longitudinal TL or ELH head produces the inner tube layer(s) and an ECH



one further downstream for the outer layer(s)."

In addition, Maillefer offers its TOA 32, which helps to identify die drool deposits inside the tube – so they can be detected before the product is sent to the customer. Die drool is a common phenomenon that occurs over time and originates on the extrusion die face. Bits of plastic accumulate until they form a deposit that drops off into the product, where it remains hidden. The result is a poor construction – which needs to be separated, due to its sub-standard quality.

Maillefer says that its TOA 32 can be used in a range of applications – such as for making blown fibre ducts.

### Double speed

**Guill Tool** has redesigned its high-production rotary dies – both inline and crosshead styles – which it says has doubled production speed.

The company says that models running at 1000rpm are now available in its line of patented rotating tip and die designs.

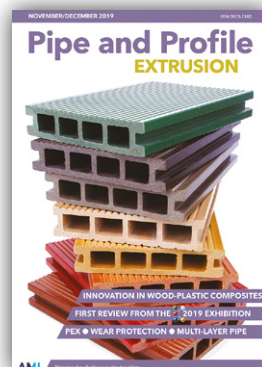
By rotating the tooling in relation to material flow, a rotary head can increase the wall strength of an extrusion – allowing a thinner wall with less material, and corresponding cost savings for the user.

Typical applications for rotary heads include medical and multi-lumen tubing plus various high-end extrusions with interlocking layer or multiple striping requirements.

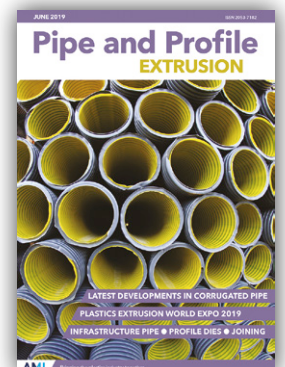


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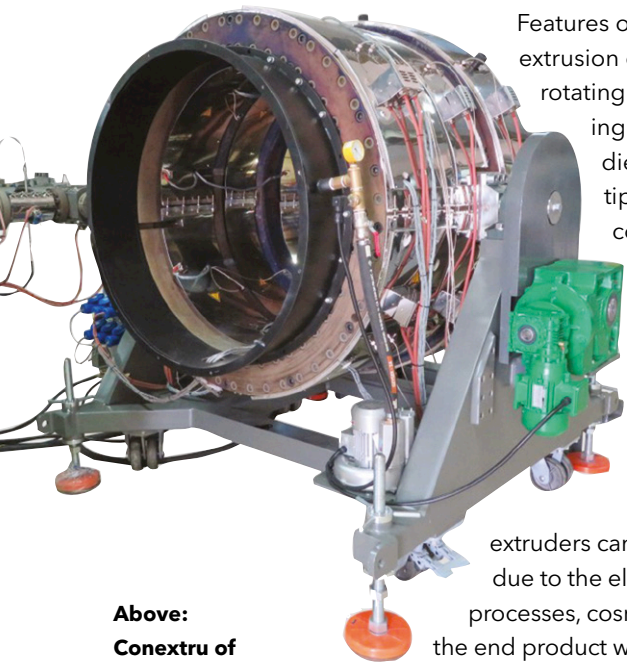


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**Above:**  
**Conextru of**  
**Austria has**  
**supplied its**  
**largest cross**  
**head for**  
**polyolefin**  
**pipe coating**

Features of the new rotating extrusion dies include counter-rotating tip and die, co-rotating tip and die, rotating die with conventional tip, rotating tip with conventional die, crosshead or inline, multi-layer, striping, certain profiles and optional quick-change cartridges that minimise cleaning downtime.

"Using rotary dies, extruders can realise cost savings due to the elimination of secondary processes, cosmetic enhancement of the end product with the elimination of weld or parting lines, plus reduction or complete elimination of ovality," said the company.

The new rotary models are available as turnkey packages, complete with die cart, tools and all accessories for installation and maintenance, said Guill.

### Altered profile

Guill has also developed a new reciprocating head that automatically alters a tube's profile.

Here, the traditional tip and die assembly is replaced with a linear reciprocating assembly that changes the tube's profile within a given length. This process is repeated throughout a single extrusion run without interruptions. Cutting capability, in association with the extrusion speed, cuts the finished product to length.

Both cost and value stream activities are reduced, while quality is improved, says Guill. Only one extrusion run is needed to produce a finished product, rather than multiple extrusion runs with tooling changes along with a manual assembly operation to connect different tubing shapes.

The reciprocating head eliminates an assembly operation, as well as in-process inventory. This means there is no need for storing various tubing shapes and connectors needed for assembly, fulfilment of orders and replenishment of finished goods.

### PO pipe coating

Conextru of Austria says it has supplied its largest cross head for polyolefin pipe coating.

Coating polyethylene (PE) pressure pipes is a significant trend, says the company. It involves covering the PE100 pipe with an additional

polypropylene (PP) layer, via a coating process. This 1-3mm PP layer protects the pipe when it is installed in a trench without sand, which reduces the cost of installation.

The PO 1000 CR pipe heads that make the pipes are 400-1000mm in diameter, and have a maximum throughput of 250 kg/h. The distribution system is a helical spiral of 36 channels, which is specially designed for low output and low volume.

PP and PE do not weld together, so the grip or adhesive force is by shrinking the PP to the PE pipe. Different process parameters can influence this grip - with PE pipe temperature being the most important.

The whole coating equipment has a range of 400-1000mm, and has an electrical box as an interface for all power cables and thermocouples. A C 45 30 extruder, with maximum output of 250 kg/h PE and 200 kg/h of PP, includes a barrier screw and ABB PLC control.

A second extruder (C 30 25), with maximum output of 5 kg/h provides colour stripe material.

### Tooling takeover

US-based **Paradigm Industrial**, a custom engineering and manufacturing company, recently bought **Vulcan Tool Company** - whose products include the Shimmy range of die and tube cutting machines.

According to Paradigm, the Shimmy die provides superior speed and accuracy for trimming stamped parts. At the same time, Vulcan's Brehm, Ultimate and Ringmaster tube cutters are known for high-speed cuts that are burr-free and are used in many industries. Vulcan also markets the Vulcnaire spindle attachment to provide high-speed options for existing mills and lathes.

"Re-establishing our commitment to Vulcan Tool customers across the USA and around the world is a top priority," said Ashley Webb, owner of Paradigm Industrial. "Vulcan has helped many manufacturers increase productivity and profit in the past. With the support of Paradigm, Vulcan is leaner and more capable."

He said that Paradigm is already enhancing infrastructure, investing in new equipment and expanding staff numbers.

### CLICK ON THE LINKS FOR MORE INFORMATION:

- > [www.davis-standard.com](http://www.davis-standard.com)
- > [www.maillefer.net](http://www.maillefer.net)
- > [www.guill.com](http://www.guill.com)
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*New and effective techniques for joining of plastic pipe in the field are vital, as they are critical to the eventual service life of the whole system*

# End to end: latest news in pipe joining

Once pipes have been made and delivered, their separate sections need to be joined together in the field – as quickly and accurately as possible and taking local conditions into account.

**McElroy** recently launched its new In-Ditch 1600 machine, which can fuse large-diameter pipe up to 65in outside diameter (OD) in tight spaces.

The In-Ditch 1600 is designed with a compact, two-jaw carriage and a top-loading heater and facer for added flexibility. It can fuse onto as little as 15in of exposed pipe with minimal excavation required. Multiple lifting points, a carriage spreader bar and skidded carriage provide ease of mobility and fit within a small envelope. A roll cage helps protect the carriage and hydraulics as they are lowered into the ditch.

The carriage of the In-Ditch 1600 has the same 30,000lbs of clamping force per jaw as its established MegaMc 1600, and the same 3,000psi maximum pressure. The In-Ditch 1600 is also compatible with the DataLogger, which records

each step of the fusion process for added jobsite accountability.

“The In-Ditch 1600 gives all contractors the option of butt fusing fittings, flanges and tie-ins for a lot less than traditional electrofusion fittings in that diameter,” said Brett Stone, sales channel manager at McElroy.

McElroy recently supplied its joining equipment for a project involving polyamide 12 pipe – which it said was the first example of the material being installed under new rules.

The project – in Henderson, Kentucky – is the first PA 12 installation under the Pipeline and Hazardous Materials Safety Administration (PHMSA) Mega Rule that went into effect in January 2019, said McElroy. This should open up the market to wider use of PA12 pipe, it added.

In the USA, the material had previously been installed only via special regulatory waivers. The new Mega Rule approved the use of plastic pipe for a greater range of high-pressure applications,

**Main image:**  
**McElroy's**  
**In-Ditch 1600**  
**can fuse**  
**large-diameter**  
**pipe in tight**  
**spaces**



**Right: A recent project in the USA installed the first PA 12 pipe under the new 'Mega' rule, which came into effect last year**

eliminating the waiver process for PA12 and making it available for wider use.

McElroy says that it helped to train fusion operators in the process of joining PA12 pipe – which is says is similar to that of fusing PE pipe – and far easier than welding steel pipe.

The material was produced by Evonik, and the pipe was extruded by Teel Plastics. Teel supplied 2,800ft of 200psi PA12 pipe, as well as specially designed 'weak link' mechanisms to aid in the installation. These were used in each section of the pipe to help ensure that as it was pulled through the bored holes, the links would break in the event of a snag instead of stressing the pipe itself.

### Electrofusion guides

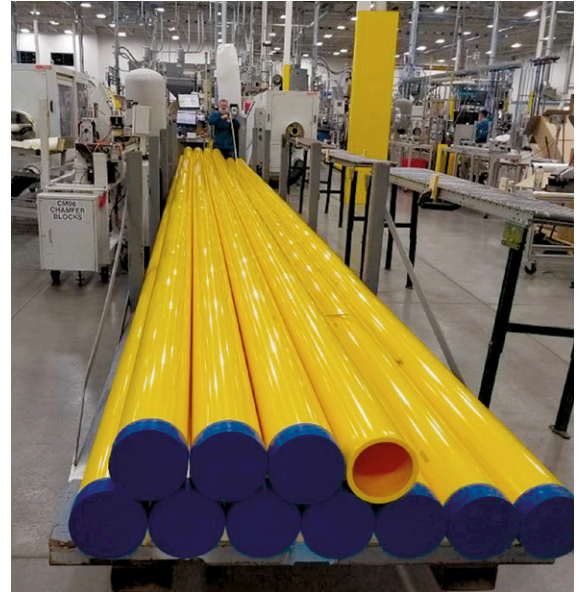
The US-based Municipal Advisory Board (MAB) has published two guides detailing the steps for electrofusing joints and couplings for HDPE pipelines. The guides are available from the **Plastics Pipe Institute (PPI)**.

Both cover generic electrofusion procedures for field joining: one cover PE pipe up to 12in; the other covers pipe of 14-30in.

Both documents explain procedures, equipment, installers' training, testing, inspection and qualification for electrofusing HDPE pipe. Those who are trained and qualified in accordance with these MAB documents demonstrate that they also have the knowledge and understanding of the general procedures and techniques of ASTM F1290.

"These publications are important for the owners and installers," said Camille George Rubeiz, co-chair of MAB, and senior director of engineering for PPI's municipal and industrial division. "The sections on pipe preparation while simple are among the most important steps to follow when electrofusing pipe sections. The HDPE fused joints create leak-free, self-restraint, monolithic piping systems. Also, the fused joints will eliminate infiltration into the pipe as well as exfiltration into

**Below: Two new guides detailing the steps for electrofusing HDPE joints and couplings are available from PPI**



the environment."

MAB has also published other guides, including one that details the various methods and steps needed to repair a high-density polyethylene (HDPE) pipeline in the field. *MAB Basic HDPE Repair Options (MAB-4)* – details the various methods and steps for repairing a high-density polyethylene (HDPE) pipeline in the field.

### Bead assessment

**GF Piping Systems** has launched an inspection tool that can assess a weld bead and provide a seal of approval quickly and objectively.

The Weld Bead Inspection (WBI) tool provides peace of mind for piping systems in a range of sectors, by assessing the quality of infrared-weld beads reliably. It can be applied to both Progef (PP) and Sygef (PVDF) components, with every element designed to be intuitive and efficient.

Using infrared butt fusion to join plastic piping components together produces a weld bead. In the past, experienced welders or quality control managers assess the quality of the bead visually. However, says GF, this expertise is on the wane.

The device is about the size of a computer mouse and houses photo-sensory technology. Welds for demanding applications can now be digitally inspected to ensure potential weaknesses are highlighted objectively – to reduce the risk of expensive leaks.

"The tool can fit up to 15 different pipe diameters and analyse 4-16 different points of a weld," said Peter Waefler, product manager for jointing technology at GFPS. "It can assess a weld bead and provide a seal of approval quickly and objectively."

The tool comes in two sizes to check the connections of pipes in a range of sizes from d20 up to

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**Right: Widos highlighted a number of its pipe joining machines and control systems at last year's K2019 show**

d225. Accompanying software allows six different key areas of a weld – K-value, wall offset, width, area, height and angle – to be examined. At the same time, it provides a pass/fail certification for each weld.

### Close control

At last year's K2019, German manufacturer **Widos** highlighted a number of its pipe joining machines and control systems.

The company has extended its range of machines for building sites, adding the Widos 4955

The model – which adds to the earlier 4400 and 6100 models – includes a basic machine, planer, heating element, protection box and hydraulic unit, as well as a bag with necessary tools. Individual components such as hydraulic control unit or reducer inserts can be combined, depending on the size of the machine.

The 4955 can handle PE and PP pipe, for outside diameters of 90-355mm. Its advantages include the ability to carry out CNC welding without the use of a base frame.

The building site machines are designed for pipeline construction and are suitable for a wide range of applications. Four clamping rings provide the necessary stability for welding long pipelines. By removing the fourth clamping ring, the machines are also adaptable for working in narrow conditions because they can be operated in smaller spaces.

Other highlights from the show included the WI-CNC 6.0 and WI-SPS 6.0 control units. Coupled with basic machines for building sites, WI-CNC 6.0 allows for welding of plastic pipes from 50 to 3,500mm. The WI-SPS 6.0 control unit in workshop machines welds plastic pipes from 160 to 2,400mm.

At the show, the company demonstrated how these control units offer better monitoring of the welding process.

The control unit's connectivity feature allows for programming, monitoring and remote control of the welding process as well as the integration in modern production processes.

"With the WI-SPS 6.0, we laid the cornerstone for the integration of our machines in automated production lines," said Christian Suhling, CEO of Widos.

### Belling breakthrough

Also at K2019, **Sica** of Italy showcased a new PP pipe belling machine, the Everbell4 200EN.

The machine is a new concept in multi-socketing machines, says Sica. It processes up to four pipes at

a time with only two ovens (reducing energy consumption by around 40%) and a single forming station. It is versatile and productive in regard to different kinds of pipes and material formulations, says the company.

The machine has been tested on a customer's extrusion line for more than a month.

Advantages include its compactness, high speed, ease of use and precision, says the company.

It measures 233 x 89cm, which is narrower than previous Sica models – and competitor machines – says the company. The machine can handle 1200 sockets/hour for PP pipes in diameters of 32, 40 and 50mm, with 1.8mm wall thickness. The speed is not influenced by the simultaneous processing of different pipe lengths.

The model is equipped with a patented system to assure permanent socket profile for pipes from 32 to 200mm.

Sica says the machine is also very flexible: it handles different pipe diameters with the same arms, and uses socket shaping tools and ring inserting tools from an earlier model.

In addition, **Baruffaldi** of Italy recently developed and demonstrated a new automatic in-line socket welding machine for corrugated pipe.

The SRM 200-700/6-CA is designed for PE and PP corrugated pipes of between 200-700mm diameter, in standard lengths of 3, 6 or 12m.

The technique offers maximum mechanical strength and no ovalisation, zero production waste and no loss of speed on the extrusion line, says the company.

The system was demonstrated at an in-house event in late 2019.



### CLICK ON THE LINKS FOR MORE INFORMATION:

- > [www.mcelroy.com](http://www.mcelroy.com)
- > [www.plasticpipe.org](http://www.plasticpipe.org)
- > [www.gfps.com](http://www.gfps.com)
- > [www.widos.de](http://www.widos.de)
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## MIXING

# Small-scale production and trials

MTI Mischtechnik plans to showcase its range of laboratory mixers – with heatable and coolable mixing vessels – at Solids 2020.

The mixers are suitable for the entire scope of bulk material processing tasks including the production of trial mixtures and small-scale production batches in laboratories and technology centres. Applications range from master-batches and compounds for the plastics and rubber industry, including the production of natural fibre compounds, to applications in the chemical and automotive supplier industries.

MTI's laboratory mixer range includes the type M vertical high-speed mixers (working volume up to 28 litres), heating/cooling mixer combinations from the M/KMV series (working cooling mixer volume up to 51 litres) and the Unitec type UT vertical universal mixers (working volume up to 51 litres). On a small scale, they cover the entire range of conventional industrial applications from homogenisation via friction mixing, coating, agglomeration and granulation to drying.

Solids 2020, held in Dortmund, Germany, has been rescheduled to June 2020.

➤ [www.mti-mixer.de](http://www.mti-mixer.de)



## DRYING

# Multi-hopper drying provides flexible and economic solution

Conair says that its Multi-Hopper Cart (MHC) system is an economical solution to central drying.

The MHC features up to four dependable Conair CH Series mass-flow hoppers mounted on a lightweight pushcart. Even with the largest hoppers mounted, the cart is only 35in deep, which saves floor space and makes it easy to manoeuvre. Material can be dried off-line, then wheeled where it is needed – or stationed remotely to supply material to multiple machines at once.

There are two basic configurations. The simplest has hoppers only with an insulated integral welded manifold system for supply and return of



dehumidified air from a central dryer. For smaller applications, it can also heat the material. For larger throughput applications – or those requiring higher temperatures, supported by a Conair D Series Carousel Plus dryer with the DC-C Premium control package – the cart can be wired for power and individual heaters added to each hopper.

Seven hopper sizes are

available, with nominal capacities ranging from 18 to 201lbs. Carts are built in two sizes, accommodating either three or four hoppers. A slide-gate discharge port prevents material leakage but facilitates easy hopper draining.

➤ [www.conairgroup.com](http://www.conairgroup.com)

## INSTRUMENTATION

# GF invests in flow control

Swiss pipe manufacturer Georg Fischer has invested in UK-based start-up Oxford Flow – giving it access to a new pressure regulating valve.

The technology will allow Fischer to help its customers reduce leaks in their water networks.

Fischer's investment – amounting to a 23% stake – will help Oxford Flow to scale up its R&D operations and expand globally. It should also help the company to raise more capital from its existing investors.

"This signals a shift for the utility sector," said Neil Poxon, CEO of Oxford Flow.

➤ [www.oxford-flow.com](http://www.oxford-flow.com)

➤ [www.gfps.com](http://www.gfps.com)



## TESTING

## Flexible motorised force tester

Ametek has introduced its Chatillon TCM series of flexible motorised test machines.

The TCM series consists of two force testers, offering fast and effective force testing up to 350lbf (1500N).

TCM100 is suitable for low capacity testing up to 100lbf (500N), while TCM350 can test samples at a capacity up to 350lbf (1500N). Both feature a standard crosshead travel of 406mm (16in) and are available in extended editions with a crosshead travel of 812mm (32in). A throat depth at a full 100mm (3.9in) enables the operator to perform force tests including tension, compression, bending, peeling, adhesion, insertion and extraction on samples up to 200mm (7.8in). This gives a wide variety of testing options.

► [www.ametektest.com](http://www.ametektest.com)

## DRYING

## Vacuum technology dries complex extruded parts

UK-based ACI has developed a new profile dryer, for complex plastic and rubber extrusions.

The dryer is compact and efficient and is designed to draw out moisture from unusually shaped profiles including EDPM rubber extrusions, asymmetric profiles and silicone seals during manufacture.

To ensure it does not damage or distort the extruded part, it uses vacuum technology rather than compressed air - which often contains oil and water.

As well as achieving high drying efficiency, it can reduce running costs through lower energy consumption - using a 1.5kW or 3kW motor, says the company.

The unit is fully enclosed with a small footprint of just 1,300mm long, which easily fits into most production lines. The main enclosure contains a side channel blower and cooling fan as well as a



water separator which collects coolant for recycling. The unit is made from stainless steel with ceramic rollers, eliminating the risk of corrosion. To suit customer requirements, the drying head can be configured to meet individual specifications.

Designed for intricate and specific profiles, the solution is capable of drying extrusion of up to 65mm in diameter, and is particularly suited to production lines where water collection or spray containment is essential.

Drying speed varies with profile size, but smaller

profiles of 0.02-6mm can achieve a drying speed of up to 100 m/min.

Chris Hellier, managing director of ACI, said: "This offers a solution to many of the issues associated with traditional profile dryers. Our blower-driven units greatly reduce noise levels and significantly cut energy consumption compared to compressed air nozzle arrangements."

Typical applications include EDPM, nitrile rubber extrusions, PVC, plastic extrusions, silicone seals, profiles, tubes, pipes and bars.

► [www.aircontrolindustries.com](http://www.aircontrolindustries.com)

## RECYCLING

## Pre-shredder incorporates ergonomics

Vecoplan's new VEZ 3200 pre-shredder is one of this year's winners of a Red Dot award for product design.

It was developed to produce refuse-derived fuel (RDF). Vecoplan focused on a contemporary appearance when creating the VEZ - and took

on an industrial design company as a partner -- but said it was not "just about colour and shape".

"For us, the design was not all about appearance: ergonomics was also an important factor," said Werner Berens, CEO of Vecoplan.

He said that the design influences the machine construction - making the shredder easier to handle for operators.

The company has already sold around 15 machines worldwide.

► [www.vecoplan.com](http://www.vecoplan.com)





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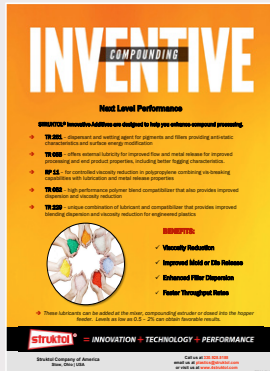
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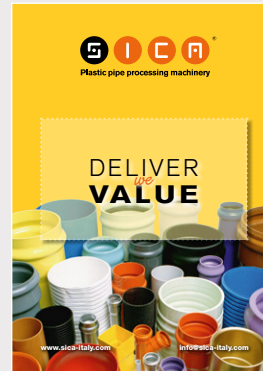
## STRUKTOL: PLASTIC ADDITIVES



Struktol offers an extensive range of additives to enhance processing and performance of virgin and recycled plastic compounds. Products range from dispersants and wetting agents, through lubricants to compatibilisers.

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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 bellowing and robotised packaging machines.

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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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## 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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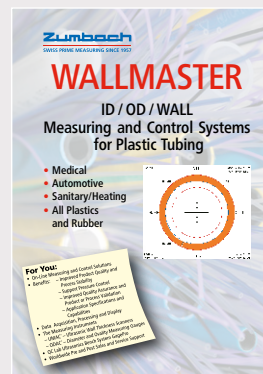
## UNICOR: PIPE CORRUGATION



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

## New Age Industries

<b>Head office:</b>	Southampton, Pennsylvania, USA
<b>CEO:</b>	Ken Baker
<b>Founded:</b>	1954
<b>Ownership:</b>	Private (Employee-owned company)
<b>Sales (2019):</b>	Around US\$80 million
<b>Employees:</b>	Around 200
<b>Profile:</b>	New Age was founded in 1954 by Raymond Baker, as an importer of metal hardness testers. Soon after, the company moved into reselling nylon braid-reinforced PVC hoses – and started manufacturing products in 1990. The testing business was sold long ago, and the company now concentrates on hose and tube products made from a multitude of materials, and for a number of end markets.
<b>Product lines:</b>	The company's hosing products are made from a wide range of materials, including PVC, polyurethane, polyethylene, nylon, polypropylene – and specialist materials such as fluoropolymers (including Viton), silicone and latex. It recently introduced a new phthalate-free clear PVC tubing product, Clearflo 70. Earlier, it developed a kink-resistant version of its BrewSavor line of hoses for breweries – by adding stainless steel braiding to the product.
<b>Factory location:</b>	The company moved to its current 180,000 sq ft facility in Southampton in 2000. In 2018, it completed a two-year expansion and renovation at the site. Recently, it invested in new extrusion equipment for the site. In 2006, CEO Ken Baker began selling his share in the company to employees – a process that was completed at the end of 2019, making New Age an employee-owned company. The company has a UK-based manufacturing partner, Colex International.

To be considered for 'Extruder of the Month', contact the editor on [lou@pipeandprofile.com](mailto: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:**

### June 2020

Pipe corrugators  
Profile die developments  
PVC recycling  
PEX pipe

### July/August 2020

PVC stabilisers & lubricants  
Oil & gas industry applications  
Extruder technology  
Chinaplas 2020 preview

**Editorial submissions should be sent to Lou Reade: [lou@pipeandprofile.com](mailto:lou@pipeandprofile.com)**

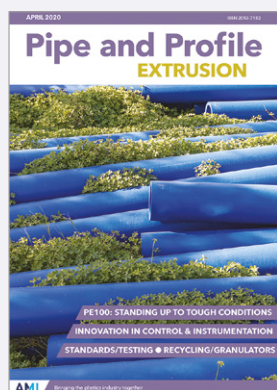
**For information on advertising in these issues, please contact:**

**Claire Bishop: [claire.bishop@ami.international](mailto:claire.bishop@ami.international) Tel: +44 (0)1732 682948**

**Levent Tounjer: [levent.tounjer@ami.international](mailto:levent.tounjer@ami.international) Tel: +44 (0)117 314 8183**

# Keep informed: read our latest editions

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



## Pipe and Profile April 2020

The April edition of Pipe and Profile Extrusion takes a look at some of the latest innovation in PE100 pipes. It also examines new developments in process control and instrumentation, extrusion standards and material size reduction.

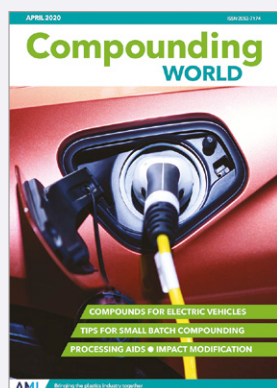
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## Pipe and Profile March 2020

The March edition of Pipe and Profile Extrusion magazine looks at the latest ideas in screw production. It also reviews developments in laboratory extruders, computer-based process simulation, and polyolefin applications.

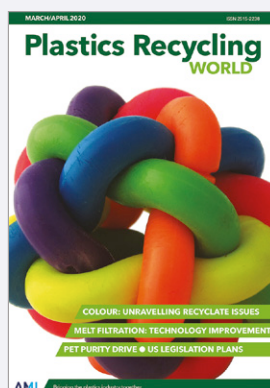
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## Compounding World April 2020

The April edition of Compounding World takes a look at the opportunities for compounding companies as car makers turn their attention to electric vehicles. Other features cover small batch compounding, impact modification and innovations in lubricants.

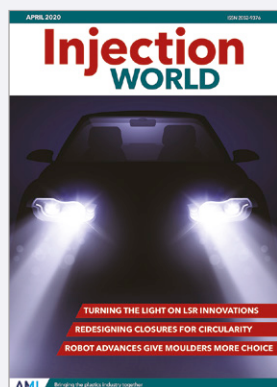
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## Plastics Recycling World March/April 2020

The March/April edition of Plastics Recycling World looks at the challenges of effective colouring, plus the latest developments in melt filtration and PET recycling. It also updates on US recycling legislation moves.

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## Injection World April 2020

The April issue of Injection World looks at the growth in applications for liquid silicone rubber moulding as suppliers introduce innovations. Plus features on robots and caps/closures.

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## Film and Sheet April 2020

The April edition of Film and Sheet Extrusion looks at how chemical recycling could help boost recycling rates for film and sheet waste. Plus in-depth features on agricultural film, recent advances in flat die technology and the latest in slitters and winders.

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## GLOBAL EXHIBITION GUIDE

2020	<b>15-18 June</b>	Plastivision Arabia, Sharjah, UAE <b>POSTPONED</b>	<a href="http://www.plastivision.ae">www.plastivision.ae</a>
	<b>16-19 June</b>	FIP, Lyon, France <b>POSTPONED</b>	<a href="http://www.f-i-p.com">www.f-i-p.com</a>
	<b>8-10 September</b>	Feiplar, Sao Paulo, Brazil	<a href="http://www.feiplar.com.br">www.feiplar.com.br</a>
	<b>9-11 September</b>	Plastics, Printing & Packaging, Dar-es-Salaam, Tanzania	<a href="http://www.expogr.com/tanzania/pppexpo">www.expogr.com/tanzania/pppexpo</a>
	<b>9-13 September</b>	Taipei Plas, Tapei, Taiwan	<a href="http://www.taipeiplas.com.tw">www.taipeiplas.com.tw</a>
	<b>10-12 September</b>	Plasti & Pack, Lahore, Pakistan	<a href="https://plastipacpakistan.com">https://plastipacpakistan.com</a>
	<b>21-25 September</b>	Colombiaplast, Bogota, Colombia	<a href="http://www.colombiaplast.org">www.colombiaplast.org</a>
	<b>29 September-1 October</b>	Interplas, Birmingham, UK	<a href="http://www.interplasuk.com">www.interplasuk.com</a>
	<b>7-8 October</b>	Plastics Extrusion World Expo Europe, Essen, Germany <b>NEW DATE</b>	<a href="https://eu.extrusion-expo.com">https://eu.extrusion-expo.com</a>
	<b>13-17 October</b>	Fakuma, Friedrichshafen, Germany	<a href="http://www.fakuma-messe.de">www.fakuma-messe.de</a>
	<b>29-31 October</b>	MECSPE, Parma, Italy <b>NEW DATE</b>	<a href="http://www.mecspe.com">www.mecspe.com</a>
	<b>4-5 November</b>	Plastics Extrusion World Expo USA, Cleveland, USA	<a href="http://www.extrusion-expo.com/na/">www.extrusion-expo.com/na/</a>
	<b>10-13 November</b>	Plastimagen, Mexico City, Mexico	<a href="http://www.plastimagen.com.mx">www.plastimagen.com.mx</a>
	<b>24-27 November</b>	Argenplas, Buenos Aires, Argentina <b>NEW DATE</b>	<a href="http://www.argenplas.com.ar">www.argenplas.com.ar</a>
2021	<b>1-5 December</b>	Equiplast, Barcelona, Spain	<a href="http://www.equiplast.com">www.equiplast.com</a>
	<b>14-17 December</b>	Interplas Thailand, Bangkok, Thailand	<a href="http://www.interplasthailand.com">www.interplasthailand.com</a>
	<b>9-11 March</b>	JEC World, Paris, France <b>NEW DATE</b>	<a href="http://www.jec-world.events">www.jec-world.events</a>
	<b>13-16 April</b>	Chinaplas, Shenzhen, China	<a href="http://www.chinaplasonline.com">www.chinaplasonline.com</a>
	<b>4-7 May</b>	Plast 2021, Milan, Italy	<a href="http://www.plastonline.org/en">www.plastonline.org/en</a>
	<b>17-21 May</b>	NPE 2021	<a href="http://www.npe.org">www.npe.org</a>

## AMI CONFERENCES

<b>14-16 September</b>	Polymer Sourcing & Distribution, Hamburg, Germany
<b>16-17 September</b>	Plastics Recycling Technology, Vienna, Austria
<b>23-24 September</b>	Medical Tubing & Catheters, San Diego, CA, USA
<b>27-28 October</b>	Plastic Pipes in Infrastructure, Hamburg, Germany
<b>2-3 November</b>	Profiles USA, Cleveland, Ohio, USA
<b>4-5 November</b>	Wood-Plastic Composites, Vienna, Austria

For information on all these events and other conferences on film, sheet, pipe and packaging applications, see [www.ami.international](http://www.ami.international)

**PLASTICS RECYCLING**  
WORLD EXPO

**POLYMER TESTING**  
WORLD EXPO

**7- 8 October, 2020**  
**ESSEN, GERMANY**

**PLASTICS EXTRUSION**  
WORLD EXPO

**COMPOUNDING**  
WORLD EXPO

**4 - 5 November, 2020**  
**CLEVELAND, OHIO**

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