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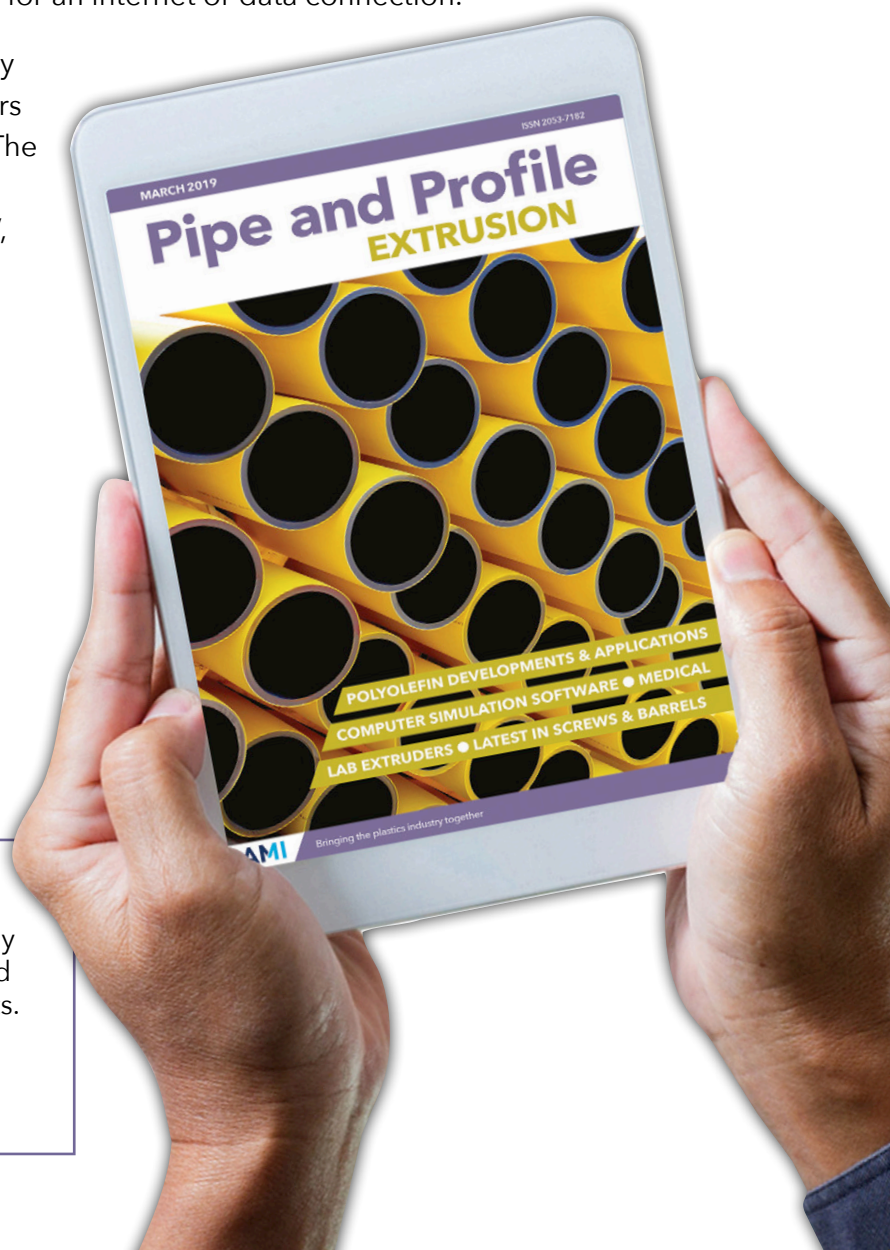
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Wienerberger buys in Croatia

Wienerberger of Austria is to acquire Croatian pipes manufacturer Vargon.

The transaction – for which the purchase price was not revealed – is subject to anti-trust approvals.

Vargon provides plastic pipes and fittings for in-house applications and infrastructure, including PE-RT pipe for underfloor heating and PE100 gas

pipe. It employs around 250 people at its production site near Rijeka and generated sales of nearly €25 million (US\$26m) in 2021.

Wienerberger says the takeover will strengthen its piping solutions business in south-eastern Europe, and complements its position in infrastructure, water and wastewater systems in the region.

"It enables us to further strengthen our position as a partner for the entire building envelope in Europe," said Heimo Scheuch, chairman of the managing board of Wienerberger.

He expects Vargon to grow through its association with Wienerberger subsidiary Pipelife. For future growth, Wienerberger will focus on the in-house

segment and develop the Vargon brand. The company expects its new regional production facility to give it better access to south-eastern Europe.

Goran Brašnić, Vargon's current CEO who will retain a 20% stake in the company, added: "Wienerberger will ensure further sustainable development of our firm."

➤ www.wienerberger.com

Potable water project scoops award

An eight-mile pipeline that provided potable water to three rural Texas communities was among the winners at this year's Plastics Pipe Institute (PPI) awards.

The original pipeline failed after a winter storm caused it to freeze and snap – cutting off three rural communities. The problem was solved by a group of HDPE pipe companies and PPI. Dow donated resin to make the pipe; Pipeline Plastics contributed the manufacturing; Modern Dispersions provided carbon black; and McElroy Manufacturing, whose fusion equipment was used,



provided the training for the project.

Other winning projects were: a visitor park in Utah that used 40,000ft of Rehau's Raupex pipe; a new warehouse that installed 17 miles of HDPE corrugated

pipe from ADS; a new gas distribution system that used 50,000ft of Dow's PE4710; and a data centre that installed 165,000ft of HDPE conduit from WL Plastics, using HDD.

➤ www.plasticpipe.org

Primo builds tech centre

Danish profiles extruder Primo is building a technology centre in Tistrup, Denmark.

The centre – due to open later this year – will bring together testing and development for Primo's departments in eight countries. In the past, testing has typically taken place on operating production lines. Primo says the new centre will now give it a more flexible development environment.

"Production of plastic profiles continues to become more specialised," said Claus Tønnesen, CEO of Primo. "The new technology centre will pool our expertise from all our factories in Europe and Asia."

The centre will focus on three main areas: production technology including digitalisation; tools; and developing new materials.

➤ www.primo.com

Ipex expands capacity in USA

Canada-based pipe manufacturer Ipex is to expand operations at three of its US-based sites.

The company will add 28 new production lines at facilities in North Carolina, Oklahoma and Florida. The new lines – which include closed-loop wall monitors,

end-of-line pipe bundling automation and gravimetric feeding systems – are expected to come online from late 2022 to early 2024.

"This will allow us to increase production capacity for our pipe business to ensure high fill

rates and excellent service in the US and Canada," said Alex Mestres, CEO of Ipex. "These investments will also add enough capacity to deliver a number of new products we have in the pipeline and ready to launch."

➤ www.ipexna.com

Registration opens for Plastics World Expo in Cleveland, USA

The AMI Plastics World Expos return to the Huntington Convention Center in Cleveland, Ohio on 9-10 November 2022.

The plastics industry event – the largest in North America this year – brings together four focused exhibitions: Plastics Extrusion World Expo, Plastics Recycling World Expo, Compounding World Expo and Polymer Testing World Expo.

Free online registration has now begun. By registering in advance, visitors receive free admission to all four exhibitions – featuring more than 250 suppliers – and to five conference theatres hosting technical presentations, educational seminars and business debates. Attendees and exhibitors can also buy tickets (US\$50 each) for a networking party at the Punch Bowl Social on the evening of 9 November.

"The event will allow visitors to meet and compare suppliers from around the world, and learn from busi-



Left: Conference sessions are a popular part of AMI's Plastics World Expos, which run in Cleveland again this year

IMAGE: AMI

ness leaders and technical experts in the conference theatres," said Andy Beevers, events director at AMI. "When we ran these expos in Cleveland last year, they attracted more than 3,000 visitors – including buyers and specifiers from leading extruders, recyclers, compounders, OEMs and brand owners."

The four expos will host many leading manufacturers of extrusion, compounding, recycling and testing equipment, plus suppliers of polymers, additives and related services.

The exhibitor line-up includes companies such as BASF, Brabender, Clariant, Davis-Standard, Entek, KraussMaffei, Struktol, Wacker and many more. (See the full exhibitor list at www.na.compoundingworldexpo.com/exhibitors.) To learn more about exhibiting at any of the expos, visit www.ami.international/exhibitions.

To book a free ticket for the expos and conferences – which is valid for both days of the event – visit: www.ami.ltd/Plastics-World-Expos-NA-Register.

New standard for pipe'

ASTM International has approved a new standard for cross-linkable polyethylene (CX-PE) pipe for use in fluid and gas transport.

"Those needing corrosion-resistant piping for transporting aggressive fluids at elevated temperatures will be interested in this new standard," said Tom Walsh, a member of ASTM's F17 plastic piping systems committee.

➤ www.astm.org

Takeover sees Israeli and Indian irrigation firms merge operations

Israel-based Rivulis is to acquire the international operations of India's Jain Irrigation Systems.

The combined company will employ around 3,300 people across 35 countries, offering a range of irrigation products and services.

The combined company, Rivulis, will be 78% owned by Temasek – an investment company based in Singapore – and 22% by Jain Irrigation. The company says a total revenue of around US\$750 million will make it

the world's second largest irrigation firm.

Richard Klapholz will continue as CEO of Rivulis CEO, while senior management from Jain's international business will continue within the new company.

Jain Irrigation will also supply products to the new company – for sale outside India.

This is a long-term supply agreement that will "drive revenues and profits", according to Jain.

"This merger will create a

world-leading player, ideally placed to serve its global customer base thanks to its geographic footprint, breadth of offerings and technological depth and expertise in micro irrigation," said Anil Jain, managing director of Jain Irrigation.

This the latest expansion for Rivulis – which in May opened a 6,000 sq m plant in Spain, to produce drip irrigation products.

➤ www.rivulis.com

➤ www.jains.com

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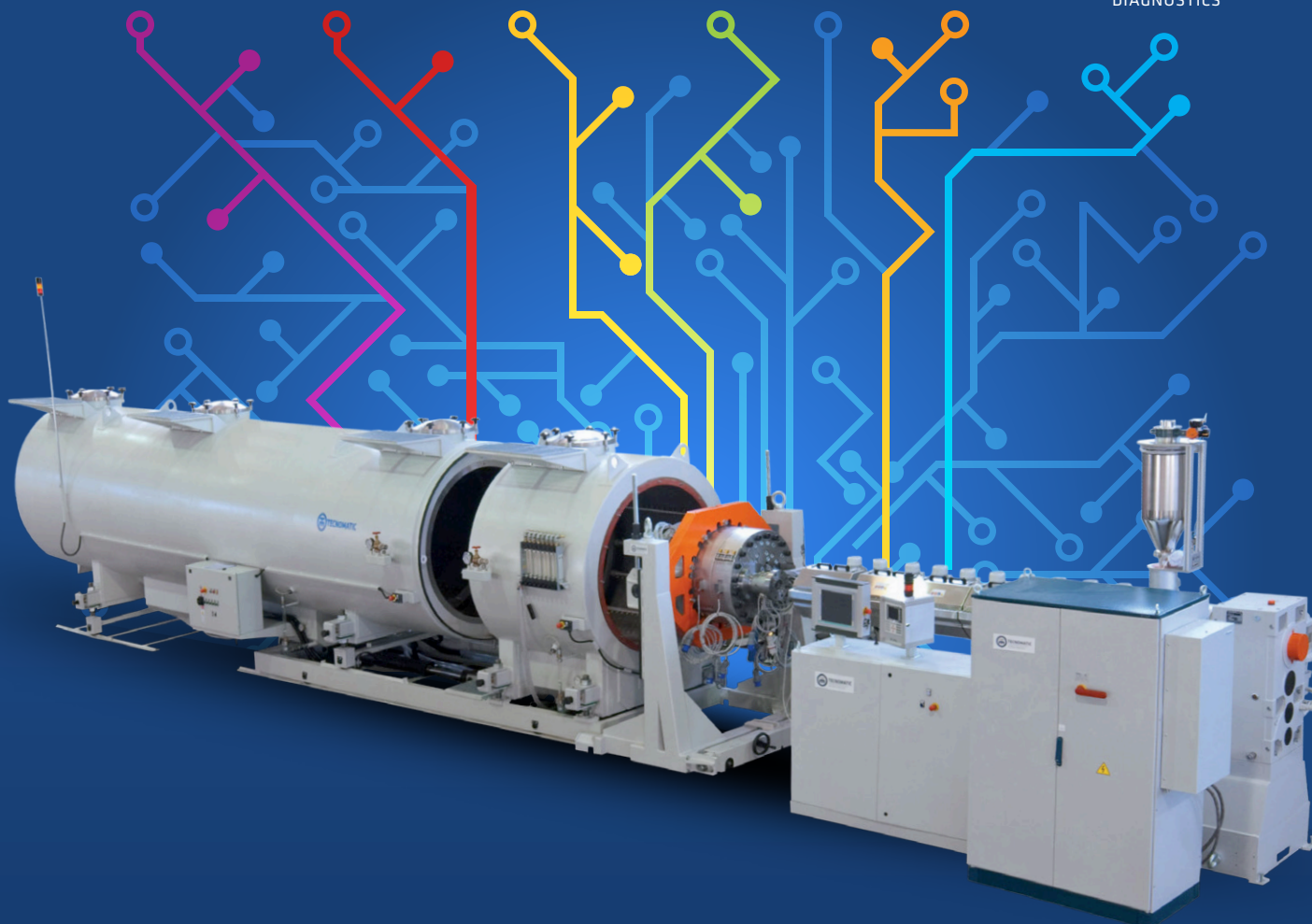
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IN BRIEF...

Three European plastics trade bodies have appointed new leaders. **Teppfa**, which represents plastic pipe producers, has elected Sebastian Bondestam – president of Uponor Infra – as its new president for the next two years. **Plastics Europe**, which represents plastics manufacturers, has appointed Marco ten Bruggencate – commercial VP for packaging and speciality plastics for EMEA at Dow – as its new president. He succeeds Markus Steilemann, CEO of Covestro. At the same time, **European Plastics Converters** has elected Benoît Hennaut as its president for 2022-2024. Hennaut, CEO of Herige Group, replaces Renato Zelcher.

www.teppfa.eu
www.plasticseurope.org
www.plasticsconverters.eu

Petronas of Malaysia is to buy Sweden's **Perstorp** from private equity owner Financière Forêt in a deal valued at €2.3 billion (US\$2.4bn). Perstorp operates seven manufacturing sites worldwide, three R&D centres, around 1,500 employees and generated sales of €1.3bn in the 2021 financial year. It is active in a number of areas, including general purpose and phthalate-free plasticisers, which it markets under the Pevalen and Emoltene brands. The move is a further diversification into specialities for Petronas, after it bought BRB Group in 2019.

www.perstorp.com
www.petronas.com

VDMA: China's exports larger than Germany's

Exports of plastics machinery from China exceeded those from Germany for the first time last year, according to VDMA, which represents German machinery manufacturers.

Figures from VDMA and the German Statistical Office show that China now accounts for almost 24% of total exports of core machinery – equivalent to around €5,667 million (US\$5,960m). At the same time, Germany's exports accounted for 22%, or €5,213m (US\$5,483m). The next largest machine exporter is Japan, with a share of just over 9%.

China also became Germany's top export market last year – accounting for just over €1 billion (US\$1.05bn) in sales following a 19% surge in demand. The USA fell to second place, while India moved from 15th to third in Germany's export table. Overall, German exports increased by more than 9% in 2022.

Despite this strong

Germany's leading export markets, 2021

Country	2021 sales, m€	2021 growth (%)	Position
China	1,002	27.9	1
USA	781	-9.5	2
India	290	183.9	3
Italy	232	35.5	4
Poland	221	7.6	5
France	194	18.6	6
Mexico	143	25.6	7
Austria	129	15.0	8
Turkey	126	-3.3	9
Spain	124	15.4	10
TOTAL	5,213	9.4	

Source: VDMA

export performance in 2021, Germany has seen a 10% dip in foreign sales in the first four months of 2022.

Euromap, the umbrella organisation for European machinery makers, added that world production grew 13% last year to reach a record level of €38.6bn (US\$40.6bn). This was driven by a 15% growth from China and 11% growth from Europe.

"In the medium term,

[machine makers] in Europe will have to prepare themselves for a significantly higher price level, as raw materials and energy in particular have become much more expensive," said Luciano Anceschi, president of Euromap. "Processors are holding back on investments and therefore on new orders for machines."

➤ <https://www.vdma.org/plastics-rubber-machinery>
 ➤ www.euromap.org

Tosaf expands US plant

Israel-headquartered Tosaf, which manufactures additive and colour and white masterbatches, has completed a US\$2 million investment at its subsidiary plant at Bessemer City in North Carolina, USA.

The money has been spent on a new silo system and additional extruders, taking the total invested at

the site to more than US\$20m.

"The silos and enhanced production capabilities allow us to better meet the short lead times for our rapidly growing customer base," according to Chai Tsadaka, general manager of Tosaf.

Tosaf saw North American sales grow 30% from 2020 to 2021. A large

portion of this was attributed to new customers, which now represent 28% of active buyers. In all, 75% of the company's product portfolio – and 90% of its custom colours – are made to customer specifications according to Tosaf, which employs around 1,000 people worldwide.

➤ www.tosaf.com

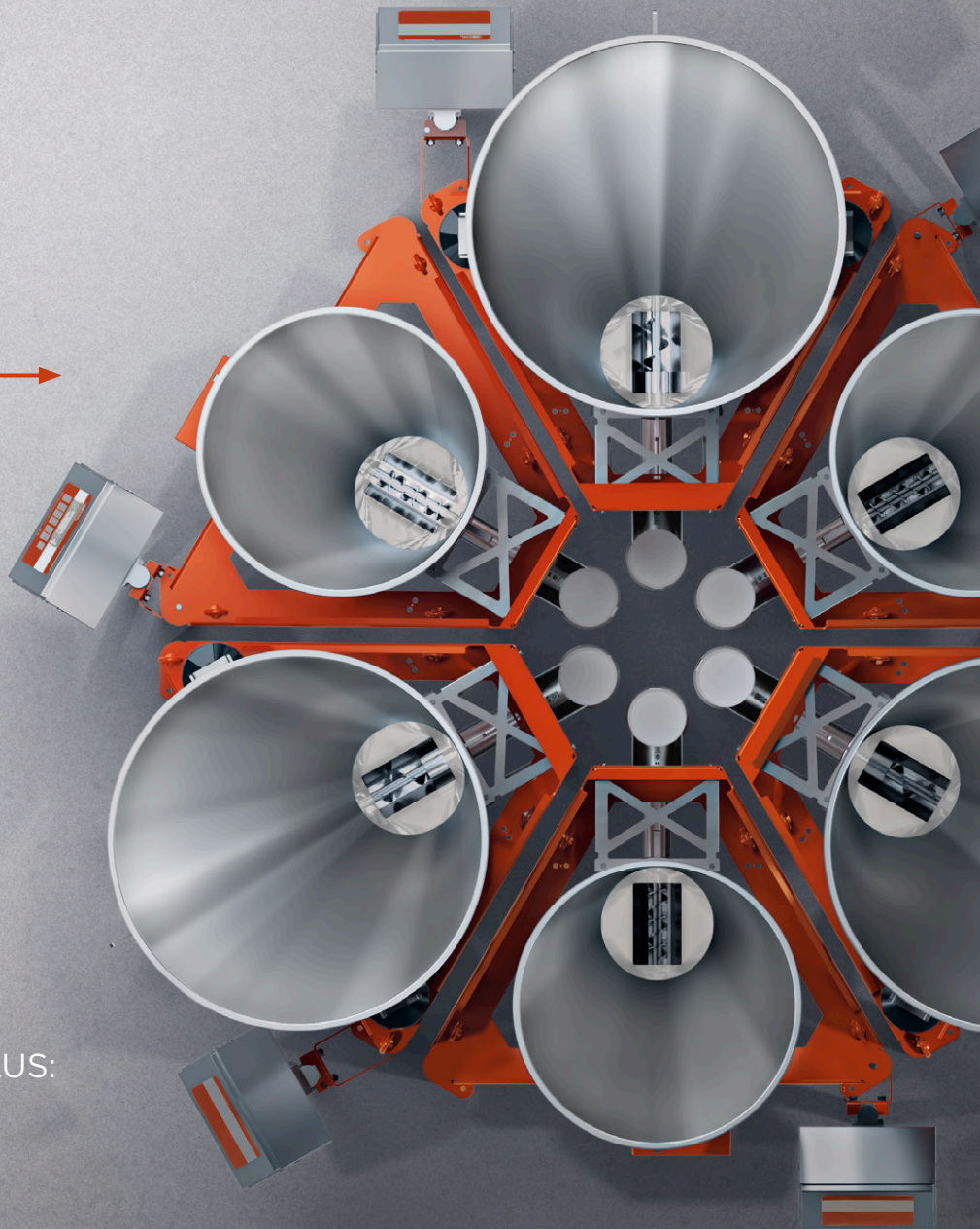
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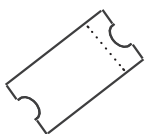
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Making pipes from recycled fuel tanks

A pan-European research project has made plastic pipes from recycled car bumpers and fuel tanks.

The Life Circ-ELV project has developed a new plastic recovery process that has been implemented at consortium member company Desguace Cortés. It involves separating the polypropylene (PP) bumpers and polyethylene (PE) fuel tanks from vehicles and making two demonstration products from the recycle: wheel liners; and pipes and pipe fittings, which were made by Isolago of Portugal.

The project was co-ordinated by Aimplas, which also optimised the pre-treatment of the bumpers and fuel tanks to obtain the recycled raw material.

This led to a 20% reduction in the CO₂ emissions during the manufacturing of the new products, due to using 30% recycle from the project. Aimplas also carried out a life cycle assessment (LCA) during the recovery of old plastic parts and making new ones.

➤ www.aimplas.es



Above: Life Circ-ELV has produced pipes and fittings from recycled car bumpers and fuel tanks

Expanding in siding in Canada

Saint-Gobain says it will become the leading siding manufacturer in Canada after acquiring exterior building materials manufacturer Kaycan for US\$928 million.

The purchase will also allow the company to enlarge its PVC offerings across the USA.

Kaycan has revenues of US\$472m - more than half of it in Canada. It has 12 manufacturing plants (of which nine are in Canada) and employs around 1,300 people.

➤ www.saint-gobain.com

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IMAGE: IMAGE: VINYLPLUS ITALIA

PVC recycling rates are rising again, due partly to schemes such as a new medical waste recycling programme and a UK company's efforts to recover rigid parts from power stations

Vinyl destination: PVC recycling

The Covid pandemic caused PVC recycling rates – at least in Europe – to dip, as reprocessing centres were forced to close during lockdown.

However, PVC recycling rates in Europe have risen again, reaching almost 27% in 2021 according to **VinylPlus**, the voluntary recycling scheme set up by the PVC industry.

For the year as a whole, it reported that 810,775 tonnes of PVC waste were recycled into new products. This represents 26.9% of all PVC waste generated in 2021 in the EU-27, Norway, Switzerland and the UK.

It says that the rate is above the 23.1% estimated by **AMI** for overall plastics recycling in Europe in 2021.

Pre- and post-consumer

Within the total, the amount of pre-consumer recycling – in which factories reprocess their waste internally – increased by around 25%. However, post-consumer recycling – where PVC is collected after it has been used – fell by around 6% to 295,000 tonnes.

Pre-consumer waste – such as off-cuts from a production line – is relatively easy to collect, which helps to explain the increase in recycling it. However, VinylPlus says that more efficient production processes will generate less pre-consumer waste, while new collection systems will help to raise post-consumer recycling rates.

“We also extended our network – with some big converters doing pre-consumer recycling,” it said.

There were a few reasons for the dip in post-consumer recycling. One, said VinylPlus, was a “more restrictive regulatory framework” – and regulatory uncertainty regarding continued recycling (caused by issues such as the presence of ‘legacy additives’).

“Legal certainty is needed to ensure continued investment and renewal of investment in recycling,” said VinylPlus.

In addition, there was a scarcity of PVC waste, it said, as it is “not generated in sufficient quantities”. The slowdown of construction, renovation and also recycling activities – caused by the pandemic – also affected post-consumer waste recycling.

Recycling of flexible PVC and films jumped last

Main image:
Pipe recycling in Europe fell last year

IMAGE: VINYLPLUS MED



Above:
VinylPlus Med
has initiated a
medical PVC
recycling pilot
scheme at
hospitals in
Belgium

year by around 50%, rising from 170,000 tonnes in 2020 to 262,000 tonnes in 2021. The majority of this was in pre-consumer recycling.

Recycling of profiles (including window profiles) remained static – rising by around 2,000 tonnes to exceed 355,000 tonnes. Within these figures, post-consumer recycling rose by 5% while pre-consumer recycling fell by around 2%.

Less pipe recycling

However, recycling of pipes and fittings slumped from around 82,000 tonnes in 2020 to less than 35,000 tonnes in 2021. The report says: “New stricter definitions for pipe waste explain the lower volumes.” VinylPlus says this was due to a “significant drop” in pre-consumer waste volumes, for two main reasons: changes in the way that pre-consumer waste was reported – to align with Circular Plastics Alliance monitoring conditions; and a revision by Teppfa to align its definition of waste with that used in product standards (CEN/TC 155).

There were also some operational reasons behind the fluctuations in recycling rates. For instance, recycling of coated fabrics dipped, said VinylPlus, because “we lost some companies that have been reporting previously”. However, adding one large converter of soft PVC led to an increase in that category.

In addition, VinylPlus has begun using new software to collect and analyse the data – and adopted a new system called RecoTrace in 2021.

“When we started using RecoTrace, we made categories more detailed,” said VinylPlus. “Companies can now find the right waste category/application – hence also the appearance of new categories.”

One new category – called ‘other rigid’ – includes items such as furniture and gardening, agriculture and leisure applications, and accounted for 58,000 tonnes/year.

VinylPlus has set itself new targets – to recycle at

least 900,000 tonnes of PVC waste into new products by 2025, and 1 million tonnes by 2030.

Medical boost

VinylPlus has stepped up its efforts to recycle medical PVC waste with its VinylPlus Med scheme.

Launched last year, the project aims to recycle single-use PVC medical devices in partnership with hospitals, waste management companies and recyclers. It currently collects material from four hospitals in Belgium – and has 29 more on the waiting list.

“Most PVC medical waste is incinerated – generating CO₂ and other waste streams such as flue gas and combustion residue,” said Inge Dewitte, an advisor at Belgian waste management industry association **Denuo**.

PVC is the most commonly used plastic in healthcare, accounting for around 30% of all use, and can be recycled up to 10 times without significant loss of quality, she said.

“PVC is expected to remain dominant in medical, because it can meet many technical requirements at low cost,” she said.

While countries including the UK and Australia already have schemes to collect medical PVC waste, the new scheme will attempt to return PVC to the medical sector – though not in its original guise, due to exacting standards for making medical devices.

“We want to turn the PVC into new hospital applications such as flooring and shoe soles,” said Dewitte.

The scheme supplies hospitals with mobile stands, transparent plastic bags and collection boxes – as well as posters that explain its rules. Waste management company **Renewi** is in charge of collecting the waste – and plans to integrate it with its existing operations (such as collecting hazardous waste).

There are a few restrictions. For instance, PVC products must be “clean and non-infectious” – which rules out blood bags. The scheme focuses on three main product types: tubing; masks; and infusion bags.

In some cases, a product may not be made completely from PVC. In these cases – such as in an infusion kit – non-PVC parts must be separated at the recycling stage.

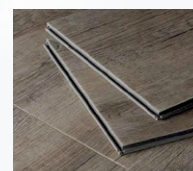
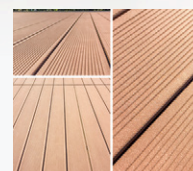
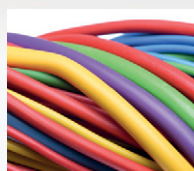
Another restriction is that the scheme cannot handle products that contain DEHP plasticiser – though many manufacturers have now stopped using it.

“VinylPlus is developing a scanner that can identify DEHP in medical devices,” said Dewitte.

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IMAGE: VINYLPLUS



Above: Van Der Perre: "PVC is a good material to recycle and can help hospitals cut costs and emissions"

"That way, if we accidentally collect it we could identify it at the recycling stage."

Belgium-based recycler **Raff Plastics** is a partner in the project. Caroline Van Der Perre, co-owner and manager of the company, said: "It's a pity that a lot of PVC medical waste is burnt. It's a good-value material to be recycled - which can help hospitals to cut costs and emissions."

Increase down under

Australia has expanded its own recycling scheme for medical PVC - having pioneered the concept back in 2013.

This year, it expanded to more regions - including Albany in Western Australia and Rockhampton in Queensland. More than 280 hospitals now participate in the **Vinyl Council of Australia** programme. Since 2015, it has recycled more than 545 tonnes of PVC medical products - which it says is the equivalent of 27 million IV bags.

Due to the pandemic, the volume collected in 2021 (119 tonnes) was lower than in 2020 (129 tonnes). However, more than 60 hospitals across Australia have joined the scheme in the last two years.

With partners Baxter Healthcare and recycler Welvic Australia, the Vinyl Council wants to recycle the equivalent of 50 million IV bags - around 1,000 tonnes - in Australia over a five-year period to 2025.

"The sustained increase in hospital participation and collection efforts in recent months is encouraging," said Sophi MacMillan, CEO of the Vinyl Council of Australia. "We hope that recycling volumes increase - back up to pre-Covid levels again - throughout early to mid 2022."

Cost analysis

At last year's PPXX conference in Amsterdam, The Netherlands, Alessandro Marangoni - CEO of Italy-based **Althesys Strategic Consultants** - presented a cost-benefit analysis of PVC pipe recycling.

The financial study considered the use of PVC pipes in water and sewer networks in Italy and Germany - and concluded that there is a positive net balance for recycling them.

"The analysis considers - for each country - the costs of recovering, separating and treating PVC pipes at their end of life," he said.

In addition, it also accounted for factors such as pipe waste disposal savings, the value of the recovered pipe material, carbon emission savings and any positive economic and employment fall-outs from the recycling business.

The stages of PVC recycling include: dismantling the installed product; collecting, sorting and cleaning; recycling the recovered material; and converting the recyclate into a new product. The collection, sorting and cleaning stage is the most critical, he said - and is complex and expensive because the volumes of PVC products are diluted in a large number of applications spanning different products and uses.

"This makes it difficult to organise appropriate and competitive collection chains," he said.

"Moreover, PVC is often coupled with other materials, which requires appropriate technologies for its separation."

For Italy, recycling was compared with either landfilling or incineration. The cost of landfilling was estimated at €200/tonne and that of incinera-

Chemours leads TiO₂ recovery research

Chemours is co-ordinating a three-year research project that seeks to develop an "efficient, cost-effective and more sustainable process" for recovering TiO₂ and polymers from plastic end-use products.

The pigment is used in many extruded plastic products, including both pipes and profiles.

In the first stage of the project, called Remove2Reclaim, the partners developed a sorting mechanism to identify plastic waste containing TiO₂ and identified solvent-based extraction routes to remove it.

Future anticipated milestones include

developing methods and equipment to detect TiO₂ in specific polymer matrices, recovering it via dissolution, and reusing.

"Current commercial-scale recycling technologies do not allow polymers and additives to be effectively removed and separated, limiting the potential applications and overall quality of products made with recycled plastic," the company said. "Remove2-Reclaim is designed to change that."

Other project partners include Ineos Styrolution, Lybover, Deceuninck, Matco Plastics, Centexbel, Vito, Ghent University, and KU Leuven.

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IMAGE: SHUTTERSTOCK

Chemours is co-ordinating a project to recover TiO₂ from plastic end-use products

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Above: BM Technology Tech in the UK recovers, cleans and chops rigid PVC

Recycling PVC from power station towers

BM Technology Tech has created something of a niche for itself with recovery, cleaning, chopping and milling of rigid PVC parts from refurbished and decommissioned power station cooling towers in the UK. Each cooling tower can contain as much as 400 tonnes of recyclable PVC, in the form of honeycomb sheets, which until now has been going to landfill.

By the end of their first useful lives, the honeycombs are heavily contaminated, typically with limescale and silt from the cooling water. The honeycomb sheets are much lighter than compact sheet, and so more expensive to transport to any recycling facility. For this reason, BM Technology Tech has developed a mobile compactor that enables it to carry out preliminary size reduction on-site. "We are saving transport costs and carbon emissions with this innovation," said business manager James Morley.

The company sells the regrind for recompounding into pellets which can be made into products such as window frames and pipes.

BM Technology Tech also has a growing business in recovery of uPVC from when cooling towers or water treatment plants are refurbished; elements need replacing after 10 to 20 years, depending on local conditions. A 15 m radius trickle filter bed with 3.6 m depth of filter media contains around 2,500 m³ of plastic, weighing close to 65 tonnes.

"We are continually finding more places where honeycomb PVC has been used and is in need of recycling," Morley said.

tion at €220/tonne. The extra costs of collection, sorting and pre-treatment for recycling of pipe waste were estimated at €190/tonne and €20/tonne, respectively.

The costs of transportation to the recycling site – assumed to be 100km – and indirect environmental impacts were also included. Recycling and other treatment costs were estimated at €50/tonne as a whole.

Revenues from recovered material were €500/tonne of homogeneous PVC pipe.

Recycling PVC was assumed to halve energy consumption compared to virgin PVC production – which he said was a conservative estimate.

Overall, the cost-benefit analysis showed a net positive balance of €515-544/tonne of PVC pipes.

For Germany, the study investigated single-layer and three-layer pipes with an inner layer made of recycled PVC. Here, the study only compared recycling with incineration – because landfilling of pipe waste has been banned in Germany.

The German calculation assumes a €200/tonne cost of incinerating pipe waste. The extra costs of collection and sorting amounted to €225/tonne for homogeneous pipes and €235/tonne for three-layer pipes. For both types, a cost of €25/tonne for the pre-treatment before recycling was assumed.

For Germany, the net balance of PVC recycling was positive, though slightly lower than in Italy due to the higher cost of material collection and sorting in Germany, and higher costs of incineration in Italy. Marangoni estimated a 13.5% higher net benefit of incineration in Italy compared to Germany.

"In Germany, the three-layer pipes showed a lower net benefit than homogeneous pipes because they contain an inner layer of previously recycled PVC – whose value is lower," he said.

He added that fluctuations in raw material prices affected net benefits – because the revenue from recycled materials drove profits.

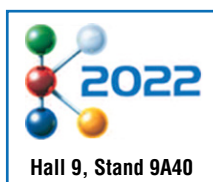
"This result should push for more PVC recycling in the pipes industry," said Marangoni. "Utilities active in building and renovating water and sewer networks should take into account the ease of recycling PVC pipes in their procurement choices."

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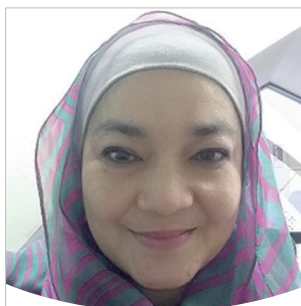
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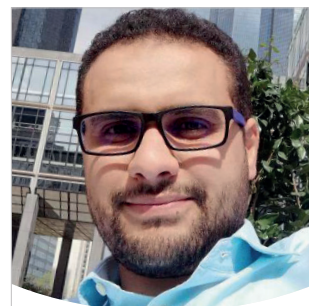
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IMAGE: SHUTTERSTOCK

Seeking stability in PVC

Developments in PVC stabilisers are targeting new market demands and potential regulatory changes. Peter Mapleston finds out more

Stabilisers are key to the successful use of PVC in both flexible and rigid applications so, perhaps unsurprisingly, it is an area that has seen ongoing development activity in recent times. Some of these developments target changing market trends, others safety issues and possible impending legislation, and still more simply provide improved overall performance.

In an effort to strengthen security of supply and address issues associated with limited availability of butyltin intermediates, **Galata Chemicals** has developed two new, high efficiency methyltin stabilisers. The company explains that over the past couple of years the industry has seen tight supply of tetrabutyltin (TBT), which is a major intermediate used for manufacturing butyltin heat stabilisers for PVC in EMEA and North America. At the same time, exports of TBT from Asia have also been limited. Taken together, this has created an uncertain outlook for TBT in the near future, Galata says.

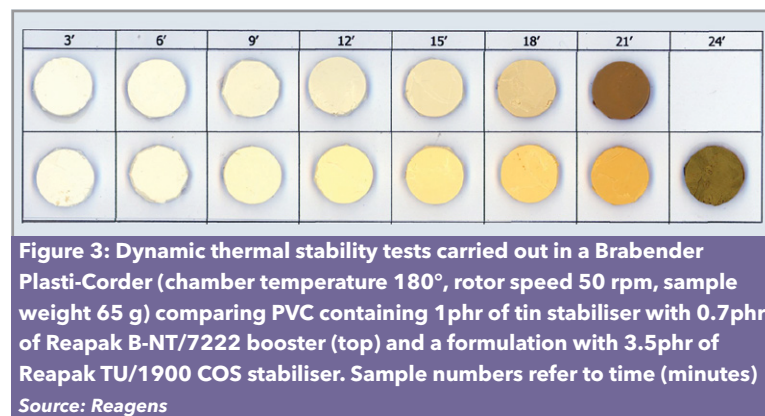
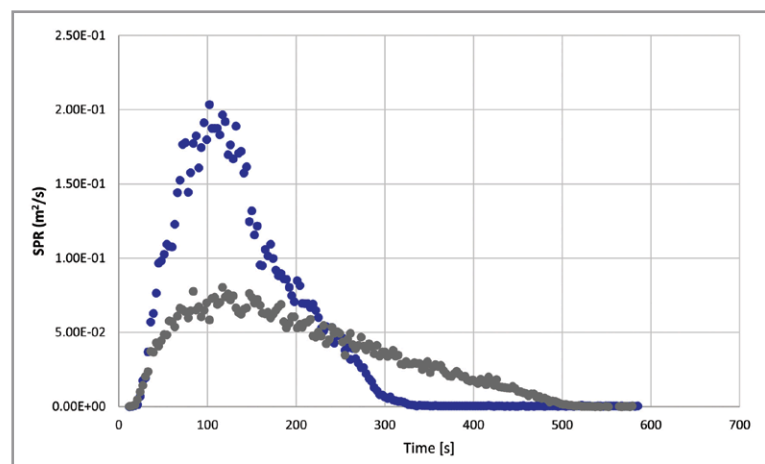
The company's recently introduced Mark 3205 and Mark 3270F grades are intended for use in rigid profile, siding, fencing and pipe compounds.

They are said to impart comparable-to-superior heat stabilising efficiency compared to conventional butyltin stabilisers when used at the same loadings.

Mark 3205 is said to exhibit good anti-chatter performance, which is important in high-speed extrusion applications, while Mark 3270F is designed to be particularly effective in outdoor applications requiring good weathering and extended long-term heat stability characteristics. "It is expected that the incorporation of these stabilisers into rigid PVC compounds would also enable customers to lower cost-in-use of their formulations compared to the butyltins," said Peter Frenkel, vice president of technology at Galata Chemicals.

Galata Chemicals has also introduced Mark BZ 921, a high efficiency, phenol-free, alkylphenol-free liquid barium-zinc-containing stabiliser that has been formulated for use in general purpose plasticised PVC compounds. Compared to conventional stabilisers of this type, the company says Mark BZ 921 delivers better initial colour, static and dynamic heat stability as well as good oven-aging performance characteristics.

Main image:
New stabiliser systems promise to improve processing and durability of PVC while addressing cost and supply issues



Completing the new introductions, Blendex SS400 further extends Galata's polymer modifier product range. It is said to be suitable for use in rigid PVC compounds for demanding applications where high Izod impact resistance is required, such as rigid calendered sheet and profile compounds. In addition to its ability to deliver high Izod impact resistance at lower loadings, the product is also said to maintain very good drop dart impact and gloss characteristics.

Weathering effects

It is well known that PVC undergoes thermal degradation and photo degradation due to exposure to natural sunlight and that this weathering effect depends on temperature, irradiance and humidity of specific geographical conditions, according to **Reagens**.

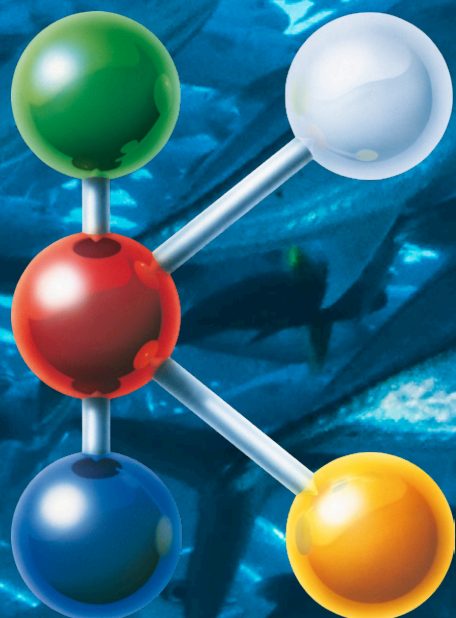
A white window profile, for example, if not correctly formulated could turn yellow in a relatively short period of time. On the other hand, a brown or green PVC shutter could easily whiten due to the phenomenon of "chalking". This chalking effect is the result of a complex series of reactions that together cause strong oxidation and damage of the surface through creation of micro cracks and holes, which scatter incident light. Reagens has developed a new range of one-pack Ca/Zn stabilisers formulated to prevent chalking of dark coloured weatherable PVC articles over extended periods of exposure (Figure 1).

One of the keys to the success of PVC, particularly in building and construction, is its outstanding fire performance; the polymer is difficult to ignite and displays low flammability, a high tendency of self-extinction, low flame spread, and quite low heat release rate. But it is still often necessary to add flame retardants and smoke suppressants, especially in unplasticised articles.

One of the most common flame retardant system components used in PVC is antimony trioxide (ATO). However, antimony reserves are in the hands of just a few players, many of which are in China. For that reason, antimony has been considered a critical raw material in the European Union, and it is one of 35 mineral commodities considered to be critical to the economic and national security of the United States.

"In the European Union, ATO is also under the eye of ECHA and the possible change of the classification can be a weak point for [the] PVC value chain," said Gianluca Sarti, R&D Manager at Reagens (ECHA currently classifies antimony trioxide as Suspected to be Carcinogenic).

"What Europe learnt, particularly in these last



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IMAGE: SONGWON



Above: Omya will distribute Songwon's PVC product lines across Latin America

two years in the pandemic and war, is that the scarcity of strategic raw materials can impact deeply on the economy of the countries," Sarti said. "For all these reasons ATO-free alternatives must be available, competitive in costs and performance. In that context, one of the new R&D fields at Reagens is in flame retardants replacing ATO in a wide range of articles."

These alternatives, which function in the condensate phase and promote crosslinking of PVC during fire conditions, also act as potent smoke suppress-

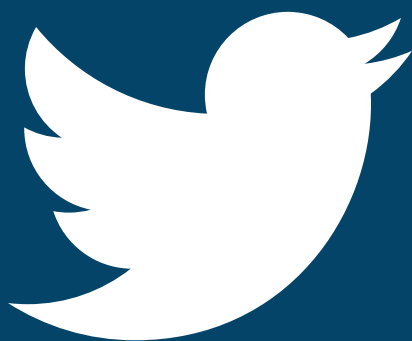
sants (Figure 2). This means they can be used for production of articles with extremely low smoke emission. Reagens has introduced its NT 800X FR series for use with unplasticised and plasticised PVC – particularly cables, hoses, conveyor belts, roofing membranes, and uPVC panels – and is developing tailor made solutions based on specific customer needs.

"Another pretty interesting resin is chlorinated PVC [PVC-C], used for niche articles where some specific characteristics are required – heat and chemical resistance, flame retardancy, low smoke emission," Sarti added. Reagens produces boosters for tin stabilisers and COS (solid calcium organic system) stabilisers for a wide range of PVC-C articles, including pipes and fittings, and sprinklers. These are marketed as Reapak B-NT/7222 and Reapak TU/1900 respectively (Figure 3).

Expanding capacity

Late last year, **Baerlocher** said it would install additional mixing and granulation units this year at its production plant at Bury in the UK to increase capacity for calcium-based PVC stabilisers by more than 50%.

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"This expansion will support the strong demand in all new and recycled PVC applications and reinforces the company's commitment to the 'post Brexit' UK and Irish markets," the company said.

"For the past 25 years, the Bury site has established itself as the premier solid PVC stabiliser production plant in the UK," said Andy Jones, the group's global head of PVC additives. "This expansion begins the next chapter for the company, as we approach our 50th anniversary in the UK during 2023, with an increasingly challenging regulatory framework and complexity in supply chains."

The announcement was made a few months after Baerlocher began expanding its Dewas site in Madhya Pradesh, India. This new production facility will have a capacity of 30,000 tonnes/yr and will exclusively produce Ca-based PVC stabilisers. A previous expansion at the site was completed only a little over a year earlier.

Jayen Modi, managing director of Baerlocher India Additives, says the company will focus on investing only in calcium-based stabiliser capacity while continuing to provide choice for converters with traditional systems to enable their transition towards sustainable calcium-based stabiliser systems

for all PVC applications. "The PVC industry globally is under varying stages of transition to more sustainable additive solutions," he said. "We want to be ready when our customers decide to convert their products away from using traditional stabilisers."

In January this year, **Songwon** announced it had entered an exclusive PVC additives partnership covering Latin America with Omya, a leading distributor of speciality chemicals. Omya will provide marketing and sales, customer service as well as distribution and logistics for Songwon's PVC product lines across the Latin American region.

"With its extensive distribution network, strong service capabilities and solid reputation, we are confident that the Omya team can drive Songwon's PVC business in this region and that our Latin American customers will receive excellent support and service," says Joe Vermeersch, sales manager TPU, TIN and PVC at Songwon International Americas.

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IMAGE: BAUSANO



Recent extruder developments include a piggyback arrangement for making profiles, a high-output grooved model and a flexible pipe production system for an industry newcomer

Machine code: latest in extruder technology

In the lead-up to the K show in Germany, machinery manufacturers typically keep their cards close to their chests regarding new launches. Many will already have completed work on new machines – but details will not be revealed until closer to the show.

However, many suppliers continue to make refinements to existing models – which are also being used in new and innovative ways by customers.

Tecnomatic, for instance, recently supplied a new extrusion line to Riccini, which will use it to make multi-layer polyethylene (PE) pipe.

The new line – which includes co-extruders, dies and a control system – will produce pipe of 20-90mm diameter, at outputs up to 600 kg/h.

The line includes Tecnomatic's Vega extruders (in L/D 37 ratio), co-extruders for the inner and outer layer in L/D 30, and a Venus Multi 160 die head which can produce pipe diameters up to 1,600mm.

Riccini offers a range of products including corrugated and smooth sewage and drainage

pipe, pressure pipe for water and oil transportation, and products to protect cables. Its products are made at a 130,000 sq m facility in Umbria.

"After years employing foreign machinery, we have found a high-quality supplier in Tecnomatic," said Fabio Riccini, general manager of Riccini. "This is seen in the efficiency of processes – in terms of productivity – reduction of waste and optimal use of resources."

Vega extruders have a constantly updated screw geometry which – combined with water-cooled and grooved feed bushings – allows high production and plasticisation even at maximum flow rate, says Tecnomatic.

"The specific production has been further increased and stays constant throughout the screw rotation range – even at high back pressure values," said Tecnomatic.

The machines include synchronous AC motors designed for the use in highly dynamic performance applications with variable speeds. The motors are strong enough to withstand high

Main image:
Bausano's custom extrusion lines can extrude products from waste plastic and natural fibres

Right: Roller blind manufacturer SPPF has expanded capacity by adding new extruders from Battenfeld-Cincinnati

overloads, while high-quality insulation avoids gradual deterioration caused by high-frequency operation, it added.

In addition, the line incorporates Pipe 4.0, a program for networking pipe extrusion lines. Through the machine's extrusion process control (EPC) system, different machines and peripherals are connected and can be activated through a uniform user interface. This allows the whole production process – including material feeding, temperature control and synchronisation – to be coordinated and monitored. All parameters are recorded and monitored centrally.

The system can carry out energy monitoring and convert numbers and data into valuable information – allowing later analysis.

Saving space

Polish profile manufacturer **Decco** has saved space in its production facility by using a number of 'piggyback' extruders from **Battenfeld-Cincinnati**.

Decco originally installed two of the company's co-extrusion lines in 2019 and has placed repeat orders for several more. The piggyback models consist of main extruders and co-extruders and have extended Decco's production capacity to 20 lines.

"The high-performance level of the extruders and their mature process technology support the production of high-grade, durable profiles for some 350 customers in 30 different countries," said Piotr Domaszewski, managing director of Decco.

Co-extruders enable the production of multi-coloured designs and the use of recycled material in the middle layer.

Decco uses its own production scraps as well as bought-in PVC regrind.

In all the co-extrusion solutions recently delivered to Decco, a TwinEx 78-34 with an output of up to 290 kg/h is the main extruder, combined with a ConEx NG 65 as co-extruder. The conical twin screw extruder, with up to 250 kg/h output, is mounted on top of the parallel extruder, so that floor space is required only for the latter. As well as saving space, the piggyback configuration offers cost advantages through a common control cabinet, easy operation and high energy efficiency.

The integration of tooling is simple and variable thanks to the flexible frame structure of the co-extruder.

"The space-saving solution was certainly a buying incentive for us," according to Domaszewski. "But just as important are the energy efficiency and performance of the two extruders, which guarantee economical manufacturing of high-quality profiles."



IMAGE: BATTENFELD CININNATI

Added output

In addition, French manufacturer of PVC roller blinds **SPPF** has ordered three Alpha Plus extruders from Battenfeld-Cincinnati in order to expand production capacity.

SPPF produces 350,000 roller blind boxes and roller blinds per year. The extruders it has ordered have a 60mm diameter, a smooth feed zone and BCtouch UX compact control.

"With its intuitive operation, this control system facilitates daily production work for our machine operators," said Guillaume Le Roc'h, production manager at SPPF.

Alpha extruders are available in 45, 60 and 75mm as basic models, as well as with finely or coarsely grooved feed zones according to customer needs. They are equipped with a Knödler drive system as standard and have a compact design.

"Thanks to their compact footprint, the extruders are suitable for flexible use, which is very important in view of our extensive product portfolio," he said.

Multiple sizes

Canadian pipe extruder Encoma – which was only formed last year – is using a QuickSwitch line from **KraussMaffei** to make various sizes of multi-layer HDPE pipe.

The three-layer line – the first QuickSwitch line in North America – was installed in late 2021 at a new factory in Manitoba.

"As a newcomer in this branch of industry, it was important to have a partner who would set up a turnkey plant and provide training and support," said Derek Hofer, plant manager at Encoma.

The company has already ordered two new lines: a second QuickSwitch line and a five-layer PE-RT line to make underfloor heating pipes.

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Right: Encoma is using a QuickSwitch line from KraussMaffei to make various sizes of three-layer HDPE pipe. Germany has stepped up their research cooperation



achieved with the first QuickSwitch line for HDPE pipes were so convincing," he added.

QuickSwitch is KraussMaffei's solution for making pipes of different dimensions on a single line, without the need for retooling. The main component of each line is an adjustable calibration basket, which adjusts to new pipe dimensions automatically without having to stop the line. The waste produced during this period is limited to a cone-shaped piece of material – which boosts efficiency and sustainability.

The system also ensures fine adjustment of pipe wall thickness and pipe centring. Both are crucial in the production of high-quality pipe. Once saved, production data can be retrieved and adjusted at any time, to ensure reproducibility.

With the line installed, Encoma produces pipes with diameters of 25-63mm. The second QuickS-

witch line will extend the dimensional range by up to 6in (168/175 mm).

Research boost

In addition, **KraussMaffei** and the **Institute of Plastics and Circular Economy (IKK)** at Leibniz University in Germany have stepped up their research cooperation. While IKK focuses on analytical and application-oriented research – as well as process and material development – KraussMaffei ensures that research results are implemented in machinery for extrusion, recycling and injection moulding.

IKK examines the whole value chain of plastic recycling – from sorting, shredding and mechanical recycling to optimising recycled materials for processing into new components.

A tandem Edelweiss Compounding line is being installed, to carry out basic tests. This will underpin development of recycling processes to remove odours or contamination as efficiently as possible and optimise the resulting properties of the recyclate.

KraussMaffei has been helping with practical tests in IKK's technical centre since it moved to its new location in September 2019. The joint research work in mechanical plastic recycling has already concluded.

"Through the cooperation with IKK, we can acquire young talent and help them in the training and education process," said Michael Ruf, CEO of KraussMaffei. "This practical experience prepares them for the requirements of their future career. Ideally, we can offer the students prospects in our company following the completion of their studies."



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Right: Davis-Standard says its SHO groove feed extruders offer up to 20% higher output than existing models

Gear reduction

Davis-Standard has introduced a new gear reducer for its extruders - which can be used on machines with high and low torque, speeds and extrusion pressures.

It can also accommodate the company's Activ-Check system, which allows continuous monitoring, preventative maintenance and mobile alerts.

The new gear reducer is available in five different dimensions and capacities for extruders ranging from 2in (50mm) to 6.5in (165mm).

"This represents strategic engineering and the application of cumulative knowledge to deliver greater functionality without compromising performance," said Gary Peacock, director of engineering at Davis-Standard. "We've improved all major components and packaged them in a redesigned housing - and already have hundreds of extruders in the field fitted with the new reducer."

One benefit is that the horizontal orientation is a good fit for belt-driven machines or low centre-lines. This allows for a range of belt drives, versatile feedscrew timing and adaptability to direct-coupled drives. The vertical housing arrangement is designed for direct-coupled and narrow footprint machines. This allows for tight positioning of extruders used in multilayer processes.

Case-hardened precision-ground helical gearing is available in a wide range of gear reduction ratios. The new reducer series uses spherical roller thrust bearings, which absorb the axial process load and provide a self-centring, compact design with better low-friction characteristics, says Davis-Standard.

Groove fed extruder

In addition, the company has extended its range of groove feed extruders with its SHO (super high output) model.

It is equipped to save space while offering outputs up to 20% higher than existing groove feed models, says the company. An optimised feed section and high-performance DSB barrier screw are beneficial for high-viscosity HDPE applications such as pipe extrusion - where lower melt temperature, reduced power consumption and improved energy efficiency are critical.

"Improving energy efficiency equates to tangible savings for your operation, while reducing your carbon footprint," said John Christiano, VP for technology at Davis-Standard. "The SHO builds on our existing groove feed technology with a more streamlined, compact footprint."



Natural fibres

Bausano of Italy has enhanced its custom extrusion lines to extrude products from waste plastic and natural fibres.

The lines combine waste materials such as PVC, PE or PP with a range of natural fibres. These include wood dust and substances of plant origin, such as rice husks, coffee grounds and banana peels. As with wood-plastic composites (WPCs), the materials are suitable for applications such as flooring and decking.

Bausano's extrusion technology can incorporate up to 100 phr of wood or natural fibre. The counter-rotating twin-screw configuration achieves accurate mixing between melted polymer and fibre, passing it through the mould without the need for a melting pump. Profiles can be directly extruded from the raw material (direct extrusion) or the material processed from granules (indirect extrusion).

In direct extrusion, Bausano says its machines process fibres with a humidity level of up to 12%, at a speed three times higher than other solutions on the market.

"Plant fibre-plastic composite materials are a valid alternative in construction and architecture," according to Clemente Bausano, vice president of Bausano.

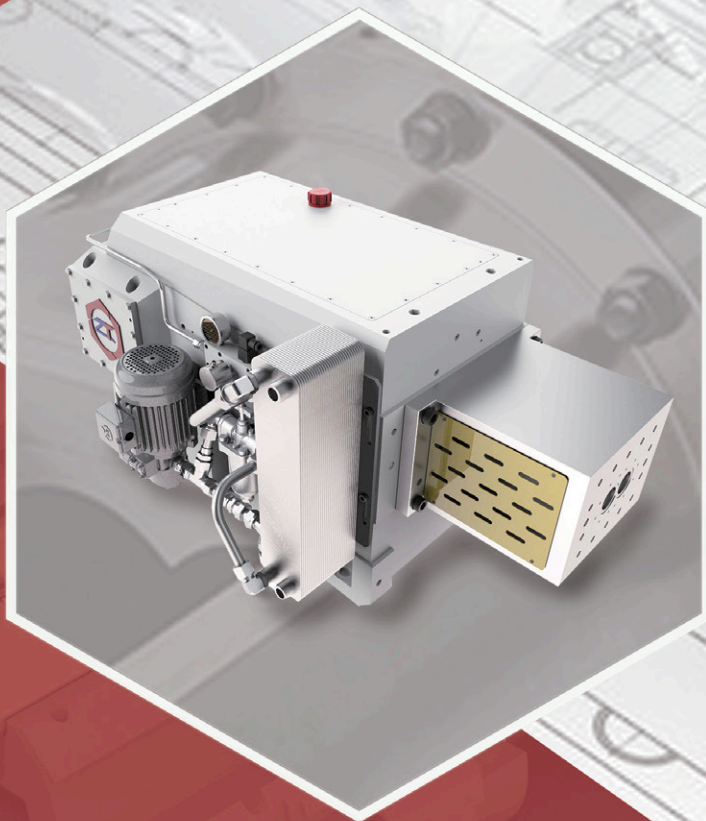
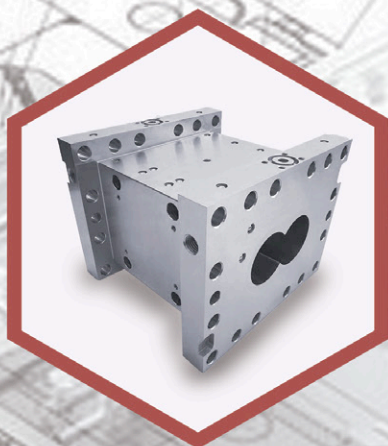
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BOOK YOUR PLACE

Gearing up for K2022

It's that time again: K2022 kicks off in a few short months. In this special section, we look ahead to the global plastics industry's key event - and provide essential links to help you get the most from your visit

In just three months, the world's largest plastics show will open its doors. K2022 runs from 19-26 October 2022 in Dusseldorf, Germany.

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

The last K show in 2019 recorded 3,330 exhibitors from 63 countries on 177,000 m² net exhibition space. It also welcomed 224,116 trade visitors - of whom 73% came from outside Germany.

Sustainability is a growing concern within the plastics sector, so the circular economy will feature heavily at the show. As well as machinery - such as

equipment for processing, recycling and waste management - there will also be multiple examples of new materials - such as bioplastics and formulations that include higher levels of recycle.

There is also a return for the Science Campus - which allows business to exchange ideas and information with academia - as well as two special events: 'Plastics shape the future', and the VDMA's Circular Economy Forum.

A new element of the show is the Start-up Zone, which will showcase new and small companies in the plastics sector. This area, in Hall 8b, will feature companies that are less than 10 years old, have fewer than 100 employees and generate a turnover below €10 million (US\$9.5m).

Pipe & Profile Extrusion magazine at the show

Pipe & Profile Extrusion will be exhibiting at K2022 on stand C11 in Hall 7. By paying a visit, you can find out more about all of our digital plastics magazines and apps.

The stand is run by our parent company AMI, which will be showcasing its latest industry directories and

market reports, and information on our many conferences including Plastics Extrusion World Expo 2022.

In the run up to the K2022 event, *Pipe & Profile Extrusion* will be publishing detailed previews of the innovations that will be on show.

Look out for our K Preview issues in

September and October. Follow the news on our @plasticsworld Twitter feed. We will review K2022 in detail in our November/December edition.

Exhibitors can send press releases to lou@pipeandprofile.com. Full details of our special coverage of K2022 are in our [media pack](#).

Dates: 19-26 October 2022 **Venue:** Dusseldorf Fairground, Dusseldorf, Germany
Hours: 10:00 to 18:30 daily **Organiser:** Messe Dusseldorf **Website:** www.k-online.de



knowledge is power

Use our selection of web links to make your visit to Dusseldorf - and K2022 - as productive and enjoyable as possible



BUY YOUR TICKETS

Save queueing - and money - by buying entry tickets in advance. A three-day ticket costs €120, while one-day tickets cost €55 when bought in advance. Order tickets by clicking [here](#). A catalogue is €25: buy a voucher online and exchange it at the show.



GET K ON THE PHONE

Lots of useful K2022 data is now available on your smartphone or tablet - including exhibitor and product databases, exhibition plans, travel information, hotel listings, city guides and restaurant reviews - via the 'The K App'. To download the free app, visit the page [here](#), which has links to both the AppStore (for iPads and iPhones) and Google Play (for Android devices).

BOOK YOUR ACCOMMODATION

Dusseldorf accommodation fills up fast during K and the best options go early. Find out what's still available and make your reservation as soon as possible at the official [website](#).



CHECK OUT THE REST OF DUSSELDORF



After a hard day at K2022 you will have earned some relaxation time. Make the most of your evenings in the city by checking out the restaurants, pubs, bars, culture and entertainment on offer. This official guide has useful listings, as well as guides to the sights and neighbourhoods: <http://bit.ly/DusseldorfGuide>

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

And if the Altstadt and its 260 pubs get too crowded, try heading to the **Media Harbour**, for its modern architecture and venues, which include restaurants, bars and clubs.



IMAGE: SHUTTERSTOCK

ORGANISE YOUR TRAVEL

Dusseldorf is well connected and getting around the city is easy thanks to its excellent public transport network. There is one important change to note this year: your admission ticket to the show does not include free use of local transport, as it did in the past. Instead, visitors can travel using the **eezy app**, which is like an 'e-ticket'. Details on transport can be found [here](#).

GET ROUND THE EXHIBITORS

With more than 3,000 exhibitors to choose from and a total exhibition area of more than 170,000m², it makes sense to plan your time at the show before you head off. The good news is that you can search for participating companies by name and by product using the online K2022 database.

To search by company, click [here](#)

To search by products, click [here](#)

You can also locate companies using the interactive floorplan which can be found [here](#)

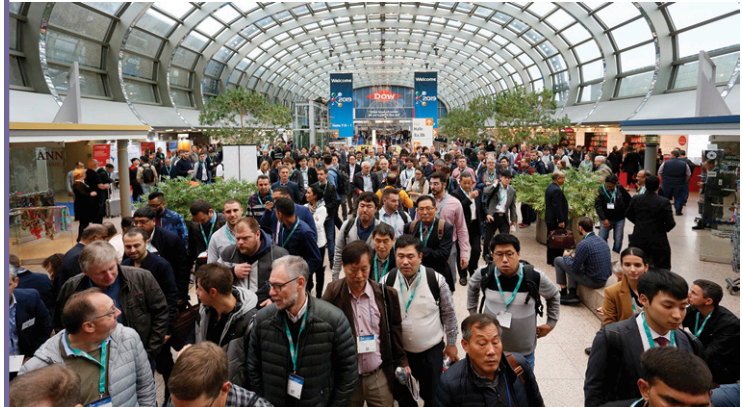


IMAGE: MESSE DUSSELDORF, CONSTANZE TILLMANN



IMAGE: DUSSELDORF TOURISMUS

SOAK UP SOME CULTURE

Dusseldorf is more than just K2022. As the capital of North Rhine-Westphalia, it is home to more than 100 galleries and museums. One celebration is for the artist Joseph Beuys, who spent much of his life in the city. While his centenary fell in 2021, there are still several ongoing events. These include: an augmented reality (AR) experience (at three separate locations); and, if you're feeling fit, a Beuys-themed cycle tour.

[Find out more here](#)

TRY SOME RETAIL THERAPY

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



IMAGE: DUSSELDORF TOURISMUS, MARKUS LUGS

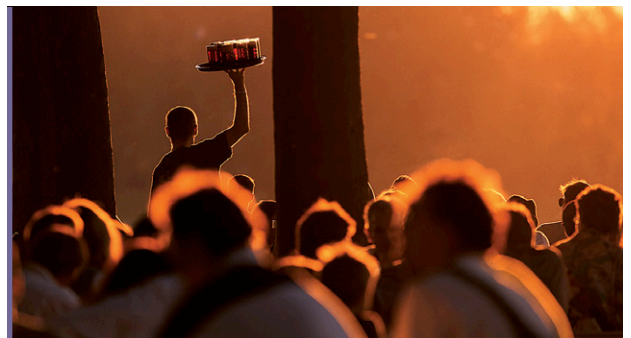


IMAGE: DUSSELDORF TOURISMUS, U. OTTE

DON'T FORGET THE ALTBIER!

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

AMI | Events

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ANCILLARIES

Temperature controller simplifies operations

Conair's Thermolator TW-T temperature control unit (TCU) includes several new features that simplify operation and maintenance.

TW-T units sized at 3 hp and below also require 15% less floor space than earlier designs. All sizes (from 0.75 to 10 hp) have an open-back cabinet that allows air flow around pumps and other internal components while enabling visual maintenance inspection without having to remove cabinet panels.

One new feature, automatic phase detection, causes an alarm to sound if the TCU is powered up using incorrect wiring. This means it is no longer necessary to look at pump shafts to determine rotation.



The new model also has a dynamic maximum setpoint.

Cooling-water supply pressure determines the machine's maximum setpoint, allowing processors to work around plumbing limitations. Low-pressure installations can now operate at lower

temperatures, while higher water pressure gives access to a full high-end range of setpoint temperatures.

In addition, a modulating cooling valve ensures consistent temperature control without valve changes or deadheading.

TW-T units are also now equipped with Conair's common control platform - which delivers the same user experience regardless of equipment type.

With the new TCU control, calculated flow rates - or current readings from an optional integrated flow meter - are always available. Also, trend curves of historical readings can be used to help identify potential problems before they arise.

➤ www.conairgroup.com

GRANULATORS

Better regrind quality

CMG says that its new G26 granulator line can help to raise productivity while improving regrind quality.

There are three models - and more than 30 configurations - in the series. The models are the G26-30, G26-45 and G26-60. Standard configurations cover capacities starting from 50 kg/h to 300 kg/h.

CMG says the cutting chamber is the signature feature of the new line. The high precision guarantees an accurate cut, dimensional homogeneity of regrind particles and no generation of dust, says the company. No cooling water is necessary, regardless of the application.

Integral controls monitor all functions of the granulator unit.

➤ www.cmg-granulators.com

COMPOSITES

Machine learning finds new materials

Researchers in Japan have developed a machine learning method to identify sustainable alternatives for composite materials. Their findings were published in the journal *Science and Technology of Advanced Materials: Methods*.

The researchers, from Konica Minolta and the Nara Institute of Science and Technology, say that their model "rapidly searches through large numbers of materials" to do this. Their results might be applied to areas within pipe and profile extrusion, such as finding new materials for composite

pipes or wood-plastic composites.

"Finding a new composite material that achieves the same performance as the original - using human experience and intuition alone - takes a very long time," said Michihiro Okuyama, assistant manager at Konica Minolta. "You have to evaluate countless materials while also taking into account the interactions between them."

The researchers developed a new type of machine learning method - which can quantitatively evaluate interactions between component

materials to reveal how much they contribute to overall composite performance. It then searches for replacements with similar performance to the original material.

The researchers tested their method by searching for alternative materials for a composite with three components: resin, filler and additive. They evaluated the performance of the substitute materials and found them similar to the original material.

➤ www.konicaminolta.com

➤ www.naist.jp

FOAMED PIPE

Foamed pipe saves costs

Two machinery companies have developed a foamed pipe that can protect underground electrical cables.

The pipe, developed by Hans Weber and Promix Solutions, is cheaper and more environmentally friendly than conventional versions, because it is lighter and uses recycled material.

For the project, Weber provided two grooved barrel extruders – an NE7 40 for the foamed middle layer and an NE5.40 for the inner and outer layers and a PKM250 three-layer pipehead.

Promix provided an N400 gas dosing station with adapted injector for precise metering of nitrogen and a P1 180 melt cooler for homogenisation and temperature reduction of the melt. In initial trials, Borealis HE3490 LS HDPE was used to make a DN110 x 6.3 cable protection tube and foamed with nitrogen.

After making a non-foamed reference sample, the metered gas quantity was gradually increased, resulting in a weight reduction of up to 26% for virgin material and around 15% for recycled material. The pipe was then tested in accordance

with DIN 16876 and GA KSR 2010 (Switzerland). Attention was paid to the ring stiffness and drop test according to DIN EN 744. Based on these results, the test was repeated with a foamed inner layer – made of recycled HDPE – which also showed good feasibility with a stable process.

In the near future, the partners will continue to foam further pipe variants, as well as testing throughputs and other polymers. They are also working on a solution for physically foamed PVC extrudates.

➤ www.hansweber.de

➤ www.promix-solutions.com

IMAGE: HANS WEBER

JOINING

Sliplining replaces sewer line

When a sewer line recently collapsed in Tulsa, USA, local contractor T-G Excavating chose to employ a McElroy Rolling 412 as its HDPE fusion solution.

A crew of about 10 people fused 360ft of 7.125in HDPE pipe – sliplined into an existing 8in pipe – to provide sewerage to nine houses in the local area.

With the HDPE successfully fused into a single piece, the crew pushed the pipe into the existing line in both directions. Smaller electrofusions took place later in the project.

➤ www.mcelroy.com

PVC-O

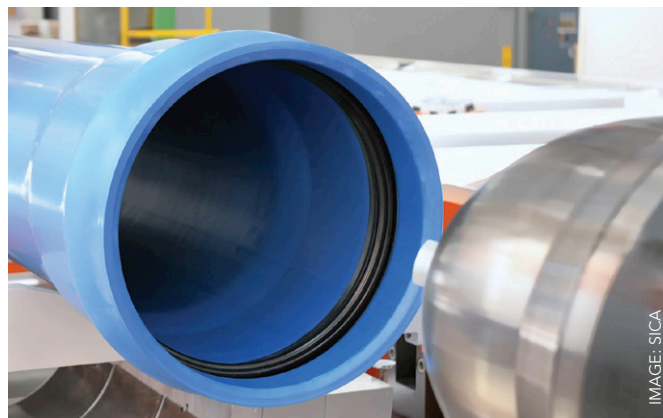
Belling machine for PVC-O pipe

Sica of Italy has developed a belling machine for oriented PVC (PVC-O) pipe.

The Starbell model can produce Rieber-type sockets on PVC-O pipes – which are typically thinner than conventional PVC pipes due to their molecular orientation.

Rieber-type sockets have a gasket integrated during the belling phase. They are popular because, during installation, the chance of accidentally displacing the gasket is reduced – which cuts the risk of external water dispersion.

Producing the socket in PVC-O pipe requires different procedures than for conventional PVC. To date, these procedures have only been industrially



applicable for forming 'Anger-type' sockets – but are now available for Rieber socket joints, says Sica. The new belling machine can process pipes that are made and oriented continuously, as well as those oriented off-line in a tank. Sica says its Rieber belling system complies with a large number of international technical standards.

The process can be applied to pipes up to class 500 – established by ISO 16422 – which imposes the most stringent requirements for resistance to hydrostatic pressure, says the company.

Three models are available, based on a maximum external pipe diameter of 250, 500 and 630mm.

➤ www.sica-italy.it

IMAGE: SICA

AMI | Events

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INOEX: WARP PIPE MEASUREMENT



The WARP contact-less radar-based pipe measurement system from Inoex uses terahertz technology to provide simple and effective multi-point dimensional control of thick and thin wall plastic pipes. Learn more in this brochure.

[CLICK HERE TO DOWNLOAD](#)

COPERION: PRORATE PLUS FEEDER



THE ALL-NEW PRORATE PLUS:
SURPRISINGLY POWERFUL

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The new ProRate Plus feeder system from Coperion K-Tron offers a cost-effective and simple-to-configure gravimetric option for processors looking for reliable handling of pellets and free-flowing bulk powders.

[CLICK HERE TO DOWNLOAD](#)

MIXACO: MIXING TECHNOLOGY



Mixaco has been driving innovation in PVC mixing technology for more than 50 years and has 7,500+ machines installed worldwide. This brochure explains some of the details that make its HM and KMH heating cooling mixers stand out.

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DAVIS-STANDARD: PIPE & PROFILE



Pipe, Profile and Tubing Overview

Overview

Our pipe, profile and tubing extruders and systems are designed to provide you with the highest quality products with minimal downtime. Extruders are available in a range of sizes to meet your needs and we can tailor our systems to your specific requirements. Our systems are designed to provide you with the highest quality products with minimal downtime. Extruders are available in a range of sizes to meet your needs and we can tailor our systems to your specific requirements.

Features

- High precision extrusion technology
- Advanced extrusion technology
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- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology

davis-standard.com

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

[CLICK HERE TO DOWNLOAD](#)

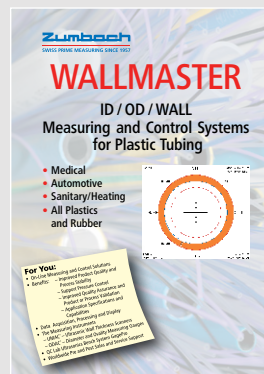
NDC: PRECISION GAUGING



The Accuscan Pro series single-axis diameter gauges are the latest addition to the NDC Technologies precision on-line measurement product line. Learn more about performance and features in this four-page brochure.

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ZUMBACH: MEASUREMENT CONTROL



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- Advanced extrusion technology
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- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
- Advanced extrusion technology
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- Advanced extrusion technology

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

[CLICK HERE TO DOWNLOAD](#)

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

Rivulis

Head office:	Kfar Saba, Israel
CEO:	Richard Klapholz
Founded:	1966
Ownership:	Private (majority owned by private equity firm Temasek)
Employees:	Around 2,300
Profile:	Rivulis, established in 1966, has grown from its origins on Kibbutz Gvat to become a large player in micro-irrigation systems. Its products include drip tapes, drip lines, online drippers and sprinklers – all of which help to maximise the irrigation of crops. These solutions are applied everywhere from olive groves in Israel to vineyards in China.
Product lines:	The company produces a range of branded irrigation systems, including Rivulis and Eurodrop. An example is its Rivulus Defend range of drip lines and tapes that are resistant to insect attack. Its Max-Flat layflat, made from polyethylene, is a durable hose that resists stress, cracking and kinking, which is resistant to chemicals in the water supply. In addition to its branded products, the company designs turnkey projects – through a series of project design centres.
Factory locations:	Rivulis has 16 global manufacturing locations, in countries including Israel, USA, France, Chile, Brazil, Egypt and Australia. It recently opened a new 6,000 sq m plant in Spain to expand production. In addition, the company is acquiring the international division of Jain, a leading India-based producer of irrigation products. The acquisition will see the combined company add around 1,000 employees – and the ability to distribute Jain's irrigation products outside India. In addition, Rivulis has three research and development centres in Israel, USA and Greece.

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

Pipe and Profile FORTHCOMING FEATURES EXTRUSION

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

September 2022

Window profiles • PEX
Downstream equipment
Large diameter pipe
K2022 Show Preview 1

October 2022

Materials recycling/granulation
Extruder developments
Biaxially oriented film
K2022 Show Preview 2/PEW Expo NA Preview

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

For information on advertising in these issues, please contact:
Paul Beckley: paul.beckley@ami.international +44 (0) 117 311 1529

Keep informed: read our latest editions

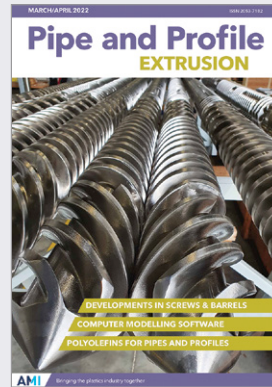
AMI publishes five process-specific FREE plastics industry magazines. Simply click on the cover below to read each magazine. Or download the issue in the relevant Apple or Android app



Pipe and Profile May/June 2022

The May-June issue of Pipe and Profile Extrusion examines corrugated pipe, how it continues to find use in cutting-edge projects, and how machinery producers look to improve speed, performance and control. Plus features on recycling/granulators and pressure pipe.

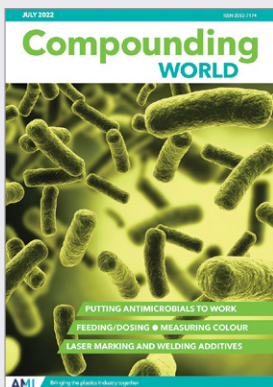
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Pipe and Profile March/April 2022

The March/April edition of Pipe and Profile Extrusion looks at how optimised screw designs can lift production efficiency. This issue also explores some new highly demanding application areas for PO pipes and reviews the latest in computer simulation tools.

[▶ CLICK HERE TO VIEW](#)



Compounding World July 2022

The July 2022 edition of Compounding World explores developments in the fast moving antimicrobial additives sector. It also looks at some of the newest innovations in colour measurement, laser marking and welding additives, and feeder technology.

[▶ CLICK HERE TO VIEW](#)



Plastics Recycling World May/June 2022

The May-June edition of Plastics Recycling World has these features covering: Shredding advances lead to greater precision; What's new in compatibilisers; Processors can get more from in-house recycling.

[▶ CLICK HERE TO VIEW](#)



Injection World June 2022

The June edition of Injection World looks at the latest developments in 3D printing and how they can be exploited by moulders. It also explores some options for reducing energy use and reviews innovations in bioplastics.

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Film and Sheet June 2022

The June 2022 edition of Film and Sheet Extrusion explores some of the latest innovations in printing technology. It also looks at recent masterbatch introductions for film production, as well as reviewing developments in blown film dies and downstream equipment.

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EXTRUSION

Injection
WORLD

Plastics Recycling
WORLD

GLOBAL EXHIBITION GUIDE

2022	26-30 September	Colombiaplast, Bogota, Colombia	www.colombiaplast.org
	4-7 October	Plastex, Brno, Czech Republic	www.bvv.cz/en/plastex
	19-26 October	K2022, Dusseldorf, Germany	www.k-online.com
	9-10 November	Plastics Extrusion World Expo, Cleveland, USA	https://na.extrusion-expo.com
	23-26 November	Plast Eurasia, Istanbul, Turkey	https://plasteurasia.com/en/
	29 Nov-1 Dec	Plastic Print Pack West Africa, Accra, Ghana	www.ppp-westafrica.com
2023	17-19 January	Swiss Plastics Expo, Lucerne, Switzerland	https://www.visit.swissplastics-expo.ch/de
	1-5 February	PlastIndia, New Delhi, India	www.plastindia.org
	28-30 March	Plastic Print Pack Nigeria, Lagos, Nigeria	www.ppp-nigeria.com
	17-20 April	Chinaplas, Shenzhen, China	www.chinaplasonline.com
	25-27 April	JEC, Paris, France	www.jec-world.events
	30 May-2 June	Equiplast, Barcelona, Spain	www.equiplast.com
	5-8 September	Plast 2023, Milan, Italy	www.plastonline.org/en
	26-28 September	Interplas, Birmingham, UK	www.interplasuk.com
	17-21 October	Fakuma, Friedrichshafen, German	www.fakuma-messe.de


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12-14 September 2022	PVC Formulation Europe, Cologne, Germany
7-8 December 2022	Oil & Gas Non-Metallics, London, UK
8-9 December 2022	PVC Formulation Asia, Bangkok, Thailand
14-15 December 2022	Medical Tubing & Catheters North America, Orlando, USA
21-23 February 2023	PVC Formulation North America, Cleveland, USA
6-8 March 2023	Cables Europe, Cologne, Germany
23-25 May 2023	Masterbatch Europe, Munich, Germany

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