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Flexible foam, inflexible problems

This is our regular flexible foam issue – and it’s a packed and varied one. James Snodgrass covers some of the key events at the recent EuroPUR meeting in Berlin, we have a paper on the effects of silicone surfactants on the flammability of a class of blowing agents, and we round things out with a review of the market for polyurethanes in North America with our review of UTECH Las Americas.

One thing that has not gone away is the relatively high price of raw materials over recent years, and how that is feeding into society’s view of flexible polyurethane foam.

As one of our stories this issue explains, people are growing concerned with polyurethane foams, and they are not as inexpensive as they used to be. The industry does not seem to be able to do much to lower raw material prices, and the supply-demand conundrum is beyond this editor’s wit to solve.

But in the war to keep consumers on side, clever people have started producing foams that do not smell. It sounds like a trivial thing, but smell is a powerful emotional prompt. If PU foam smelt of roses, chocolate or even beer, I can almost guarantee foams that do not smell. It sounds like a trivial thing, but smell is a powerful emotional prompt. If PU foam smelt of roses, chocolate or even beer, I can almost guarantee consumers would have less of a problem.

And maybe the different PU sectors – flexible, rigid and CASE – could bring together companies’ EHS reports with global standards like the UN SGD programme. Perhaps if there were a benchmark for each sector based around that, it could win together companies’ EHS reports with global standards like the UN SGD programme.

In other news, this will be my last issue as editor of this job is and as you are, there is a world beyond PU that I want to explore with my family. Time is precious. Use it wisely.
ADVANCING CHEMISTRY
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We drive to achieve a more sustainable future!
FSI to open systems house in Middle East

Dubai, UAE – US systems house Foam Supplies is to open a manufacturing plant in the UAE in September as part of a three-way joint venture. It could also eventually start production in Dharam, Saudi Arabia, according to Yakoob Hassan, managing director of Prime Seal, one of the partners in the JV.

Speaking at the UTECH Middle East Foam and Polyurethane Expo, Hassan explained that the JV will concentrate much of its production on rigid insulation foams based around the blowing agent Ecomate (methyl formate). The third party in the JV, local company CIFS, is a rigid PU and PIR insulation manufacturer.

The plant will be located in the Jebel Ali Industrial Area, which is about 35km south of the World Trade Centre, Dubai, Hassan said. FSI’s move into the region was prompted by news that BASF has shut its systems house in the Emirates. Global business director Roy Choudhury said this had left a big hole. ‘It is an opportunity,’ he said. ‘141b is being phased out and HFO blowing agents are not liquids at these temperatures.’ The city was 47°C on Tuesday 8 June, the second day of the three-day event.

Burnett acquires Flex Foam, expands Phoenix operations

Baltimore, Maryland — Integrated foam and bed maker Burnett Group has acquired Flex Foam. Financial details of the transaction were not disclosed.

‘The addition of Flex Foam to the Burnett Group marks an important milestone in the 137-year history of the company,’ said CEO Richard Tucker.

Flex Foam was founded in Phoenix, Arizona in 1978, and claims to be the state’s first PU foam manufacturer. David Cortright, Flex Foam’s general manager, will stay with the company, overseeing day-to-day operations. He said the move gives his customers access to Burnett’s technical polyester and polyester foams and nonwoven products.
**PU board makes drawers run smoothly**

*Grafenberg, Germany –* PU board manufacturer Rampf has revealed a novel use for its Raku Tool WB-1000 polyurethane board – full-extension drawer runners.

Master carpenter Jonas Gessner came across the material at a Rampf Tooling Solutions seminar. ‘That’s when I decided to make my full-extension drawer runners out of Raku Tool WB-1000 instead of using solid wood as carpenters normally do,’ he said. ‘A full-extension drawer runner needs to be made with the utmost precision to ensure it works properly, has all the necessary technical properties, and meets the desired quality standards. The polyurethane board material is the best way to achieve this precision.’

Rampf claims drawer runners made from its PU board will be superior to those made of wood because solid wood tends to warp when exposed to changes in temperature or humidity, and drawer runners can become misaligned leading to sticking and jams. ‘Polyurethane doesn’t swell, shrink, distort, or rupture,’ said Matthias Traxel, technical service expert at Rampf.

The company says its material can easily be machined with standard carpentry tools, and can be lacquered to match the wood.

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**DuPont removes halo FRs from PIR insulation**

*Wilmington, Delaware –* DuPont Performance Building Solutions has reformulated its Thermax polyisocyanurate insulation to remove halogenated flame retardants.

The Thermax Non-Halogen (NH) Series products are the first polyiso, Class A, non-halogen and LBC Red List Approved products in the North American above-grade commercial wall systems market, DuPont said.

Kieran Carlisle, the company’s global innovation leader, said the company had reformulated the panels to be more sustainable. ‘We have been working with a third party, GreenCircle Certified, to validate the ingredients in our products as well as providing our customers a Declare label via International Living Future Institute (ILFI),’ he said.
Selena posts record set of quarterly results

Wroclaw, Poland – Polish PU foam maker Selena reported record quarterly results for the first quarter of 2022. Revenue was up to PLN421.6m (€89.1m), an increase of 20.6% on the same period a year earlier. Operating profit rose by 30.5% to PLN25.8m.

Sales in the EU generated about two-thirds of the company’s revenues. However, the company is growing its activities in other parts of the world, with sales up in both North and South America. Selena claims to be one of the world’s four largest producers of PU foam.

‘The beginning of 2022 brought us relative peace amid [a] partial stabilisation of raw material prices and supply chains,’ said CEO Jacek Michalak. ‘Just as the whole world was looking forward to further stabilisation, the war [in Ukraine has] heavily impacted on [the] economic relations in Europe and globally.’

Last year, the Polish company unveiled plans to open a new production facility in Kazakhstan, where its activities are focused on manufacturing insulation systems. Construction of the plant should be complete by 2024.

Selena operates a number of production facilities across the world. In addition to Kazakhstan, this includes factories in Poland, Spain, Romania, Brazil, Turkey, China and South Korea.

Kingscourt to invest in Ukraine

Kingscourt, Ireland – Rigid insulation board maker Kingspan is to invest up to €200m in a new production centre located in Ukraine, according to press reports. The company said it expects to make district heating products and insulation products in the nation.

It is currently scoping out locations in the country following its withdrawal from its activities in Russia.

According to a report in newspaper The National, Ukrainian Foreign Minister Dmytro Kuleba welcomed Kingspan’s announcement to invest and help create what he called a modern and innovative economy with urban development expertise and green technologies.

‘Our goal is not solely renewal and rebuilding of the destruction caused by Russian aggression, but also the creation of a completely new, modern and innovative economy leveraging leading urban development expertise and green technologies,’ he said.

FRX Nofia FRs accredited by ChemForward

Chelmsford, Massachusetts – Nofia flame retardants from FRX Polymers have been awarded Safer designation from ChemForward. The non-halogenated polymeric products’ applications include polyurethanes, and they are particularly useful for the electronics sector.

To qualify for the Safer designation, all chemicals present at or above 100ppm must have been disclosed, well-characterised, and given rigorous toxicological assessment against ChemForward’s stringent criteria for determining their safety. They must not present high hazards.

The designation was awarded after a rigorous third-party toxicological assessment and verification process. This considers both human and environmental safety.

The programme is designed to help suppliers build trust with customers.

VKC launches new shoe line, plans expansions

New Delhi – India’s largest PU-based footwear brand VKC Group has launched a new product line under the brand name Debongo. It includes shoes, sandals, sliders, apparel, bags and accessories.

‘The move is in line with expanding the product range, besides responding to the changing market dynamics where focus is on sporty as well as fashion footwear,’ said the company’s chairman, Abdul Razak. Bollywood star Amitabh Bachchan is promoting the brand.

VKC is also considering further domestic capacity increases. This will be done through plant expansions or a new facility.

The company turned over INR21bn ($269m) in the past financial year. Its production sites are spread across India, and it has capacity to produce over 500,000 pairs/day. It also has production in Dhaka, Bangladesh, and Colombo, Sri Lanka, each with a daily capacity of 10,000 pairs.

Elsewhere, the company has ceased production in Khartoum, Sudan. The lingering political stalemate in Sudan has led to a stagnating business environment, and may have been a factor behind the decision.

Worldwide car demand shrank yet again in May

Oxford, UK – World car registrations in May 2022 were down 10.3% compared with the same month in 2021 at 6.19m units, according to LMC Automotive. The consultants said that supply bottlenecks are the main problem in most regions, and manufacturers are unable to meet demand in most regions.

In the US, sales were down 29.2% in May at 1.11m units. In the same month in 2021, US dealers sold 1.57m units. Prices are high because inventories of cars on lots are low, LMC said.

Sales in China of 1.9m units were down 7.7% on the same month last year, when Chinese dealers sold 2m units. Although manufacturing numbers were down, the reopening of cities such as Shanghai in April led to a strong sales rebound.

In Western Europe, sales were 1m units in the month. This is 13.7% lower than the amount sold in May 2021. Consumer demand was higher earlier in the year but has been dampened by the continuing war in Ukraine.

Sales in Brazil and Argentina reached 207,000 units in the month. This compares with 197,000 units in the same month in 2021.

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To offer sustainable solutions for its customers, Repsol is building Spain’s first chemical polyurethane foam recycling plant at its Puertollano Industrial Complex. It will be capable of processing over 2,000 metric tons of polyurethane waste per year, and the start-up will be at the end of 2022.

The polyurethane foam recycling plant is committed to boosting new business models that reflect Repsol’s environmental roadmap to becoming net-zero emissions by 2050.

We aim to help our customers meet their sustainability objectives and respond to the vital need to recycle and extend the useful life of their products.

Repsol commits to the circular economy by continuously developing new products that help their customers to comply with the industry’s needs.
Furniture maker blasts PU’s cost and image

Berlin – The CEO of Home Group, a key European furniture maker, criticised the timidity of European raw materials suppliers and outlined her company’s move away from ‘high-cost foam’ at the recent EuroPUR meeting in Berlin.

Lorraine McMahon said that, since the start of coronavirus, her company has wanted to use more springs because of the high cost of foam. She also suggested that foam has a relatively poor image in the eyes of consumers. ‘In Germany, if you say pocket springs, they are prepared to pay more than if you say foam,’ she said.

McMahon added that her company is trying to use as little foam as possible. ‘Why is there such a huge difference in the price of foam in China and Europe?’ she said. ‘At the end of the day, whether it’s mattresses or sofas, we compete in the end market with products from China. I will not be able to compete if I have pay 60% more for foam.’

This, she said, was in stark contrast to the textile sector, where there has not been a huge price increase. She told the conference that her company had considered making its own foam to make it more cost-effective, but she felt she couldn’t justify the cost of equipment she considers will be obsolete in a decade.

She hit out at chemical companies — some of whom were present at the conference — for refusing to supply Ukraine because it is a country at war. She also criticised IKEA for stopping production in Ukraine as it didn’t want to sell products manufactured in a war zone. Representatives of IKEA’s sister company Ikano were also in the audience.

Bright start, but tough 2022 in prospect at Covestro

Leverkusen, Germany – Covestro’s sales leapt 41% in the first quarter of 2022 to €4.7bn, and EBITDA across the business rose 8.5% to €806m. However, the company downplayed performance over the rest of the year in the face of the coronavirus pandemic, the war in Ukraine, and supply chain disruptions.

CEO Markus Steilemann said: ‘We’ve got off to a successful start in the new fiscal year. However, we recognise there are increasing political and economic uncertainties, especially in view of the war in Ukraine.’

This quarter is the first time the company had reported in its two-business unit formation, and Covestro had decided to make EBITDA growth a key target along with a reduction in scope 1&2 greenhouse gas emission key metrics.

‘Now, more than ever, we have to reduce long term dependency on fossil raw materials,’ Steilemann said. ‘Covestro is part of the solution to that. Without the chemical industry, the transformation to a sustainable industry landscape isn’t possible.’

In the company’s performance materials business, which includes commodity polycarbonate, standard polyurethane components and base chemicals, sales rose 37.2% to €2.4bn in the first quarter of 2022. This compares with €1.74bn in the equivalent period in 2021.

However, EBITDA in the division fell 1.6%, or €10m, to €620m in the first quarter of 2022. The margin decline was because Covestro was unable to fully pass its higher raw material and energy costs on to consumers in the quarter.

Sales in the company’s solutions & specialties business, which includes tailored urethanes, TPUs and elastomers, along with a number of other non-PU businesses, rose 45.3% to €2.22bn. EBITDA in the division increased by 19.2% to €224m.

Materials help BASF in Q1 2022

Ludwigshafen, Germany – BASF’s materials business performed strongly in the first quarter of 2022. Sales rose 39.9%, at €4.8bn, up from €3.4bn in the equivalent period in 2021.

EBIT in the division increased by 10.5% to €954m in the quarter. This compares with €863m in the equivalent period in 2021. The increases were driven by higher prices and currency effects, and volumes were up as well.

BASF reported that MDI volumes in the Asia-Pacific region, North America and Europe were up in the quarter. Overall, the company’s sales were €23bn in the first quarter of 2022, up 19.0% on the same period last year. EBIT across the business rose 17.7% to €3.7bn.

The numbers would have been better, but Russia’s invasion of Ukraine led to an impairment charge on the company’s holding in the Nordstream II gas pipeline.

‘Nevertheless, we had a very good start to the year 2022,’ said chairman Martin Brudermüller.
A big step up for sustainability and insulation performance

Arkema’s Forane® 1233zd liquid blowing agent provides improved insulation performance for the appliance and construction markets — making for a brighter and more sustainable future. Forane® 1233zd liquid blowing agent has a low GWP of only 1* and is EPA SNAP approved for most polyurethane foam applications. In addition to energy efficiency and low environmental impact, it is safe, non-flammable, and easy-to-use.

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Strong Q1 for Trelleborg in 2022

Trelleborg, Sweden – Polyurethane and rubber processor Trelleborg said it has a ‘record-setting’ orderbook at the end of the first quarter. However, it warned that raw material supply, transportation and labour shortages are all bottlenecks.

The company generated SEK7bn sales in the first quarter of 2022, up 21.9% on the same period last year. EBITDA across the division was up 43.6% between the first quarter of 2021 and the first quarter of 2022, at SEK3bn. This is up from SEK2.6bn.

Deliveries and orders improved during the first quarter in the company’s sealing solutions business, up 16.9% from SEK3.3bn to SEK3.7bn. EBIT in the division rose 43.2% to SEK441m, an increase from SEK308m in the equivalent period in 2021.

Sales and profits were driven by ‘notable’ increases in sales to the marine and aerospace sectors, compared with 2021. Automotive and rail sales were up, too.

‘Demand was healthy in most industries, and capacity utilisation is high in our manufacturing facilities, which generated good efficiency,’ said CEO Peter Nilsson. ‘The deterioration in the geopolitical situation added to the challenges related to raw materials supplies and freight, but had only a limited financial impact during the quarter.’

In the company’s industrial solutions business, sales rose by 28.5% between the first quarter of 2021 and the first quarter of 2022, at SEK3bn. This is up from SEK2.6bn.

Sales revenue fell in EMEA, Asia and Americas, compared with 2021. Automotive and rail sales were up, too.

‘We have built up strong market positions in recent years, which are particularly paying off in the current situation,’ said CEO Matthias Zachert. ‘We can thus pass on higher raw material and energy costs via our selling prices. However, it is impossible to predict the impact of the war in Ukraine on future business performance.’

In the company’s engineering materials business, where Lanxess reports its polyurethane systems, sales rose by 52.8% between the first quarter of 2021 and the first quarter of 2022, to €576m. This compares with €377m in the 2021 quarter. EBITDA in the division was up 13.6%

Lanxess passes price rises on to customers in Q1

Cologne, Germany – Sales at Lanxess were €2.4bn in the first quarter of 2022, up 43.6% on the same period last year. EBITDA across the business rose by 32.2%, reaching €320m.

‘We have built up strong market positions in recent years, which are particularly paying off in the current situation,’ said CEO Matthias Zachert. ‘We can thus pass on higher raw material and energy costs via our selling prices. However, it is impossible to predict the impact of the war in Ukraine on future business performance.’

In the company’s polyurethane business, sales rose by 13.6% to €1bn in the first quarter of 2022, up 21.9% on the same period last year. EBITDA in the division was up 21.9% to €576m. This compares with €377m in the 2021 quarter. EBITDA in the division was up 13.6%

Economic earnings plummet as car makers’ problems hit

Ursensollen, Germany – Operating earnings at automotive and commercial seat maker Grammer fell by 88% in the first quarter as production problems in the sector hit.

The only region to show revenue growth was North America, in a rebound from the particularly poor performance there in Q1 2021 because of the severe impact of...
Selena chases China for cash compensation

Nantong, China — Polish PU foam maker Selena is chasing the Chinese and local governments for compensation as it has to move its factory in Nantong because of the potential for flooding there.

The plant, which makes rigid PU foams and other building materials, is in danger of flooding as a result of the Yangtze River area protection programme, according to an official document received by the company.

Selena would use the compensation to relocate the factory, which was valued at CNY58.2m ($8.9m), according to a filing with the Warsaw Stock Exchange.

The parent company has provided Selena Nantong Building Materials, which operated the plant, with a set of guidelines related to seeking compensation for the assets of the Chinese factory. This also includes other damages and costs related to a possible relocation of the plant in Nantong away from the flood risk.

The Nantong plant is thought to be Poland’s largest manufacturing investment in the Chinese market.

Covestro gears up to use recycled feedstock for MDI in Asia region

Shanghai, China — Covestro is to use benzene derived from recycled thermoplastics, oils and fats to make MDI for the Asian market. First, Neste will supply its Neste RE material to SK Geo Centric, which will convert this into benzene in Korea. Covestro will then convert the benzene into MDI in Shanghai, China.

Neste’s RE is an ISCC certified product made from 100% renewable raw materials. It can be used to make MDI with significant reduction in greenhouse gas emissions compared to traditional crude oil, Covestro said. This will shrink the carbon footprint of materials and products made from it.

BASF and Sinopec break ground on expansion project

Nanjing, China — BASF and Sinopec have broken ground on an extension to their joint venture site. This will lead to, among other things, more capacity for ethylene oxide, which can be used to make polyols.

No financial details of the expansion were given, but BASF director Markus Kammath said: ‘BASF-YPC is one of the most successful joint ventures for BASF globally.’

The partnership between BASF and Sinopec is more than 20 years old. ‘We will deploy state-of-the-art technologies to build the new facilities, which will give us a competitive edge in the dynamic Chinese market,’ said BASF Greater China president Jeffrey Lou.

Low VOC water-blown PU for greener chinese buses

Shanghai, China — BASF is supplying a low-VOC water-blown PU spray foam insulation system for use in a new fleet of buses for the Chinese market.

The foam system, Elastoflex CE3651/108, was chosen because it gives better interior or air quality than competing formulations, BASF said.

‘The product has a lower density than competing alternatives, is easy to process, and fast to apply. This is the first time that BASF has developed a low-odour spray foam system based on FR technology, which meets stringent FR requirements,’ said Desomond Long, BASF’s vice president for transportation performance materials in the Asia-Pacific region.

The material has a limiting Oxygen Index >28, and so meets Chinese standard JT1095-2016 for interior and insulation parts used on China’s buses.

It is being sprayed on the ceilings of the buses to thermally insulate the roofs, and to cut the amount of noise inside the bus.

Jiahua may start US polyol production by 2025

Mexico City — Chinese polyol manufacturer Jiahua is considering constructing a world-scale polyol facility near Houston, Texas by 2025, according to Timothy Madden, the company’s US CEO.

Madden said his company had seen demand for its polyols grow in the US during 2020 and 2021. ‘We were airfreighting products to the US and then moved to ISO tanks,’ he said. ‘Now we have a shore tank which we are supplying in bulk with product shipped to Houston through Panama.

‘Supplies are then shipped to customers by rail.

He confirmed that the company is looking at the possibility of building a 200kT/year production site in the US. ‘We started market research in 2020, and by 2021 our business had grown enough to warrant a shore tank,’ he said.

Research with large flexible foam makers in the US is under way, and if it goes well there would be sufficient demand to build the site.

Goviil: drop-in solution along the value chain.

‘[The products are] a technical drop-in solution that our customers can use immediately without a major changeover in their plants,’ said Sucheta Govil, Covestro’s chief commercial officer.

Govil: drop-in solution along the value chain.

Jiahua may start US polyol production by 2025
Manali set to increase polyester polyol capacity

Chennai, India – Manali Petrochemicals is planning to invest INR400bn ($5.15bn) plans to add 9kT/year for polyester polyol capacity in the next two years. The company currently has 50kT/year capacity operating at about 70%. The plan is to increase this and, if a sustainable supply of raw materials can be secured, expand again, it said.

The polyols will be used in house, and also used to make cast elastomers by Notedome in India and the UK. The remainder of production will be sold to the domestic and international markets.

Manali announced an INR2.25bn expansion of its propylene glycol capacity in September 2020, and the approvals are expected from the Ministry of Environment within the next quarter, it said. The two-phase brownfield development is projected to cost between $200,000 and $300,000.

Pearl adds new low-lambda insulation, rebrands systems

Dubai – Pearl Polysyrene Systems has launched a new low-lambda insulation range. It has also rebranded its polyurethane systems for insulation. The new brand, EcoPearl, includes products for sandwich panels, insulated pipes, spray foam and other insulation applications, such as water heaters and appliances.

The company said the low-lambda range has a 20% improvement on regional standards in insulation performance for metal sandwich panel applications. Products in the range also have high levels of fire retardancy.

They are supplied as two-component systems, allowing customers to use existing plant.

The company won the Innovative Insulation Project of the Year at the Construction Innovation Awards 2021 for the R&D stage of the project, which led by Ilhan Kurt, who is head of R&D, and the company’s CEO Martin Kruczinna.

The award was organised by Construction Business News Middle East.

Turkey’s Mekpan invests in more sandwich panel production capacity

Konya, Turkey – Turkish sandwich panel manufacturer Mekpan Panel has increased its production capacity to a total of 8.5m m²/year. Its range of roof and wall panels and insulation includes PU- and PIR-based products.

The company is already planning to allocate further funds to raise output, according to senior company representatives. The amount was not disclosed.

“At Mekpan Panel, we aim to increase our market share by 10 to 15% this year, as we did in previous years,” chairman Celalettin Hakan Katirci told the local Turkish industry news website stendustri.com. “We are continuing with new investments to increase our production in 2022.”

As a result of an investment begun in 2020, Mekpan Panel has commissioned a second production line at the plant in Konya. Katirci said this line introduced new technology to the company’s manufacturing complex, which will allow it to make products that meet market demand.

The expansion project is in reaction to the company’s rising export sales and its plans to boost its presence in several foreign markets. It already exports to neighbouring countries, including Azerbaijan, Turkmenistan, Georgia, Iraq and Morocco.

SK Chemicals starts up large-scale biopolyol production

Seongnam, Korea – SK Chemicals has begun the full-scale production and supply of the biopolyol polyoxytrimethylene ether glycol, or PO3G. The facility in Ulsan has a capacity for the production of several kilotons of the biopolyol, which is being sold under the brand name Ecotron.

The polyl is made from fermented corn. When used in place of petrochemical-derived polyols, the company says, it produces softer textile materials and artificial leather. It can also confer improved elasticity and abrasion resistance.

Its lifecycle assessment, the company claims, shows it has a 40% reduction in greenhouse gas emissions when compared to polyols from petrochemical sources. It has been given eco-friendly certification by Vincotte in Belgium and the US Department of Agriculture.

SK is already working with LX Hausys and companies in the automotive sector to develop eco-friendly artificial leather. These include Hyundai and Kia.

“We plan to consider additional expansion in response to increasing market demand,” said Jung Jae-jun, SK Chemicals’ head of new business development.
UTECH Asia / PU China returns to Guangzhou, China, in September 2022. It’s the leading exhibition for the Chinese polyurethanes market and enables visitors to see the latest innovations and solutions available from hundreds of key suppliers.

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Huntsman bullish as MDI comes online

The Woodlands, Texas – Sales at Huntsman were $2.4bn in the first quarter of 2022. This is up 30% on the same period last year. Earnings were up 46% at $415m.

In the company’s largest division, polyurethanes, sales rose by 29.8% to $1.4bn in the first quarter. This compares to $1.1bn in the equivalent period in 2021.

Adjusted EBITDA in the division rose 8.2% to $224m, up from $207m in the 2021 quarter. The company said it suffered because of supply chain disruption, higher commodity prices, labour costs and inflationary pressures. The downward pressures on performance were magnified by tensing external pressures,’ said CEO Doug Del Grosso. ‘We’ll continue to operate in a challenging environment driven by supply chain disruption, lower selling, general and administrative costs.

In the company’s Americas business, sales declined by 2.9% between the second quarter of 2021 and the 2022 quarter, to just under $1.6bn. Adjusted EBITDA in the division fell 28.1% to $46m.

Adient and the industry continue to operate in a challenging environment driven by intensifying external pressures,” said CEO Doug Del Grosso. He added that the company has identified customers and market segment, and will hit the ground running.

Another tough quarter for seatmaker Adient

Plymouth, Michigan – Adient, the automotive seating and interiors giant, generated sales of $3.5bn in the second quarter of 2022, down 8.2% on the same period last year. Adjusted EBITDA across the business fell 44.5% to $181m in the equivalent period in 2021.

Adient said that it blamed ‘Adient and the industry continue to operate in a challenging environment driven by intensifying external pressures,’ said CEO Doug Del Grosso. Sales in the company’s EMEA business dropped 25.6% between the second quarter of 2021 and the second quarter 2022, to $1.2bn. Adjusted EBITDA fell from $141m in the 2021 quarter to £30m in the 2022 quarter.

Recycled plastic makes graphene for Ford’s enhanced auto foam

Houston, Texas – A team led by James Tour at Rice University has developed a flash Joule heating process to turn plastic parts from end-of-life vehicles into graphene.

Ford has been incorporating graphene into enhanced foam and using it in vehicles since 2018. It has been working with the Rice team on the project, and provided end-of-life plastic from its trucks. The amount of plastic used in vehicles is increasing as manufacturers chase weight reduction and improved fuel economy, but this is posing greater problems for the manufacturers in the light of end-of-life regulations for vehicles. ‘In Europe, cars come back to the manufacturer, which is allowed to landfill only 5% of a vehicle,’ Tour said. ‘That means they must recycle 95%, and it’s just overwhelming to them.’

The work has been published in the journal Communications Engineering.

In the flash Joule process, mixed ground plastic is blasted with a high voltage, and the sudden, intense heat of more than 2500°C vaporises the other elements, leaving behind turbostratic graphene. No solvents are required for the process, and the energy requirements are not significant.

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Magna hit by falling auto production

Aurora, Ontario – Sales at global automotive seat and interiors company Magna fell by 5.8% and adjusted EBIT was down by 34% in the first quarter of 2022. Sales were $9.6bn in the quarter, and adjusted EBIT was $507m. The company, Canada reports in US$.

Magna is almost entirely reliant on business from the automotive industry, which shrank by 7% globally and by 16% in Europe.

Novoloop raises another $10m

Menlo Park, California – Novoloop has raised a further $10m in its Series A funding round. This is in addition to the $11m it announced in February.

The company developed a process to make TPU from waste polyethylene, which is being marketed under the brand name Osiste. This has potential in applications such as footwear. The capital will be used to start developing industrial capabilities for the material. A feedstock pre-treatment unit will also be set up to assess the quality of post-consumer waste.
After the success of our inaugural event in June 2022, we’re delighted to announce that UTECH Middle East Foam & Polyurethane Expo will be returning to Dubai, UAE, on 5-7 September 2023.

It’s the region’s only event dedicated specifically to the foam and polyurethane industries and offers visitors the opportunity to see the latest products and solutions from key suppliers and learn from leading experts during the conference.

Interested in exhibiting? For more information and to reserve your location on the show floor, contact Matt Barber at mabarber@crain.com.

mefpu.com

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US government backs national 3D printing initiative

Washington DC – President Biden has officially launched Additive Manufacturing Forward, a voluntary compact among large manufacturers to help smaller US-based suppliers increase their use of 3D printing. It will be supported by several federal initiatives.

The White House said the additive manufacturing offers multiple advantages over conventional manufacturing methods. The reduction in lead time for parts made this way can be significant, and this includes parts using polyurethane materials such as TPU.

Other potential advantages to the US economy include a reduced dependence on imports. However, 3D printers represent a significant investment, and manufacturers may struggle to find the finance they require because of the novelty of the technique and the fact that demand is not clear.

AM Forward includes five companies: General Electric Aviation, Honeywell, Lockheed Martin, Raytheon Technologies and Siemens Energy.

Power outage hit Stepan’s polyol numbers

Northfield, Illinois – Stepan, whose portfolio includes specialty polyols, generated $675.3m in sales the first quarter of 2022. This is up 25.6% on the same period last year. Operating income across the business rose 17.4% to $63.3m in the first quarter.

In the company’s polymers business, which includes polyols, sales rose by 24.8% between the first quarter of 2021 and the first quarter of 2022, at $187.7m. This compares with $150.4m in the 2021 period. Operating income in the division fell 21.2% to $14.1m, down from $18m in the 2021 quarter.

The decline in operating income was attributed to the power failure at its Millsdale plant that led to a force majeure declaration for a number of product lines. This hit earnings to the tune of about $5m, Stepan said.

‘The company had a solid start to the year despite the power outage at Millsdale and ongoing global supply chain challenges,’ said new CEO Scott Behrens. He succeeded long-time CEO Quinn Stepan, who stepped down in April.

Elite to open new foam factory in Maryland

Newnan, Georgia – Foam manufacturer Elite Comfort Solutions is to set up a new foam manufacturing plant in Havre de Grace, Maryland, its first in the state. It predicts the new foam pouring and fabrication facility will employ 225 people by 2025.

The leased facility in the Harford County Enterprise Zone is being set up with the help of a $900k loan from the state economic development body Advantage Maryland, and a further $90k loan from Harford County. The company will also be eligible for various state and local tax credits. Elite was acquired by Leggett & Platt in 2019.

Blueview launches range of recyclable plant-based shoes using algal PU

Cardiff, California – Blueview has launched what it claims to be the world’s first biodegradable shoe. All the plastics are from plant-based sources rather than derived from petroleum.

The shoes are made using Soleic renewable, biodegradable polyurethane foam for the arch support, cupsole and outsole. It is derived from algae, and came out of research at the University of California at San Diego, which was commercialised by the spin-out Algenesis. Algal PU made by the company has already been used to make surfboards and flip-flops.

The upper is machine-knitted from PlantKnit, a yarn made from hemp, cotton, jute and Tencel. Durability tests were carried out on the shoes at Heelux Labs.

Formlabs adds PU 3D printing resins

Somerville, Massachusetts – Formlabs has launched two polyurethane resins for 3D printing. They are designed for use with its range of stereolithography printers, and the company says they are the toughest materials it now offers.

PU Rigid 650 is designed to make impact-resistant, pliable parts that maintain dimensional accuracy under load. The second resin product, PU Rigid 1000, can be used to make semi-stiff, sturdy and unyielding parts that can endure high-stress environments.

They can be used to manufacture parts for medical, automotive, aerospace, industrial and consumer products. PU Rigid 650 can be used, for example, to make high-performance connectors such as hinges and snap fits, as well as impact-resistant components like wheels, bumpers and grommets. PU Rigid 1000, Formlabs said, is ideal for jigs and fixtures, castings and enclosures, and sturdy consumer products.
Strong sales at Dow, but Sadara takes off shine

Midland, Michigan – Dow’s sales were $15.2bn in the first quarter of 2022, up 28.3% on the same period last year. Operating EBIT across the business was up 55.7% to $2.4bn.

CEO Jim Fitterling said: ‘Despite higher energy costs, we captured healthy end-market demand and achieved solid volume growth, price gains and margin expansion.’ He added that the company’s balanced and disciplined capital allocation approach had been important in the results.

In the company’s industrial intermediates & infrastructure business, which includes its polyurethane and construction chemicals business, sales rose by 25.4% to $4.5bn in Q1 2022, compared with $3.6bn in the equivalent period in 2021. Operating EBIT in the division rose by 103% to $661m in the quarter, compared with $326m in the equivalent period in 2021.

The gains in the polyurethane and construction chemicals business were driven by higher prices, but net sales dropped through the quarter as they were hit by planned maintenance at Sadara.

Pricing, logistics dull Tempur

Lexington, Kentucky – Tempur Sealy’s first quarter sales were up 18.8% to $1.2bn in the first quarter of the year. However, adjusted EBITDA across the business lagged, rising just 1.9% to $234.5m.

CEO Scott Thompson put the sluggish earnings numbers down to headwinds from macroeconomic matters such as geopolitical events, falling consumer confidence and new coronavirus outbreaks.

The company managed to grow market share in the first quarter. ‘We plan] various initiatives this year, including expanding our manufacturing capabilities, growing our direct to consumer channel both online and in-store, and transitioning to an enhanced ERP system,’ he said.

Margins in the company’s international business fell because of performance at Dreams, the UK furniture retailer. Unlike Tempur’s other routes to market, this sells bedding from a range of manufacturers. However, the purchase gave a boost to sales in the international business, which were up 92% to $308m in the quarter.

The company has updated its financial guidance for 2022. It expects sales to grow by at least 10%, through higher prices and its purchase of Dreams.

Purple hit by changing consumer patterns

Lehi, Utah – Purple, the bed-in-a-box specialist, had total sales of $143.2m in the first quarter of 2022. This is down 23.2% on the same period last year. Overall, EBITDA across the business fell by 138% to a negative $10.6m in the first quarter of 2022.

The company said its direct-to-consumer sales fell by 31.5% in the quarter. In addition, there was a 6.3% fall in revenues from the wholesale channel.

‘These results represent a building block towards re-establishing Purple as a profitable growth company and creating a stronger foundation that will move us towards our long-term plans,’ said CEO Rob DiMartini.

Purple mattress designed with PU
Strong winds blow as summer starts

Regina Sousa
Technon Orbichem

The North American market firmed up further at the beginning of Q2, as demand was healthy and supply tight after a confirmed force majeure at a major producer, plus unconfirmed production issues at two others. BASF declared force majeure on 22 March following equipment failure at its Geismar MDI plant. Although no other forces majeure or closures have been heard about in Europe, the war in Ukraine and high crude oil costs could lead to shutdowns or cuts in European MDI production, so any relief from imports to the US market is unlikely at this point.

Concerns in the European petrochemical markets are mounting as the war in Ukraine continues. European MDI prices had started March in a stable position, as most plants were online and demand steady, but this changed mid-month when energy costs started to surge following the invasion. Markets were very volatile at the beginning of March, but then a clearer picture started to emerge in April, and the extent of Europe’s dependence on Russian natural gas became apparent. Natural gas prices have remained high over the past few months, keeping energy and production costs elevated. As a result, producers have had to introduce energy surcharges into contracts. Huntsman has announced a gas surcharge of €300/ton on MDI sold in Europe, the Middle East and Africa.

Chinese domestic crude MDI market supply levels were high in Q2 and this should have pulled prices down, but a jump in crude oil prices boosted market sentiment and prices of crude MDI fluctuated at the same level as February. In terms of supply, all units operated normally, and supply was stable. However, the market changed dramatically in April after the number of Coronavirus cases increased significantly and local lockdowns were introduced. Logistics were restricted in some areas, and some downstream units also reduced their operating rates, so overall demand was weak from March until early June. Shanghai started to lift its lockdown restrictions on 1 June, and it is expected that demand will improve over the next few weeks.

The North American TDI market firmed at the beginning of Q2 as demand remained healthy from all sectors except automotive. The auto sector expects to see some improvement in the coming months as semiconductor chips could be moving from Europe to the US. A shortage of other key materials following the war in Ukraine, such as wiring harnesses, has forced some European car manufacturing sites to cut production. Before March, there were expectations that shipping problems had reached their peak and vessel shortages would improve, meaning freight costs could begin to stabilise towards the end of this year. This view changed in April following a rise of Coronavirus cases in China, and some parts of the country went into lockdown in order to reduce the number of infections.

The European TDI market changed following the conflict in Ukraine. The most significant change has been the high increase in natural gas costs as Europe depends on Russia for its supply. One TDI buyer said in March that TDI export volumes to Russia were already lower because of sanctions being imposed on the country. Disrupted TDI supply has put prices under more upward pressure. In February, two European TDI producers were having production issues. BASF and Covestro were running at lower rates, but both operators went back up again in April. At the beginning of Q2, most buyers were saying they could find TDI but at higher costs after the energy price increases in Europe.

In China, Shanghai had been under a city-wide lockdown from late April to early June as the number of confirmed Coronavirus cases remained high. Several TDI units were taken offline and production capacities in Shanghai dropped sharply leading to tight TDI supply. However, downstream demand has been flat during the pandemic and the weak performance of both supply and demand have pulled TDI prices down for most of Q2.

In April, high costs of feedstock propylene oxide should have added upward pressure on North American polyether polyols, but the market was balanced and prices stabilised. Feedstock propylene oxide is very tight and remained a concern for polyols producers. Supply of PO is not showing any signs of improving, and this could begin to add upward pressure on polyols prices.

In Europe, demand changed following the Russian invasion of Ukraine on 24 February. Europe is under severe pressure from high energy costs and the rising cost of living. One market participant said demand for foam started to decline in the past few weeks as consumers are paring back their spending as they face higher energy and fuel costs. This means that overall comfort and bedding demand has declined since the beginning of Q2. As Russia has been sanctioned by most European countries, trading with Russia has more or less ground to a halt. The automotive sector has been under pressure because of the Russian invasion of Ukraine, but this market was starting to improve a little in May.

In China, flexible polyol producers were under pressure for most of Q2 against a backdrop of rising crude oil values and propylene oxide costs. Coronavirus-related lockdowns in some cities of China caused downstream demand to weaken, and inventories, as a result, started to climb to high levels after just a few days. Demand in early June had still not picked up, and therefore the polyols markets have remained soft.

For more pricing information, contact Regina Sousa at regina.sousa@orbichem.com or visit the Orbichem website at www.orbichem.com
When Europur and Euro-Moulders members came together in Berlin in June there four dominant concerns emerged, for flexible foam companies writes James Snodgrass

Ukraine, sustainability, broken supply chains and rising prices dominated this year’s annual Europur conference held by the European association for the flexible foam industry, in Berlin in June.

Newly re-elected president of the Europur board Bart ten Brink opened with a salute to Ukranian Europur and Euro-Moulders members, many of whom were attending virtually from Kyiv, with a call for solidarity with the people of Ukraine bringing applause from the conference hall.

He spoke of the benefits of digitalisation in making the industry more efficient and of the need to become more sustainable through increased use of recyclates and bio-materials, and offered a warning: ‘Polyurethane faces the possibility of being delisted… despite all its incredible properties,’ he said. ‘I’m personally convinced that our industry has a bright future. But we must therefore ride the waves of change.’

Three chaotic years
Clint Raine, from Belvedere and Partner, previewed his analysis of the European flexible PU foam market, due for publication in August. Despite the general gloom, he noted there was some growth in 2021, mainly in the UK, Poland and Spain, and largely driven by bed-in-a-box.

He noted the increasing use of springs in furniture manufacturing because of the increasing cost of foam, and this point was also brought up in a controversial presentation by Home Group MD, Loraine McMahon, see p10).

‘There are many questions we need to consider,’ Raine said. ‘When will feedstock prices finally stabilise? When will the automotive supply chain issues stabilise? Will it be Q4 2022 or later? Which forecasts will be nearest reality? Will inflation be 10% or higher, and for how long? Sorry to be Mr Doom-and-Gloom,’ said Raine, ‘but that’s where we are now. For the foreseeable future, just in time is a dream.’

The multitude of major events in the past few years have been challenging for the industry.

‘A lot has happened in the most chaotic three years of your career,’ said James Elliott, business development manager of analysts Argus Media, in his presentation on volatility in energy and petrochemical markets.

Since the conference at Lisbon in 2019, price volatility has been on an unprecedented scale, and a dig through the figures was sobering: during this period, crude oil hit a low of $10/barrel (April 2020) and a high of $141 (March 2022); natural gas was €4/MWh in June 2020 and €175 in March 2022 ($4, $190); naphtha was $103/tonne in April 2020, $1173 in March 2022 and ethylene was €620/tonne in May 2020, €1,665 in April 2022 ($682, $1,839).

‘Rahul Gautam, chairman and MD of Sheila Foam, believes the Indian industry is in a good place for growth. ‘[At my first] conference in Europe 13 years ago, I said the Indian industry was underdeveloped. Everything seems to be aligning. The time for India is there. There is an opportunity for the EU and India to get together and make magic in these challenging times,’ said Rahul Gautam, chair and MD of Sheila Foam.

Explaining the peculiarities of the Indian foam market, Gautam said fillers are extensively used for nucleating the reaction, and also for cost-cutting. Local raw materials manufacturers produce about 40kT/year flexible foam, but India lacks a large domestic polyol facility. ‘Somebody, someday, has to come up and develop that,’ Gautam said.

 Cooperation please
In his view, India is lagging Europe on sustainability and recyclability, but he said the Indian Polyurethane Association is two steps ahead of India as nation and is already talking about sustainability, carbon credits and carbon footprint.

‘We all know how versatile PU is,’ said Gautam, ‘but its goodness has not disseminated to everyone. We need to work a little more on that’. He also explained India’s legacy challenge: ‘In India mattresses have traditionally been cotton or rubberised coir. Some 65-70% of the country still sleeps on old fashioned mattresses.’

The Indian market is hard for importers to crack because India doesn’t share Europe’s standard mattress sizes because,
The European Commission (EC) realised the furniture industry had a negative impact on the overall environmental score of products. The industry used low quality materials, poor design and, at end of life, most of its products went to landfill or incinerators.

This pushed the EC to propose its Ecodesign Sustainability Products Regulation (ESPR). While ESPR’s objectives – reducing negative lifecycle environmental impact, increasing reusability and reparability, and reducing the presence of substances of concern – will be tough to implement, Lauwaert noted that Article 18 of the Regulation gives the industry scope for self-regulation. ‘It is sometimes better to do this than leave it in the hands of an administration that don’t really know about production processes,’ he said.

**Designing to PU’s strengths**

Marco Pelucchi, president of AIPF (Italian Flexible PU Foam Producers Association) offered respite from the prevailing doom, highlighting imaginative products made from flexible foam. His Association’s initiative, Poliuretanoe, presents PU as a ‘trendy and increasingly widely used material’ to the public on its YouTube and social media channels.

To demonstrate PU’s enormous design potential, Pelucchi handed over to a pre-recorded video address from architect Riccardo Giovanetti, who gave examples of exciting design trends in PU. These include Marshmallow, a stool with a separation of material and lighting. The way we perceive materials depends upon the light. There’s no second chance to make a first impression.

But this integration, and the increasing use of composite materials, brings new challenges to recyclability for the entire industry. ‘There are two divergent directions between [increased] recyclability and having a touch surface [with embedded electronics] everywhere. Composites are not making recycling easier. The trend should be to make it as easy as possible to disassemble. The future is not always one way.’

Continuing the interiors theme, Adient executive Michel Berthelin, VP, EMEA, looked to advances in sustainable automotive seating design as one potential contributor to the sustainability puzzle. Berthelin said: ‘Sustainability has to be authentic. It can’t be greenwashing. Customers are very choosy about the ultimate outcome and they require full transparency about where the materials come from and traceability.

‘The vast majority of the total embodied CO2 in vehicle seats comes from the materials not the production, 95%.’

One novel idea to remove weight from vehicles is to integrate the sound system into the seating, bringing the speakers closer to the occupants’ ears. And this has an additional benefit of energy saving because speakers that are closer to the ears require less power.

Despite the challenges ahead, Berthelin predicts a future for PU foam in automotive seating: ‘You’re not going to spend three or four hours sitting in a car that doesn’t have foam, I might be wrong.’

The first day’s keynote presentation came from Yochai Gafni, commercial director, Europe, at Dow Polyurethanes, the sponsors of the conference. Gafni, a former Israeli Air Force pilot, warned of dangerous times ahead. ‘We are facing four additional waves coming at us, and they are much larger waves than coronavirus,’ he said. ‘We live in a VUCA world, a world with volatility, uncertainty, complexity and ambiguity.’

Challenges for the industry include climate change and the adoption of digital asset management for greater efficiency, and an imminent wave of retirements means the chemical industry must address the talent gap. ‘The market is tight, so we might have to recruit below our usual threshold.’

**Networking and currywurst**

Dow also sponsored the evening beer-garden BBQ at Fischerhuette am Schlachtensee, where beer, wine, bar sports and a boating lake aided conversation as colleagues and competitors, suppliers and customers, reunited after the three-year pandemic hiatus.

While the first day comprised of big hall presentations, the second day was split into breakout sessions across three different rooms, with themed sessions on chemicals, machinery, health and safety, adhesives and sustainability. The conference concluded with an address from Eric Van Lancker, president of Euro-Moulders, who thanked all participants of the 2022 conference and announced that next year’s conference will be held in Budapest on 14-15 June, sponsored by Mol Group.
Take the weight off

And relax... how Norway exports chairs to the world with little or no stress. Simon Robinson reports.

It is traditionally hard to scratch a living on the west coast of Norway. Historically, people fished in the cold waters, or farmed on the narrow strips of land between the sea and the mountains.

It must have been a high-stress environment when the crops failed or there was a storm at sea. So the idea of a chair that could remove all the stress from the person sitting in it would have resonated very strongly with the design team at a local furniture maker.

A number of furniture makers were in the village when Jens Ekornes started his spring-making factory in 1946 with NOK5,000 of capital, equivalent to about US$1000 at the time. The company moved from springs for mattresses into polyurethane upholstered furniture in 1960 when the site in Sykkylven became home to the first Laader Berg CF3 foaming machine to be made. This machine was constructed from the ground up, and installed by Laader Berg himself at the Ekornes factory. It was in use until 1972 when they installed the newly patented Maxfoam machine, Per Henning Vaagen, Laader Berg’s CEO, said on a tour of the Ekornes plant earlier this year.

The foam from that machine was used in Ekornes’ Stressless range of reclining chairs, said Sveinung Utgaard, Ekornes’ manager of foam production.

The company has grown considerably since its foundation. Ekornes now has four factories in Norway, one in Lithuania, one in the US at Morgantown, North Carolina, two in Vietnam, and one in Thailand. The Sykkylven site employs 900 people from 35 countries, out of a total of 3300 across the business.

The company replaced its original Maxfoam line with a new Maxfoam 5020 model in 2000, and this was upgraded with a new control system two years ago, Vaagen said. Once foamed, the material is cut to 12x2x1m blocks and moved to a storage facility with room for 60.

‘Up to 30 blocks can be made in a single run,’ said Mateusz Balon, chemical engineer at the plant. The site aims to produces 1500 chairs/day.

Once the blocks are called into production, they are crushed on a Hyma machine and passed to Fecken-Kirfel saws for cutting, Utgaard said.

Worldwide growth

About 30% of each block becomes in-process scrap, which is rebonded. This rebonded foam is used to make less critical cushioning parts such as footrests. Alternatively, it may be sold to third parties.

As well as its Laader Berg block machines, the Ekornes plant moulds seatbacks, armrests and cushions using Danish-built Saxe Polyfa machinery. A series of oval racetrack and carousel machines handle the production of seats and backs. Typically, it takes the 12-carrier carousel...
8-10 minutes to complete a full cycle. This gives workers time to spray the moulds with a water-based release agent, and fit metal parts that will be encased in moulded PU and pass the finished parts on for further processing.

Where multiple layers of foam are needed, they are glued together with either a water-based adhesive or a hot melt. Some of the newer seatbacks for the dining range use a three-plate mould to produce a hollow moulding that can be pulled over a thermoplastic frame. This is so that it will make recycling the furniture much easier, said Utgaard. ‘We’re thinking ahead,’ Utgaard said.

Ekornes formulates its own recipes based on raw materials from two or three suppliers. ‘Seat cushions are more dense than back cushions, and our R&D focus is on improving quality rather than driving down the cost of foam,’ Balon said.

Utgaard explained that as they are based in a high-cost country, making high-margin furniture is essential. ‘We believe in good quality and hard work,’ he said. ‘We started with a lean production system 12 years ago and have increased quality. Product is monitored thorough checkpoints.’

**Automation and robotics**

The company makes use of automation and robotics to reduce the cost of production as far as it can. Utgaard believes that about 10% of Norway’s industrial robots are in use at Ekornes.

Self-reliance goes beyond formulations, as the company designed the grippers the robots use for different jobs in-house. This may seem to be a small thing but, Utgaard said, they believe it is a competitive advantage.

As well as using robots to help improve product consistency, the company tries to improve quality by giving its employees some variety in their jobs. People work in production cells and can move between tasks. ‘This helps with their health, morale and our ability to cover for sickness,’ Utgaard said.

Sykkylven is the pathfinder plant for the company, which liked Laader Berg machinery enough to install a second machine at its second plant in Felsund, Norway, in 1969. It is building a range of dining chairs, and the goal is to make about 400 a day at the site.

The company now has Chinese owners. ‘It has been very positive for us,’ Utgaard said. ‘We have a new industry-driven strategy with more sofa production.’

Some design ideas come from the company’s offices in China for the market there, but Utgaard said the strategy is to keep production in Norway and, for some sofas, in Morgantown, North Carolina.

‘We have some sister products made at our site in Lithuania under the IMG brand, which Ekornes bought in 2015,’ he said. Normally, the plant’s location, 600km to the northwest of Oslo, does not pose logistical problems but, Utgaard said, things were tight in June/July last year, with TDI and polyol stocks coming close to running out. ‘A ship with a consignment for the factory developed an engine problem, and it took a week to repair it,’ he said.

**Booming business**

Ekornes rode the wave of lockdown purchases in 2021. According to the company’s latest annual report, gross operating revenue rose from NOK3.5bn ($360m) in 2020 to NOK4.3bn in 2021. The company’s EBITDA grew from NOK666.6m to NOK833.3m. Ekornes said the growth was largely driven by sustained high consumer spending on home furnishings as demand surged during the coronavirus pandemic.

The company operates in three segments. There is the Stressless high-end furniture brand, the entry-level IMG, and Svane mattresses and bedding. It ended 2021 with a ‘record high’ combined order reserve of NOK1.4bn. This is up from NOK1.3bn the year before.

In the Stressless division, powered seating products performed well in the US last year. These did well in Europe, but so did recliners, sofas and the newly launched Stressless Dining. Demand was sufficiently strong for the company to increase prices to help offset the rise in materials and shipping costs.

Sales in the IMG division also rose to record levels in 2021. It also performed well in the US in the year.

Growth in the Svane bedding business was hit by tough competition in its Scandinavian heartland, and EBITDA fell in 2021. Ekornes was listed on the Norwegian stock exchange until August 2018, when it was bought by Chinese furniture manufacturer and retailer Qumei Home Furnishing Group.

Despite, or perhaps because of, its remote location on the edges of Europe and the Arctic, Ekornes has been forced to produce innovative products to survive and grow. There’s no sign of that stopping.
Methylal: a greener alternative for foam

By Michel Beaujean
Senior Scientific and Technical Advisor
Lambiotte & Cie

Methylal is one of a family of blowing agents that can be used as an alternative to HFCs, HCFCs and HFOs. They are particularly suitable for rigid foam applications, but more recently have been used in a continuous flexible block foam plant. This opens up their potential usage considerably.

Many people are concerned that, like pentane, methylal is a highly flammable substance, and companies worry about the cost of transitions from non-flammable HCFCs and HFCs to non-halogenated blowing agents.

Our work shows the flammability of methylal can be significantly reduced by the presence of silicone surfactants. This development could have significant implications for the flammability of polyurethane formulations.

Methylal, or dimethoxymethane, is an easy-to-handle liquid at room temperature, with a boiling point of 42.3°C. There is no requirement to label containers in terms of toxicology – the OEL is 1000ppm – eco-toxicology or atmospheric chemistry according to UNECE GHS/CLP classifications. The ozone depletion potential of methylal is zero, and its global warming potential is much lower than CO2. It is petrochemically derived but, potentially, could be made from bio-methanol.

Methyal is used in rigid and spray foams, flexible slabstock and moulded foams, integral skin foams, shoe soles and one-component foams. It can be used alone, with water, or in combination with other blowing agents such as HFOs, HFCs and pentanes.

Although it is safe to handle, its flashpoint is below 23°C, which makes it a category 2 flammable liquid. While it is volatile at room temperature and its vapour pressure increases dramatically from 40kPa at 20°C to 82.5kPa at 37.8°C, methylal has a lower heat of combustion (25.44kJ/g) than, for example, cyclopentane (44.2kJ/g). The lower heat of combustion can contribute to lower flammability in foams.

However, mixing methylal with polyols significantly lowers its vapour pressure in the mixture, and also increases its flashpoint. But not all materials with a low flashpoint are combustible. Mixing polyols and methylal also affects the sustained combustibility, sustained burning and minimum ignition energy needed to start a flame.

Additionally, liquids with a flash point above 35°C that do not sustain combustion do not need to be considered as flammable liquids. For example, a mixture of 6% methylal in glycerine propoxylated polyl Mw450, hydroxyl number 383 and viscosity of 330mPa.s, has a flashpoint of 10.7°C and a vapour pressure of 10kPa. Chart X shows the change in vapour pressure of dimethoxymethane in different polyl mixtures. In the chart, LEL is the lower explosion limit or lower flammability limit, and a mixture of methylal and air with a...
Continued from page 25

concentration of methylal lower than the
UEL will be non-flammable. UEL is the upper
explosion limit or upper flammability
limit, and a mixture of methylal and air with a concentration of methylal higher than the UEL will also be non-flammable.

Our work shows that blends of methylal
with higher-viscosity polyols have higher flash points and that polyols with differing structures but similar viscosities have similar flash points.

We also examined the ability of polyol blends with methylal to sustain burning according to test L2, recommendations of the transport of dangerous goods, manual of tests and criteria, 5th revised edition, published by the UN. Samples are tested at 60.5° and 75°C. To sustain burning, the test portion must ignite while the test flame is in the test position, maintained for 15s, and remains alight for more than 15s after the flame is removed.

For example, a sorbitol-based polyol with hydroxyl number 460-485 and viscosity of 35000 mPa.s with 8-14 wt% added at room temperature were heated to between 60.5°C and 75°C. When the samples reached test temperature, a flame was introduced. This test showed that the maximum combustion time after the flame was removed for the 14% addition was 4s.

Adding silicone surfactants significantly increases the flashpoint of polyol/methylal mixtures. We evaluated this in two combinations. The first involved a 260MW polyether triol with kinematic viscosity at 25°C between 830-980cSt, without the addition of a silicone surfactant or methylal the flash point is in the range 180-214°C. Adding 0.5pbw silicone will raise the flash point of a blend of 100 parts triol and 2 parts dimethoxyethane from about 37°C to more than 50°C in tests using Eratflas apparatus to ASTM D93A.

The results in the lower graph on p25 show that the flashpoint of the mixtures increased from 50°C for the polyol-2pbw methylal blend to 80° for the blend with up to 1.5pbw silicone, before falling with higher levels of silicone addition. The same trend was seen in the polyol-3pbw methylal blend. This is shown in the chart above.

This work shows that although methylal is a flammable blowing agent for flexible and rigid foam. The flammability of blends of the blowing agents in model formulations that are close to the real world are significantly lower than the blowing agent on its own.

This is an edited version of a paper presented at UTECH Las Americas, Mexico City 24-26 May 2022. Michel Beaujean was the lead presenter. Benoit Labelle, Laurent Godefroid, Celine Guissart, from Lambiotte also contributed to this paper.
New foam additives from Momentive

The bed-in-a-box market puts a range of tough demands on flexible foam. Momentive said it has a new package of additives to help meet those challenges.

Momentive has launched a new range of GeoCell additives for the bed-in-a-box market. The company said they are designed to produce flexible polyurethane foams in a range of densities and hardnesses that can be compressed and will rebound well once unpacked.

‘Additives and particularly silicone stabilisers play an important part in this recovery mechanism,’ said Alberto Melle, the company’s global business leader for PU additives. ‘That is why we have created a new portfolio of additives, which are tailor-made for mattress-in-a-box applications.’

He said that, in addition to silicone, the company is launching a novel additive that helps polyurethane foam recover better after compression as a result of stronger polymer struts. ‘The overall Niax additive package will improve foam airflow, density distribution and recovery properties after compression,’ he said, speaking at UTECH Las Americas in Mexico City in late May.

For foam makers, Momentive said, the products have the ability to produce foams with better airflow than conventional additives, more uniform density from the top to the bottom of blocks and lower glass transition temperatures, with better tensile, tear and elongation values than conventional materials. Additionally, these have wider processing latitude than similar additive packages and offer lower emissions.

For bed-in-a-box makers, the additives are designed to produce foam without odour, with good durability, improved recovery and consistent temperature management. The idea is to help to give users a good night’s sleep on a mattress that feels the same when they get out of bed as when they got in it.

There are a number of additives in the range, with combinations for the layers typically found in bed-in-a-box products: the supersoft topper, HR Foam, open cell visco foam, visco-pneumatic and conventional foam.

Although the additives can be used separately, Momentive has bundles designed for each layer.

The company said its Niax L-417 product is designed to work with MDI and TDI foams. Momentive said that it is hydrolytically stable, and can be used with polyester polyol. Foam properties can be tailored by altering water, L-417 and isocyanate index levels.

The company’s Niax L-894 product is for conventional foams. It is designed to control cell opening and helps give cells with a fine cell structure over a wide range of densities. It can also be used with CO2. The additive is designed to give good top and side skin properties.

The range also includes EF-700 a catalyst with balanced blowing and gelling activity and a Geolite 206 a processing aid.
Looking to the north

Mexico's PU industry has strong ties with its northern neighbour, as Simon Robinson found at UTECH Las Americas.

With its commercial fortunes tied to the mighty US market for polyurethane products, Mexico leverages the added value its increasingly skilled workforce can bring to the products processed at its factories.

The nation is the third-largest producer of polyurethane components in the whole of the Americas after the US and Brazil, according to IAL Consultants, which makes it the second-largest in the USMCA trade block that also includes the US and Canada. And that is what counts.

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Speaking to exhibitors and visitors at the show, it quickly became apparent that there is far more to the Mexican industry than a simple screwdriver operation where low-skill, low-cost employees perform basic operations.

Complex automotive parts, for example, will pass back and forth over the border several times during production, tying the countries more closely together. But for more simple products, such as mattresses, refrigerators and footwear, the fact remains that the US purchases a great deal of these products from Mexico, which, in some sectors, now is a bigger exporter than China.

Speaking at the sidelines of the show, Heberto Moreno, director of engineering plastics and polyurethanes for BASF in Mexico, summed it up in a conversation at the recent UTECH Las Americas event in Mexico City: "Mexico is a competitive location, because unlike [the larger PU consuming country] Brazil, it is outward-looking with good trade links to the US and Canada," he said.

Continued on page 30
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Cannon’s Bertinat: refrigeration growth

Fecken-Kirfel’s Torres: business with local foamers

Mexico, said: ‘Mexico has become a global hub for refrigerator manufacturing. Its position will grow stronger over the coming years as manufacturing know-how increases and logistics improve.’

He said that about 80% of the country’s refrigerator production is exported to the US and Canada. ‘This is true in terms of both volume and value,’ he said, adding that US and Canadian consumers prefer much larger refrigerators to those in Mexico, with many Mexicans still shopping daily. ‘Frozen food is not in the culture yet, except possibly in the highest-income groups,’ he said.

Refrigerators are just one example. ‘There is a very tightly integrated infrastructure of companies which operate across the border with America,’ Moreno said. ‘Mexico may buy its polyurethane raw materials from US producers with large petrochemical complexes across the Gulf in Texas and Louisiana, but the products made with them may cross and recross between countries as semi-finished products.’

‘Mexico is benefiting from deglobalisation, particularly in automotive,’ according to Alberto Melle, global segment leader for PU slabstock at Momentive. ‘It will be a long process to make products more locally and buy them from more local producers, but it will be like the JIT revolution in the later 1990s in manufacturing,’ he said.

Daniel Torres, general sales manager at cutting machinery company Fecken-Kirfel, said that Mexico is a direct beneficiary of US tariffs on goods from countries like China. ‘Mexico is attractive for businesses which have faced tariffs on Asian production,’ he said. ‘As well as this, it is becoming more attractive to produce more locally for the US.’

Saip’s local agent Antony Meroni described the Mexican market as a good one for the company. ‘We expect to supply more machines in the coming years because of exports to the US.’ One of the company’s recent highlights has been supplying a refrigerator line to Isocindu, a continuous panel manufacturer. ‘It was a very modern, very large line for the Mexican market,’ he said. Legislation for greater levels of insulation in Mexican buildings is driving growth in the rigid board sector, Moreno added.

Davide Bertinat, who works in sales for Cannon, said: ‘Wages are low, and taxes are favourable. Mexico is a good place to manufacture for the US, and we see new Asian companies moving in.’ The company employs about 20 people in Mexico and holds stocks of spares locally.

Bertinat said that his company’s main area of business in Mexico is in refrigeration, for international brands such as Whirlpool and Electrolux.

The market for refrigeration in Central and South America is growing, with a lot of products made in Mexico. The automotive market in Mexico is also growing, he said, and there are opportunities for new slabstock machinery.

‘It is excellent news that Mexico has gained inward investment following the pandemic,’ said BASF’s Moreno. ‘Supply chains are shorter from Mexico to the US than they are from Asia. Mexicans work hard, innovate and are good employees.’

Baumer’s Osuna said that the market for cutting machinery was good during the pandemic, and there was a boom in sales during the lockdowns. ‘Since then, performance has generally been good,’ he said. ‘People want to be comfortable at home, as well as in the office.’

He added that there are new players in the Mexican market, notably bed-in-a-box mattresses. ‘[This sector] came into existence in Mexico a couple of years ago and has been growing at 100% a year for several years,’ he said. ‘It is a challenge to traditional mattress makers.’

Melle from Momentive also believes this growing market provides a great opportunity for the polyurethane flexible foam industry, as this material offers a greater range of properties and flexibility in bedding application than steel springs.

‘PU foam can be compressed and rolled and, using the proper foam density and additives package, the final bed will fully recover,’ he said. ‘Additives and particularly silicone stabilisers play an important part in this recovery mechanism and that is why we have created a new portfolio of additives, called GeoCell, which are tailor-made for mattress-in-a-box applications.’ You can read more about these additives on page 27.

Lars Baumann, sales manager for the slabstock market at Hennecke, said that his company is now selling a wide range of machinery into the Mexican market, from small to large plants. ‘There is also a strong market in slab stock and mattress and furniture,’ he said. ‘Because of coronavirus, people stayed at home, and people bought new furniture.’

The foam business grew, and our sales grew with it. There are new plants in north and south Mexico, and there are companies looking at high-tech foam with machinery to make it.’

Fecken-Kirfel’s Torres said that his company’s Mexican business is largely with local foamers. ‘We have seen all the comfort companies and those selling online doing very well over the past couple of years,’ he said.
The show floor was busy at Mexico City’s Centro Citibanamex exhibition centre for UTECH Las Americas’ third visit to the city. As well as domestic manufacturers, many international companies were present to display their machinery and materials, looking to increase their business in the vibrant Mexican market.

India’s Best Foam, for example, was in Mexico looking for a local distributor or agent to handle Mexico and Latin America for its range of machinery made in northern India. They would report to its Americas office in Toronto, Canada.

Cannon said one of the highlights of its recent business in Mexico was the sale of a solid door line to Whirlpool in Monterrey in 2021. The automotive market in Mexico is growing, and there is space for new slabstock machinery.

Brazilian machinery maker Cofama was at the event, showcasing its range of discontinuous slabstock machines. The company was promoting its shuttle system that allows two separate boxes of foam to be made from the same dispensing head. The company also makes mix heads and claims its range contains models that are able to handle up to 14 streams of raw materials.

A diverse range of companies visited Mexico City for UTECH Las Americas in May 2022. We take a look around some of the stands.

Continued on page 32
Concentrol said the Mexican market is going well, and it considers Mexico and the US to be one market. Although business is going well, it said, it is finding a number of problems in selling to the Mexican market, notably transporting products from Europe to the US.

Dolphin Pack was at the show explaining how its new range of foam compactors can help the industry to save money, with a number of machinery options that can roll or fold slabs to reduce volume by up to 70%. This could help the bed-in-a-box market grow in Mexico because more mattresses can be transported in fewer trucks over longer distances. Eric Zanninelli, who works in technical sales for the company, said Dolphin Pack was on the lookout for new customers and has an agent in Mexico City.

Fixtures and a new range of high-pressure machinery were under discussion on the Edge-Sweets/Esco stand. Jim Gohlke, sales engineer at Edge-Sweets, said that its new high-pressure machines have taken the know-how in the machinery into sectors such as automotive and refrigeration and agricultural tyres.

‘As well as this high-pressure equipment, we also want to get into fixtures,’ he said. ‘Target markets will be refrigeration and industrial tyres in Mexico. We have to be quick to respond in sales and service, and can design projects.’

Korea’s Dosa was at the show, reinforcing its presence in the Mexican polyurethane market. The company has been operating in Mexico ever since Korean manufacturers such as Kia and Samsung started producing automobiles and domestic appliances in the country. Its machines are shipped from Korea.

About 90% of Frimo’s business in Mexico is for the automotive sector, and sales representative Gabriel de la Vega said the company recently supplied a line to Grammer, the German automotive interiors company. He added that Frimo is aiming to double the size of production at its 20,000m² site in Mexico by the end of the year. ‘We can build everything in Mexico for the Mexican and North American market,’ he said.

Momentive was at the event talking about its range of foam stabilisers. It also highlighted a new group of GeoCell additives for bed-in-a-box applications.

Purinova from Poland was testing the water at UTECH Las Americas this year. The company is interested in finding an agent in the country that can sell its range of European polyols.

Michel Beaujean, senior scientific and technical advisor at Lambiote, which makes methylal blowing agents for polyurethanes, said his company was using UTECH Las Americas to promote methylal as an alternative to HCFC 141-b blowing agents. He said the blowing agent had won an application in continuous flexible block foam, and this would significantly increase the volume of methylal being used. ‘We have capacity and can increase if we need to,’ he said.
SAVE THE DATE!

The leading event for the Mexican polyurethanes industry will return to Centro Citibanamex in Mexico City on June 13-15, 2023.

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Polyurethane production in the Asia-Pacific region was 13.6MT in 2021 up 2% on 2020 following a coronavirus-related decline the previous year, according to a new report from IAL Consultants.

Across the region, production growth is expected to be 5.1% each year over the next five years with India, Indonesia and Vietnam growing fastest, while Japan, Singapore and New Zealand are lagging behind the pack. Unlike other regions, elastomers are the largest product group with 38% of APAC PU output, followed by flexible foam (20%), rigid foam (19%), and small amounts of adhesives and sealants as well as a negligible amount of binders. Growth in the use of elastomers is tied to footwear, synthetic leather, and spandex industries in the region.

IAL said that the market for elastomers performed well in 2021. Polyurethane Chemicals and Products in Asia Pacific (APAC) 2022 updates the 2021 report.
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