

October 2019

PUreview

REPORTING THE WORLD OF POLYURETHANES FOR OUR CUSTOMERS

HUNTSMAN

Enriching lives through innovation



TRANSFORMING PLASTIC WASTE INTO ENERGY-SAVING INSULATION





Positive steps to a more circular economy

Tony Hankins, President, Huntsman Polyurethanes

In recent years, the circular economy (CE) has grown from being a somewhat abstract, conceptual idea to become an increasingly significant influence on the decisions of policy makers, business leaders and consumers alike. The CE model and mindset involves moving away from the traditional “take-make-dispose” linear economic model to one that retains as much value as possible from resources, products and materials. The challenge for Huntsman and our customers is to rethink the way we design our products, to build-in reduced material use, enhanced durability, renewability, reuse, repair, and replacement, from the outset. Applying these principles successfully, we can design out waste, increase resource productivity and decouple growth from natural resource consumption.

Our main feature (pages 8-11) provides a thought-provoking insight into an innovative technology that we’ve developed, which makes positive steps towards a more circular economy. Our proprietary process upcycles the equivalent of one billion scrap PET (polyethylene terephthalate) plastic bottles a year into the most effective insulation on the planet.

The complex global challenge of plastic waste has become etched into the public’s consciousness over the past few years. Huntsman doesn’t produce PET plastic bottles, but we clearly recognize the impact plastic waste has on the environment and are actively doing something about it. Our technology not only reduces the plastic waste making its way into the oceans and landfills, but the MDI Urethanes insulation we create from it delivers significant energy savings, which in turn alleviates global warming.

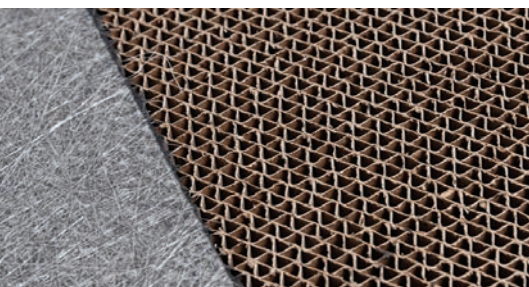
Another good example of our contribution to a more circular economy is featured on page 6 of the magazine, which showcases our range of bio-based technologies for the automotive industry. This is an industry which is driving hard to move away from fossil-based technologies and our bio-based products provide alternative solutions which don’t detract from the performance or quality of traditional solutions.

Clearly, the principles of the circular economy are already being applied across Huntsman. We embrace the CE model and stand ready to work with our customers to address the challenges ahead.

New RIMLINE® HC+ resins for composite parts production

Huntsman has introduced a new addition to its family of RIMLINE® resins, which are used to create composite parts for automotive applications. RIMLINE® HC+ resin is a two-part polyurethane system that can be spray-applied to fiberglass-reinforced honeycomb panels to form a tough, lightweight, composite material, with high structural integrity and exceptional rigidity.

RIMLINE® HC+ resin was developed to help the automotive industry produce weight-saving, robust, semi-structural panels in an efficient and cost-effective way. With outstanding performance characteristics, the product opens up a variety of possibilities for original equipment manufacturers (OEMs) that want to produce high performance, load-bearing, flat and shaped honeycomb panels, which can be easily integrated with fixings and fastenings.



Proven in the production of interior structural parts, such as load floors, parcel shelves, sun roofs and seat backs, RIMLINE® HC+ resin can be used to create ultra lightweight composite components with a superior stiffness to weight ratio. The non-drip resin system is ideal for both vertical and horizontal spray applications. Easy to apply, with a long spray time of up to 120 seconds, but quick cure capabilities, RIMLINE® HC+ resin permits a high number of releases between cleaning cycles, leading to higher productivity and lower material waste. Crucially, it also meets customer needs for VOC and odour specifications.

Earlier this year, RIMLINE® HC+ resin was launched at the 2019 JEC World International Composites Show in Paris, where Huntsman displayed a load floor, which demonstrated



the unique high stiffness and ultra-lightweight properties that can be achieved using the system. |

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RIMLINE® HC+

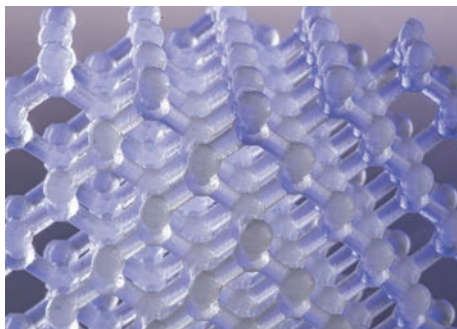
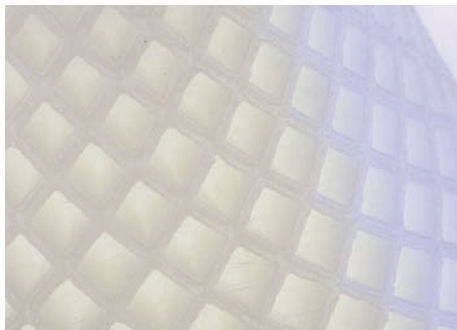


Delivering a new dimension in 3D printing materials

New urethanes product platform unveiled ahead of introduction at K 2019, the world's largest trade show for the plastic and rubber industries.

A new range of additive manufacturing materials that are designed to address emerging needs in the 3D printing industry was unveiled by the Huntsman team at the K 2019 show preview in Dusseldorf, Germany. The IROPRINT® additive manufacturing platform contains three different kinds of urethane-based materials (resins, powders and filaments), which can be 3D printed using a variety of additive manufacturing methods, including stereolithography (SLA), high speed sintering (HSS) and fused filament fabrication (FFF).

Initially, the range of soft, flexible IROPRINT® additive manufacturing materials will be targeted at the global footwear and sports industry, where 3D printing is being used to make both customized and mass manufactured shoes. Longer-term, the plan is to roll the IROPRINT® additive manufacturing platform out across a much wider range of applications and industries.



All three IROPRINT® additive manufacturing product lines are easy to use and print, offering advanced abrasion resistance, elongation and tear strength. For radiation-cured forms of printing, such as SLA or digital light processing (DLP), IROPRINT® R resins also offer a long pot life and quick cure capabilities.

Stephane Peysson, Global Business Development Manager at Huntsman Polyurethanes, said: “Our innovation incubation team worked in close cooperation with end-users and industry leaders to develop our IROPRINT® additive manufacturing product portfolio. Together, we looked closely at what makes a good 3D printing material, and what’s been missing from the market to date. We believe the launch of our IROPRINT® additive manufacturing portfolio fills a gap that exists for a range of functional, durable, yet softer 3D printing materials, which are technology agnostic, and both economical and easy to print – whatever your preferred production technique.”

“Ahead of officially introducing the range at the K 2019 show in October, we’ve been building relationships with key technology partners, which in turn work with some of the biggest footwear brands in the world. Further down the line, we see huge opportunities for our IROPRINT® additive manufacturing materials in other sectors of the 3D printing market, from components for the automotive industry to objects for Internet of Things (IoT) applications. It is an incredibly exciting time to be in the additive manufacturing market with

some estimates suggesting the sector is set to grow by more than 20% by 2024.”

To find out more about IROPRINT® additive manufacturing materials, visit Huntsman at K 2019 at the Dusseldorf Messe from 16-23 October, 2019: Stand 22 in Hall 8A. |

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The IROPRINT® additive manufacturing platform includes three product lines, optimized to work with the common 3D printing techniques preferred by footwear producers.

IROPRINT® R resins are a range of soft, durable, one-component liquid resin systems that can be 3D printed using SLA, DLP and other radiation-curing methods.

IROPRINT® P powders. For companies looking to 3D print with powder-based materials, IROPRINT® P powders are a line of high performance thermoplastic polyurethanes (TPU) for HSS forms of printing.

IROPRINT® F filaments are a collection of high performance TPU materials, which have a consistent diameter, and are designed for use with FFF and other extrusion-based printing techniques.

Huntsman opens new systems house in Dubai



In September, Huntsman opened its new polyurethanes systems house in Dubai, United Arab Emirates (UAE). Situated within the Jebel Ali Free Trade Zone (JAFZA), the purpose-built facility strengthens Huntsman's differentiated downstream capabilities in the Middle East – increasing its capacity to produce polyurethane systems and polyester polyols for customers across the region and into North Africa.



The new systems house comprises a production area equipped with the latest manufacturing equipment, plus blenders, reactors, filling stations, control room, offices and quality control laboratories. The facility will manufacture polyurethane foams for construction, insulation, appliances, bedding and furniture applications. It will also produce systems for the footwear industry; and prepolymers for coatings, adhesives, sealants and elastomers applications.

The site will also serve as the regional base for Huntsman's Demilec spray polyurethane foam business, (see related story on page 5). These resources will provide customers in the

region with local technical and training assistance, fully supported by the global Demilec organization.

Tony Hankins, President of Huntsman's Polyurethanes division said: "This investment is the latest step in the expansion of our worldwide systems house capabilities, which underpin our downstream growth strategy. Constructing the new systems house at JAFZA brings us closer to our customers and gives us everything we need to expand our business in the Middle East and North Africa, including manufacturing competitiveness, infrastructure links and speed of response."

The Dubai systems house will manufacture rigid and flexible foams for construction, insulation, appliance, and bedding and furniture applications.



Steen Weien Hansen, Vice President for Europe, Africa, Middle East and India, further commented: "With a fast-growing population that is 90% urbanized, the UAE is a big importer of polyurethane for use in construction and building projects and the production of consumer goods. With the much-awaited EXPO 2020 Dubai just a year away, the booming construction sector will increase the import of polyurethane in the market directly contributing to the growth of Huntsman's business in the UAE." |

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Demilec launches spray foam products for Middle East

Demilec, Inc. recently opened its Demilec Spray Foam Technical Application and Training Center in Dubai, United Arab Emirates.



The state-of-the-art Technical Center, located on the site of the Huntsman systems house, will be the focal point of the company's strategic entry of its spray foam insulation business for the Middle East. Demilec is one of North America's leading manufacturers of open-cell and closed-cell spray polyurethane foam (SPF) insulation and coatings.

As part of the inauguration, Demilec hosted a SPF seminar, featuring an introduction to its award-winning spray foam technology; a demonstration of spray techniques and a review of spray foam equipment, including the Graco reactor system. Additionally, Demilec will introduce several open- and closed-cell spray foam insulation products – Heatlok® HFO Pro®, Heatlok® XT, Agribalance® and Sealection® 500 SPF products – to the Middle East construction market.

"Demilec is excited to take the next step in the globalization of its spray foam business. Through the opening of Huntsman's new systems house in Dubai, Demilec will better serve customers in the Middle East. The new technical center will enable Demilec to provide the same level of technical and customer service in the Middle East, as found in North America," said Simon Baker, President, Demilec, Inc. |

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 **DEMILEC**
A **HUNTSMAN** COMPANY

Bio-based technologies for automotive applications

With society moving towards a circular economy, industries are starting to move away from fossil-based technologies to more sustainable, renewable, bio-based resources for the production of chemicals, materials and fuels. In the automotive industry, there is a definite drive in this direction – with a clear focus on lightweight materials, alternative power trains and the adoption of bio-based products.



Huntsman's commitment to supporting the automotive industry and its sustainability ambitions is reflected in our ongoing development of technologies that incorporate increasingly higher levels of bio-based components – without detracting from performance or quality.

Currently, we have four bio-based products for use in the automotive industry. These materials offer similar performance levels to current technology solutions and enable OEMs to achieve above a 9% level of bio-based content, according to ASTM-D6866-12. |



ACOUSTIFLEX® HR BIO

A high resiliency polyurethane flexible foam that delivers lightweight insulation for closed pour and open pour acoustic applications, such as carpet inlays, dash insulations and stuffer pads. It is also available as a semi-rigid foam for elastomeric and heavy-layer noise barriers, such as wheelhouse, transmission tunnel and pillar cavity fill insulators.



RUBIFLEX® HR BIO

A high resiliency polyurethane foam for automotive comfort applications. Designed for standard molded seat pad applications, RUBIFLEX® HR BIO foam offers superior comfort and support for head restraint, armrest and console applications.



RUBIFLEX® H BIO

A semi-flexible polyurethane foam for molded cut-and-sew head restraint, armrest and console components.



RUBITRIM® SR BIO

A semi-rigid foam that delivers a soft touch in a variety of transportation-related molded trim applications including instrument and door panels.

New engineering elastomers for extreme working conditions

TECNOTHANE® VTER engineering elastomers is a new range of customizable, high performance, MDI-based hot cast elastomers from the team at Huntsman. This innovative portfolio of resilient polyurethane materials has been developed for the manufacture of wheels, castors and industrial parts, designed to perform in extreme working conditions.



Easy to process compared to NDI-based technologies, the TECNOTHANE® VTER range of materials, includes six elastomer solutions with customizable features, which can be adapted to customer-specific requirements. All six products offer outstanding tear and cut resistance, plus high rebound properties.

Because of the materials' low hysteresis, wheels made with TECNOTHANE® VTER elastomers are less inclined to generate heat and require less energy to operate. This makes them ideal for high speed, high frequency applications and heavy-duty, high load tasks, where friction can be a problem. Castors, wheels and parts based on TECNOTHANE® VTER elastomers also perform well in cold storage warehouses, where the temperature can reach sub-zero degrees. This gives supply chain managers

the confidence that the movement of components via stock transfer, stacking and picking equipment, will remain reliable, even in freezing conditions.

Simone Breviglieri, Techno-Commercial Manager, at Huntsman, said: "When we developed our TECNOTHANE® VTER family of elastomers, we had a very clear vision for an alternative to NDI-based hot cast elastomer systems that could offer comparable performance properties. Combining the best of our MDI chemistry with our hot cast elastomers expertise, we've created a range of products, which are available globally, and are designed to withstand extreme working conditions across a range of markets and applications." |

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The six products available in the TECNOTHANE® VTER range:

TECNOTHANE® VTER:

Designed to satisfy various end-use applications, this multi-purpose product is based on a three-component system, and has hardness properties that can be adjusted according to the mix ratio.

TECNOTHANE® VTER V:

This elastomer is ideal for the production of bumpers and can be used in other applications, where high frequency stress is the norm. It can also perform exceptionally well at low temperatures – remaining elastic down to -40°C.

TECNOTHANE® VTER R:

This three-component system is well suited for the production of large wheels. Easy to process and handle after curing, this elastomer offers outstanding physical and mechanical properties, including excellent tear resistance and rebound.

TECNOTHANE® VTER E:

Developed with the production of high performance wheels in mind, this three-component elastomer offers very low hysteresis, outstanding tear resistance and rebound properties.

TECNOTHANE® VTER H:

This two-component system is a high hardness material that performs very well in high load situations. This product is recommended for the development of wheels used on automatic guided vehicles and in automated warehousing applications.

TECNOTHANE® VTER M:

Capable of withstanding high load and high-speed operating conditions, this easy to process, high performance elastomer performs best when used in very heavy load wheel applications, e.g., on monorails.

Transforming plastic waste into energy-saving insulation

Huntsman does not produce polyethylene terephthalate (PET) plastic bottles, but we clearly recognize the impact plastic waste has on the environment and are doing something about it.

Through a proprietary process, we transform severely distressed PET scrap – that otherwise would have been destined for landfills or found its way into our oceans – into energy-saving polyurethane insulation, the most effective insulants available in the market today.

Every year in our plant in Houston, Texas, we upcycle the equivalent of one billion 500 ml PET bottles – some five billion bottles since 2014 to manufacture approximately 260 million lbs. of TEROL® polyester polyols. Next year, we will start using that same, well-proven TEROL® polyols technology in Kuan Yin, Taiwan, to satisfy the growing demand from the regional polyisocyanurate (PIR) foam insulation market.



Les Yamato
Business Manager,
TEROL® polyols



Kenny Pan
Vice President of
Huntsman Polyurethanes
Asia



Doug Brady
Vice President
Product Management
& Technology, Demilec

PU Review spoke with three members of the Huntsman Polyurethanes team to find out more about this innovative upcycling process. Les Yamato, Business Manager, TEROL® polyols, told us about PET use, the company's upcycling technique and the benefits of using a feedstock based on a upcycled product. Kenny Pan, Vice President of Huntsman Polyurethanes Asia, outlined details of the new plant being built in Taiwan. We also spoke to Doug Brady, Vice President Product Management & Technology at Demilec – Huntsman Polyurethanes' spray foam business – to learn how this part of the business is also utilizing PET waste in its product formulations.

PU Review (PU R): What is PET and why are you using it as a feedstock?

Les Yamato (LY): PET is one of the world's most widely produced plastics. You'll find it in fibers for textiles, bottles, films for packaging, and other industrial and consumer uses. According to *National Geographic*, globally, more than a million plastic bottles are sold every single minute. This is a staggering figure. There is a huge debate around single-use plastics at the moment, and the onus is on each and everyone one of us to do what we can to reduce and recycle waste. As a business, we also recognize this responsibility.

PU R: How does upcycling differ from recycling?

LY: Upcycling is a specific form of recycling that turns waste into a material or product that is of a higher quality. This is what we are doing at our TEROL® plant in Houston, and what we'll be doing in Taiwan, as of the end of next year – turning PET waste into high performance polyurethane insulation.

PU R: How does the PET upcycling process work?

LY: After plastic/PET bottles, e.g., water bottles, are used by consumers, they are discarded and collected by local recycling companies. Reclaimers then purchase the bottles from the recyclers. They then wash, grind and process the plastic/bottles into a scrap product.

The next step is to convert the scrap into an upcycled material, in this case, a polyester polyol. In terms of the actual manufacturing process that we use to turn PET into our TEROL® polyols, I can't go into too much detail. As you can imagine, the process we have developed is proprietary. Suffice to say,

we take the PET scrap and work it through a number of innovative steps to properly convert it into our TEROL® polyester polyols.

PU R: What are the resulting polyols used for?

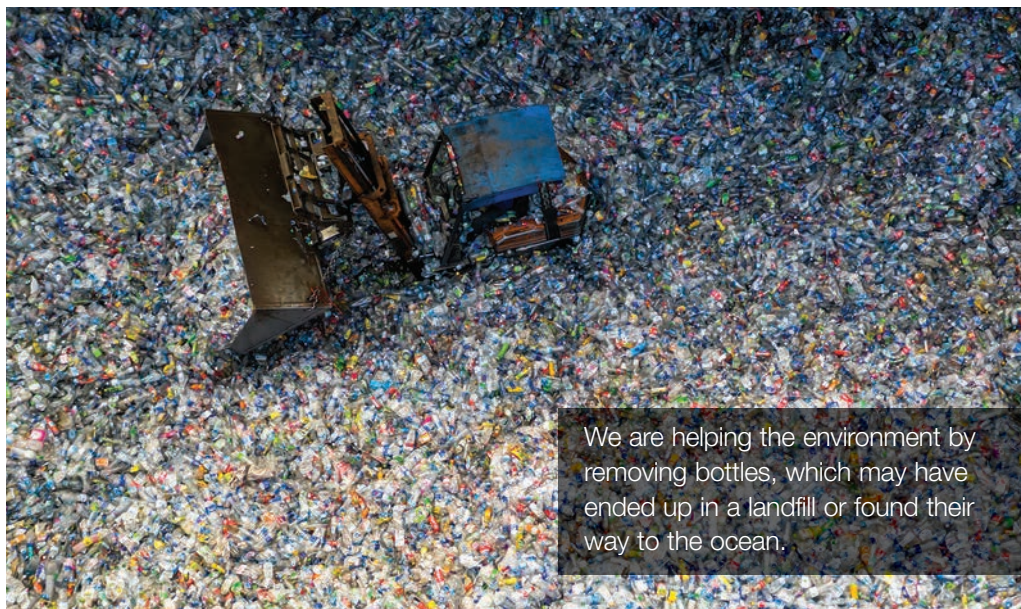
LY: Our TEROL® aromatic polyols are used in a variety of MDI-based polyurethane insulation products, including polyisocyanurate (PIR) boardstock systems and spray polyurethane foam (SPF), as well as in pour-in-place applications.

When you think about it, this process really is a win-win. We are helping the environment by removing bottles, which may have ended up in a landfill or found their way to the ocean. At the same time, we are manufacturing insulation products that help improve a building's energy efficiency – thereby, reducing the consumption of fossil fuels and reducing CO₂ emissions. Both of which can contribute to global warming.

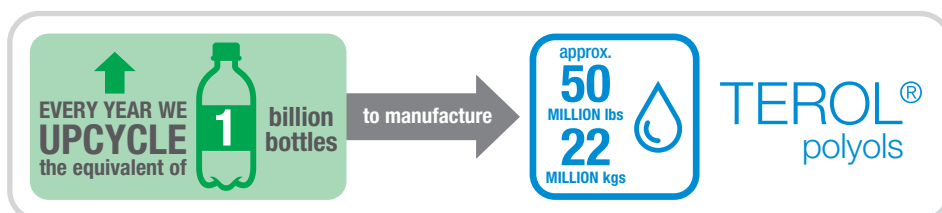


PU R: What other advantages does this process deliver?

LY: As well as diverting an important waste stream away from landfill sites and the ocean, there are energy benefits associated with using a recycled or upcycled feedstock. According to Stanford University's *Recycling and Solid Waste Report 2016*, on average, it takes 76 per cent less energy to produce a product from recycled plastic than from virgin raw materials.



We are helping the environment by removing bottles, which may have ended up in a landfill or found their way to the ocean.



“Once the plant is fully up and running, we anticipate that it would use the equivalent of 250 million 500ml PET bottles per annum.”

Kenny Pan
Vice President of Huntsman Polyurethanes Asia



There is an increasing demand for insulation in Asia with big opportunities in the cold store sector.

PU R: How much waste PET have you used to date?

LY: Over the past five years, our Houston site has used the equivalent of around five billion 500ml PET bottles to manufacture approximately 260 million lbs. of TEROL® polyols.

PU R: Do you need to use a special type of PET waste to create your polyols?

LY: No, any type of PET can be used to manufacture TEROL® polyester polyols via the trans-esterification process we have developed. Common sources are virgin PET; post-industrial scraps from extrusion applications; and post-consumer scraps from the recycling of bottles.

PU R: Does using different feedstock affect the quality of the polyols?

LY: Certainly the quality of the feedstock is important, however we have developed processes and procedures for evaluating and dealing with a variety of PET streams, so the polyester polyols we produce have the same properties regardless of the type of PET stream.

In 2014, Huntsman became the first U.S. polyester polyol manufacturer to receive the Underwriters Laboratories (UL) Environment certification. UL verified our pre-consumer recycled, post-consumer recycled and renewable resource content claims by reviewing the company's manufacturing practices and raw materials sources.

While all of our TEROL® polyols contain recycled content, five products – TEROL® 250, 256, 563, 649 and 925 – have been certified by Underwriters Laboratories (UL) Environment. Other TEROL® products are slated for UL Environment certification over the next year.

PU R: How do your customers react to this aspect of your work?

LY: Our customer base has been very appreciative and enthusiastic, knowing that their products will use an upcycled material to help reduce global warming and energy consumption. I think, when given the chance, and all things being equal, they reach for the product that has a positive environmental impact, and that's a TEROL® polyol.

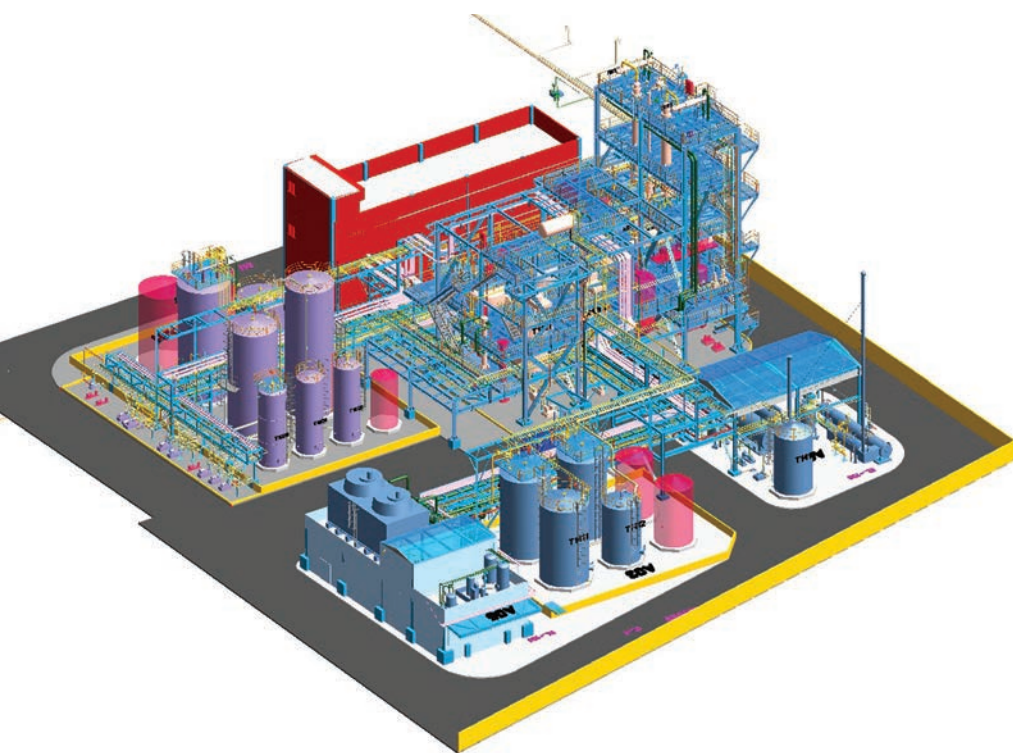
PU R: Kenny, construction of Huntsman's new TEROL® polyol production plant in Taiwan is due for completion in mid-2020. What will be the capacity of the plant?

Kenny Pan (KP): Once online, the 3,600 square meter site will be able to produce 22,000 tons of TEROL® aromatic polyester polyols per annum for our customers in Asia.

PU R: How much is the business investing in construction of the plant

KP: This project represents a multi-million-dollar (USD) investment in our APAC polyol production capabilities. This investment will help Huntsman go after new downstream opportunities in the polyurethanes industry, by giving us the opportunity to develop and offer PU systems based on aromatic polyester polyols for the Asia region.

The 3,600 square meter site will be able to produce 22,000 tons of TEROL® aromatic polyester polyols per annum for our customers in Asia.





Demilec alone has used the equivalent of approximately 600 million PET bottles in the manufacture of key products, including Heatlok® HFO spray foam.

PU R: How much PET waste will the plant use?

KP: Once the plant is fully up and running, we anticipate that it would use the equivalent of 250 million 500ml PET bottles per annum.

PU R: What was the main driver for building the plant?

KP: Just like our TEROL® polyol plant in Houston, our Taiwan facility will produce products that will ultimately end up in MDI-based polyurethane insulation systems. The market for insulation is growing steadily across the APAC region – particularly in China, where a government stimulus program has renewed investments in infrastructure projects. This in turn is increasing demand for insulation. We have also identified big opportunities in the cold store sector.

With our new plant on stream we will be able to better serve our customers in the region in these sectors. In addition, the new facility ticks all the right boxes when it comes to cycle economics, plastic and waste reduction and sustainability. The plant will have a positive impact on the planet and on our profitability – diverting valuable materials away from landfill and incineration, while giving us a cost-effective raw material input stream.

PU R: Doug, I understand that Demilec is also upcycling plastic bottles to produce its products. Can you tell us more?

Doug Brady (DB): Even before Huntsman's acquisition of the business in 2018, the Demilec team was committed to developing and producing high-performing,

environmentally-responsible products, that enable architects in the United States to qualify for many green certification programs. This includes the United States Green Building Council's LEED program, which covers the use of upcycled materials content, as well as its use of renewable resources. As part of this work, we began manufacturing our own polyols based on recycled PET and soya oil in Canada in 2006.

Over the years, our efforts in this area haven't gone unnoticed across the industry. In 2015, we were one of three companies to receive the American Chemistry Council's (ACC) Innovation in Plastics Recycling award for our efforts in plastics recycling. More recently, we won the Best Green Building Product at the 2019 International Builders Show (IBS). (Read more on page 15).

We have been using PET-based polyols in our systems for many years. When we were acquired by Huntsman, we converted the systems based on our polyols to TEROL® polyols. To date, Demilec alone has used the equivalent of approximately 600 million PET bottles (from both sets of polyols) in the manufacture of key products, including our Heatlok® HFO spray foam and ECO-PUR® pour-in-place insulation – and this innovative technique remains a core part of our manufacturing strategy. |



Huntsman is always looking to create solutions that lead to a greener future for people and the planet. The business is committed to the manufacture of products that play an important part in the creation of cleaner, more energy-efficient living and workspaces. By reusing and upcycling PET waste, Huntsman is changing the lifecycle and journey of plastic bottles, reducing waste and saving energy. The business is also demonstrating that, with ingenuity and innovation, it is possible to create practical solutions that can help solve the global plastics waste problem and facilitate the evolution of the circular economy.



Making the world a cleaner place, one pipe at a time



To most people, a pig is an animal, but in the world of industrial processing, a pig is actually something completely different. An industrial pig is a special tool that is sent down a pipe, often at high speed, to ensure that the line is clean and functioning correctly, and to recover any residual product or debris that might have got stuck to the sides over time.



Commonly used in the utilities industry for cleaning out oil, gas and water pipes, industrial pigging systems are also employed in the manufacture of food and drink products, and in the production of household formulations, such as cleaning products, cosmetics and toiletries, and DIY products, including paint.

Pigs Unlimited International, based in Tomball, Texas, is a leader and innovator in the development of industrial pigging products – and a key Huntsman customer. Pigs Unlimited and Huntsman have been working together since 2018, with Huntsman initially supplying the business with MDI for foam pigs.

In early 2019, the conversation between the two companies evolved. At the time, Pigs Unlimited was in the process of moving to a new 100,000+ square ft. facility that would significantly increase its manufacturing

footprint. The Pigs Unlimited team mentioned that it was considering investing in a new casting machine to support the growth of its hot cast urethanes business.

After discussing technical requirements, Huntsman recommended the purchase of a CASTECH™ machine. Produced by Huntsman's Hot Cast Elastomers business, CASTECH™ machines are a low-pressure, equipment solution for the efficient metering, mixing and hot casting of elastomers based on two or more components. Using CASTECH™ machines, it's possible to produce high-grade elastomers with a very high mix quality, based on MDI, TDI and NDI prepolymers, or microcellular foam systems.

Alex Ziev, Account Manager at Huntsman takes up the story: "While we awaited the delivery of the team's CASTECH™ machine, we started talking about the materials that

Using CASTECH™ machines, it's possible to produce high-grade elastomers with a very high mix quality.



Pigs Unlimited were using to make their pigs. During the course of our discussion, the team expressed their concerns about the introduction of stricter regulations regarding the use of TDI-based materials, and said they were thinking about switching to an MDI hot cast elastomer. Following this conversation, we suggested that the team should try our DALTOCAST® system – a family of three-component hot cast engineering elastomers. Offering an advanced portfolio of polyurethane systems, which include a full range of polyols and chain extenders based on MDI, our DALTOCAST® systems are ideal for the creation of industrial components, including solid cast pigs that need to travel at high speed, and are in regular contact with different liquids and substances. Impressed by the quality of the DALTOCAST® system that we recommended, the team decided to

move away from the two-component TDI-based system they had been using for a number of years.”

Allen Pennington, President at Pigs Unlimited, explained more: “We’ve been making industrial pigs since the 1990s and shipping them around the world to customers in a range of sectors. For some time, we’d been thinking about looking for a company that could support our expanding hot cast elastomer and machinery requirements, and help us transition to an MDI-based system. Our discussions with Huntsman were both timely and fortuitous. We quickly developed a good rapport with the Huntsman team – which was important to us as a family-run business. Beyond the people, we were impressed with the quality of the DALTOCAST® materials they offered; the

functionality of the CASTECH™ machine; and the expertise available.”

Continuing, he said: “The team went the extra mile to get us up and running quickly and efficiently. They were with us every step of the way – helping to smooth our transition to using DALTOCAST® materials and supporting the installation of the new CASTECH™ machine. We took delivery of the new machine in May and are already seeing the benefits. The new machine has a much larger output and is really reliable, requiring much less maintenance overall.” |

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“For some time, we’d been thinking about looking for a company that could support our expanding hot cast elastomer and machinery requirements, and help us transition to an MDI-based system. Our discussions with Huntsman were both timely and fortuitous.”

ALLEN PENNINGTON,
PRESIDENT, PIGS UNLIMITED

Lightweight absorber foam for automotive applications

Huntsman's automotive team has developed a lightweight absorber (LWA), semi-rigid foam system, for acoustic applications in engine and trunk compartments.

ACOUSTIFLEX® S NBR polyurethane foam is a fully formulated system that can help to make vehicles quieter, and offers a raw material saving of up to 20% compared to 15 kg/m³ variants.

Suitable for use in self-extinguishing and non-burning end products, according to MVSS 302 and UL-94V0, ACOUSTIFLEX® S NBR polyurethane foam is based on a polyol blend mixed with SUPRASEC® diisocyanate and various performance additives. The result is a thermoformable system that can be used to create thicker, more complex component parts, quickly and efficiently – without compromising product performance.

Easy to mold, and with a fast cool down and cycle time, the ACOUSTIFLEX® S NBR system delivers consistent acoustic performance and density throughout the foam block. Furthermore, ACOUSTIFLEX® S NBR polyurethane foam is self-supporting, so requires fewer clips for faster assembly times. |

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ACOUSTIFLEX® S NBR

Experimental batches of TEROL[®] polyols now available

A 50-liter, pilot-scale, lab reactor system has been installed at the lab at Huntsman's TEROL[®] polyol manufacturing site in Houston. This reactor, now fully functional, will allow the site to produce experimental batches of TEROL[®] aromatic polyester polyols for customers to use in advanced machine trials.

The reactor can manufacture ten gallons of experimental polyols in a single batch. The reactor reduces material handling and manufacturing time and increases the types of products that can be synthesized, including next generation polyols for rigid foam insulation applications. The first sample batch was used by the Huntsman technical team in Europe to support the development of a low smoke, fire-rated, metal panel system.

Additionally, it will help the technical team accelerate the rate of polyester polyol innovation at the site. Meredith Gregory, Product Manager Polyols & Blends, Huntsman Polyurethanes – Americas said: "the reactor allows the TEROL[®] site to quickly and efficiently respond to market demands for experimental polyol products, potentially shortening the time to market."

Other uses of the reactor include the development of experimental polyester polyols for binders and geotechnical foams. |

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Forthcoming events and technical presentations

2019

ABRAFATI 2019 International Coatings Congress & Exhibition, São Paulo, Brazil (1-3 October)

Polyurethanes Technical Conference (CPI), Orlando, Florida (7-9 October)

Insulation Contractors Association of America Convention (ICAA), Phoenix, Arizona (11-12 October)

K 2019, Dusseldorf, Germany (16-23 October)

Contech Buildings, Quebec, Canada (24 October)

Montreal Fall HomeExpo, Montreal, Quebec, Canada (24-27 October)

Malaysian Wood Expo 2019, Kuala Lumpur, Malaysia (19-21 November)

Formnext 2019, Frankfurt, Germany (19-22 November)

The Buildings Show (Construct Canada), Toronto, Ontario, Canada (4-6 December 4-6)

2020

International Builders Show (IBS), Las Vegas, Nevada (21-23 January)

Montreal HomeExpo, Quebec, Canada (6-9 February)

Buildex Vancouver, Vancouver, British Columbia, Canada (12-13 February)

Spray Polyurethane Foam Alliance Convention & Expo (SPFA), Pasadena, California (11-14 February)

SIMAC Tanning Tech 2020, Milan, Italy (19-21 February)

Expo Habitat, Quebec, Canada (20-23 February)

Montreal National Home Show Montreal, Quebec, Canada (12-15 March)

FoamExpo North Americas, Novi, Michigan (24-26 March)

American Coatings Show 2020, Indianapolis, Indiana (31 March-2 April 2)

Air Barrier Association of America Conference & Tradeshow (ABAA), Reston, Virginia (7-8 May) American Institute of Architects Conference (AIA), Los Angeles, California (14-16 May)

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Designed and produced by: Chris Pearson creative communications.



Demilec spray foam named Best Green Building Product

The National Association of Home Builders (NAHB) in the United States named Demilec's Heatlok® HFO spray polyurethane foam (SPF) the winner of the Best Green Building Product category during the 2019 International Builders Show (IBS).



Entrants were evaluated by a panel of more than 30 industry experts and media judges using the following criteria: innovation, functionality, good design and builder/consumer friendliness.

The Heatlok® HFO family of products uses Honeywell's Solstice® liquid blowing agent with ultra-low global warming potential and non-ozone-depleting blowing agents.

This latest accolade builds on previous award wins for the Heatlok® range. Heatlok® HFO High Lift and Heatlok® HFO Pro SPF won the coveted 2018 CPI Innovation Award and 2018 Home Builder Executive Gold Innovation award for their high R-values of 7.5/inch and 7.4/inch, respectively.

Heatlok® HFO High Lift SPF can be sprayed at 6.5 inches for an R-49 in a single pass, and acts as a vapor retarder and water barrier. Additionally, the product is a certified air barrier by the Air Barrier Association of America (ABAA).

Doug Brady, Vice President Product Management & Technology at Demilec, said: "We are incredibly excited and grateful for the recognition afforded us with this award. It is the culmination of years of development work that has enabled Demilec® to offer our contractors and builders a solution to meet virtually every energy code and insulating requirement. Our Heatlok® HFO Pro spray foam is designed to meet continuous insulation requirements for exterior applications from the basement and up the walls. Our HFO High Lift spray foam can be used in the attic, creating a virtual cocoon that protects almost the entire structure from the outside elements."

Aside from thermal efficiency, both products also have other environmental attributes. To date, Demilec has recycled the equivalent of more than 600 million plastic bottles in the manufacture of its spray foam products; and Heatlok® HFO products are composed of a total of 19% recycled and renewable content. |