

# SNIW

February / March 2021

## SUSTAINABLE NONWOVENS

### Levels of complexity

Can sustainable feedstocks transform the AHP industry?

#### Media savvy

Focus on filtration

#### Eco investment

Green issues drive technology spending

#### Pace setting

Record growth for biopolymers

Technical Innovation and Industry Best Practice

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# On the right track

Speculation about the pace and status of sustainability issues in the nonwovens industry can be firmly put to bed with the news that the growth rate for bio-based polymers is now higher than fossil-based polymer market growth.

Raw materials made from a biological feedstock have been identified as a renewable and more sustainable alternative to fossil-based plastics. Unlike the vast majority of fossil-based polymers, many such biopolymers are biodegradable, which is helping provide a solution to the dizzying escalation in plastic waste seen across much of the world.

In fact, the latest figures show that 2020 was a promising year for bio-based polymers: sold out PLA in 2019 has led to the installation of increased capacities, PE and PP made from bio-based naphtha are breaking ground and future expansion for bio-based polyamides as well as for PBAT, PHAs and casein polymers is on the horizon. As a new report from Germany's Nova Institute shows, only bio-based PET showed a lower growth rate.

Encouragingly, the figures also show that several global brands are already expanding their feedstock portfolio to include, next to fossil-based, sources of renewable carbon, CO<sub>2</sub>, recycling and especially biomass, increasing the demand for bio-based as well as biodegradable polymers.

The latest information also shows significant progress has been made in providing the absorbent hygiene products industry with more sustainable feedstocks.

The European Union's Single-Use Plastics Directive and similar legislation being planned in North America and elsewhere is now seeing a range of initiatives that promise to change the face of the \$90 billion markets for AHPs.

While biofuels remain the main alternative focus of the oil industry, our report on page 28 outlines a marked swing towards the development of new biopolymers, bioplastics and bio-based synthetic fibres that is attracting significant new investments.

Consumer product brands and retailers at the other end of the long supply chain are also highly active, and new start-ups – notably in the field of alternative cellulosic fibres derived primarily from cotton-rich waste clothing – as well as plastic recycling projects, are suddenly finding it easy to attract new investors.

Admittedly, the scale of making the AHPs market in any way sustainable, let alone circular, should not be underestimated, but it is increasingly apparent that we are on the right track.



Haydn Davis, Editor

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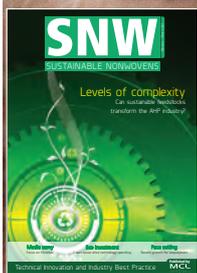
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# NONWOVENS NEWS

LATEST INDUSTRY NEWS FROM  
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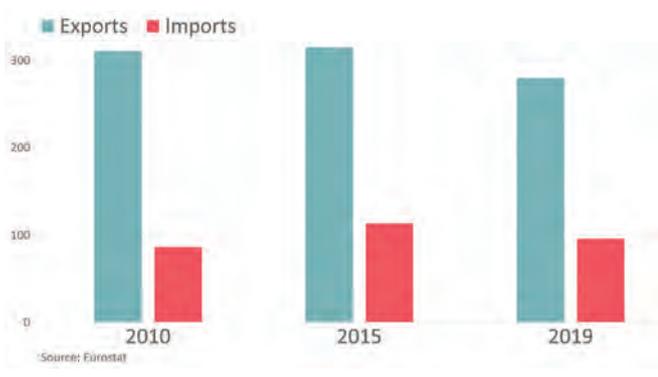
## EDANA welcomes rules of origin agreement

BRUSSELS - EDANA has welcomed the Trade & Cooperation Agreement (TCA) signed in December 2020 between the European Union and the UK and, in particular, its specific rules of origin for nonwovens.

The most recent available figures cover 2019, when the UK exported nonwoven roll goods worth €96 million to the EU, while export traffic in the other direction reached a value of €280 million. The UK remains the second biggest trade partner for EU local manufacturers after the US.

Welcoming the TCA, Jacques Prigneaux, EDANA's Market Analysis and Economic Affairs Director, said that the agreement not only guaranteed that nonwoven roll goods will be able to continue to travel between EU member states and UK without customs duties, but also recognized that a nonwoven process is sufficient to confer the origin on the product. "In order to qualify for the zero preferential tariff under the EU-UK Trade and Cooperation Agreement, products classified in HS 5603 must originate in the EU or the United Kingdom," he said. "According to the specific rule for nonwovens, devised and promoted by EDANA, and included in the TCA, any nonwovens produced locally will be considered as originating in the EU or United Kingdom, even if it has been produced using non-originating materials."

### EU27 NONWOVENS TRADE WITH THE UK (MIO €)



"Obviously, EDANA member companies can contact me and I will be pleased to guide them through the procedure to claim a preferential import tariff."

Pierre Wiertz, General Manager of EDANA added: "In this news, I see two key achievements and subjects of satisfaction for nonwoven producers whom we value as the core of EDANA's membership.

"On one hand, the ability for all of them to keep doing 'business as usual', or even expand trade opportunities, whether they trade from the EU or the UK, and on the other hand, the official recognition, hopefully once and for all, of the fact that manufacturing nonwoven roll goods is a substantial enough operation to confer origin status of the country where the resulting goods are obtained. This latter event marks another step in the independence of the nonwovens industry from the traditional textile customs rules which too often unnecessarily constrained its development."

## Glatfelter acquires Georgia-Pacific's US nonwovens business

CHARLOTTE - Glatfelter has agreed a deal to purchase Georgia-Pacific's U.S. nonwovens business for US\$175 million. The deal includes Georgia-Pacific's Mount Holly, North Carolina, airlaid manufacturing business and an R&D pilot line for nonwovens product development in Memphis, Tennessee, which collectively employ approximately 150 people.

The Mount Holly facility has a capacity of 37,000 metric tons and produces high-quality airlaid products focused on wipes and tabletop materials. The R&D pilot line and additional technical resources will enhance ongoing innovation efforts, Glatfelter said.

The deal follows Glatfelter's 2018 acquisition of Georgia-Pacific's European nonwovens business, which included manufacturing assets in Steinfurt, Germany, along with sales offices located in France and Italy.

"The agreement to acquire Georgia-Pacific's U.S. nonwovens

business further reinforces our commitment to invest in growth opportunities as part of Glatfelter's ongoing transformation while also expanding our operating footprint in the United States," said Dante C. Parrini, chairman and chief executive officer of Glatfelter. "Our airlaid business has delivered strong results throughout an unprecedented 2020. The Mount Holly facility, along with the R&D pilot line, will allow us to continue to build on this success and better serve our customers."

Georgia-Pacific's U.S. nonwovens business generates annual net sales and adjusted EBITDA of approximately \$100 million and \$20 million, respectively. Glatfelter said it expected to realize annual cost synergies of approximately \$4 million to \$6 million within three years and incur one-time costs of approximately \$10 million for transaction fees and integration.

Glatfelter plans to finance the acquisition through a combination of cash on hand and borrowing under its existing revolving credit facility.

The transaction is subject to customary closing conditions, including receipt of required regulatory clearances.

## Berry investment to address wipes shortage

EVANSVILLE - Nonwovens manufacturer Berry Global is to invest more than US\$70 million in its United States wipe substrate capabilities as it looks to meet a long-term increase in demand.

The investment includes a new line, producing additional capacity, and enabling the company to better serve its global customers as well as support the continuing growth of its business.

Berry supplies many of the world's leading brands with wipe materials for infection prevention. Prior to the demand surge of 2020, the impregnated wet wipes segment, specific for home cleaning and disinfecting, was growing at 6% in the 2014 to 2019 time frame. Amplified by COVID-19 prevention, the demand for disinfectant wipes is expected to have permanently shifted to its current, increased use.

The investment, which has a targeted commercialization date of the March quarter 2023, is complementary to Berry's existing portfolio and features the company's proprietary Spinlace technology.

Spinlace technology is a highly efficient process that incorporates almost limitless material inputs, including pulp, with high-speed hydroentanglement. Additionally, Berry's proprietary Apex technology is combined with Spinlace to impart customizable three-dimensional images directly into the fabric to provide differentiated functional and aesthetic attributes. The Apex process improves strength, pick up or lay down of liquids, and improves visuals versus traditional manufacturing methods.

The line will be flexible in its production capabilities, with the ability to supply materials for wipes, filtration, personal care incontinence, and healthcare applications.



## Andritz to supply spunlace line for Minet

GRAZ - International technology Group Andritz has received an order to supply a neXline spunlace eXcelle line to Minet S.A, based in Ramnicu Valcea, Romania, for processing various fibres from 25 to 70 gsm to produce a wide range of hygiene products.

Start-up is expected during the second quarter of 2022.

The production capacity of the line, which will be the first of its kind in Romania, will be 10,000 tons a year, while the operating speed will be up to 250 m/min and the maximum output at the carding outlet around 1,500 kg/h.

Andritz will deliver a complete line, from web forming to drying. The line will integrate one high-speed TT card, the robust Jetlace Essentiel hydroentanglement unit equipped with a neXecodyr S1 system for energy saving, and a neXdry double-drum through-air dryer.

Cristian Niculae, Commercial Director at Minet, said: "The Minet group is a company with a long-term vision and sustainable growth. Our strategy has always been to identify and fully meet market needs. The main reason why we decided in favor of a spunlace process was the fast development of our local wipes market recently. Romania should have spunlace nonwovens, so Minet – as the local frontrunner in nonwovens – has decided to become the first factory there using this technology." The close collaboration between Andritz and Minet in needlepunch was an important consideration in the choice of supplier for the spunlace line as well as the fact that Andritz is recognized as a key benchmark for production of premium spunlace roll goods.

Just recently, Andritz successfully completed the commissioning of a neXline needlepunch eXcelle line for Minet. This line is dedicated to the production of automotive products made from a large variety of fibres. For this contract, Andritz delivered a complete line from fibre preparation to end-of-line, also integrating card, crosslapper, batt drafter, two needlelooms and a Zeta felt drafter with a working width of more than 6m.

The line is also equipped with the unique ProDyn web profiling system, operating as a closed-loop control system in order to ensure perfect evenness of the products.

Founded in 1983, Minet is a major producer of nonwovens in Romania and serves more than 1,000 customers. The company delivers about 20 million sqm of needlepunched felts per year and offers products with the highest quality standard and which are used in many different fields, such as automotive, geotextiles, and wadding.

## World first for Kelheim with EMAS accreditation

KELHEIM - Kelheim Fibres has become the first viscose fibre manufacturer worldwide to receive EMAS certification, a management system that aims to certify the complete environmental performance of a company.

EMAS stands for "Eco Management and Audit Scheme" and is a standardised eco management certification system developed by the European Union. EMAS includes the globally applicable ISO 14001 standard and goes beyond its requirements by demanding more transparency and continuous improvement. Certified companies report in their annual EMAS Environmental Statement on their environmental goals and their progress in meeting them.

"Our aspiration is that our fibres offer an eco-friendly and high-performance alternative to synthetic materials," said Craig Barker, CEO at Kelheim Fibres. "So, it's not enough that our fibres are made from renewable resources and that they are fully biodegradable – our environmental awareness must include the whole production process and all that goes with it if we want to safeguard our credibility. The EMAS certification proves that we take this responsibility seriously."

During the audit preceding the certification, the independent environmental auditor thoroughly investigated all departments of the company, from the production itself to the company canteen. The inspection found no non-conformances and was impressed by the competence and the high sense of responsibility among Kelheim's employees.

In contrast to the EU Ecolabel and similar certifications, EMAS does not apply to individual products or services, but certifies the complete environmental performance of the company. This

benefits not only the protection of the environment and climate, but also the improvement of a company's Eco efficiency.

"An efficient environmental management system ensures that economy and ecology go hand in hand – that gives us a decisive competitive edge," Barker added.

Kelheim's viscose speciality fibres are used in range of diverse applications from fashion, hygiene and medical products to nonwovens and speciality papers.

All products are made from 100% wood pulp from PEFC or FSC certified sources.

They are fully biodegradable and offer an environmentally sound alternative to petroleum-based materials in a broad range of different end products – while maintaining or even enhancing the functional performance of the product.

The production takes place exclusively in Germany and complies with the strict German environmental legislation.

## Rockline to increase wipes capacity

SHEBOYGAN - Rockline Industries has announced plans to increase capacity at three of its wet wipe manufacturing facilities across the US.

The US\$18 million investment will see high-capacity wet wipe production lines at its sites in Springdale, Russellville and in Booneville, all located in the state of Arkansas.

Announcing the plans, Ron Kerscher, senior vice president of sales and marketing for Rockline said the increased capacity would lead to the creation of around 100 jobs. "Rockline has been proud to be a part of the Arkansas community for many years and we are excited to be bringing new jobs and new

## Freudenberg introduces ECO-CHECK

WEINHEIM - Freudenberg Performance Materials has begun using the Eco-Check label to identify particularly sustainable products within its portfolio.

It is hoped that the use of the label will help customers quickly and clearly identify sustainable products which meet demanding criteria in at least one of four categories: Saving resources, eco-efficiency for customers, reduced environmental impact at the end of the product's life, or extended durability.

"The Eco-Check label quickly and accurately indicates to our customers at a glance that the relevant product offers a significant advantage in terms of environmental protection compared to our standard products or those of our competitors," explained John McNabb, CTO Freudenberg Performance Materials.

"A Freudenberg product bearing the Eco Check label fulfills at least one of four demanding environmental aspects: 1) Its manufacture saves resources; 2) It improves the manufacturing footprint of our customers; 3) It is recyclable, biodegradable or can be disposed of in an environmentally friendly manner after use. 4) Certain features contribute to a long service life of the product."

Many of Freudenberg's products bearing the Eco-Check label contain a high proportion of recycled polyethylene terephthalate (PET), derived for example from plastic bottles.

In this case, the most important environmental advantage is the reduction in CO2 emissions. Typical examples of products offering this benefit are carpet backings and components for shoes and clothing, including comfortemp materials.

According to Freudenberg, increased durability, raw material savings and improved eco-efficiency for customers are the main features of numerous fabrics from the Evolon range, which are used by consumers in the form of bed linen, bath towels and reusable cleaning cloths, for example.

The Eco-Check label also demonstrates the significant sustainability advantage of a small number of manufacturing and processing steps for a particular healthcare product: a hydrophilic PU foam with a direct coating of silicone adhesives, which is used in modern wound care.



# OUR GOOD NATURE RUNS DEEP.



When it comes to keeping our natural resources clean, cotton has always been a leader in the field. Unlike petroleum-based synthetic fibers, all-natural cotton biodegrades in water.<sup>1</sup> So choosing cotton means less plastic pollution in our oceans, our rivers, our food and our bodies.<sup>2</sup> It's the fiber that's helping grow a cleaner future.



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1: THE GENERATION AND AQUATIC BIODEGRADATION OF MICROFIBERES PRODUCED FROM LAUNDERING FABRICS. Zambrano, M., et al. NC State University, Raleigh, NC, USA. Cotton Incorporated, Cary, NC, USA.\* 76% in waste water after 250 days with continued degradation projected. 2: Accumulation of Microplastic on Shorelines Worldwide: Sources and Sinks. Mark Anthony Browne, et al. Environmental Science & Technology 2011 45 (21), 9175-9179. DOI: 10.1021/es201811s

opportunities to our local communities,” Kerscher, said. “As a result of the COVID-19 pandemic millions of consumers have been introduced to the convenience of personal care wipes. This has led to a dramatic increase in consumer demand for these products.”

Rockline, which is headquartered in Sheboygan, Wisconsin employs nearly 2,500 people worldwide.



## Johns Manville unveils glass fibre recycling unit

DENVER – Johns Manville has installed a €10 million thermal recycling unit for waste glass fibres at its Engineered Products plant in Trnava, Slovakia.

The investment will enable Johns Manville to drastically reduce the amount of glass fibre waste that is usually sent to landfill.

“The primary goal of this investment is to achieve a tangible positive environmental impact by drastically reducing the landfilling of glass fiber waste,” explained Elena Hrivikova, manager for Environment, Health and Safety – Europe/Asia. “This project is part of our response to the European Commission’s zero waste program and our overall target for sustainable management of the planet’s natural resources.”

The new Trnava unit has a projected recycling capacity of more than 3 tons per hour and consists of a warehousing area, feeding and transportation equipment, shredder, burning chamber and milling. After processing, the recycled glass powder is free of organic particles and re-fed as raw material into the glass production process on-site, thereby achieving a closed production loop. The project will keep more than ten thousand tons of waste out of the landfill each year; equivalent to one large truck every day.

“We have invested nearly €10 million into state-of-the-art technology and made sure the recycling capacity will allow further glass fibre production capacity growth in Trnava. The investment is another milestone of Johns Manville’s strong commitment to environmentally responsible manufacturing operations,” added Martin Nywlt, director of Global Operations for JM’s Engineered Products business.

## Techtextil North America targets August return

ATLANTA - Techtextil North America returns to Raleigh, North Carolina, this August as it looks to reunite an industry keen for in-person business interactions.

Scheduled for August 23-25, 2021, the show’s theme this year is “Accelerating Technology” and aims to highlight the textile industry’s high level of innovation and contribution to the global supply chain through advanced technology.

North Carolina State University’s Wilson College of Textiles – internationally renowned as a leader in the field of textile education and innovation – will again serve as the Official Academic Partner, with several members of the college’s faculty also seated on the show’s Advisory Council.

Selected for their industry knowledge and expertise, the Advisory Council acts as a support to the management team in the planning and execution of the Techtextil North America Symposium and other educational content and show features, which, in line with the show’s theme, will heavily focus on advanced technology in textile design, development and end-to-end manufacturing.

Techtextil North America first landed in Raleigh February 26-28, 2019, a decision made in order to bring the event back to the heart of the textile industry. Moving the show from its 2017 location in Chicago to the Southeast proved popular among the industry, making the 2019 edition the highest attended odd-year show to date.

For more information on the upcoming edition of Techtextil North America, August 23-25 in Raleigh, North Carolina, please visit [www.techtextilna.com](http://www.techtextilna.com).

## P&G boosted by baby & feminine care sectors

CINCINNATI - The Procter & Gamble Company has reported second quarter fiscal year 2021 net sales of \$19.7 billion, an increase of 8% compared to the previous year, helped by a solid performance from the Baby, Feminine and Family Care segment.

Net earnings were \$3.9 billion, up 4% compared to the second quarter in 2020.

The Baby segment saw organic sales increase 6% compared to the same period last year, driven by growth in North America and devaluation-related price increases in certain regions. This was partially offset by market contraction in certain regions due to the pandemic and competitive activity.

Feminine Care organic sales increased mid-single digits driven by positive product mix due to premium innovation growth in North America and Greater China and devaluation-related price increases in certain regions. Family Care organic sales increased double digits driven by consumption increases as consumers spend more time at home during the pandemic.

“We delivered another strong quarter of results across all key measures – top line, bottom line and cash,” said David Taylor,

chairman, president and chief executive officer. "We remain focused on executing our strategies of superiority, productivity, constructive disruption and improving P&G's organization and culture. These strategies enabled us to build strong business momentum before the COVID crisis, accelerated our progress in calendar year 2020 and remain the right strategies to deliver balanced growth and value creation over the long term."

Looking ahead, P&G has raised its outlook for fiscal 2021 all-in sales growth from a range of 3-4% to a range of 5-6%.

## Glatfelter awarded 'Fine to Flush' certificate

CHARLOTTE - Glatfelter has received the Fine to Flush certificate from Water UK for its improved nonwoven substrate used in dispersible wipes and moist toilet tissues.

The product was independently tested by the technical experts at the Water Research Center Limited (WRc), an independent Center of Excellence for innovation and growth, who have been at the forefront of research into wet wipes and their subsequent impact on water networks. Glatfelter is now expanding its already GD4 certified portfolio to offer a full range of customized dispersible wipes substrates.

"This project is an excellent example of Glatfelter's dynamic innovation coupled with our deep commitment to develop eco-friendly solutions that will enhance everyday life for millions of people around the world," said Chris Astley, senior vice president, chief commercial officer, "adding that Glatfelter's dispersible wipes substrates begin to disintegrate immediately when flushed and will not harm sewage systems or block pumps at water treatment stations. In addition to being fine to flush, the product is free of chemicals or binders and is 100% biodegradable, he said.

In addition to the company's dispersible wipes that are Fine to Flush, Glatfelter produces a full portfolio of substrates for everyday use ranging from personal and home, including baby wipes, moist toilet tissues, and household surface wipes, to industrial applications for cleaning and sanitizing wipes.

## Minet invests in Aeris air treatment technology

BERGAMO - A new spunlace line for Romanian nonwovens manufacturer Minet will be equipped with the latest Induction Humidification System from Aeris Group.

The technology from Aeris, which operates in the air-conditioning, heating and filtration markets, will ensure air quality, ambient filtration and air treatment around the new Andritz line.

The IHS system offers a number of advantages compared to the traditional humidification systems such as the elimination of possible proliferation of bacteria and mucilage, the removal of possible corrosion risks of the components and the elimination of any risk of condensation.

It also offers homogenous temperature and humidity values along the whole line and in the treated ambient area, a total recovery of all the endogenous heat produced in the room (motors, lighting, etc.); and also ensures that there are no obstacles in the room because you do not have diffusers at floor level, close by the operators and process line.

Further benefits include the possibility of introducing air at low temperature directly without condensation problems and without the creation of fastidious airflow at low temperatures. There is also a complete absence of wastewater and fewer pipes in the production department.

## Shemesh invests in new US facility

GREEN BAY - Shemesh Automation has responded to an increased demand from its North American customer base with the purchase of a new site for its US subsidiary, Shemesh USA Inc. The Israeli firm will use the 43,055 square-foot site in Green Bay, Wisconsin to house its complete spare parts inventory, a 200ppm complete wet wipes packaging demonstration line including rotary liquid filling, conduction sealing, rolls stuffing and labeling machines.

Shemesh USA Inc's Director of North American Operations, Mark Calliari, said the investment was indicative of the converting specialist's commitment to driving excellence and supporting its customers. "When businesses grow as rapidly as Shemesh has in North America in recent years, it can be easy to forget the values that underpinned that growth," he said. "Not so at Shemesh. The investment in our impressive Green Bay facility, the full inventory of parts, demonstration line, and of course the growing team are all indicative of our commitment to driving excellence and supporting our customers on their journey.

"When you buy Shemesh, you are not just buying top-of-the-line machinery, you are buying into a long-term partnership – our significant investment in US-based personnel and now our Green Bay facility is testament to that."

Shemesh Automation's sales director, North America, Bob Green added: "At Shemesh, we very cognizant of the importance of reinvesting in the areas that catalyzed our rapid growth in the first place – namely providing unparalleled service to our customers. In North America, our philosophy is no different – we promise to be there for all of our customers when they need us the most. The purchase of our new facility in Green Bay is a significant investment which solidifies our commitment to continued growth and industry-leading customer service."



## Essity recognised with sustainability ranking

STOCKHOLM - Hygiene and health company Essity has been recognized as one of the world's 100 most sustainable companies by Corporate Knights.

The list was announced virtually during the recent World Economic Forum.

The Global 100 list represents the top 1% of companies in the world in terms of sustainability performance. Corporate Knights analyzes and compares 8,080 companies with minimum gross revenue of US\$1 billion against global industry peers. The ranking is based on 24 quantitative key performance indicators, including resource management, employee management, financial management, clean revenue & clean investment and supplier performance.

## Nonwovens firms join Responsible Flushing Alliance

SEATTLE - A number of leading companies from the nonwovens supply chain, in partnership with the wastewater and sanitation industries, have come together to form the Responsible Flushing Alliance, an independent nonprofit with

a mission of educating consumers about responsible and smart flushing habits.

Formed to address the need for long-term solutions to the problems in the US's wastewater systems, Responsible Flushing Alliance - established with 501(c)(6) - has appointed Lara Wyss as its president. Wyss comes to the role with more than 20 years of experience in communications and public relations, with an emphasis on environmental affairs and the consumer products industry.

The first initiative that Wyss will spearhead for the Responsible Flushing Alliance is a consumer and industry education campaign to raise awareness about the proper disposal practices for non-flushable products and to advocate for the prominent placement of "Do Not Flush" labels on non-flushable products.

Initially, the campaign will focus on California where the Responsible Flushing Alliance has partnered with the California Association of Sanitation Agencies (CASA) to develop an industry-led, statewide awareness campaign in California.

"Just because an item can clear a toilet bowl, doesn't mean it should be flushed," Wyss said. "We're looking forward to working with California's sanitation and wastewater industries to raise awareness about what not to flush to keep our infrastructure operational."

The Alliance will also expand efforts nationwide through partnerships with other wastewater and sanitation stakeholders. "The creation of the Responsible Flushing Alliance as an independent nonprofit organization allows us to better



## Solar power for Ontex in Spain

VALVERDE DEL MAJANO – Absorbent hygiene leader Ontex has inaugurated what is the largest solar rooftop in the region at its plant in Segovia, Spain. The installation was developed and financed by Menapy and will produce 3.9 GWh of electricity per year – equivalent to the yearly consumption of about 1,000 households. The rooftop solar panels cover more than 20 per cent of the Segovia plant's electricity demand, and offset 1,500 tons of CO<sub>2</sub> per year.

"We can now produce a large part of the electricity we need to manufacture essential hygiene goods," said Annick De Poorter, Ontex vice president for R&D, quality and sustainability. "This is another step towards our goal to have carbon neutral operations by 2030. We will reach this goal through on-site renewable energy production, energy savings, purchasing energy from renewable sources, and carbon offsets via reforestation projects.

"Since 2017, all of Ontex's European factories in nine countries run 100 per cent on electricity from renewable sources, combining on-site production and purchasing of renewable electricity via Energy Attribute Certificates (EAC's). Seventy per cent of Ontex manufacturing plants on five continents run on electricity from renewable sources."

"This project marks an important milestone for Menapy in the Iberian market," added Menapy managing partner Tom Polly. "It crystallizes our long-term experience in industrial rooftop solar projects in Belgium and it confirms that our 'Solar as a Service' can bring important added value to high-consuming industries in Spain. Ontex has clear and ambitious goals in sustainability and saving on energy costs, and with this project we help them achieve both, without the investment."

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focus on our mission to elevate consumer awareness of how smart flushing behavior in the bathroom impacts the overall health of our homes, and ultimately our communities," added Becky Johnson, the Responsible Flushing Alliance's Board Chairman and Global Public Policy Director at Kimberly Clark. "The Responsible Flushing Alliance is committed to contributing real solutions by working with the wastewater and sanitation industries to educate consumers about making smart flushing decisions. To be successful, this effort will take all stakeholders working together. We invite others to join us."

Members of the alliance include Albaad, Center for Baby and Adult Hygiene Products, Essity, First Quality, Georgia Pacific, Johnson & Johnson, Jacob Holm, Kelheim Fibres, Kimberly-Clark Corporation, Nehemiah Manufacturing, Nice-Pak, Procter & Gamble, Rockline Industries, Sellars Nonwovens, and Suominen Corporation.

## FDA clearance for Callaly's Tampliner

LONDON - Callaly has received clearance from the U.S. Food and Drug Administration (FDA) for its award-winning Tampliner, an organic cotton tampon with a built-in mini-liner.

The Tampliner sees a regular tampon attached to the mini pantyliner with a patented virtual applicator for clean insertion, removal and protection against leaks.

The Tampliner, which is designed and manufactured in the UK and launched in February 2020, was invented by Dr Alex Hooi, a senior British gynecologist and Fellow of the Royal College of Obstetricians and Gynecologists and developed by garment technologist Ewa Radziwon, who trained at London College of Fashion. The product is protected by four granted patent families covering 80% of the US\$34 billion global market. It is

now being exported across Europe to Sweden, the Netherlands and Ireland.

Callaly's multiple-award winning Tampliner was recently recognised as a "next-gen tampon" in TIME's 100 Best Inventions of 2020 - its annual list of the 100 Best Inventions that are making the world better, smarter and even a bit more fun.

Callaly's founder and CEO, Thang Vo-Ta said: "We are excited that Callaly was able to receive 510K clearance from the US Food and Drug Administration, opening up the important US market for our Tampliner, now earmarked for launch in Summer 2021. We are committed to delivering innovative period care products that truly meet the needs of people with periods, through dedicated innovations that are highly differentiated and adhere to the highest possible standards."



## EDANA accepting submissions for Outlook 2021

BRUSSELS - EDANA is now accepting submissions for Outlook 2021 programme, which will take place online from April 21-23.

This year's event will be a fully interactive digital gathering featuring a wide range of expert insights, knowledge sharing, one-on-one networking and facilitated meetings with peers to ensure plentiful business development opportunities.

## Jacob Holm to expand spunlace capacity

Candler – Jacob Holm is to upgrade an existing spunlace line at its plant in Candler, North Carolina as it looks to increase its use of sustainable raw materials. The additional capacity comes in addition to the significant Project Boost capacity investment announced in June 2020, which is on track to be completed as scheduled, with significant equipment installations currently progressing as planned at all sites.

The new equipment in Candler is expected to launch by December 2021 and will target further expansion of sustainable products, including more efficiency in running natural and innovative fibres.

According to Jacob Holm, this new tranche of investment to increase spunlace capacity underpins the company's commitment to support the growth of its customers and to continue to play a key role in the industry while targeting its partners' needs for growing volumes of sustainable product offerings and co-innovation abilities. "We so appreciate the hard work of our team members who have been critical in making this happen, as well as local officials in Buncombe County, North Carolina, for their unwavering support of local businesses," said company CEO Martin Mikkelsen.



For this edition, EDANA is now welcoming papers on:

- Innovation and product development
- Wet Wipes
- Sustainability and Circularity topics
- PPE & Facemasks
- EU Medical Device Regulation

This year's event will also feature a number dedicated sessions on healthcare and medical developments, a sector in which the role of nonwovens has been highlighted during the Covid-19 pandemic.

Other highlights will include: 40+ papers, live interaction with speakers, panel discussions, roundtables and personalized company space. There will also be product presentations, one-on-one chats and video meetings, company meetings and multiple networking opportunities.

For further details go to the EDANA website - <https://www.edana.org>

## Nice-Pak to construct new facility

MOORESVILLE - Wipes manufacturer Nice-Pak has signed an agreement to begin construction on a new facility in Mooresville, USA which will boast a host of environmentally friendly features.

The 1.2 million-square-foot facility, which will house manufacturing and a distribution centre at a single location, will represent a US\$165 million investment that will result in 150 additional jobs in Morgan County by 2024, and employ up to 800 associates when fully operational.

"Our new investment in Mooresville is an important milestone in our mission of helping the world stay healthy and well," said Robert Julius, Chairman and CEO of Nice-Pak. "We could not think of a better partner than the Mooresville community in our ongoing efforts to meet the increasing demand for wipes - essential products in helping to protect against COVID-19."

The current facility will remain open and part of Nice-Pak's overall manufacturing footprint. Construction of the new location is slated to begin in March 2021, with a target occupation date in May 2022.

The state-of-the-art facility will remain zero landfill as part of Nice-Pak's "war on waste" that includes more efficient energy and water use, and a reduction of greenhouse gas emissions. Designed by ARCO Design/Build in Indianapolis, the facility will boast a sustainability profile with plans for natural and LED lighting, low-flow water fixtures, eco-friendly landscaping, high-efficiency HVAC systems, low VOC paints and floor coverings, and a white roof to reject heat gain. The building will be constructed from local concrete and regionally-sourced, heavily-recycled content steel. The current Nice-Pak facility boasts world-class safety performance that underscores Nice-Pak's commitment to health and wellbeing at their production facilities.

Nice-Pak says it is continuing to respond to the unprecedented need for wipes - essential in battling the COVID-19 pandemic.



## Certified alternatives to synthetics from Canada

VICTORIA – Bast Fibre Technologies Inc., (BFTi) has been awarded a critical suite of certifications signifying its One and Sero trademarked technical natural linen and hemp fibres are truly sustainable alternatives for the nonwovens industry.

The Canadian cleantech fibre engineering firm is focused on the development and commercialisation of IP protected natural fibres and is working with bast plants, some of nature's most efficient carbon sequesters.

The recent introduction of plastics legislation in many countries, combined with increasing global concern about deforestation, is forcing the nonwovens industry to look for alternatives to synthetic and pulp-derived fibres, the company says.

BFTi's fibres are now officially designated free of plastics and harmful chemicals and have received recognition as a 'BioPreferred Next Generation Solution' with a very low environmental impact rating. In addition, BFTi abides by harmful substance regulations such as the European REACH and California Prop 65 regulations.

"These certifications clearly illustrate BFTi's commitment to delivering both high-quality and truly-sustainable natural fibres," said Jim Posa, president of BFTi. "Synthetics have been the default fibres in the industry for decades and these certifications now give our customers the confidence to accelerate their transition to sustainable fibres."

Bast fibres offer many compelling performance advantages over and above their excellent sustainability profile. These stem from the natural role the fibres play as nutrient highways within the plant. These superior fluid handling and distribution properties flow through to the nonwoven fabrics and ultimately to better performance for the consumer.

"With these critical certifications in hand, we are excited to make the transition to a commercial stage enterprise with the official launch of our One fibre this year," said Noel Hall, BFTi CEO and chairman.

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

The company recently received EPA approval for claims that its disinfectant wipes demonstrate efficacy against the virus that causes COVID-19. The company has also introduced a new graphics and branding strategy for their Nice 'N CLEAN wipes, covering the baby, hand, flushable and surface categories. The program supports market-leading performance products with a comprehensive wellbeing and sustainability platform.



## H.B. Fuller adhesive for natural-based hygiene articles

ZURICH - H.B. Fuller has introduced a new Eco Passport-certified, cotton bonding adhesive solution, which aims to address the increasing demand for more natural-based hygiene products. Cotton and viscose swell when wet, making them more challenging to bond. In response, H.B. Fuller's technicians have developed Full-Care 5885, a high wet-strength adhesive that allows manufacturers to confidently switch to natural substrates like 100% cotton and viscose without having to significantly increase coat weight.

"Around the world, while consumers of disposable hygiene products are seeking more environmentally-friendly products, H.B. Fuller advanced technologies and expertise are ready to help manufacturers operate in a more sustainable way," explained H.B. Fuller's Dr. Stefan Eller, EIMEA Technical Service Manager. "One good example is our new high wet strength, low odour and light colour Full Care 5885 adhesive solution, which offers great value by combining high-performance 100% cotton bonding at low cost in use."

This new adhesive solution is said to enable hygiene producers to meet demands for more sustainable products. It not only provides high-performance cotton bonding at low cost in use, but has an optimized viscosity profile, allowing application at lower temperatures, ease of use for application set up and optimal line efficiency.

In the current times of consumers demanding more ingredient transparency, H.B. Fuller says that Full-Care 5885 offers extra assurance as it meets the certification requirement of the Eco Passport by Oeko-tex, the independent certification system now being increasingly used by the hygiene industry to show ecological responsibility.

As Eller notes, cotton-based articles are in high-demand and it's a trend set to continue apace. With its soft, breathable properties, it is already the world's most widely used natural fibre and it is therefore no surprise that it is increasingly regarded by multiple markets as the natural choice for baby diapers and feminine care products. "Full-Care 5885 is suitable for all standard machines and application types – including slot, spiral and spray – while combining optimized rheological profile for clean and consistent application," he added. "It's an innovative hot melt adhesive that provides robust solutions for our customers and the next generation of sustainable goods."

## INDA releases new North American outlook report

CARY – INDA, the Association of the Nonwoven Fabrics Industry has released a new industry outlook report, North American Nonwovens Industry Outlook, 2019-2024.

This report marks INDA's eleventh analysis of the nonwoven/engineered materials market since its first overview of the industry in 1995. INDA's exclusive content provides analysis across all of the nonwoven end-use markets, including 133 disposable and 129 durable categories, to provide the most comprehensive and accurate view available of the total North American nonwovens industry. Detailed supply (capacity, production, and trade flows) and demand data are presented for the North American industry for 2014, 2019, and a forecast for 2024.

INDA designed this report to support strategic business planning and decision-making using INDA's proprietary demand model of 262 nonwoven categories. The projections in the report were made by analyzing current market trends and driving forces to highlight the market potential in terms of dollar value, units, and volume in both square meters and tonnage.

Dave Rousse, INDA President, said: "This report provides the most actionable insights available on demand prospects in the most important disposable and durable market segments. No other report has the primary data that INDA gathers, making this the most reliable and definitive view of the industry through 2024. Anyone who must assess, understand, and manage the assets of an organization would benefit from this essential business planning tool."

Brad Kalil, the report author and INDA's Director of Market Intelligence & Economic Insights, said: "This is a great time to be in nonwovens...statistically and emotively. North American nonwoven production growth exceeded U.S. Real GDP growth for the sixth consecutive year. Production growth exceeded capacity growth for the third consecutive year and industry's overall operating rate in 2019 improved for the third consecutive year. Nonwovens are a healthy business that attracts investment and performs best when it manages its capacity growth sensibly. The information in this report is intended to advance that cause."

The 350-page report — including 166 figures and 95 tables — is available for \$3,500 for INDA Members, and \$5,000 for Non-members. To purchase the report, contact INDA, [info@inda.org](mailto:info@inda.org); T: +1 919 459 3700, or [www.inda.org/store](http://www.inda.org/store).

## Andritz to acquire Laroche

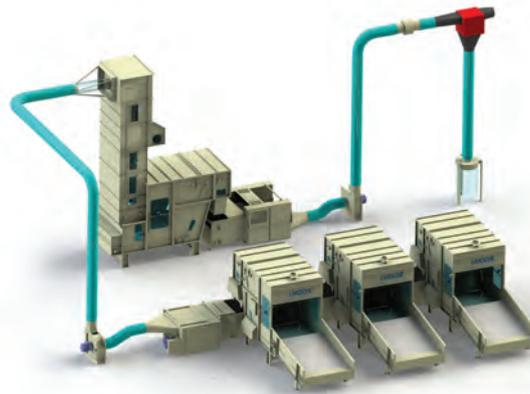
GRAZ - International technology Group Andritz is adding a range of fibre processing technologies to its nonwovens manufacturing offering with the acquisition of LM Industries, comprising Laroche SA and Miltec SA, France.

Andritz will take over all Laroche entities and their business worldwide. Closing of the transaction, which is subject to approval by the Andritz Supervisory Board, is expected at the beginning of 2021. Financial terms of the deal were not disclosed.

Based in Cours, France, Laroche is a major supplier of fibre processing technologies such as opening, blending and dosing, airlay web forming, textile waste recycling and decortication of bast fibres.

The product portfolio further complements the Andritz Nonwoven product range with the company now able to offer the complete supply and value chain, from the raw material, to opening and blending, web forming, bonding, finishing, drying, and converting.

Laroche's high-performance technologies for opening and blending will also enhance the Andritz scope of supply for spunlace, needlepunch and wetlaid production lines. Moreover, both companies have agreed to further strengthen the development of their existing technologies for high-speed and high-capacity applications and also to continue pursuing the development of textile recycling processes in order to stay ahead of the changes the industry is facing.



Laroche SA has been developing fibre processing technologies for more than 100 years. With integrated manufacturing, the company supplies lines for a wide range of industries/products: spinning, bedding and furniture, automotive, acoustic and thermal insulation, geotextiles, filtration, wipes, and many more.

Announcing the deal, Robert Laroche, president of Laroche said: "This acquisition is the logical

conclusion in view of the successful long-term relationship between Andritz and Laroche. We have been working in close cooperation for more than ten years and are very much looking forward to becoming a member of the Andritz family."

Andreas Lukas, senior vice president and division manager, Andritz Nonwoven added: "By adding Laroche's state-of-the-art products and expertise to our existing capabilities, Andritz Nonwoven will further strengthen its market and technology position."

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## Nonwovens research honoured in VDMA student awards

Frankfurt - Innovations in nonwovens technology were among the recipients of year's awards from the VDMA through its Walter Reiners-Stiftung Foundation.

The foundation, through the VDMA Textile Machinery Association, is actively involved in promoting young engineers and each year offers prizes for the best dissertation, diploma or master's thesis and creativity prizes for bachelor's and semester theses.

Among this year's winners was Maximilian Speiser of Reutlingen University, who was awarded a promotion prize in the category master thesis of €3,500 for his master thesis which presented a solution for increasing energy efficiency in the nonwovens manufacturing process.

There were also two promotion prizes from the German Textile Machinery Industry in the dissertation category, which were awarded to Dr. Frederik Cloppenburg of ITA Aachen, and Dr. Annett Schmieder from TU Chemnitz. In his dissertation Mr. Cloppenburg developed a model for the optimization of roller cards in the nonwovens process while Ms. Schmieder introduced a damage analysis system for fibre ropes. The system detects when a rope must be replaced e.g. in transport applications.

## NWI funding boost for PPE development

NORTH CAROLINA - The Nonwovens Institute (NWI) at the North Carolina State University has received a six-month, approximately US\$400,000 grant from The National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) to investigate improving the properties of materials they're using for masks and respirators.

Ultimately, the researchers' goal is to enhance the materials in order to boost performance and production capacity. "The idea behind the grant is to improve the performance of the materials we are currently producing," said Behnam Pourdeyhimi, executive director of NWI, the principle investigator.

N95 respirators and surgical masks are generally a sandwich of one or two common nonwoven layers; spunbond layers that provide mask strength and protect the inner filtration layer – and a nonwoven meltblown material that filters microscopic unwanted particles like viruses and bacteria.

Because of the current critical need for masks caused by COVID-19, Pourdeyhimi and his NWI team created a new spunbond material that can serve as a filter without the need for a meltblown filtration layer. The unique fabric is composed of two different polymer materials that are combined to make a single fibre with significant strength and bulk, along with microfibers of a similar size to the normal meltblown filters.

## Portable electrospinning device now in use in hospitals

LOD – Israeli biomedical company Nanomedic Technologies has now shipped a number of its Spincare handheld electrospinning units to hospitals in Europe. The Spincare wound care system integrates electrospinning technology into a portable, bedside device, offering immediate wound care treatment, creating a fully personalised single application customised nano-fibrous transient skin-like layer based on a patient's wound condition, size and contour.

The portable technology enhances the inherent characteristics of the electrospun nanofibres, mimicking the structure of the body tissue, providing an excellent medium for tissue integration and regeneration and facilitating the body healing process. Electrospinning is a unique technique that uses electrostatic forces to produce nano-diameter nonwovens that incorporate very fine pore sizes with a high surface area, making them an ideal solution for delivering wound healing therapies to any surface of the body.

Nanomedic says its device gives patients increased mobility – often essential for burn rehabilitation – and the ability to shower, which can be difficult with traditional bandages. The translucent layer it produces also allows medics to examine the wound without touching it.

Rob Lyon, the managing director of Regen Medical, the UK-based distributor for Spincare, said burns could be extremely difficult to dress, making the application of bandages agonising.

"Spincare is a contactless device," he said. "The protective mesh mimics the skin, which allows patients to move around more easily.

Hospitals in Germany and Switzerland have used the electrospinning gun for treating facial wounds and it has also been applied to wounds on people with diabetes, who can develop chronic foot sores that can lead to amputation.

Baljit Dheansa, a doctor in the UK who specialises in burns and scarring, told *The Guardian* he had used Spincare on five patients at Queen Victoria hospital in Sussex, with positive results on superficial burns.

"With this kind of dressing, in the right circumstance, it just means the patient doesn't have to learn about how to do dressings, and they are bit more flexible and don't have to worry so much. And relax a bit more."



# Media savvy

The nonwovens industry is benefitting from a growing demand for increasingly effective air filtration technology in the wake of the coronavirus pandemic.

In general, demand for nonwovens used in filtration applications is projected to climb by 2.7% per year to US\$1.5 billion in 2024 driven, in part, by the ongoing development of advanced nanofibre technologies.

A new report from the Freedonia Group notes that nanofibre technologies, which offer finer filtration capabilities than microfibre and coarser materials, make nonwovens more competitive with alternatives such as membranes.

Amongst the latest research in the sector is a recent development from Verdex Technologies, which has introduced a technology for spinning nanofibres using low-pressure air and no solvents. The technology provides nonwovens producers with the ability to offer a wide variety of functional enhancements to their products, particularly high-efficiency air filtration and liquid cartridge filtration products.

The growth in filtration applications will also be driven by continued regulation of air and water quality, requiring the filtration of outgoing air and wastewater in manufacturing applications; and increasing interest and awareness among consumers and homeowners in indoor air and drinking water quality, leading to new spending on filtration products.

While gains in key manufacturing sectors will support growth through 2024, the report also notes that gains will be limited in others due to the COVID-19 pandemic. For instance, motor vehicle production has fallen substantially in 2020 due to various lockdown and stay-at-home orders. However, demand for some end uses has increased, such as consumer water filters, with more



Fibertex has developed a range of advanced pleatable products for air filtration.

consumer staying at home for longer periods. Additionally, sales of higher value filters that can provide better protection against airborne pathogens will help limit declines.

Over the long term, as smart technologies such as reminders increase the replacement rate of disposable filters, particularly among consumers, sales of filters will benefit and, subsequently, demand for nonwovens used in those filters will rise, the report says.

## Pleatable

The use of nanotechnology can be seen in recent developments from Fibertex, which has developed a range of advanced pleatable products for air filtration, based on in-house produced nanofibre layers, which are combined with tailored nonwovens, to support the

benefits provided by nanofibre materials.

The Fibertex Pleatex filter media product range – which can be pleated on all types of pleating machines – is said to offer the highest efficiency and lowest pressure drop on the market, through pure mechanical filtration.

Pleatex media do not lose their efficiency due to electrical discharge in the presence of moisture and air pollutants, like electret meltblowns. Additionally, these products do not contain any harmful, small fibre shreds, as is the case with conventional, fine glass fibre-based filtration products.

All products in this range conform with new ISO 16890 requirements and also adhere to the lowest energy consumption standards in ventilation systems, the company says.

Pleatex filter media containing **▶**

nanofibres can achieve filtration efficiencies up to HEPA 13 level according to EN 1822 and ISO 35H according to ISO 29463.

All Fibertex filtration products can also be treated with permanent plasma coating or non-permanent impregnations, to enhance hydrophobicity, oleophobicity or hydrophilicity. Anti-static treatment is also available.

## Purifier

Elsewhere, whilst the coronavirus pandemic has reduced the demand for filtration products in markets such as automotive, there has been a noticeable rise in the need for air filtration technology, both for units in commercial and residential settings.

Filti, the Kansas, US-based air filtration and nanofibre technology company has developed the 9500 Home Filter which is an HVAC filter constructed using nanofibre technology, an N95-quality material that is proven to filter 95% of aerosolized, airborne particles – like COVID-19 – moving through the material.

As air conditioners and heaters recirculate air throughout a room or building, the HVAC filters are designed to trap dirt, debris, allergens and other impurities from recycling into the airflow.

However, microscopic viruses, such as

COVID-19, which studies have proven to be airborne, can easily move through most low-efficiency HVAC filters. Without a filter material that can successfully trap the smallest pollutants, aerosolized particles can be recirculated in the building.

The replaceable filter is the only MERV 16 (Minimum Efficiency Reporting Value) residential HVAC filter on the market. The extremely efficient yet highly air permeable nanofibre fabric, allows for an increased airflow ratio that won't put additional stress on a residential HVAC system, the company says.

The launch of the 9500 Home Filter is a return to Filti's core products after pivoting in March to produce N95-quality nanofibre material that could be made into face masks. After selling enough material to make nearly 15 million masks, the company now hopes its new N95-quality HVAC filter will provide the next level of protection nationwide.

Meanwhile, Ludwigsburg, Germany-based filtration specialist Mann+Hummel Group has been rolling out its latest air purifier technology using HEPA filters.

This latest development aimed at containing the corona pandemic - the HEPA H14 filters (individually tested according to ISO 29463 & EN 1822) - has been installed in the two new mobile and stationary high-performance room

air purifiers, the OurAir TK 850 and OurAir SQ 2500.

These purifiers are said to be capable of reliably filtering more than 99.995% of viruses, bacteria and micro-organisms from the air.

As such, they help to minimize the risk of infection in internal spaces. The devices are modern in their design, and thanks to the innovative ePTFE medium, they operate at high performance with particularly low noise levels. This allows infectious virus particles such as SARS-CoV-2, which can attach themselves to aerosols, to be almost completely filtered out.

At a recent virtual press conference, the filtration solution manufacturer presented the two new high-performance room air purifiers to the media in Belgium, the Netherlands and Luxembourg, following a recent successful product launch in Austria, Switzerland and Germany.

These purifiers are designed to create almost completely virus-free air in internal spaces. The stationary room air purifier OurAir SQ 2500 is suitable for rooms of up to 200 m<sup>2</sup> and the mobile room air purifier OurAir TK 850 for rooms of up to 70 m<sup>2</sup>.

Both devices replace the air contained within the specified room sizes five times per hour, allowing the aerosol concentration in rooms to be quickly reduced by a significant amount, and kept at a constantly low level. Further added value is created thanks to the energy efficiency of the devices. The high energy consumption, which occurs especially in the winter time with frequent ventilation and therefore a constant cooling of the room, can be reduced to a minimum with the air purifiers. The technology also helps to protect against infections caused by colds, flu viruses and mould spores. Beyond that the devices filter free allergens from the air and thus also help against allergy complaints in the pollen season.

"Our air purifiers are a complementary measure to the existing hygiene and distance regulations and an important component for a speedy resumption of our habitual everyday life. We are proud that our technologies are able to help schools, hospitals and other institutions



to continue operating as normal. In order to make the purchase of our devices easier, we offer attractive leasing models,” explained Jan-Eric Raschke, director & chief product owner Public Air Solutions. “Air purifiers are a sensible long-term investment, because they filter not only the SARS-CoV-2 virus, but also flu and cold viruses and free allergens. As a result, they can make a decisive contribution to reducing absenteeism due to illness or allergies in the future.”

Both devices are also designed to work particularly with low noise levels, a key decisive feature, especially in facilities such as schools or universities, where concentrated work is required.

“The most effective and safest air purifiers are equipped with HEPA (High Efficiency Particulate Air) filters. It is important to note that the term HEPA is not a protected term.

The addition ‘individually tested according to ISO 29463 & EN 1822’ ensures that these are indeed effective HEPA filters,” explained Frank Spehl, director, Engineering Life Sciences &



Mann+Hummel have developed the OurAir TK 850 and OurAir SQ 2500.



Environment Airfiltration. “Our newly qualified ePTFE membrane medium, which we use in our HEPA filters, plays a decisive role as the most technically advanced filter medium in the field of HEPA filtration with regard to energy consumption and noise generation.

Compared to HEPA filters made of micro glass fiber media, the ePTFE HEPA medium allows a very low pressure drop, which has a very positive effect on the energy balance and noise level.

The most modern, technologically advanced cleanrooms are equipped with this technology.”

In addition to mobile antiviral air

purifiers, Mann+Hummel also offers the conversion and upgrading of air conditioning and ventilation systems, which also significantly reduces the risk of infection in internal spaces.

Based on decades of experience in the field of clean rooms and operating rooms,

Mann+Hummel has also developed a new ePTFE HEPA filter in the H14 class. With filtration efficiency of more than 99.995% according to EN 1822, it offers optimum protection against viruses, bacteria and microorganisms.

The new medium makes it possible to reduce the differential pressure by 50% compared to HEPA filters made of micro glass fibre media and is thus on a par with a “pre-corona” filter system in terms of the operating costs of an air conditioning and ventilation system.

The filter also meets the requirements of class E fire protection according to EN 13501. ▶

## New filtration technology for the AHP sector

BERGAMO - The Aerie Group, which offers tailor-made solutions for companies requiring strict cleanroom standards, has launched a new filtration system for manufacturers of products for the diaper and hygiene markets. Aerie specialises in the supply of filtration, process air treatment and integrated environmental microclimatic control solutions for industrial production processes and plants.

The latest development from Alenia NW, the nonwovens division of the Bergamo-headquartered Group, is the VDF16, a modular technology which consists of a set of filtering drums which, with airflow from inside to outside, is said to keep the filtration chamber exceptionally clean.

According to Aerie, the wide filtration surfaces and the efficient regeneration system allows the installation of filter media with filtration efficiency of greater than 99.99% in line with the HEPA E10 standard, with no maintenance required.

The VDF unit also has a ventilation section which ensures the automatic stabilization of the unit’s operating pressure.

The commercial launch of the VDF follows a two-year test period with a pilot model at one of Aerie’s Italian customers. The customer runs an adult diaper production line and over the two years, tests have shown up to 60% less energy consumption compared to the customer’s previous filtration unit along with an exhaust dust concentration of just 0.2 mg/Nmc, a figure which Aerie says has never been obtained before with only one stage of filtration.

There have also been zero maintenance costs and line stops attributed to the VDF.

“The VDF offers a number of advantages,” says Aerie. “These include a clean filter chamber since the air flows from inside to outside and continuous, controlled selective interval cleaning with no pressure fluctuations. The VDF also offers certified filter media for a long service life, energy-saving operation due to low-pressure drops and a very compact design. There is also a complete recirculation of the wasted sucked material without any interference with the formation drum and any device for dust concentration.”



## Silver

Nonwovens with enhanced air filtration properties have also been the subject of a recent development from advanced material specialist Noble Biomaterials, which has been working with fellow US-based firm PureAir Filtration to develop antimicrobial filtration equipment manufactured with silver technology.

FiberShield, which can be used as an added fabric layer in particulate filters to help fight microbes amid the COVID-19 pandemic, is made of a proprietary blend of nonwoven nanofibres that are impregnated with antimicrobial Ionic+ silver technology.

The antimicrobial fabric can be used in any particulate filter and is said to be the only one on the market to offer such flexibility to filter manufacturers.

FiberShield with Ionic+ technology has been tested and proven effective by independent testing laboratories to inactivate over 99% of specific pathogens.

PureAir has also launched a second product in its antimicrobial line called Microbe-sorb, an adsorbent media that utilizes a proprietary blend of compounds to activate, enhance and deliver the strong antimicrobial properties of permanganate, a material commonly used in medical practices since the early 1800s. Independent laboratory tests show Microbe-sorb inactivates over 99% of microbes on contact.

Both products are aimed at mitigating the impact of the COVID-19 pandemic by focusing on improving air quality through gas, odor and pathogen removal.

Noble Biomaterials, Inc. is a key supplier

of antimicrobial and conductivity solutions for soft-surface applications. The company produces advanced material technologies designed for applications in the performance apparel, healthcare, industrial and emerging wearable technology markets. Its flagship brands include X-Static, Ionic+ and Circuitex.

In France, nonwovens manufacturer Lydall is installing a new production line which, as well as filtration media for face masks, will also be used to manufacture fine fibre meltblown fabrics for high-efficiency air filtration systems.

The new line will be installed its facility in Saint-Rivalain in the second quarter of 2021, substantially increasing the company's capacity to supply this critically needed material to the European market.

According to Lydall, the investment solidifies its position as one of the largest global suppliers of fine fibre meltblown filtration media, the crucial component MERV-, HEPA- and ULPA-grade air filters. Lydall will receive up to 30 per cent of funding for the investment through the support of France's Ministry of the Economy and Finance.

Lydall's Saint-Rivalain facility manufactures medium- and high-efficiency filtration media for a variety of applications that are critical to environments such as operating rooms, gas turbines and nuclear containment buildings. The facility currently has one line dedicated to meltblown filtration media production to make high-efficiency indoor air quality filters and, in response to COVID-19, has maximized its output to

further support the production of personal protective equipment (PPE) in Europe.

Meanwhile, to address the spread of healthcare-associated infections (HAIs) from aerosolized viral particles, Porex Corporation, part of the US Filtration Group, is pioneering the use of viral filtration efficiency (VFE) testing methods for the materials it supplies for use in medical devices.

As the first company to run this new analysis, Porex has been able to consistently obtain a 99.9987% VFE score for its filter materials, proving they help to protect healthcare workers and patients from aerosol-based viruses potentially present in medical settings.

Georgia-based Porex initiated VFE testing for its materials after observing the needs of its customers, which frequently fielded concerns from patients and healthcare workers seeking information that the components used in various equipment procedures would not pose risks of a HAI contraction.

Nearly one in 31 hospital patients acquires a HAI and these infections lead to an estimated 99,000 annual deaths in US hospitals alone, according to the Centers for Disease Control and Prevention (CDC).

Healthcare workers face similar, if not greater, threats due to frequent exposure to viral pathogens.

"The Covid-19 pandemic has magnified what was already a pressing issue in healthcare settings around the world, which is that inadequate filtration materials put patients and professionals at risk of contracting dangerous viruses," said Avi Robbins, vice president, of global product development and R&D at Porex. "We took the step to lead the materials industry into VFE testing to validate efficacy, and we are thrilled to confirm that our filtration and venting components are trustworthy and reliable for blocking viral particle spread."

Porex develops venting and filtration solutions via several core technology platforms such as sintered particles, bonded fibre, PTFE and Oxyphen track-etched membranes.

Filtration and venting media from Porex are suitable for suction canisters, catheters, syringes and other medical equipment utilized in aerosol-generating medical procedures. **SNW**

FiberShield with Ionic+ technology has been tested and proven effective by independent testing laboratories to inactivate over 99% of specific pathogens.



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# Biosphere expands into diaper production

Biosphere is expanding its range of hygiene products with the installation of a diaper line from Andritz Diatec.

The Biosphere Corporation, located in Dnipro, Ukraine, has been growing fast since its foundation as a domestic cleaning goods distributor in the late 1990s.

It is now a large manufacturer and supplier of hygiene products making and delivering around 1.3 million items per day. The latest addition to its hygiene products offering is a range of baby diapers, made on a production line supplied by Andritz Diatec.

Starting out as a local company in 1997, Andriy Zdesenko founded the Biosphere Corporation as distributor of international products in hygiene and domestic goods, supplying diapers and feminine hygiene products for well-known international brands. With a headcount of just 15 people, the focus at the time was to concentrate on the supply of all household and cleaning items including aluminum foil, sponges, and wet wipes. At the same time,

Zdesenko was working on a plan to becoming a major manufacturer of hygiene products, seeing the potential in Ukraine, but also in other export markets.

Fast forward to 2021 and the Biosphere Corporation now manufactures and supplies over 2,000

different items of household and hygiene products to the domestic market as well as exporting to more than 30 countries. The company turns over around US\$250 million and employs approximately 3,000 people at five locations.

As part of his plans for the Biosphere Corporation, Zdesenko was determined to become a leading baby diaper manufacturer and supplier in Ukraine. "It was my ambition to do this, as it had been at the back of my mind for a long time, but there were other manufacturing plans that got in the way, including investing in spunlace production," he says. "We are also the leading producer of wet wipes in Ukraine today, and we expect to start production of spunlace in the second decade of 2021."



Andriy Zdesenko founder and CEO of Biosphere company.

## Diaper line

At the end of June 2019, an opportunity arose to enter the baby diaper market when Luca Capriotti, Area Sales Manager, Andritz Diatec, contacted Zdesenko with a proposition for a new line. "We had known and communicated with Luca for some years before Diatec became a part of Andritz Group. At the same time, we went forward with Andritz equipment and service through our spunlace production. Then, when we began to look again at a diaper line, we realized that Diatec had become a part of Andritz as well.

"I listened to the proposition, although it wasn't exactly part of our plans to invest in a baby diaper line at the time. At the end of the conversation my plans for a baby diaper line had changed, and I decided a serious conversation with Andritz Diatec must take place."

For the meeting, Zdesenko came

Converting baby diaper line from Andritz Diatec at Biosphere facilities.



armed with a series of requests; the plan was to produce a sophisticated product for babies that was of top European quality, at the same time as being value for money. Andritz Diatec examined the details and the data on a micro level and came up with a tailor-made solution, specifically for the market in Ukraine.

“What I have always liked about Andritz is that it has reliable management and a culture of innovation,” Zdesenko added. “In the modern world, top service and innovation always come first, particularly for us as a new player in certain products and markets.”

## Production

It’s important to consider, says Capriotti, that there are a lot of different aspects involved in diaper production such as the requirement for 16 different types of raw material: “Then there were the market parameters to consider, sizes, weights, qualities. We took all in all the requests of the Biosphere Corporation, at the same time as digging deep into the data of the marketplace and product specification and came up with a tailor-made design and a that was completely fit for purpose.”

“We learned very early about the complexity of baby diaper production from Andritz Diatec,” adds Zdesenko. “We are talking about a highly developed sandwich involving many kind of different raw materials all going through the line at high speed. There should be no waste, top quality, and at maximum efficiency. If you get any of these wrong, you lose reputation and lose money.

“And at the same time you have major, experienced international competitors who are already supplying a competitive market. It is a very brave challenge, and a reliable partner is vital.”

## COVID-19

The official contract for the new open baby diaper line was signed on the 23 July 2019 and a new, purpose-built factory was constructed. The project of preparing and installing the new open baby diaper line went according to plan over the space of the next seven months, leading up to March 2020, when commissioning and start-up of the line was planned to take place.

The equipment and Andritz Diatec



High quality baby diapers produced by Biosphere.

technicians arrived in early March for the installation and start-up phase of the project, and just one week after arrival the COVID-19 pandemic struck. With Italy’s borders closing fast, it meant that the technicians had to leave Ukraine just as the vital part of the project was beginning.

“This was a real challenge,” says Zdesenko. “We quickly formed a plan using our very experienced Biosphere Corporation production experts, along with online support from Andritz Diatec.

“We were fortunate to have our head of Diapers Production, Robert Dreja onsite at the Dnipro site to make sure that everything could continue as planned. We utilized every kind of communication platform, using video and audio so that Andritz Diatec experts could speak to our technicians live as they prepared the line for start-up.”

The new baby diaper line started up on time and on schedule despite all the challenges of COVID-19 in April 2020, “We had the usual teething problems associated with any start-up, but we were delighted with what we achieved, particularly in the middle of a pandemic,” says Zdesenko. “I am proud of the production team at the Biosphere Corporation, and pleased with the professional management and remote technical support given by Andritz Diatec.”

## Facility

The result is that Biosphere claims to have the most modern facility in

Ukraine for the production baby diapers on a line that will produce 600 diapers per minute of top quality. Capriotti says: “The type of product the Biosphere Corporation can produce with this line is equal to the top products in any developed market allowing the company to expand in the Ukraine as well as to other international markets.”

Noting that Biosphere donated the first 300,000 diapers it produced on the line to charities supporting families in need, single parents and public hospitals across Ukraine as the pandemic hit, Zdesenko adds: “We are now delivering our diapers to all territories in Ukraine, and we are starting production of private label products for the local market. We also have our own brand, Bambik, which is making a mark in the biggest discount stores and well as in ecommerce offerings.”

Future growth plans for the Biosphere Corporation include a facility for the production of raw materials for its own products and there are additional plans for five new lines – three baby diaper lines including pants, and two lines for feminine products. The company is also looking to move into tissue production at some point in the near future.

“We have already identified all the locations for the new lines and will be opening them up in the next two to three years,” concludes Zdesenko. **SNW**

# Bio-based polymers set the pace

A new report from the Nova Institute shows that for the first time, the growth rate for bio-based polymers is higher than fossil-based polymer market growth.

2020 was a promising year for bio-based polymers: sold out PLA in 2019 has led to the installation of increased capacities, PE and PP made from bio-based naphtha are breaking ground and future expansion for bio-based polyamides as well as for PBAT, PHAs and casein polymers is on the horizon. As a new report from Germany's Nova Institute shows, only bio-based PET showed a lower growth rate.

The report, *Bio-based Building Blocks*

and *Polymers – Global Capacities, Production and Trends 2020–2025*, also shows that several global brands are already expanding their feedstock portfolio to include, next to fossil-based, sources of renewable carbon, CO<sub>2</sub>, recycling and especially biomass, increasing the demand for bio-based as well as biodegradable polymers. Nevertheless, at the same time, there is a lack of support from political circles, which are still mostly promoting biofuels and bioenergy.

## Volume

In 2020, the total production volume of bio-based polymers was 4.2 million tonnes, which is 1% of the total production volume of fossil-based polymers. For the first time in many years however, the CAGR is at 8%, significantly higher than the overall growth of polymers (3–4%). This is expected to continue until 2025 (see Figure 1).

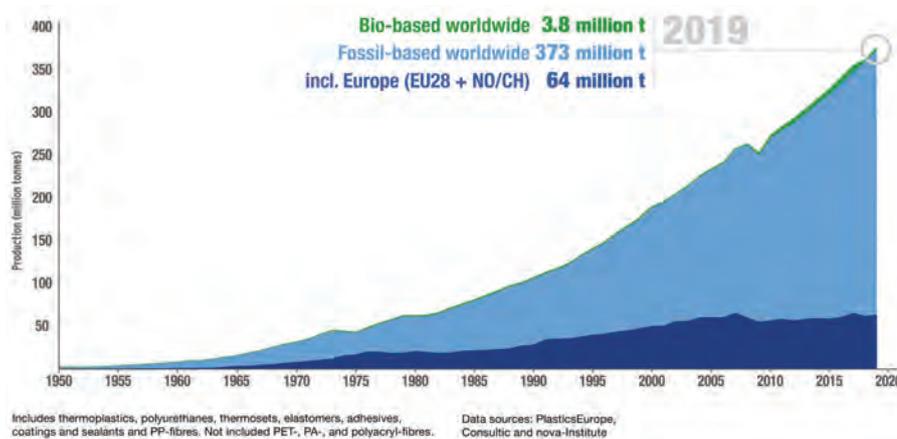
Overall, the global land requirement for bio-based polymers is only 0.006 % of the global agricultural land. The major biomass feedstock used for bio-based polymer production is glycerol as a biogenic by-product (37%).

## Capacity increase

According to the report, the increase in production capacity from 2019 to 2020 was mainly based on the expansion of polylactic acid (PLA) and poly(butylene adipate-co-terephthalate) (PBAT) production in Asia as well as worldwide epoxy resin production.

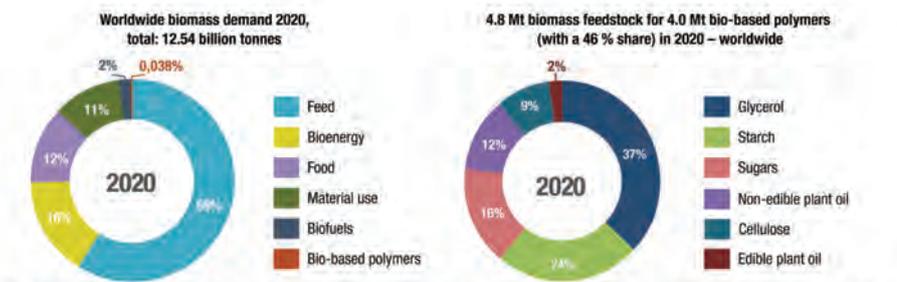
Also, increased and new production capacities for polybutylene succinate and copolymers (PBS(X)) and bio-based polyethylene (PE) and polyurethanes (PUR) were reported in 2020. In particular, polyamides (PA) and polypropylene (PP) will continue to grow significantly (about 36%) until 2025 while capacities for polyhydroxyalkanoates (PHA) will grow in Asia and North America. Additionally, casein polymers in Europe will increase by 32% until 2025, followed by increases in PE in South America and Europe, with PLA mainly in Europe and PBAT in Asia at about 8%.

**FIGURE 1: PLASTICS PRODUCTION FROM 1950 TO 2019**



Includes thermoplastics, polyurethanes, thermosets, elastomers, adhesives, coatings and sealants and PP-fibres. Not included PET-, PA-, and polyacryl-fibres. Data sources: PlasticsEurope, Consultic and nova-Institute

**FIGURE 2: BIOMASS UTILISATION WORLDWIDE. FIRST AND SECOND GENERATION, TOTAL AND FOR BIO-BASED POLYMERS**



The 0.038% share of biomass used to produce bio-based polymers translates into an area share of only 0.006%. This is due to various factors: high-yielding crops (like maize) are used for the production of bio-based polymers leading to a high area efficiency; the yields are not only used for polymer production but also for animal feed (the protein share) and thus only a part is allocated; and finally, because the biomass is a process by-product that uses no land (such as glycerol).

## Bio-based feedstocks

Considering the steadily increasing demand for bio-based polymers, the

Nova Institute also highlights the importance of taking the issue of biomass feedstocks into account. This is especially true for the recurring debate on the use of food crops for bio-based polymer production.

Figure 2 shows the worldwide biomass utilisation in 2020. The total demand for biomass was 12.5 billion tonnes for feed, bioenergy, food, material use, biofuels as well as bio-based polymers. While the majority of the biomass (59%) is used for feed production, only 0.038% is needed for bio-based polymer production.

This, says the report, results in a biomass feedstock demand of 4.8 million tonnes for the production of 4 million tonnes of bio-based polymers and corresponds to an agricultural land share of only 0.006%.

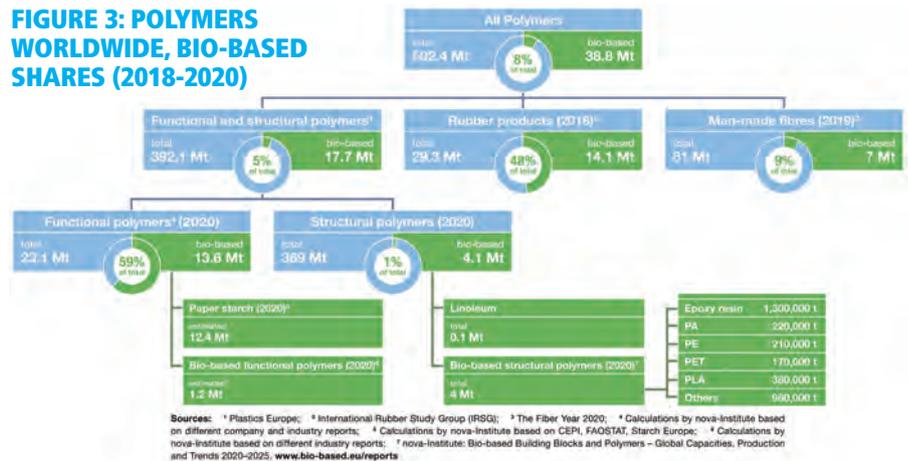
This small area share is due to various factors: the major feedstock used for bio-based polymer production is glycerol (37%); as a biogenic process by-product from biodiesel production it represents a biomass without land use. This glycerol is mainly used for epoxy resin production via epichlorohydrin as an intermediate. The utilised biomass also comprises 24% starch and 16% sugars with both feedstocks derived from high-yielding crops such as maize, sugar beet or sugar cane, having a high area efficiency. 12% of the biomass is from non-edible plant oil such as castor oil, 9% from cellulose (mainly used for cellulose acetate) and 2% from edible plant oil.

From the 4 million tonnes of produced bio-based polymers (fully and partly bio-based) only 1.9 million tonnes are actual bio-based components of the polymers (46%). Considering this fact, 2.5 times more feedstock is needed than actually is incorporated into the final product. This amount of 2.9 million tonnes (61%) of feedstock that is not ending up in the product is due to a high number of conversion steps and related feedstock and intermediate losses, as well as the formation of by-products.

## Sustainability and renewable carbon

The only way for polymers, plastics and chemicals to become sustainable, climate-friendly and part of the circular economy, suggests the report, is the

**FIGURE 3: POLYMERS WORLDWIDE, BIO-BASED SHARES (2018-2020)**



complete substitution of fossil carbon with renewable carbon from alternative sources: biomass, CO<sub>2</sub> and recycling (<http://www.renewable-carbon.eu>). This necessary transition is already on the strategic agenda of several global brands that are already expanding their feedstock portfolio to include, next to fossil-based, all three sources of renewable carbon. This rethinking from the market point of view, especially in the use of biomass, will, and already did, increase the supply of bio-based as well as biodegradable polymers.

Nevertheless, the Nova Institute highlights that the market remains challenging from a political perspective and in terms of crude oil prices, as major advantages of bio-based polymers have not been politically rewarded yet. These are that bio-based polymers replace fossil carbon in the production process with renewable carbon from biomass which is indispensable for a sustainable, climate-friendly plastics industry; and that biodegradability is offered by almost half of the produced bio-based polymers. This can be a solution for plastics that cannot be collected and enter the environment. In these situations, they can biodegrade without leaving behind microplastics.

Only a few countries such as Italy, France and probably Spain, says the report, will politically support this additional disposal path.

## Drivers and policy

The most important market drivers in 2020 were brands that want to offer their customers environmentally friendly solutions and critical consumers looking

for alternatives to petrochemical products.

If bio-based polymers were to be accepted as a solution and promoted in a similar way as biofuels, the Nova Institute says that annual growth rates of 10 to 20% could be expected. The same would apply, should the oil price rise significantly. Based on the already existing technical maturity of bio-based polymers, considerable market shares could be gained in these cases.

## Bio-based polymers

The global polymer market includes functional and structural polymers, rubber products as well as man-made fibres (Figure 3). The report focuses on the bio-based share of the structural polymers which are composed of the structural part and the bio-based linoleum part, together amounting to 4.1 million tonnes.

The total amount of bio-based functional polymers consists of bio-based functional polymers and paper starch, yielding 13.6 million tonnes. As well as these two groups making up 17.7 million tonnes of bio-based functional and structural polymers, rubber products and man-made fibres can be bio-based. In total, 14.1 million tonnes of rubber products and 7 million tonnes of man-made fibres are from bio-based resources.

Figure 4 shows all (semi-) commercial pathways from biomass via different intermediates and building blocks to bio-based polymers. As in previous years, several pathways and some new intermediates were added. Bio-based building blocks and polymers analysed in detail within the report are highlighted in bold. ▶

Figure 5 shows the different pathways of bio-based “drop-in”, “smart drop-in” and “dedicated” inputs within the chemical production chain. For each group, certain bio-based polymers are exemplarily shown.

Additionally, biodegradable bio-based polymers are highlighted with a green dot. The different bio-based polymer groups are subject to different market dynamics. While drop-ins have direct fossil-based counterparts and can substitute them, the dedicated ones have new properties and functionalities that petrochemistry does not provide.

Both have their own advantages and disadvantages from a production and market perspective. While bio-based drop-in chemicals are bio-based versions of existing petrochemicals, which have established markets and are chemically identical to existing fossil-based chemicals, smart drop-in chemicals are a special subgroup of drop-in chemicals. Even though they are chemically identical to existing chemicals based on fossil hydrocarbons, their bio-based pathways provide significant process advantages compared to the conventional pathways.

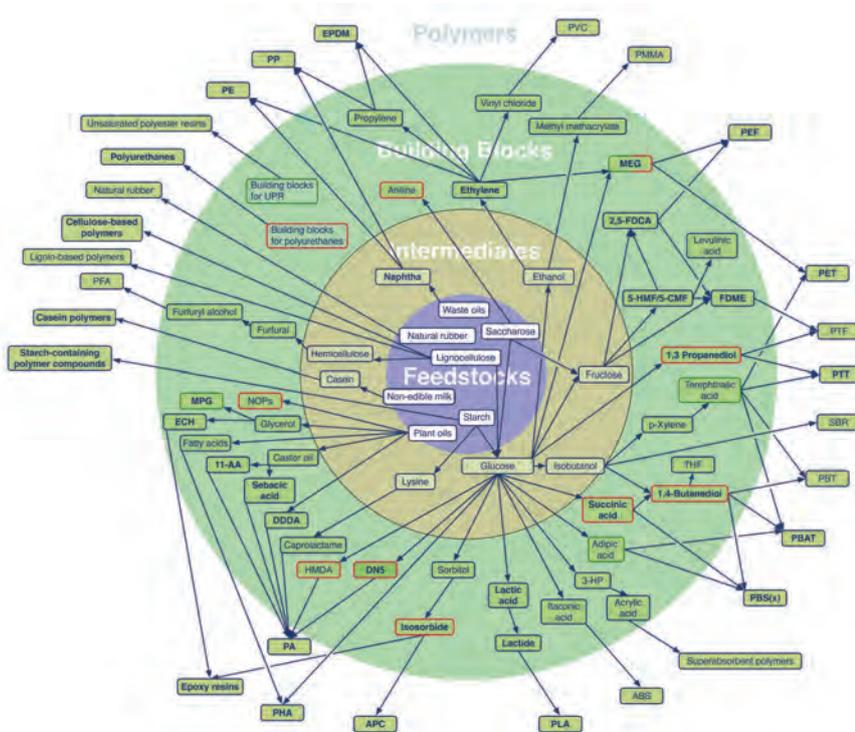
Additionally, these bio-based pathways

can be built on completely new approaches, such as epichlorohydrin, where the fossil feedstock propylene is not substituted by bio-based propylene but with glycerol from biodiesel production. Dedicated bio-based chemicals are chemicals which are produced commercially via a dedicated pathway and do not have an identical fossil-based counterpart.

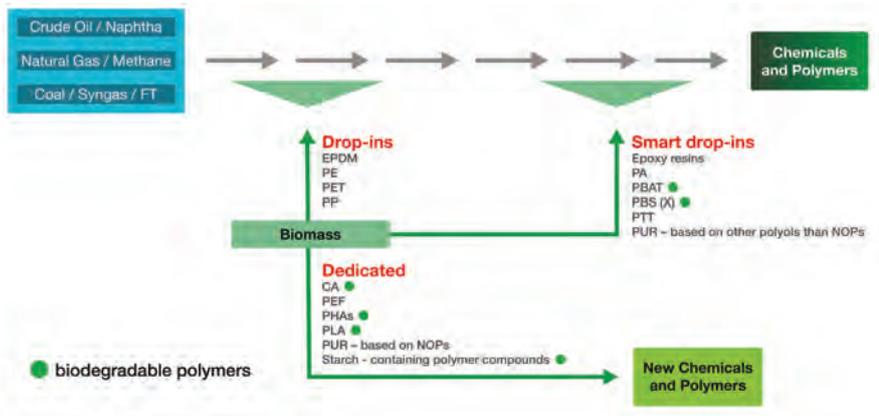
Figure 6 and Figure 7 summarise the results of the report and show the share of the bio-based polymer production capacities in 2020 and the development of capacities from 2018 to 2025 on the basis of forecasts by current and some new producers.

The total installed capacity in 2020 was 4.6 million tonnes with an actual production of 4.2 million tonnes. An increase to 6.7 million tonnes capacity in 2025 is expected, indicating an average compound annual growth rate (CAGR) of about 8%. The following polymers show an even higher increase significantly above the average growth rate: PA will continue to grow by 37% and PP by 34% until 2025. Casein polymers in

**FIGURE 4: PATHWAYS TO BIO-BASED POLYMERS**



**FIGURE 5: SCHEMATIC DIFFERENTIATION OF PATHWAYS OF DROP-IN, SMART DROP-IN AND DEDICATED BIO-BASED CHEMICALS AND POLYMERS**



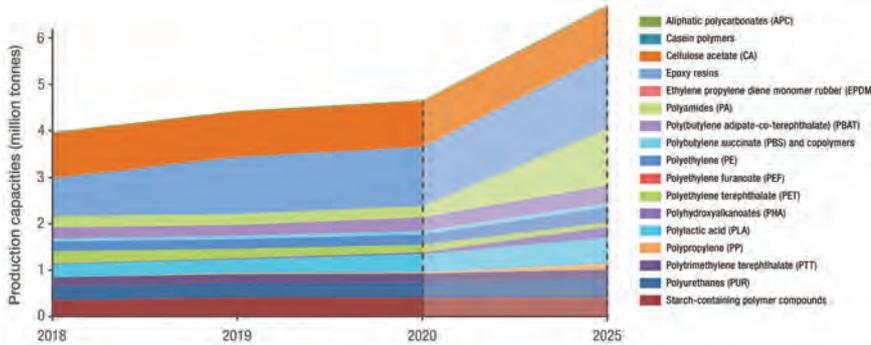
**FIGURE 6: SHARES OF BIO-BASED POLYMERS PRODUCTION CAPACITIES 2020.**

Total production capacity of 4.6 million tonnes

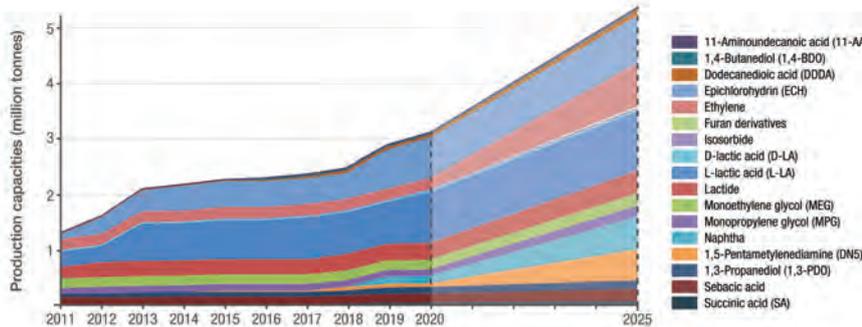


- Aliphatic polycarbonates (APC)
- Casein polymers
- Cellulose acetate (CA)
- Epoxy resins
- Ethylene propylene diene monomer rubber (EPDM)
- Polyamides (PA)
- Poly(butylene adipate-co-terephthalate) (PBAT)
- Poly(butylene succinate) (PBS) and copolymers
- Polyethylene (PE)
- Polyethylene furanoate (PEF)
- Polyethylene terephthalate (PET)
- Polyhydroxyalkanoates (PHA)
- Polylactic acid (PLA)
- Polypropylene (PP)
- Poly(trimethylene terephthalate) (PTT)
- Polyurethanes (PUR)
- Starch-containing polymer compounds

**FIGURE 7: BIO-BASED POLYMERS. EVOLUTION OF WORLDWIDE PRODUCTION CAPACITIES FROM 2018 TO 2025**



**FIGURE 8: BIO-BASED BUILDING BLOCKS. EVOLUTION OF WORLDWIDE PRODUCTION CAPACITIES FROM 2011 TO 2015**



Europe will increase by 32% until 2025, followed by 8% increases in PE and a 7% growth for PLA and PBAT.

## Building blocks

In Figure 8, the report illustrates the development of capacities for the main bio-based building blocks used for the production of polymers from 2011 to 2025. The building blocks are utilised for the synthesis of structural and functional polymers as well as ingredients in various other applications such as food, feed, cosmetics or pharmaceuticals, and therefore show a higher average CAGR than polymers. The overall production capacity of bio-based building blocks increased about 7% (212,000 t/a) in 2020. This increase is mainly based on L-lactic acid and epichlorohydrin (ECH). The overall forecast for bio-based building blocks worldwide indicates a growth by 11% (CAGR) until 2025, with 1,5-pentamethylenediamine (DN5), naphtha, ethylene and different furan derivatives being the main drivers.

Following Asia as the leading region, which has installed the largest bio-based production capacities worldwide with 47% in 2020, Europe follows with 26%,

followed by North America with 17% and South America with 9%, respectively (Figure 9). With an expected CAGR of 16% between 2020 and 2025, the report notes that Asia displays the highest growth of bio-based polymer capacities compared to other regions of the world. This increase is mainly due to higher production capacities for PA, PBAT, PHA and PLA.

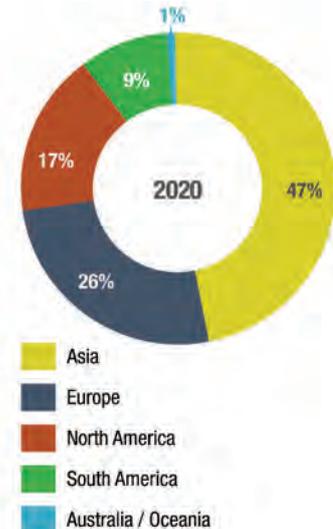
## Market segments

Today, bio-based polymers can be used in almost all market segments and applications, but the various applications per polymer can be very different. Figure 10 shows a summary of the applications for all bio-based polymers covered in the report.

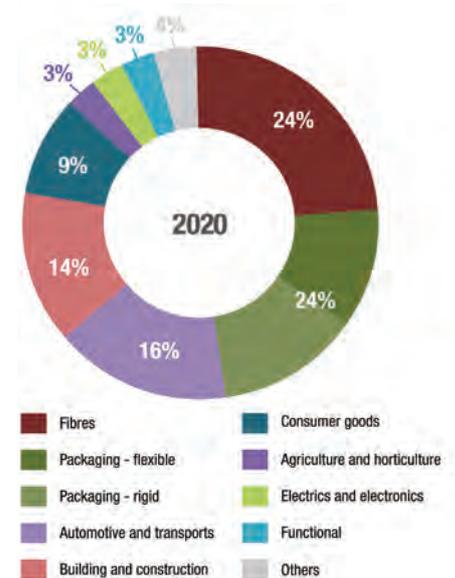
In 2020 fibres including woven, nonwoven (mainly cellulose acetate (CA) and poly(trimethylene terephthalate) (PTT)) have the highest share with 24%. Packaging, both flexible and rigid, also has a 24% share in total, followed by automotive and transport with 16% (mainly epoxy resins, PUR and aliphatic polycarbonates (APCs)), building and construction with 14% (mainly epoxy resins and PA), and consumer goods with

**FIGURE 9: GLOBAL PRODUCTION CAPACITIES OF BIO-BASED POLYMERS PER REGION 2020**

without cellulose acetate, epoxy resins and polyurethanes



**FIGURE 10: SHARES OF THE PRODUCED BIO-BASED POLYMERS IN DIFFERENT MARKET SEGMENTS IN 2020**



9% (mainly starch-containing polymer compounds, PP and casein polymers).

The agri- and horticulture, electrics and electronics as well as functional and other segments have a market share of under 5%, respectively. **SNW**

All graphics in this report:



# Levels of complexity

Consulting editor **Adrian Wilson** examines the latest progress in providing the absorbent hygiene products industry with more sustainable feedstocks.

The European Union's Single-Use Plastics Directive (SUPD) and similar legislation being planned in North America and elsewhere, along with the EU's plan to introduce mandatory separate collection for waste clothing by 2025, is now seeing a range of initiatives that promise to change the face of the \$90 billion markets for absorbent hygiene products (AHPs).

While biofuels remain the main alternative focus of the oil industry, there is a marked swing towards the development of new biopolymers, bioplastics and bio-based synthetic fibres that is attracting significant new investments. Consumer product brands and retailers at the other end of the long supply chain are also highly active, and new start-ups – notably in the field of alternative cellulosic fibres derived primarily from cotton-rich waste clothing – as well as plastic recycling projects, are suddenly finding it easy to attract new investors.

## AHPs

The scale of making the AHPs market in any way sustainable, let alone circular, should not be underestimated of course.

Baby diapers, femcare products and those for coping with adult incontinence (AI), are all currently based on

petroleum-derived synthetic fibres, primarily based on spunmelt polypropylene (PP), polyethylene (PE) or polyester (PET), in combination with varying degrees of wood pulp, superabsorbent polymers (SAPs) and elastics.

There are around 1,200 machines across the world making baby diapers alone, typically at a rate of 1,000 a minute, and an average scrap rate of 2.5% equates to 30,000 diapers being discarded every minute, long before reaching the retail shelves.

The considerable post-consumer waste AHPs generate is meanwhile estimated to be in the region of 30 million tons each year, all of which is either incinerated or sent to landfill. This equates to 1.5 billion diapers that are disposed of globally daily – 18,000 each second. And this waste is not currently in a fit state to be recycled by simple recovery of its constituent parts.

Unsurprisingly, AHP post-consumer waste is becoming a bigger and more visible problem all the time, especially as other products continue to be successfully recovered from landfills.

## Polypropylene

PLA (polylactic acid), as a valid alternative raw material to PP is now at an advanced stage of growing capacity and commercialisation, while PHAs (polyhydroxyalkanoates), as previously reported in *Sustainable Nonwovens*, especially from Danimer, hold much promise.

Attempts to produce a viable bio-PP have also been made over the years, most notably by Procter & Gamble, working with Braskem of Brazil, but proved unsuccessful.

However, in the past two years, two of the major European PP manufacturers – LyondellBasell, one of the world's largest plastics, chemicals and refining companies globally, headquartered in Rotterdam, The Netherlands, and Vienna, Austria-headquartered Borealis – have announced progress with a technology for producing bio-PP from agricultural waste.

Both projects are joint ventures with Neste, based in Espoo, Finland. Neste produces bio-based alternatives to conventional fossil-based feedstocks for the production of polymers and



There are around 1,200 machines across the world making baby diapers alone, typically at a rate of 1,000 a minute.

chemicals and now has an annual production capacity of three million tons of renewable products.

Based on Neste's technology, in June 2019 LyondellBasell announced the first parallel production of bio-based PP and bio-based low-density PE at a commercial scale.

LyondellBasell has introduced a new Neste renewable feedstock to its site in Wesseling, Germany, which was converted directly into the bio-based PE and PP.

Borealis also announced a strategic co-operation for the production of renewable PP with Neste in October 2019.

It enabled Borealis to start using Neste's 100% renewable propane produced with its NEXBTL technology as a renewable feedstock at its facilities in Kallo and Beringen in Belgium.

Borealis has used Neste's renewable propane, produced in Rotterdam, to create an entire portfolio of applications based on renewable-PP called Bornevables, commercially launched in March 2020.

## Milestone

Marking a major milestone in the development and expansion of a supply chain for bio-based polymers from a major manufacturer of spunmelt nonwovens for the AHPs market, in November 2020, Fibertex Personal Care, headquartered in Aalborg, Denmark, shipped its first batch bio-based spunmelt nonwovens.

This range of nonwovens fabrics is based on a high-purity, recycled plastic developed with SABIC (Saudi Basic Industries Corporation), the multinational chemical manufacturing company headquartered in Riyadh, Saudi Arabia.

The fabrics are made from SABIC Trucircle circular PP which uses feedstock derived from previously used plastics.

The material is part of the SABIC PureCares family of polypropylene for AHPs that was introduced at the beginning of 2020. The certified circular PP is created from post-consumer mixed plastics that have been broken down into their molecular building blocks and then



An inevitable end-use in 2020 for the new Bornevables range of bio-PP manufactured by Borealis.

“Marking a major milestone, the first batch of bio-based spunmelt nonwovens for AHPs was shipped by Fibertex Personal Care in November 2020.”

repolymerized to create virgin plastics.

Fibertex Personal Care is now providing the certified circular nonwovens to customers from its Comfort, Elite, Dual and Loft product ranges.

## PET polyester

While the recycling of PET plastic bottles into fibres is well established and used extensively for nonwovens by major players such as Freudenberg, these feedstocks should ideally be going into making new plastic bottles, in order to establish a truly circular chain.

It is for this reason, that there has been much interest in the patented Gen II depolymerization technology, of Loop Industries, headquartered in Montreal, Canada, for turning post-consumer waste PET into its primary building blocks, or monomers – DMT and MEG – which meet established purity criteria for producing virgin-quality PET.

It further can accommodate feedstocks such as old clothing, carpets and even mattresses, suggesting a major move towards circular chains.

In October 2020, however, the validity of Loop's depolymerisation process was

questioned by financial analyst Hindenburg Research, leading to a damaging impact on Loop's share price.

Loop faced more trouble in 2020, with a joint venture depolymerisation plant with Indorama Ventures scheduled to start production last July still yet to be built. This resulted in a five-year contract with a major Coca Cola supplier being cancelled, although it is now being renegotiated.

The delay in building the plant with Indorama has been put down to Covid-19 issues, and in response to the allegations

made by Hindenburg, an independent verification of Loop's process has subsequently been conducted by Kemitek, a not-for-profit College Centre for Technology Transfer specialised in the fields of green chemistry and chemical process scale-up.

## Methodology

Kemitek subsequently established a rigorous and independent methodology for this verification.

Its team was on site at Loop's Terrebonne, Quebec, facilities for 16 days to verify each step of technology at mini-pilot (25 L reactor) and pilot scales (6000 L reactor), from feedstock (post-consumer waste PET plastic) to the final purified monomers, DMT and MEG.

Kemitek received the feedstock directly from Loop's supplier. It then dried, sampled, sealed and shipped the waste plastic feedstock to Loop. The feedstock was also sent to an external laboratory by Kemitek for analysis and characterisation.

Once on site, the Kemitek team took possession of the feedstock, controlled and secured the entire process to always ensure the chain of custody via human supervision and numbered lockouts and seals on the equipment.

Throughout the process, the Kemitek team took samples at key steps for subsequent analysis to confirm there was no tampering by Loop's team.

The final purified monomers were

secured by Kemitek and sent for analysis to ISO 17025 certified external laboratories. These analyses confirm the purity of the resulting monomers.

The feedstock used throughout the verification consisted of pallets of post-consumer waste PET plastic. In appearance, it was a mix of clear, grey and coloured flakes and fines with a PET content varying between 86% and 95%, as determined by a Loop-conducted analysis. Feedstock contaminants identified by external laboratories mandated by Kemitek include printed film, silicone elastomer and polystyrene.

### Purity

The final report issued by Kemitek, which was filed late in December as an exhibit to Loop's Form 8-K, draws the following conclusions:

"The Kemitek team was able to understand, witness and verify the execution of Loop's Gen II PET depolymerization technology from feedstock to monomers. While the verification was not intended to certify the yields or economic viability of the technology, as these were out of the scope of our mandate, our observations confirmed the production of significant quantities

of DMT and MEG from a post-consumer waste PET feedstock at both mini-pilot and pilot scales.

"Characterisation of the finished products also confirmed that the quality of the primary PET plastic building blocks meets Loop's specifications for the production of PET resin and polyester fibre, achieving DMT purity ranging from 99.7% to 100.1% and MEG purity ranging from 98.2% to 98.9%."

### PureCycle

PureCycle Technologies (PCT) started up a pilot plant for PP resins recycling in Hanging Rock, Ohio, with an annual capacity of 70 tons in July 2019 and is now planning to build a commercial plant capable of processing 50,000 tons annually within the next two years at the same site.

While PCT operates independently from Procter & Gamble, which invented the resin recycling process, it is likely to play a major role in helping the corporation meet ambitious goals. P&G intends to make all of its packaging recyclable or reusable, and to replace 50% of all of the virgin plastics it uses with recyclable or reusable alternatives, by 2030.

With sales of \$71 billion in its financial year to June 2020, P&G is a huge user of PP, in nonwovens but also in injection moulded components and plastic films.

According to John Layman, Procter & Gamble's head of corporate R&D and the founding inventor of the PCT process, plastics have too much value to be thrown away, but the price of a single plastic component is so low that it is difficult to recapture any of the that value.

Achieving quality that is just like virgin PP with the same regulatory approvals and restoring it to products with no trade-offs in an endless cycle is PCT's goal, and the three main challenges it faces are in removing contamination, colour, and odour.

The plastics recycling waste stream also consists of a huge diversity of different plastics in different forms, so pulling a single polymer out of it profitably is extremely tricky.

PCT's proprietary technology employs a hydrocarbon solvent at elevated temperatures and pressures, and a novel combination of standard chemical engineering operations. These processes purify the recycled resins via the removal of odour, volatile organic chemicals, and other organic and particulate contaminants and additives.

It is a polymer-to-polymer process to feed dirty plastic in and get clear plastic out and the end product has the same mechanical properties as virgin PP with the same tensile modulus and impact strength.

A key advantage is the simplicity of PCT's process, which requires a lot less steps than pyrolysis, consumes a lot less energy and ultimately is likely to be much more cost effective.

### PP recycling

A number of other new PP recycling ventures have recently been announced, including Braskem's collaboration with Encina Development Group, to pursue a long-term partnership in the production of circular, recycled PP.

Braskem is the largest polyolefins producer in the Americas with a growing biopolymers portfolio. In November 2020, it committed to significantly expanding its efforts to eliminate plastic

Loop's patented PET depolymerisation process has now been independently verified.



waste in the environment by 2030 and to achieve carbon neutrality by 2050.

Texas-based Encina's technology produces renewable chemicals made from post-consumer plastic and the company will break ground on a new facility in the second half of 2021. Once completed, the facility is targeted to process 175,000 tons of plastic waste, converting it into more than 90,000 tons of recycled chemicals per year. The plant is designed to expand to 350,000 tons of incoming plastic waste in future phases. Encina's proprietary technology economically extracts chemicals from plastic through catalytic pyrolysis. The process utilizes mixed plastics from post-consumer sources, which are currently costly to recycle, and often destined for landfills.

Braskem is meanwhile aiming to grow its I'm Green recycled products portfolio to sales of 300,000 tons by 2025 and one million tons by 2030.

## European investments

In Europe, both Borealis and Lyondell-Basell have recently announced investments in more PP recycling.

In January 2021, Borealis and Tomra, an advanced collection and sorting systems developer headquartered in Asker, Norway, started up a new advanced mechanical recycling plant in Lahnstein, Germany.

The plant processes both rigid and flexible plastic waste from households and unlike many current recycling plants, will produce the advanced solutions necessary for use in highly demanding plastic applications in various industries, including automotive and consumer products. With high purity, low odour, high product consistency and light colour fractions, the resulting Borcycle M grade recycled polymers will meet customer quality requirements across the value chain, the company claims.

Procter & Gamble will be a key customer for this plant.

In December 2020, LyondellBasell and the Paris-headquartered international waste operator Suez Group announced the joint acquisition of Tivaco, a plastics recycling company located in Blandain, Belgium.

Tivaco will become part of Quality Circular Polymers (QCP), the existing

FaterSMART's Italian AHPs recycling plant has been fully operational since 2017, with an annual capacity of 10,000 tons.



“ The Embraced project's introduction of recycling bins for AHPs in Amsterdam has been suspended due to Covid-19 issues, but a biorefinery is now being planned. ”

50/50 plastics recycling joint venture LyondellBasell and Suez. With this transaction, QCP is increasing its production capacity for recycled materials to approximately 55,000 tons per year. Recycled materials from QCP can so far be found in consumer products such as Samsonite's S'Cure ECO luggage collection.

## AHPs Recycling

The recycling of synthetic fibres like PP and PET as well as all other pure components of AHPs – SAPs, wood pulp and elastics – is fully achievable, but the problem is what happens after they have been turned into multi-component products like diapers and are considered for recycling after consumer use.

In Italy, the first used AHPs recycling

plant has been established in Contarina, Italy, operated by FaterSMART, a subsidiary of Fater, the Italian joint-venture between Procter & Gamble and Angelini, with an annual capacity of 10,000 tons.

From a pilot plant in 2013, the Contarina operation has moved to demonstration scale in 2015 and has progressed to fully working industrial operation.

The EU Horizon 2020 Embraced project's introduction of recycling bins for AHPs in Amsterdam in January 2019 has now unfortunately been suspended due to Covid-19 issues.

However, during its operational period, the logistics for collecting 10,000 tons a year of used AHPs from households and institutions to be turned back into feedstocks collection and an adequate storage system in Amsterdam were established.

Suez Group has subsequently been called in by the project's operators, Procter & Gamble, Terracycle, AEB and FaterSMART, to prepare a biorefinery for recycling Amsterdam's collected AHP waste.

Watch this space, because this is an extremely fast-moving field right now. **SNW**

Spinova's cellulosic filament fibre is produced from pulp without the use of a dissolving process.

# Far from pulp fiction

Innovations in cellulosic fibres derived from textile and clothing waste are poised for commercialisation in 2021.

Start-up companies have recently made huge progress in developing cellulosic fibres derived from textile and clothing waste and some of these fibres are poised for commercialisation in 2021.

Much like the makers of nonwoven-based absorbent hygiene products, textile and apparel brands and retailers are under immense pressure to provide products which are environmentally sustainable, according to a new report from *Textiles Intelligence*. At the same time, there is an urgent need to reduce the amount of waste generated by the fashion industry, which is estimated at 92 million tons a year and an estimated \$500 billion in retail value lost.

Making cellulosic fibres from materials derived from textiles and clothing waste is one way of addressing these two key challenges – not least because such fibres are biodegradable and are therefore considered to be more environmentally sustainable than synthetic fibres and cellulosic fibres made using conventional processes.

Furthermore, cellulosic fibres derived from textile and clothing waste can themselves be used as feedstocks in recycling processes when the textiles and garments which incorporate them have reached the ends of their useful lives, contributing towards the development of a circular economy.

## Disassembly

Some start-up companies such as Evrnu and Renewcell have focused on the development of pulp derived from textile waste. This pulp can, in turn, be used as an alternative to wood pulp in the manufacture of cellulosic fibres such as lyocell and viscose.

Evrnu, based in Seattle has secured \$11.7 million in to develop a patent-pending process it calls NuCycl.

Garments made with the NuCycl technology can be disassembled at the molecular level and regenerated multiple times, helping brands draw down the impact related to the creation and disposal of garments. NuCycl has had early adoption pledges from brands

including Levi's, Adidas and Stella McCartney, with Target to follow. The technology will be commercially available to brand and retail partners over the next 12-24 months. Evrnu is in various stages of early research and development with several other technologies designed to break down garment waste.

"Our vision is to create garments that can easily come back into the system to be broken down again and again," said co-founder and president Christopher Stanev. "Through work with our brand partners we have found ways to continually improve product performance and deliver better quality with greater value in better ways. We have a pipeline of technologies that we will continue to bring to market, all of which will reduce the fashion industry's impact on natural resources."

## Circulose

In December 2020, Renewcell finalised a loan facility from Nordea, the Swedish Export Credit Corporation and Finnish export credit agency Finnvera for SEK 450 million in order to build and

commission a 60,000 ton capacity textile recycling plant

The recycled material will be turned into Renewcell's Circulose dissolving pulp which H&M Group has committed to scale up across its brands over the next five years, following an initial collection launched during 2020.

The new plant, in Sundsvall, Sweden will be built on an industrial site belonging to SCA, in a building currently housing a publication paper machine undergoing decommissioning.

Finnish industrial machinery manufacturer Valmet will be the main supplier of the new equipment, with a SEK 232 million contract covering 40% of the value of the equipment to be installed.

"This project is an excellent example of how we can utilise our wide expertise in bio, pulp and paper technology in textile recycling," said Rickard Andersson, vice president of fibre processing at Valmet "In a project like this Valmet is not only a technology provider, this is a joint journey. During the past year we have worked together to fine-tune the technology for textile recycling. We have utilised the pilot machines at our Swedish and Finnish R&D centres to do test runs in turning recycled textile raw material into dissolving pulp sheets."

## Scale

Renewcell's technology has been specifically designed to run on proven equipment in order to ensure scalability.

The contract with Valmet covers machine equipment installation, commissioning and ongoing technical support. Valmet will supply process equipment for, stock prep, bleaching and drying commonly used in large scale state-of-the-art dissolving pulp plants throughout the world. A significant share of the equipment to be installed will be delivered locally from Valmet's own site in Sundsvall. The plant is scheduled to begin operations in the first half of 2022.

Meanwhile, Infinited Fiber Company has developed its own cellulosic fibre (see page 35) and Spinnova, of Jyväskylä, Finland, is scaling up the manufacture of its specialist cellulosic filament fibre which is produced from pulp without the use of a dissolving process. In addition, Spinnova is conducting research into the use of textile waste and bio-based waste as feedstocks.

## Opportunity

Some of these companies are poised to commercialise their products in 2021, representing an exciting opportunity for textile and apparel companies seeking to improve the environmental sustainability of their products.

Indeed, cellulosic fibres derived from textile and clothing waste are attracting high commercial interest, and a number of the apparel industry's key players – including H&M Group, Kering and Patagonia – have invested in start-ups innovating in this field. Other companies and others have established partnership

agreements through which they are exploring the use of such fibres in the manufacture of innovative new products.

Looking to the future, demand for cellulosic fibres – and lyocell in particular – is set for healthy growth, and so there is much opportunity for providers of cellulosic fibres derived from textile and clothing waste. Collaboration is key to bringing such products to market and, to support progress in this area, some major industry projects have been established, including the Full Circle Textiles Project: Scaling Innovations in Cellulosic Recycling, and the New Cotton Project.

## Competition

However, *Textiles Intelligence* notes that start-ups entering the market are competing with some industry heavyweights – including Asahi Kasei, Birla Cellulose, Lenzing, Sateri, and Tangshan Sanyou. Consequently, they will need to keep abreast of the latest developments – notably those relating to traceability. Consumers are demanding increasingly that materials incorporated in textile and apparel products are capable of being traced along the entire supply chain. This is considered to be particularly important in relation to fibres derived from recycled materials, and Lenzing has made major strides in this area through its use of innovative blockchain technology. **SNW** [www.textilesintelligence.com](http://www.textilesintelligence.com)

Shredded denim and Circulose pulp.



Finished sheets of Circulose pulp.

# Fermented focus

A \$101.4 million US project with Archer-Daniels-Midland will usher Spiber's Brewed Protein into the mainstream.

At the end of December 2020, Japanese biotechnology specialist Spiber – the developer of Brewed Protein materials – raised 25 billion Japanese yen (approximately US\$240 million) in a financing round arranged by Mitsubishi UFJ Morgan Stanley Securities.

The capital raised will be used primarily to support Yamagata-headquartered Spiber's joint project with Archer-Daniels-Midland (ADM) to establish a large-scale Brewed Protein polymer production facility in Clinton, Iowa, as well as other ongoing material development projects and other initiatives.

## Biomass

Brewed Protein materials are produced from plant-derived biomass using a proprietary fermentation process and can be processed into a variety of forms, with examples ranging from delicate filament fibres with a silky sheen to spun yarns that boast features such as cashmere-like softness or the thermal and moisture-wicking properties of wool.

Spiber's in-house technology allows for the production of animal-free fur and leather alternatives, and Brewed Proteins can also be processed into resins closely resembling tortoiseshell or animal horn. With potential uses ranging from medical applications to lightweight composite materials, they are highly adaptable.

Designed to be non-reliant on petrochemicals as primary feedstock, and to not create or break down into environmentally persistent microplastics, Brewed Protein materials have considerably less impact on marine ecosystems when compared to traditional plastic materials. The unique microbial fermentation technology employed also shows considerable potential for avoiding the high greenhouse gas emissions often associated with commonly-used animal fibres.

Prototype products based on Brewed



Protein have so far been pioneered by The North Face, with the Moon Parka, and the Vision Quest blended wool sweater for Hapan's Goldwyn.

## Mass production

After more than 15 years of research and development, Spiber is now focusing on the transition to mass production. Its Thailand plant, currently under construction, is scheduled to begin commercial operation later this year with an annual capacity of several hundred tons.

In Iowa, subsidiary Spiber America will combine its technology with ADM's deep expertise in large-scale fermentation technologies, engineering, operations and extensive agricultural supply chain. The two companies have started to modify and expand equipment at ADM's bioprocessing biorefinery in Clinton.

The Brewed Protein polymers will be produced by ADM in the US using plant-

based dextrose as a feedstock, and then shipped to Spiber's downstream facilities, where they will be processed into an array of materials – primarily fibres – for use in a variety of applications.

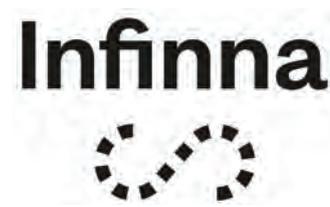
"From our partnerships with farmers and our efficient origination network and our ability to provide sustainably-sourced feedstocks from nature to our expertise in fermentation and scaling technology to commercial production, we have a substantial leadership position in the fast-growing market for more sustainable products," said Ian Pinner, ADM's chief strategy and innovation officer and president of the company's Health & Wellness division. "Across ADM, we are creating value for customers and shareholders alike by finding innovative, exciting ways to use our array of plant-based products."

An economic development incentive package approved by the Iowa Economic Development Authority (IEDA) includes direct assistance in the amount of \$1 million of the estimated \$101.4 million capital investment.

"Iowa has a deep understanding of the positive impact of projects like ours and has created an environment that is conducive to success," said Daniel Meyer, president of Spiber America. "This award will enable Spiber to accelerate its investment in the equipment and infrastructure used to convert corn-based dextrose into alternative proteins for use as next-generation biomaterials across many industries."

Spiber's new financing structure differs from a standard corporate loan and is unusual for Japan, in allowing the company to leverage not only hard assets such as its research and development equipment and Thailand commercial polymer production facilities, but also its extensive intangible assets such as its IP portfolio. **SNW**

# All systems go for Infinited



Finish technology developer moves quickly to commercialise its cellulose carbamate fibres.

Infinna is the name of the new bio-based regenerated fibre being launched by Infinited Fiber Company, located in Espoo, Finland.

The company has developed a rapid and cost-effective process for turning cotton-rich waste textiles into high-quality, bio-based regenerated fibres.

The process works with any cellulose-rich raw material – including discarded textiles, used cardboard, rice or wheat straw – turning them into cellulose carbamate fibres with the look and feel of cotton.

The Infinited technology is based on three key processes – fibre separation from the waste materials, turning the fibre waste into liquids, and then turning the liquids back into new fibres.

In addition, the process can be readily integrated into existing pulp plants, lowering both investment costs and risks. As an add-on process in existing viscose plants meanwhile, it provides the additional benefit of eliminating the hazardous chemical carbon disulphide (CS<sub>2</sub>).

## Collaborations

Infinited has already announced collaborations with six of the world's leading fashion and textile brands – Bestseller, H&M Group, Patagonia, PVH Corporation and Wrangler.

"The feedstock is waste, and the technology does not use high amounts of water or harmful chemicals," said Camilla Skjønning Jørgensen, Sustainable Materials and Innovation Manager at Bestseller. "The fibre is commercial quality and can be used to create the styles that our customers love. The clothes we make using it can even be recycled again. All of this is making Infinited technology the ultimate solution to our strategy of becoming circular by design."

"This shows the industry that apparel waste has high value and is something to be utilised," added Patagonia's Materials Development Director Sarah Hayes. "This waste is not only being upcycled but is being used to make a new premium fibre that can help push the industry towards circularity."

The six brands have now conducted in-house quality testing on various types of textiles created from Infinited fibres, including single jersey, French terry, denim and shirting fabrics. Each has found the fibres and textiles they have tested to meet their brand's stringent material quality requirements and view the fibres as ready for commercial applications.

## Nonwovens

Leading global supplier of nonwovens Suominen will also be using Infinna fibres.

"We have been working closely with Infinited and it has been thrilling to see results develop from an idea into a commercially viable product," said the company's product development manager Miika Nikinmaa. "We see great benefits in working with Infinited for circular product design and a less wasteful future for essential single-use items."

In December, Infinited signed a cooperation agreement with Andritz, to work together to bring the technology to market.

"The Andritz equipment and process portfolio offers good opportunities for fibre production technology, and our cooperation with Infinited is a significant step towards creating a new type of textile fibre," said Kari Tuominen, president and CEO of Andritz. "Textile waste recirculation is becoming mandatory in the EU in 2025 and we want to be involved in developing new bio-based fibres from textile waste and also from other pulp-based materials."

Andritz will then build equipment for both the mechanical and chemical pre-treatment processes, as well as for the carbamation process. This will quickly be followed by factory deliveries, with Infinited already expecting to secure commercial deals during 2021.

"Bringing to market a new technology, a new fibre type, and even a new way of operating in accordance with circular economy principals requires the creation of a strong ecosystem of experts working towards common goals," said Infinited Co-founder and CEO Petri Alava. "Andritz is a leading factory equipment supplier, and we are delighted to be working with them to prepare our textile fibre regeneration technology for commercialisation." **SNW**



# Greener options influence investment ideas

Sustainability issues such as increased energy efficiency and a reduction in resource use are playing an increasingly significant role in fabric manufacturers' buying decisions.

Such is the level of continuous research and development in the nonwovens industry, we have become accustomed in recent years to a regular stream of new technology announcements. This is particularly true with regard to new machinery, from all parts of the nonwovens manufacturing supply chain, with enhanced environmental credentials.

With the disappearance of trade shows and exhibitions from the calendar, an inevitable result of the coronavirus pandemic, it's fair to say that the machinery buying public has been deprived of the visual unveilings and real-life, expert presentations from the industry's leading technology suppliers.

Keenly anticipated events, such as INDEX and ANEX are both scheduled for this year and, as it stands, will be the ideal platforms for machinery manufacturers to showcase their latest developments, many of which will have been slated for launch in Spring 2020.

International technology Group

Andritz, for example has had a number of nonwovens production and textile solutions in the pipeline.

## Future-oriented

Andritz says it has always invested in future-oriented technologies that reduce the use of the various substances and raw materials required as well as cutting energy consumption. For the hygiene business, Andritz provides high level air-through bonding, spunlaid, spunjet, spunlace and Wetlace machines, as well as converting technologies and corresponding services to meet these demands for years to come.

Such processes for the production of biodegradable wipes, for example, are achieving high performance levels with natural and/or renewable raw materials. The added benefit of using a blend of fibres like wood pulp, short-cut cellulosic staple fibres, viscose, cotton, hemp, bamboo or linen, without chemical additives or binders, results in a 100% biodegradable fabric, thereby meeting

customers' needs, as well as supporting the strong tendency to move away from plastics and synthetics.

In response to the demand to save raw materials, Andritz offers its neXline spunlace technology for lightweight fabrics. Decreasing weight per square metre while maintaining high MD and CD tensile strength is the main challenge. Indeed, fibres account for a substantial part of the production costs. Very high productivity is needed for the lighter fabrics required with perfect uniformity. Andritz provides the well-known TT card web forming and the high-performance Jetlace hydroentanglement units, which it says can more than fulfill these challenges. The spunlace roll goods may achieve weights of 25 gsm and even less for ultralight spunlace fabrics, and web uniformity is excellent.

As well as the well-known calender technologies, Andritz also delivers Spunjet technologies, finishing solutions, and state-of-the-art dryers. Customers

Andritz neXline spunlace line.  
Image: © ANDRITZ





Dilo offers tailor-made production systems from full fibre opening to the finished felt.

can produce the exact fabric characteristics they need, the company says. "The patented nonwovens process called-Spunjet is the in-line hydroentanglement of continuous filaments, creating a new generation of spunlaid nonwovens with unrivalled bulkiness and softness compared to standard spunbond fabrics," says Andritz. "Spunjet offers customers the best properties ever achieved in existing and new nonwovens applications."

In order to optimize processes and gain a faster return on investment, Andritz says it is continuously developing innovative products. In the needlepunch segment, for example, it has developed ProWin technology for profile weight correction.

This unit combines the well-known technologies ProWid and ProDyn, enabling even better performance. By uniting these processes, customers have an even more homogeneous web and can reduce the input of raw materials. ProWin minimizes the level of instantaneous acceleration as well as the maximum internal speeds. As a consequence, the same machine can run faster with less mechanical stress.

ProWin can also be retrofitted to recent ProDyn installations.

With new development of the unique PA3000 pre-needleloom, the company says it is also responding to customer demands for higher capacities and lighter products. The PA3000 is an optimized cylinder pre-needleloom, which offers greater speeds and widths and has been specially developed for lighter webs. There is no friction between the web and the rolls, and there are no issues with the visual appearance.

### Tailor-made

Technology group Dilo has been working on a number of developments covering tailor-made production systems from full fibre opening to the finished felt.

A key development is a new, simplified elliptical needle beam drive, which is designed to make Dilo's Hyperpunch technology more attractive for standard applications.

Hyperpunch H V allows a more uniform stitch distribution in the pre-needling process particularly in combination with the new needle pattern 6000X. In a complete needling line this felt homogenization process can

be improved further, Dilo says. "The new needle pattern 8000X is a milestone in the needle pattern development process and results in end product surfaces with low markings over a wide range of advances/stroke."

Also worthy of note is the 3D-Lofter which, first presented during ITMA 2019, opens up a range of nonwovens applications by exploring the third dimension. A series of single web forming units, which work according to the aerodynamic web forming principle, deliver defined fibre masses in varied patterns on a base needlefelt. A stress oriented production of technical formed parts resulting in fibre savings or patterned DI-LOUR or DI-LOOP felts without repeat are two examples for this technology which explores new application areas for needlefelts.

The 3D-Lofter technology may also be used "inverted" for filling up bad spots in web mats and therefore achieves a better homogeneity of spunlace or airlaid products.

The DiloLine 4.0 concept offers I 4.0 modules which as well as supporting the user, also facilitate quality control and maintenance by maximum data ▶

transparency in production and control of operation. The Dilo 'Smart Start' solutions for a fully automatic start of the production line or DI-LOWATT for energy savings are accompanied by Siemens solutions which can be selected via App or MindSphere Data Cloud.

### Competitive

Amongst the recent innovations from Autefa Solutions are developments for the spunlace sector which, says the company, includes particularly competitive options for end product manufacturers such as complete lines for the production of direct and crosslapped spunlace products.

According to Marco Fano, CMO Autefa Solutions, the web forming process, consisting of the Injection Card and Crosslapper Topliner series, is key for high and consistent nonwoven fabric

quality. "There is still a huge demand for Spunlace Lines and our unique web forming technology meets our customers' requirements," he explains. "This advanced Spunlace technology offers a quick return on investments with our customers appreciating the performance and quality of Autefa Solutions Lines."

The main challenge in high-speed web forming lines for Spunlace is to keep fibres at any time and process stage under control. Autefa Solutions Injection card enables (Drylaid) web forming at very high production. The Injection Card uses a combination of mechanical and aerodynamic principles for a gentle fibre treatment. The Injection Card delivers a quality web at the highest productions levels with a better MD/CD. With the Topliner CL4006 SL Autefa Solutions, also offers a crosslapper with special

features for Spunlace applications. The highest layering speeds and precise weight distribution are possible thanks to the integrated drafting unit, compensation belt, antistatic equipment and new designed transport aprons.

With the Hydroentanglement Machine V-Jet FUTURA, Autefa Solutions says it recently closed the missing link within the companies' product portfolio between the very successful Autefa web forming technology and the drying technology.

The V-Jet FUTURA and the Square Drum Dryer SQ-V represent particularly advanced technology, offering a significant reduction of energy consumption compared to any state-of-the-art line.

The Square Drum Dryer SQ-V also combines the advantage of a horizontal belt dryer and the better drying

## Dilo hydroentanglement cooperation

Dilo Group has strengthened its position in the supply of complete hydroentanglement lines following an agreement with Italy's SICAM. Dilo is a major supplier of complete lines for nonwoven fabric production and has traditionally specialized in all types of needling lines for staple fibre products as well as high-speed needlelooms for spunbond production.

A further element key of its sales program for several decades has been fibre preparation and high-speed web-forming equipment for other nonwoven technologies.

In recent years though, notes Dilo, there has been a shift to higher throughput rates, and in some cases in Asia, a requirement for improved MD/CD strength ratios of hydroentangled products. In addition, Dilo's further development of the high-speed layering principle "Hyperlayer" has made considerable progress for better CD strength through a combination of inline cards and crossline card with crosslapper.

In particular, carding machines in a working width above 3.5m up to 5.1m have been supplied by DiloSpinnbau as complete high speed carding systems, comprising two or even three cards in a line to directly feed the hydroentangling units of various suppliers.

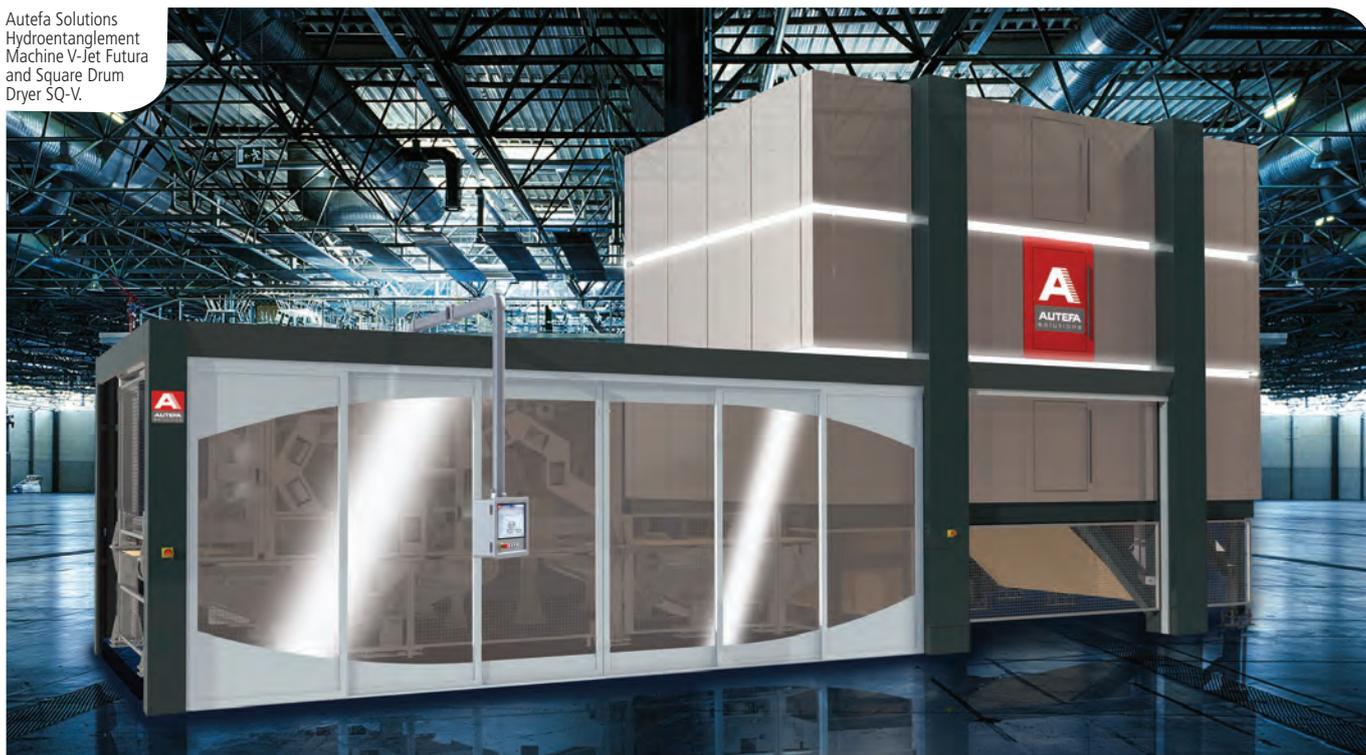
Together with DiloTemafo, not only have high throughput rates been achieved in the fibre preparation section of the line but also dedusting filtering and air-conditioning systems have been successfully engineered and integrated.

Until recently, Dilo did not supply complete lines including water-jet units, ovens and end-offline equipment to the important hydroentanglement market segment. This position has now been remedied with the signing of a new partnership with Sicam. "Together with Sicam, we have combined know-how for hydroentangling technology and therefore can provide complete lines as general contractor including equipment for cutting, winding and packaging," Dilo said, adding that it has also recently sold a complete line for hydroentangled products in Portugal. "The market for medical and hygiene lightweight products is booming and will require more hydroentangling capacity.

On the basis of our considerable fibre preparation and web-forming know-how we are looking forward to a successful cooperation with Sicam covering the market with our related activities."



Autefa Solutions Hydroentanglement Machine V-Jet Futura and Square Drum Dryer SQ-V.



efficiency with the space advantage of a drum dryer, resulting in increased drying length with a smaller footprint.

## Wipes

As a supplier of complete production lines Truetzschler says that its latest innovations offer enhanced product quality, better line efficiency and higher productivity, all of which contribute to energy and other resource savings.

With this in mind, a stand-out development has been its latest technology for the production of sustainable and affordable wipes.

As Truetzschler notes, in terms of fibre fineness – most fibres range between 3-5,5 Mic or 1,0-2,8 dtex – strength and absorbent capacity make cotton fibres an ideal raw material for single-use dry and wet wipes.

There are, however, two reasons for the limited usage of cotton fibres in single-use nonwovens. Firstly, cotton is higher priced than less expensive viscose/polyester blends most times. And secondly, cotton fibres are natural products whose qualities vary both regionally and from year to year.

Truetzschler says it has addressed these challenges by introducing new line concepts for efficiently making cotton nonwovens for wipes or hygiene textiles.



Truetzschler's wet-laid-spunlaced and structured nonwovens.

This includes reliably turning even comber noils, short or unbleached cotton fibres into high-value products.

Truetzschler's random and airlay cards have been configured to cope with variable fibre lengths and a high short fibre content. The NCR and NCA cards are able to form webs for the kind of soft cotton wipes sought after in premium markets worldwide, the company says.

Also noteworthy are lines for fully biodegradable wet-laid and spunlaced

(WLS) wipes. Along with its partner, Voith, Truetzschler says it goes beyond simply flushable wipes, offering pulp and lyocell-based materials with sufficient strength to compete with conventional wipes from polyester/viscose blends. This is possible on machinery from both companies, such as Voith's HydroFormer and Truetzschler's AquaJet, which together add up to a versatile wet-laying and spunlacing line for environmentally friendly end products. **SNW**

# Innovatec lines up further growth

Innovatec is ramping up production of its speciality nonwovens fabrics with a series of key investments.

Innovatec has started production on its second Oerlikon Nonwoven's meltblown system with the Troisdorf-based nonwovens manufacturer using the line for the production of polypropylene filter nonwovens for use in protective facemasks.

"Back in June 2020, Oerlikon Nonwoven delivered the first so-called 2-beam system to Innovatec," said Rainer Straub, head of Oerlikon Nonwoven, adding that with this second production line, Innovatec has been able to almost double its filter nonwoven output to date.

The company now has filter media production capacities that can be used to manufacture up to 2.5 billion operating room filter masks or one billion highly-effective FFP2 masks per year.

Innovatec is currently participating in the German Government's 'Nonwovens Production' grant program to ramp up its output capacities which has included a visit from German politicians, including Federal Minister for Economic Affairs Peter Altmaier and North Rhine-Westphalia Minister President Armin

Laschet. Together, politicians and industry want to ensure that the production capacities for protective equipment continue to grow in Germany and that above all critical supply chains are secured at both national and European levels.

The company has also invested in a new Reicofil Bico spunbond line from Reifenhauser which, once operational in July 2021, will expand the company's production of technical spunbond fabrics by 5,500 metric tons.

This new investment follows the earlier expansion of its spunbond fabric business in 2020.

"With this consequent focus of innovative strength and highest quality standards, Innovatec has become the market leader in the field of meltblown fabrics," said Innovatec owner Christian Kloeber. "We want to pursue this path in the market of spunbond fabrics by sustainably expanding our growth."

Innovatec will house the new line in a new production hall which is currently under construction in Troisdorf. The facility will also be sizable enough to

Facemasks from Innovatec.



house further lines, ensuring the company has capacity for significant further growth. Innovatec is initially concentrating on the production of technical spunbond using RF4 BiCo technology with a production width of 3.2 metres.

In addition to PP nonwovens, this plant will also produce polyester and PLA nonwovens. Moreover, various BiCo variations can be produced, significantly broadening Innovatec's product portfolio

BiCo technology offers a wide range of technical possibilities, especially when it comes to enhancing the strength of the nonwovens. Using this line, Innovatec will be able to use lighter basis weights which in turn can help reduce the amount of natural resources used.

In addition to the high product quality and higher process stability, Innovatec said it also was also impressed with the high-energy efficiency levels of the Reicofil line.

"With this new spunbond plant we will increase our output of nonwovens by around 5,500 metric tons per year. At the same time, we are increasingly focusing on sustainable production by using granulates based on renewable raw materials or recycled plastics. Compared to the market, we will achieve a very high energy efficiency," added managing director Daniel Krumme. "In order to deliver on our quality promises, we are only investing in state-of-the-art units. We successfully applied this strategy concerning our meltblown fabrics and we will continue along this path."

Under the brand name InnovaSpun, Innovatec already offers tailor-made solutions for spunbond fabrics for a range of applications in the construction, filtration and automotive industries. **SNW**



Oerlikon Nonwoven meltblown technology for producing high-efficiency filter media from synthetic fibers.



# Seems like team spirit

New developments and new alliances are continuing to lead the fight against the coronavirus pandemic.

A successful collaboration between three companies in Bavaria, which formed a 'Mask-Alliance' to help combat the spread of coronavirus, has welcomed several new members.

Last May, nonwovens manufacturer Sandler AG, PIA Automation and Zettl Group, a key supplier of products for automotive interiors, established the Mask-Alliance-Bavaria. Together, they set up an entire value chain for the manufacture of facemasks in the region, which culminated in September with the inauguration of a new production line to produce filter media for facemasks.

The new line now has the capacity to produce around 600 million mouth-nose-protection masks a year.

With a view to increasing the effectiveness, safety, usability, as well as the sustainability of facemask materials, the procedures are continuously being tried and tested. In order to further advance this development new partners have signed up to join the Mask-Alliance Bavaria.

Professor Clarissa Prazeres da Costa, infectiologist, senior physician for medical microbiology and infection epidemiology, and co-director of the Center of Global Health of the Technical University of Munich (TUM), and her colleague Magnus Fröhling, professor for Circular Economy at TUM, as well as professor Franz-Xaver Reichl, microbiologist, pharmacologist and toxicologist, of Ludwig-Maximilians-University Munich (LMU), and product safety experts from the team of Jörg-Timm Kilisch of the German organization DEKRA, want to contribute their comprehensive know-how to the development of new medical masks.

In addition, Bayern Innovativ (Bavaria innovative), an organisation that

facilitates innovation and knowledge transfer in the region, is supporting the alliance in identifying suitable funding programmes and in developing further competences within the scope of its cluster and networking activities.

"The intended close cooperation of member companies, research institutions and testing authorities aims to bring together the specific key competences and enable a swift transfer of knowledge and technology to small and medium-sized enterprises, the medical sector, and standardization," the Alliance said in a joint statement. "Insights obtained from this cooperation could also be applied to protective masks for kids or to a second generation of simpler mouth-nose-protection masks. With these endeavours, the Mask-Alliance Bavaria is taking the next steps towards quickly and focally advancing mask development and production in Bavaria."

## Windowed

An interesting development in Canada has seen Entreprise Prémont launch the Humask-Pro Vision, a windowed mask specially designed for the family and

professional circle of people with hearing loss.

The new mask has a transparent window allowing lip reading, which is necessary to compensate for hearing loss.

"This product will protect people in the professional and family circle whose facial expressions must be seen to communicate easily in situations and places when two metres of distancing can't be maintained – for example, in the hospital, at school, at daycare and at work," said Luc Girard, an Entreprise Prémont partner. "Our R&D team has succeeded in developing a safe and ergonomic product on the technological cutting edge,"

Production has already begun to meet the strong demand for this type of mask in Québec, Canada and the United States.

"We are currently able to manufacture thousands of masks per week and starting in January 2021, output will speed up to millions of units per week, because we are on the way to fully automated production," Girard added.

The mask's unique design was conceived to offer space between the mouth and the transparent window



Humask-Pro Vision, a windowed mask specially designed for the family and professional circle of people with hearing loss.

for greater comfort and optimum breathability. Made from hypoallergenic and microporous membranes, its anti-fogging and anti-glare properties are obtained from HUCare filtration technology.

Humask-Pro Vision's tight welds also provide enhanced protection.

"Humask-Pro Vision is the result of Québec ingenuity and know-how in technical textiles and manufacturing," said Dany Charest, general manager of TechniTextile Québec, the Cluster of Excellence in technical textile materials. "The local supply of medical personal protective equipment is at the core of Québec's health and economic recovery and the pandemic has confirmed the importance for governments and healthcare institutions to procure locally. This innovation clearly proves our ability as an industry to mobilize in order to provide a sustained supply of the equipment necessary for the protection of healthcare workers, patients and the public, as well as the quality of life of people with hearing loss."

## Antiviral

Following a series of investments designed to help in the fight against COVID-19, nonwovens producer Fitesa has expanded its product range to include an antiviral product – Fitesa Shield AV – with a material that inactivates 99% of Coronavirus within 15 minutes of contact.

Within 30 minutes, the test samples show the virus to be inactivated. Tests were conducted by Unicamp in November 2020 with the MHV strain of Coronavirus – the same genus and family of SARS-CoV-2, SARS-CoV-1 and MERS.

Fitesa Shield AV nonwovens have silver ions in their structure, integrated in a process that secures a lasting effect throughout the product's lifecycle. The treatment is non-toxic, meets all FDA and EU requirements and does not impact any other physical or chemical properties.

The Fitesa Shield AV product line consists of antiviral spunbond and multilayer SMS that can be used in various applications such as the production of surgical gowns and drapes, sterilization wraps, head covers, shoe covers, bed linens and laminates,



Honeywell has significantly increased production capacity and expanded operations to help address increased demand for PPE across the US.

including important respiratory protection equipment like N95 masks and respirators.

"These results are further evidence of our commitment to the healthcare market and our team's technical expertise," said Mateus Inacio, vice president of global operations. "It also complements our product portfolio in preparation for the start-up of new production lines that will significantly increase our production capacity worldwide."

Recent investments by Fitesa include a new multi-layer Reicofil 5 line being installed in Cosmópolis (SP, Brazil) and new meltblown machines in Brazil, Italy, Germany and the US.

## Capacity

Honeywell has significantly increased production capacity and expanded operations to help address increased demand for PPE across the US with the company delivering more than 225 million facemasks in December.

The company delivered the N95 respirators and disposable, surgical face masks to multiple locations in the U.S. for health care systems, the Federal Emergency Management Agency (FEMA), and the U.S. Department of Health and Human Services.

In addition, it shipped millions of masks to state and local governments in support of their response to COVID-19 and for their personal protective equipment (PPE) stockpiles.

"We are honored to play a part in providing much-needed PPE to those

workers responding to the pandemic in the US," said Praveen Reddy, president, Honeywell's Personal Protective Equipment business. "Honeywell has made significant investments to expand our capacity to produce N95 masks and other respiratory products in the US and globally."

Honeywell produces a range of respiratory protection products for workers, including NIOSH-certified N95 masks, flat-fold single-use masks and elastomeric half-masks with replaceable cartridges.

By steadily increasing production capacity, the company has the ability to produce hundreds of millions of facemasks for health care and other critical needs.

In April, Honeywell rapidly started up new N95 mask production operations at multiple facilities in the U.S. The company was able to begin operations in just five weeks by accelerating a process that could normally take up to nine months. The operations were initially capable of producing 20 million masks per month, and Honeywell has steadily increased capacity throughout the year.

"We are proud of our employees for their hard work to produce, test, package and ship the millions of masks in order to meet this incredible milestone," said Reddy. "These masks, produced here in the U.S., can help protect those health care workers, first responders and others who are working tirelessly on the front lines."

The technical materials specialist has also launched a new reusable, three-



dimensional knitted face cover with replaceable nonwoven filters for everyday use.

The Honeywell Dual-Layer Face Cover features an innovative 3D knit design that contours to the wearer's face and is made with a washable material, making it easy to clean.

The face cover also has a hidden pocket that securely holds a Honeywell protective filter made with meltblown polypropylene, which is similar to the material used in the construction of N95 masks. The replaceable filter can block up to 97% of 3.0-micron-sized particles (BFE) and 0.1-micron-sized particles (PFE). 2

"Honeywell has vast experience in developing respiratory innovations for industrial workers and first responders, and we have leveraged that expertise to bring the Dual-Layer Face Cover to market," said Praveen Reddy, president of Honeywell's personal protective equipment business. "When social distancing measures are difficult to maintain, people want a protective face covering that is comfortable, easy-to-clean, stylish and manufactured by an industry-leading safety technology provider."

The face covering's base layer features a seamless, 3D knit construction using polyester, nylon and cotton and provides four-way stretch, minimizing gaps and enhancing comfort. It has a contoured design with adjustable ear straps, a flexible nose clip and ventilation holes for enhanced comfort, function and breathability for most adult face shapes and sizes.

In addition to the new reusable face covers, Honeywell also offers individual Safety Packs for people attending sporting events, traveling or visiting public places. The resealable, easy-to-open kits include a disposable face mask, gloves and wipes.

These new safety products are part of Honeywell's strategic initiative to quickly develop and deploy solutions to help important sectors of the global economy recover and to help protect people as they return to public spaces. It has also increased production of N95 face masks globally to help protect frontline healthcare workers, emergency

responders and governments in responding to COVID-19.

Honeywell notes that the new masks are not FDA approved, not tested against COVID-19, and not intended for medical use.

The filter material tested by external labs, as per testing requirements of ASTM F2100-19.

### Local

In Italy, RadiciGroup is investing €15 million in a new meltblown production line as it looks to ramp up its production of filtration fabrics for use in protective face masks and other PPE.

The Bergamo-based firm says it has been at the forefront in the fight against the spread of Covid-19 from the beginning of the pandemic, rapidly setting up a production chain involving local factories for the manufacture of spunbond nonwoven for medical gowns and other personal protective equipment.

With a view to helping Italy become an increasingly independent producer of PPE, Maurizio Radici, vice president and COO of RadiciGroup said the decision was taken to produce meltblown fabrics, a nonwoven not readily available in the Italian market. "In the midst of the pandemic crisis the lack of meltblown nonwoven became evident," Radici said. "We kept receiving tens of requests from potential customers. A very small quantity of meltblown material is produced in Europe, which is certainly not sufficient to meet demand in a health emergency. Given our extensive

experience in the field of nonwovens, we swiftly began figuring out how to set up a chain for the production of PPE in Italy. And, as soon as the opportunity arose to take concrete action, we had no hesitation to jump on it."

The new line is currently being installed at Tessiture Pietro Radici SpA, a member of the RadiciGroup based in Gandino near Bergamo. The high capacity line is capable of processing a range of raw materials such as polypropylene as well as polyester, polyamide and TPU.

Enrico Buriani, CEO of Tessiture Pietro Radici, added: "With this new line installed in the Seriana Valley – among the areas in Italy that have been hardest hit by the coronavirus pandemic, RadiciGroup will become one of the few European manufacturers able to offer both spunbond nonwoven – a well-known product already produced by Tessiture Pietro Radici for many years and used in protective face masks as both the outer layer of fabric and the inner one in direct contact with the face – and meltblown, which is the real filtering and protective component of all types of masks, including surgical and FFP2 or FFP3 protective masks."

In terms of production capacity, the new line will be able to produce about 120 tons of meltblown nonwoven per month, or enough material to make about 170 million surgical masks per month.

"The objective is to reduce the dependence on imports from non-European countries – indeed, during the

RadiciGroup is investing €15 million in a new meltblown production line as it looks to ramp up its production of filtration fabrics for use in protective face masks and other PPE.



pandemic, there have been long slowdowns in deliveries of imports – and to bring back to Italy the production of essential products for health protection needed during health emergencies,” Buriani added. “Suffice it to say that, from February to August 2020, Italy imported €2.66 billion worth of masks, 92% of which came from China. We believe it is vital for Italy not to be caught unprepared in future health emergencies.

“Our country must have its own production of essential goods, and our purchase of the new line for the production of meltblown nonwoven is a step in that direction. At the same time, the production line is an investment for our Group, because we must also consider the fact that other technical applications will be found for this material, such as filtration, thus presenting prospects for economic sustainability in the medium term.”

The installation of the machinery will be completed in early 2021, after which the line will start operating 24 hours a day, 7 days a week.

### Supply chain

A new installation has also taken place at Armbrust American which has announced that its facilities are now capable of producing meltblown fabric, giving the company full supply chain control for the production of surgical and N95 facemasks.

Armbrust is manufacturing a new Electrostatic Armor Meltblown, the company's new proprietary blend of meltblown filtration material that

Armbrust American is now capable of producing meltblown fabric, giving the company full supply chain control for the production of surgical and N95 facemasks.



LyondellBasell is introducing Moplen HP560Z.

more easily adds a static charge and allows those wearing a mask greater breathability.

Company founder and CEO Lloyd Armbrust said the move to produce its own meltblown would allow Armbrust American to control costs and better scale its operations so that America's first responders have the protection they need. “Nine months into this pandemic, a lack of domestic manufacturing is the only explanation for why America still does not have enough PPE,” he said. “Investing to produce our own meltblown means we aren't dependent on other countries.”

The majority of meltblown material is currently manufactured in China and sold to U.S. manufacturers. This, said Armbrust, has caused prices for PPE to skyrocket, with some health service providers now passing those expenses to patients in the form of surcharges, according to recent reports.

### High-fluidity

In terms of raw materials for facemask, plastics, chemicals and refining company LyondellBasell is introducing Moplen HP560Z, a polypropylene with a melt flow rate (MFR) of 1500 for meltblown nonwoven applications.

The company says it is the first in Europe to offer this type of high-fluidity polypropylene. While the majority of MFR 1500 grades for meltblown nonwoven applications have so far mainly been produced in Asian countries, European demand has seen an increase, with the growing number of regional production entities for PPE, and specifically facemasks. A swift regional solution for a high-end medical grade was therefore needed.

The very high fluidity of Moplen HP560Z allows the creation of facemasks with the best filtration level, providing the highest protection efficiency possible.

An additional advantage is that Moplen HP560Z has been tailored specifically for the latest small-scale meltblown nonwoven machines which are now widely used for facemask production in Europe.

“LyondellBasell is known for finding solutions to challenges it faces, and the rapid development of Moplen HP560Z is evidence of our ability to meet our customer's needs in the European market,” said Jochem Meijknecht, marketing manager at LyondellBasell. “It is exciting to be the first company to offer a MFR 1500 grade made in Europe.”

Moplen HP560Z is produced by LyondellBasell plants in Spain.



## Antiviral

Sorpol, an importer and distributor of industrial raw materials in Israel, has launched a website to sell Acteev Protect masks, made in the USA by polyamide manufacturer Ascend Performance Materials. The two companies also plan to partner in the distribution of Acteev surgical masks, N95 respirators, nonwoven media and textile fabrics as they become available.

Laboratory tests have demonstrated Acteev fabric effective at deactivating 99.9% of the viruses SARS-CoV-2, the cause of COVID-19, and H1N1, a flu virus. Acteev technology also eliminates bacteria and fungi.

Ofer Soreq, Sorpol's marketing director, said the Acteev Protect line fits in neatly with the mission of the company, which was founded by his grandfather 90 years ago. "Our customers are looking for high-value 'smart textiles' – products with special features, like innovative protective technology and a sustainable footprint, that can help keep them safe and help them return to the lives they enjoyed before the pandemic," he said. "People deserve a better quality of mask protection than what is offered by the mass-produced disposable polypropylene masks."

Recent testing on Acteev fabric completed at the University of Cambridge has demonstrated that Acteev technology deactivates the virus that causes COVID-19, SARS-CoV-2, with 99.9% efficacy on contact. Ascend has submitted several masks designs to the U.S. Environmental Protection Agency and the U.S. Food and Drug Administration to obtain the appropriate regulatory clearances to make specific claims regarding the technology's antiviral properties in the United States.

In addition to antiviral, antifungal and antibacterial protection, the washable, reusable masks are lightweight, breathable and odour-fighting, making them comfortable to wear during a long shift at work or for outdoor workouts.

"Masks don't work if you wear them around your chin," Soreq said. "Acteev Protect masks are so light, comfortable and fresh that they can be worn for hours without interfering with your activities or irritating your face."



Laboratory tests have demonstrated Acteev fabric effective at deactivating 99.9% of the viruses SARS-CoV-2

Acteev Protect shows promise for use beyond masks, according to Ascend. The technology was originally developed for workout wear, and now the company is working on textile applications ranging from gloves to high-end athleisure. "Until now, antifungal and antibacterial materials

were too expensive for textiles used in upholstery, outdoor gear, sports gear and the like," Soreq said. "But you want to go on a 20-day trek and not have your gear smell like a dead animal. We believe Acteev Protect can make that happen." **SNW**

## Filter components help against virus

To address the spread of healthcare-associated infections (HAIs) from aerosolized viral particles, Porex Corporation, part of the US Filtration Group, is pioneering the use of viral filtration efficiency (VFE) testing methods for the materials it supplies for use in medical devices.

As the first company to run this new analysis, Porex has been able to consistently obtain a 99.9987% VFE score for its filter materials, proving they help to protect healthcare workers and patients from aerosol-based viruses potentially present in medical settings.

Georgia-based Porex initiated VFE testing for its materials after observing the needs of its customers, which frequently fielded concerns from patients and healthcare workers seeking information that the components used in various equipment procedures would not pose risks of a HAI contraction.

Nearly one in 31 hospital patients acquires a HAI and these infections lead to an estimated 99,000 annual deaths in US hospitals alone, according to the Centers for Disease Control and Prevention (CDC).

Healthcare workers face similar, if not greater, threats due to frequent exposure to viral pathogens.

"The Covid-19 pandemic has magnified what was already a pressing issue in healthcare settings around the world, which is that inadequate filtration materials put patients and professionals at risk of contracting dangerous viruses," said Avi Robbins, vice president, of global product development and R&D at Porex. "We took the step to lead the materials industry into VFE testing to validate efficacy, and we are thrilled to confirm that our filtration and venting components are trustworthy and reliable for blocking viral particle spread."

Porex develops venting and filtration solutions via several core technology platforms such as sintered particles, bonded fibre, PTFE and Oxyphen track-etched membranes.

Filtration and venting media from Porex are suitable for suction canisters, catheters, syringes and other medical equipment utilized in aerosol-generating medical procedures.

# UK recycling scheme for Berry tree shelters

Tubex, a division of the leading nonwovens producer Berry Global, has launched the first tree-shelter recycling scheme in the UK.

**T**ubex lightweight nonwoven fabric-based tree shelters enhance tree growth and development while providing individual protection from browsing animals. In 2019, Tubex has calculated that its tree shelters saved 13 million saplings, which otherwise would more than likely not have survived, just in the UK.

## Safe and efficient

The new recycling programme is fully developed and operated by Tubex, based in Aberdare, Wales, in collaboration with its key UK distributors, and designed to offer a simple process for the safe and efficient recycling of the company's tree shelters.

Under the scheme, when purchasing Tubex tree shelters, users can request to

join the programme. At the same time, they are able to order bulk sacks for storing the shelters once removed, ready for them to be collected and transferred by the company to be recycled at one of Berry Group's recycling facilities.

Once at the recycling facility, the tree shelters are washed and recycled back into polypropylene pellets and being re-used by Berry to manufacture new tree shelters, or in other businesses within the group.

The Tubex standard tree shelters are currently manufactured using recycled polymer, and the company's netting range is also produced with 85% recycled polymer.

"While our tree shelters offer innumerable benefits – from enhanced tree growth and protection against both environmental and human factors – one of the main challenges remains their disposal," said Tubex sales manager Rhauan Young. "With the creation of the Tubex collection and recycling programme, we hope to be able to offer a simple and efficient solution to the waste issue, providing an effective scheme to ensure the responsible disposal of our products is available to everyone and in turn creating a more circular economy for materials. Each recycling run will result in 24,000 kilograms of new material, which is the equivalent to nearly 200,000 Tubex tubes."

## Microclimate

The Forestry Commission in England did studies in the early 1980s to establish the effect of Tubex tree shelters on various tree species. It was established that trees inside tree shelters show a significant





increase in height compared to trees grown in nature, or inside mesh. The growth of a plant is significantly accelerated in a tree shelter compared to trees grown in tree nets or in nature.

This is because the tree shelter provides an ideal microclimate that is conducive to improved plant growth.

The factors that contribute to this include temperature, levels of carbon dioxide and moisture, light spectrum and intensity.

All these factors have an impact on the growth of the tree and on its biomass distribution through the processes of photosynthesis, respiration, transpiration and photomorphogenesis.

The microclimate therefore has an important impact on the metabolism or growth of the tree and affects the assimilation rate of carbon dioxide, the transpiration rate, the energy budget of the leaves and more.

The various benefits of the microclimate can also be measured. Whereas heat can be measured by temperature, moisture in the air can be measured by relative humidity (% RH) or vapour pressure. In particular, the vapour pressure deficit (VPD) – the difference between the amount of moisture in the air and how much

moisture the air can hold when it is saturated – is very relevant for the growth of seedlings. As the VPD increases as the air dries, the plant needs to draw more water from its roots. Another measure is the Leaf-to-Air Vapour Pressure Deficit (LAVPD). These factors affect the transpiration rate as measured by the transpiration flux density.

### Intricate balance

For a plant to grow and develop properly it must balance photosynthesis, respiration and transpiration. Left to their own devices, plants do a good job of managing this intricate balance. If a plant photosynthesises at a high rate, but its respiration rate is not high enough to break down the photosynthates produced, photosynthesis will either slow down or stop. On the other hand, if respiration is much more rapid than photosynthesis, the plant will not have adequate photosynthates to produce energy for growth. As a consequence, growth either will slow down or stop altogether.

The transpiration rate of a tree depends on both climatic demand and its physiological capacity to meet this demand. Light radiation, the water vapour gradient between the leaf and its

surrounding air, and the wind contribute to create the climatic demand. The development stage of the tree, the leaf surface, and the stomatal resistance modify the physiological capabilities of responding to the microclimatic demand.

Reduced transpiration rates may induce high leaf temperatures. This may be lethal for the foliage as temperatures inside the shelter may be 10°C higher than outside temperatures. On the other hand, such low transpiration rates may help conserve water reserves of the soil and delay the occurrence of a water deficit for the tree during the dry season. While this could be a useful attribute in dry areas, weeds and soil evaporation may use a significant amount of water saved by the tree. For this reason, it weeding is strongly recommended around sheltered trees.

Continuous low transpiration may not be a problem, as long as the shelter remains sealed. A sudden air movement inside the shelter, however, will induce very large transpiration rates, with no physiological control. In such circumstances, the tree may desiccate. It is therefore important that the tree shelter is well installed and the bottom in contact with the soil is sealed, to prevent lifting by wind, animal or accident. **SNW**

# Freudenberg's bright Future of Mobility

Optimism dominated at the Future of Mobility virtual event hosted by nonwovens leader Freudenberg Performance Materials, writes consulting editor **Adrian Wilson**.

In a poll conducted during Freudenberg's Future of Mobility webcast, well over 70% of attendees said they believed a climate neutral and emissions-free transportation industry was fully achievable in the near future.

This vote of confidence could perhaps have been influenced by the enthusiasm of keynote speaker Matthias Horx, of the Frankfurt-based Zukunftsinstitut, who painted a very positive picture of a move away from linear thinking as a result of the Covid-19 pandemic this year.

"Will the coronavirus just be a little flaw in our inevitable progress?" he asked. "I really don't think so – I think it will stay with us. What we see is a world lifted up into the air and everything is in a mess, but this will create a new order. For much of history, crisis has been a

normal state, but this is a special one – not a war, and not something relatively minor in the greater scheme of things like the financial crisis, but something that has resonance in every layer of life.

"Society stopped, and that is new. In the Hong Kong virus of the 1970s in which many thousands of people also died, nobody would have thought of just stopping everything. The dynamics of change are that for every trend there eventually comes a counter trend leading to the next step of the process, where something different has to happen. This is where we are."

## Glocalization

Globalisation, he added, has had "a really heavy run, with just-in-time production and continuous outsourcing

to places where labour is cheaper, but it has now created a new nationalism.

"The concept of "glocalization" has started to make a lot of sense to many people in 2020 and we think a lot of structures will start to follow the pattern of local autonomy while retaining open connections to a wider world. Outsourcing is over and nearshoring will be the result."

Adding weight to this, Horx said, was the movement of work to more mobile and virtual structures that has been forced into daily routines in 2020, and a second trend of the move away from dense urban areas to suburbs with sufficient local amenities for making lockdown situations tolerable. It was now also clear the internet had moved in the wrong direction but for the first time



in 2020, Facebook and other major players have had to make interventions to correct its path.

As far as energy, he said, we are at the end of the fossil age with more than enough energy to be harvested from the sun, the wind and the waves.

“We have experienced an anthropause,” Horx concluded, presenting four potential views for what the world could look like in 100 years time – from the familiar dystopian desert to a greener utopia. “I believe it is possible to actually make the world greener. It’s called progress and I still believe in it. Sometimes a crisis is necessary to point the way forward.”

### New business models

A roundtable discussion on the options for the direction new mobility should take involved Tim Horsenfeldt of Tier 1 automotive supplier Schaeffler AG, Ulf Groos, head of fuel systems at the Fraunhofer ISE and Hugo Spowers, founder of Riversimple, the developer of hydrogen-powered fuel cell electric vehicles based in Wales, UK.

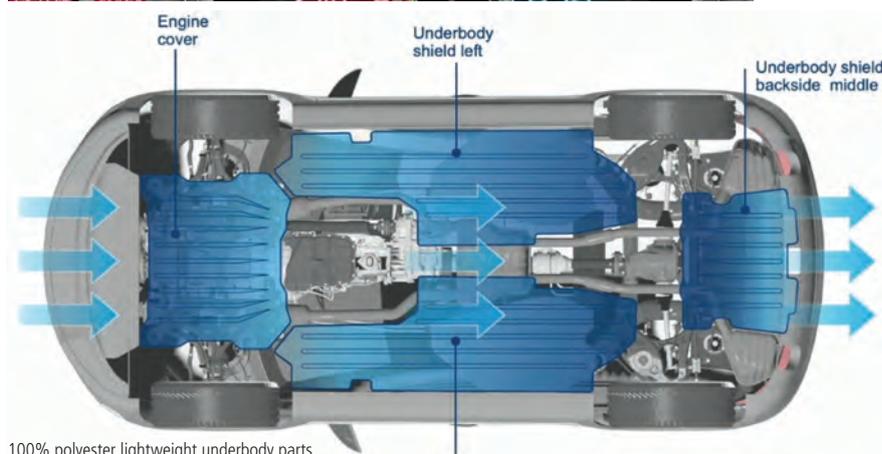
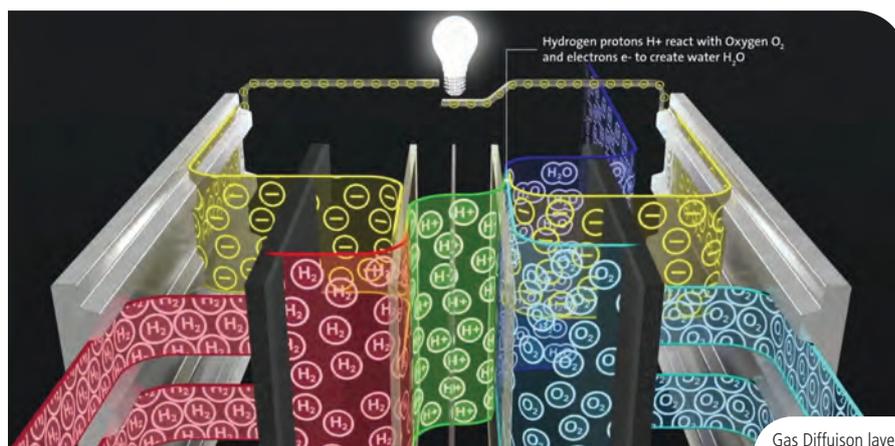
The general consensus was that it will involve a combination of battery electric vehicles, hydrogen fuel cell vehicles and biosynthetic fuels, with the infrastructure to make them viable perhaps more important than developing the technologies further.

Spowers proposed an entirely new business model involving a systems approach, looking at the lifetime cost of a vehicle and not just the build cost, with a circular supply chain for parts in which systems like Blockchain could prove instrumental.

### Innovations

Four of the latest Freudenberg Performance Materials products were then presented. Tobias Speth explained the company’s new friction inserts for joints, consisting of a 20 micron carrier material studded with 10-115 micron harder particles to create a micro interlocking system between parts while adding no additional tolerance.

This product addresses challenges with new electric vehicles in terms of NVH (noise, vibration and harshness) while have no negative impact on corrosion.



The 100% inert materials increase the friction coefficient of the part while leading to reduced scrap rates, with bolted connections able to replace laser welding processes for parts, requiring much reduced quality inspection for car manufacturers and allowing higher torque for lighter weight designs to be achieved.

Jan Ketterman and Klemen Pokrivac charted the development of acoustic pads from the shoddy with chemical binders of the 1970s to latest three layered Freudenberg solutions based on three layered combinations of polyester staple fibres and a meltblown core.

Similarly, Dr Arun Venugopal explained how underbody parts had progressed from metal, to plastic and on to glass and polypropylene fibre based products, prior to the latest 100% polyester lightweight Freudenberg designs.

The company uses a proprietary polyester spunbond which in composite form delivers an improved acoustic performance along with much higher temperature resistance, while being 100% recyclable and extremely easy to mould to shape.

### GDL

The Freudenberg gas diffusion layer (GDL) for fuel cells successfully meets a number of contradictory demands in fuel cell stacks that can be in assemblies of up to 300-400, said Dr Volker Barnhardt.

Within the single fuel cell stack, it is positioned between the bipolar anode and cathode plates at either side of the catalyst coated membranes.

The material has to be both thin and stiff, porous but thermal and electrically conductive, and keep water out while ensuring the membranes in the fuel cell remain wet.

The GDLs are produced in a roll to roll system with 100% camera-based surface inspection at Freudenberg.

“The GDL is non-fragile and can be easily processed, wound and converted,” Barnhardt said. “It has a superior magnetic polishing liquid (MPL) surface that is crack free and smooth, with its morphology designed for customised applications. It has a high specific power density and customers confirm it is the only product available on the market with a thickness of just 120 microns.” **SNW**

## Huggies launches biodegradable wipes in UK market

LONDON - Kimberley Clark has launched its Huggies Pure Biodegradable wipes in the UK. The plastic-free wipes are made with 100% naturally derived fibres with independent testing showing that they will biodegrade in landfill conditions after 15 days, making them the brand's first biodegradable product.

"We know this announcement will be

welcome news for parents who rely on these wipes as an everyday childcare essential but are also trying to reduce their impact on the planet," said Ori Ben Shai, Vice President & Managing Director Kimberly-Clark UK & Ireland. "No parent should have to compromise between caring for their baby and caring for the environment, so we're proud to be able to



offer them an affordable and sustainable solution, with baby's skin care at its core.

"Launching our first biodegradable product brings us ever closer to fulfilling the goals made in our 'Tiniest Footprint' Mission. We know we still have a long way to go

on this ambitious plan but are committed to developing the best possible products that meet our consumers' ever-changing demands."

The announcement follows Kimberly-Clark's 2019 pledge to eliminate plastics from its Huggies brand of baby wipes over the next five years, part of a wider plan to remove significant amounts of plastic from its products by the end of the 2020 in its UK market.

Elsewhere, Huggies has also made significant progress against the other goals that make up its 'Tiniest Footprint' Mission including:

- Removing 359 tonnes of plastic from its total baby wipes portfolio (on an annual basis)
- Removing 17 tonnes of plastic a year from the Huggies Extra Care portfolio (on an annual basis)
- Removing the internal plastic bags within its large pack boxes, a saving of 43 tonnes of plastic (on an annual basis)

## Toray expands Livmoa range

TOKYO – Toray Industries is to augment its Livmoa range of single-use protective clothing with Livmoa 4000 for high pressure and water resistance and an upgraded version of Livmoa CL sterilized clothing for cleanrooms.

The introductions will first be in Japan, becoming available overseas later.

Livmoa 4000 is breathable and complies with the JIS Type 5 and 6 standards for chemical protective clothing. It employs a proprietary SMS (spunbond-meltblown-spunbond) nonwoven fabric, protects wearers from dust and can also withstand a water pressure of 1,000mm H<sub>2</sub>O, which is hard to achieve with regular SMS fabric. The meltblown layer keeps dust and water out while delivering an air permeability of around 10 cc/cm<sup>2</sup>/sec. Toray is building a stable product supply system by manufacturing the fabric at its plant in Japan.

Livmoa 4000 can be worn where water resistance is necessary, such as waste disposal sites that are essentially limits to Livmoa 2000 and 3000 clothing, which are also breathable. Participants in a testing program rated Livmoa 4000 very highly for its exceptional comfort and soft fabric. The product was upgraded based on feedback from users at public research and academic institutions. Originally launched in 2019 under the supervision of the Foundation for Biomedical Research and Innovation at Kobe, its usability has been expanded, with an integrated mask cover, an optimized hood opening for a better fit with goggles and slimmer sleeves and legs to improve mobility.



## Surfaceskins launch new infection control pull handle

LEEDS - The UK's Nonwoven Innovation & Research Institute (NIRI) has launched a new Surfaceskins infection control pull handle.

Studies show that up to 80 per cent of infections are transmitted by hands. While gel dispensers and hand washing make hands clean, Surfaceskins technology was developed at NIRI as a way of providing touch protection when touching doors and eliminating the transmission of germs.

In its initial format, it was available as push pads with the pull handles now added as an alternate form of protection. When touched, the pull handles and push pads release alcohol gel,

which self-cleans the handle in seconds, ensuring the surface is clean and ready for the next user immediately.

Surfaceskins work in conjunction with gel dispensers and hand washing, a vital infection control measure designed to complement existing hand hygiene practices and protocols, breaking the transmission chain.

Each time the Surfaceskins pad is pressed, the surface self-disinfects, releasing a small quantity of antibacterial gel via the micro-valved top sheet and providing a self-sterilizing surface to protect every door user.

Independent NHS Laboratory in-vitro trials have proven kill rates of seconds against E.Coli, Salmonella, Norovirus, S.Aureus and E.Faecalis, compared to the many hours taken to achieve a similar germ-kill level by alternative products. Trials have also demonstrated that Surfaceskins improves hand hygiene compliance by increasing hand washing and gel usage.

Surfaceskins are said to be ideal for hospitals, SCBU's, HDU's, ICU, elderly wards,



## 3M launches new silicone adhesive for wearables

ST PAUL - 3M has launched a new silicone adhesive that is designed to improve the lives of patients using wearable medical devices needing longer wear.

Acrylate and silicone have dominated the medical adhesive market for years. But the adhesives currently available require device engineers to choose between strength and wear duration, or comfort and pliability. To fill the gap in the market, 3M has developed the next generation of silicone adhesives, 3M Hi-Tack Silicone Adhesive Tapes.

The first of its class is the 2480 3M Single Coated Medical Nonwoven Tape with Hi-Tack Silicone Adhesive on Liner, featuring longer wear times, supporting heavier devices and offering more secure adhesion, while providing all the traditional benefits of 3M's base silicone adhesive portfolio. "Medical devices are essential, and engineers need confidence their adhesive is strong enough to secure a heavier device for longer duration without causing trauma to the patient's skin upon removal," said Marcello Napol, vice president of 3M Medical Device Solutions. "We leveraged 3M's 55+ years of skin adhesive know-how to push the envelope of silicone adhesives and create a new product that bridges this gap. The 2480 3M Hi-Tack Silicone Adhesive is the first of its kind to offer the repositionable, gentle properties of silicone and achieve up to a four-day wear time, supporting heavier, more complex devices." The new 2480 3M Hi-Tack Silicone Adhesive has been designed to provide increased sheer performance, higher tack, stronger adhesion and longer-wear duration. The adhesive is repositionable, flexible and conformable to work well with various medical devices, including continuous glucose monitoring systems, wearable monitors, sleep and incontinence devices. It is strongly bonded to the backing to minimize residue on both skin and production equipment. The 2480 3M Hi-Tack Silicone Adhesive is compatible with ethylene oxide (EtO) sterilization. The new adhesive is part of a larger portfolio, with additional silicone adhesives to be introduced in 2021.



food preparation, washroom, toilet, factory, schools, offices and other high risk traffic areas, across multiple sectors. They are now in use, protecting staff and visitors, in factories, offices, premieriership football clubs, F1 racing teams, international airports, laboratories, restaurants, hospitals and schools.

Globally-patented, the technology behind Surfaceskins has won a raft

of awards since launching including: Medilink Innovation in Healthcare Award; Shell LiveWIRE Grand Ideas Award; Venturefest Innovation Showcase Award; Innovation of the Year (Yorkshire Post Excellence in Business Awards), and was a finalist at The Spectator Disruptor of the Year Awards.

It was also a finalist in the IDEA 19, Short-Life Product Achievement Award.



## Autoneum launches front trunk based on Ultra-Silent

WINTERTHUR - Autoneum has developed a front trunk made of Ultra-Silent, its lightweight, noise-reducing and sustainable technology initially designed for vehicle underbodies.

With demand for electric cars growing sharply, the need for lightweight components that enable a greater driving range for this category of vehicles is rising as well. Branded as frunk, this addition to its range of automotive components has been designed to meet this demand.

"With its innovative frunk for electric vehicles, Autoneum now offers the optimal solution for more storage space and longer driving pleasure," the company said. "The multifunctional frunk – short for front trunk – out of Ultra-Silent is particularly light thanks to its textile fibres and replaces the heavier plastic solutions consisting of several individual components that are common in electric vehicles today."

With its lightweight frunk, Autoneum says that its electric cars save on average three kilograms in weight, which results in lower electric energy consumption and higher driving range.

At the same time, the Ultra-Silent-based frunk also improves vehicle acoustics. "Contrary to popular belief, noise-reducing components are essential for electric models, too," the company said. "Because there is no engine noise, external and internal sound sources such as the e-motor and compressors as well as tire noise are more audible. Thanks to their sound-absorbing textile material composition, the Ultra-Silent components reduce annoying noises at the source."

Additionally, synergies with other acoustic components have a positive impact on the vehicle's overall acoustic comfort. The frunk made of Ultra-Silent is highly sustainable as well; it is made entirely of PET and contains up to 70% of recycled material.

The Frunk is currently in pre-development for a model of a new electric vehicle manufacturer and available in Europe, North America and China.

## Essity launches washable absorbent underwear

STOCKHOLM - Hygiene and health company Essity is launching new ranges of washable absorbent underwear within its feminine care and incontinence products categories.

The underwear is said to offer invisible protection for up to eight hours, providing users with a more sustainable option than disposable protection.

The launch includes TENA Silhouette Washable Absorbent Underwear for women with light bladder weakness and with a focus on discretion while in its feminine care category, Essity has developed a line of period underwear called Intimaware under the Libresse, Bodyform and Nana brands. The two products have different gusset lengths and come in

different styles and with different types of lace.

"Essity has always been at the forefront of sustainable innovation and been fast in responding to the changing needs of consumers," said Tuomas Yrjölä, president, Global Brand, Innovation and Sustainability at Essity. "Therefore, we are very excited about our most recent innovation; the launch of absorbent and washable underwear. These products take wearing comfort to the next level and also demonstrate our commitment to sustainability by providing our consumers with a sustainable, re-usable solution."

The launch of the products has commenced in Latin America and will continue in other markets in selected stores and online during the first quarter of 2021.



## First Quality introduces 3-in-1 feminine pads

NEW YORK – First Quality Products, Inc. has introduced Incognito by Prevail, a line of 3-in-1 feminine pads with multi-fluid technology to provide protection and discretion. The company is also offering an experienced eNurse team, for women who require advice over bladder issues.

As the company notes, it's common for women in their 30s and 40s to start experiencing bladder leaks, with pregnancy and childbirth triggering the condition. At the same time, they need protection for menstrual care and daily freshness.

They also need support. Research shows it takes women up to six years to get comfortable discussing bladder changes with their doctors.

"Women's bodies go through various changes between pregnancy and menopause," said First Quality Global Clinical Director Michele Mongillo, RN, BSN, MSN, RAC-CT. "The bladder may be affected with these changes, and women may be surprised to experience increased urinary leakage. Our eNurse team is an experienced and confidential resource to help women navigate this time of change."

Incognito 3-in-1 pads protect against bladder leaks, menstrual leaks and daily discharge. They feature a superabsorbent core that locks in more wetness than a standard feminine hygiene pad while neutralizing odors. All Incognito products are 100% breathable, hypoallergenic and free from dyes and harsh ingredients.

The product line is made

up of five items: Liner for daily wear, three Ultra-Thin Pads for more active days, and the Maternity Pad, which in addition for use immediately after childbirth can also address extra-heavy overnight needs.

"Our goal was to combine the best core innovation to provide multi-fluid protection, while maximizing discretion through ultimate odour protection and comfort," said Stephanie Bodle, Prevail brand manager. "Delivering all this along with 24/7 clinical support means women now have the care they need to feel confident and prepared."



## Nanosensors detect infections in smart bandage

KINGSTON – Researchers at University of Rhode Island (URI) have developed a smart bandage that can detect and monitor an infection in a wound via the integration of single-walled carbon nanotubes. The carbon nanotubes are able to identify an infection in the wound by detecting concentrations of hydrogen peroxide and until now, the challenge with using nanotubes for this purpose was in immobilising them in a biocompatible manner to stay sensitive to their surroundings. "The microfibrils that encapsulate the carbon nanotubes accomplish this," said assistant professor Daniel Roxbury. "The nanotubes do not leach from the material, yet they stay sensitive to hydrogen peroxide within the wounds."

The smart bandage is monitored by a miniaturised wearable device, which wirelessly (optically) detects the signal from the carbon nanotubes. The signal can then be transmitted to a smartphone or similar device to automatically alert the patient or a health care provider. "This device will solely be used for diagnostic purposes," said Roxbury. "However, the hope is that the device will diagnose an infection at an early stage, necessitating fewer antibiotics and preventing drastic measures, such as limb amputation. We envisage it being particularly useful for those with diabetes, where the management of chronic wounds is routine."

Roxbury's NanoBio Engineering Laboratory used several advanced technologies to make the bandage a reality.

A microfabrication process to precisely place nanosensors inside the individual fibres of the fabric was designed and optimised, advanced microscopes were employed to study the structure of the materials and a near-infrared spectrometer – home-built by former URI graduate student Mohammad Moein Safaee, now at the Massachusetts Institute of Technology (MIT) – was used to optimise the optical features of the fabric. "The cells we'll be using are known as fibroblasts and macrophages (white blood cells) that produce hydrogen peroxide in the presence of pathogenic bacteria," said Roxbury. "If all goes well, we'll move to 'in vivo' testing in mice. At that point, we would find a collaborator who specialises in these animal wound models."

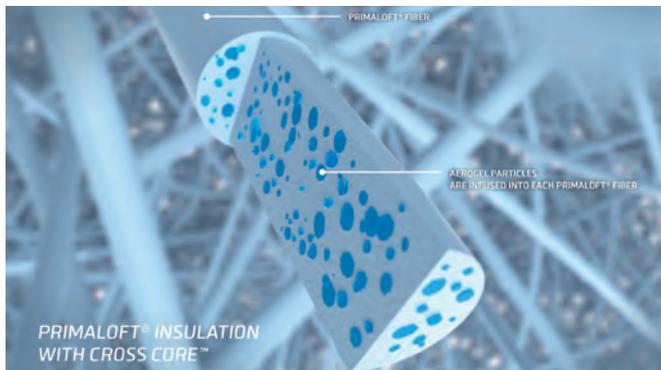
"Testing has focused on small samples, but there really is no limitation in terms of the size. In fact, this technology will be most useful in large bandages which can be more of a nuisance to remove and reapply. Ours won't need to be removed to enable detection."

## PrimaLoft achieves 90% PCR with aerogel insulation

LATHAM – PrimaLoft integrates aerogels into insulation fabrics within its Cross Core series of products and for Autumn 2021 they will contain up to 90% post-consumer recycled (PCR) content.

Silica aerogels are highly porous, lightweight structures originally developed by NASA scientists and one of the world's best insulators. They

are composed of more than 95% air and are the lightest solid materials known to man. PrimaLoft engineers have found a way to integrate them into fibres to produce apparel insulation that withstands the extreme challenges of outdoor garments. This provides both enhanced warmth and decreased weight, while allowing the freedom to



design both highly technical apparel and fashionable pieces with a variety of silhouettes.

“When we first began experimenting with the idea of using aerogel in insulation fibres, our focus was on getting the formula right so that we were delivering a new level of thermal performance,” said Vanessa Mason, senior vice-president of engineering, insulation and polymers. “Once we became the first to crack that code, we knew we needed to continue to innovate on the sustainability side and find a way to use as much recycled content as possible, while maintaining that performance. We’re excited with our progress and will continue to explore how we can introduce additional sustainable practices to this technology.”

Products in the PrimaLoft Cross Core series have so far been adopted by more than 50 brands.

## Cintas launches disinfecting and personal hand wipes

CINCINNATI - Hygiene company Cintas Corporation is now offering disposable disinfecting wipes that can kill 99.9% of germs on washable hard, non-porous surfaces and alcohol-free disposable hand sanitizing wipes.

Both are suitable for use in educational, retail, fitness and foodservice facilities.

“Our easy-to-use Disinfecting Wipes give customers and employees peace of mind that disinfecting options are readily available for use at any time,” said Markus Kuykendoll, marketing manager, Cintas. “Placing Disinfecting Wipes and Sanitizing Wipes throughout a facility sends a message that the facility cares about cleanliness and the health and wellness of its patrons and employees.”

When used according to the manufacturer's instructions, the Disinfecting Wipes clean and disinfect in one step, making it convenient for facilities with high foot traffic and single-use areas. The wipes are suitable for use on doorknobs, desks, tables and other hard, non-porous surfaces throughout a facility.

Sanitizing Wipes fast-acting alcohol-free formula are said to make it easy and convenient to use. Wipes may be placed in common areas with high-touch points, such as doors, elevators, shopping carts, escalators, and more, so employees and customers can sanitize their hands easily before and after contact.

## Paper-based packaging for Drylock diapers

VIENNA – Mondi has launched the paper-based EcoWicketBag for the baby diaper ranges of Drylock Technologies, to bring new sustainable packaging to the hygiene market globally.

The global hygiene products manufacturer approached Mondi to create a more sustainable alternative to its existing plastic diaper packaging that would travel well, have strong shelf-appeal, and protect the product, while also using renewable resources and significantly reducing its CO<sub>2</sub> footprint.

“We went to Mondi because of their expertise in paper packaging and their extensive knowledge of the global hygiene market,” said Werner Van Ingelgem, R&D director at Drylock. “Consumers are looking for more sustainable packaging that is kinder to the planet without compromising on the integrity of the product. With the EcoWicketBag, they can be confident of product quality and packaging sustainability.”

Keys advantage of using paper-based solutions is the recyclability of paper and also that consumers are more likely to know how to dispose of it correctly. The EcoWicketBag can be placed in existing paper streams, even in countries with the strictest recycling regulations. An EcoWicketBag made out of fully compostable materials is also available. Mondi also ensured the EcoWicketBag fits with Drylock Technologies’ existing plant processes, meaning it is the first paper wicket bag range that can be filled and sealed on existing machines.

“We work closely with our clients using our customer-centric EcoSolutions approach to create packaging that is fit for purpose – using paper where possible and plastic when useful,” said said Claudio Fedalto, COO of the Paper Bags business of Mondi. “With Drylock Technologies it was key to reduce the amount of plastic used, meet our customer’s sustainability targets and protect the products for consumers. By liaising closely and asking the right questions from the outset, we have been able to deliver on all of the above.”



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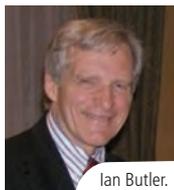
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# People

**INDA**, the Association of the Nonwoven Fabrics Industry warmly remembers Ian Butler, INDA's former Director of Market



Ian Butler.

Research & Statistics, a distinguished authority of the nonwovens industry, and mourns his passing on December 3rd, at the age of 78 in Toronto, Canada.

Butler was recruited by INDA in 1997 and created the role of Director of Market Research & Statistics. For over three decades he served the nonwovens industry by providing valuable market and business intelligence reports on North America, China, and worldwide, as well as providing numerous handbooks on various technologies.

Under his direction, INDA's market and business intelligence became renowned for accuracy, reliability and insightful analysis. Butler was also a frequent speaker at INDA and industry events providing his expert insights on various market sectors' growth in the nonwovens industry.

Butler's vast nonwovens experience included leadership positions in Stearns Canada, Airform Fabrics, Veratec Canada Inc., International Paper, and his own company, International Nonwovens Consulting, Inc. before subsequently joining INDA.

"INDA is saddened by the loss of an industry leader who was an integral part of INDA's growth," said INDA President Dave Rousse. "He was a strong nonwovens advocate who tirelessly provided crucial market research our members needed in making key decisions to advance their business and products."

Butler received his Bachelor's degree from Concordia University in 1966 and a Bachelor's in Business Administration from the University of Toronto in 1972. He is survived by his wife, Kathryn, his brother, his children, and his grandchildren.

At March's Annual General Meeting on March 25, 2021, the Board of Directors of **Autoneum Holding** will propose Liane Hirner and Oliver Streuli for election as new members of the Board of Directors. Peter Spuhler will not stand for re-election. Liane Hirner has been CFO and member of the Management Board of

Vienna Insurance Group, based in Vienna, Austria, since 2018. Previously, she worked for PwC Vienna for 25 years in various positions, including Partner and Managing Director. Oliver Streuli, a Swiss national, has been CEO of PCS Holding, based in Frauenfeld (Canton Thurgau), Switzerland, since 2019.

**Domtar Corporation** has announced that John D. Williams, president and chief executive officer, has contracted Covid-19 and is taking a temporary medical leave of absence.

The company's Board of Directors has appointed Daniel Buron, senior vice-president and chief financial officer, to assume Mr. Williams's authority and responsibility until he returns from his leave of absence. Mr. Buron will continue in his role as Senior Vice President and CFO.

**Jones Family of Companies**, a manufacturer of sustainable nonwovens fabrics, has announced the promotion of Dennis St. Louis to vice president of sales, Bedding and Furniture channel, and the hiring of Anthony Lado as human resources director/HR Leader - Talent Acquisition.

The Board of Directors of **Ontex** has appointed Esther Berrozpe Galindo as new chief executive officer, with effect from Jan. 1, 2021. Berrozpe succeeds Mr. Thierry Navarre, who has been acting as interim CEO since July 30, 2020.



Esther Berrozpe.

During her long career at Whirlpool, Berrozpe led different business units in North America, Europe, the Middle East and Africa, driving business turnaround, improving Whirlpool's competitiveness and strengthening its leadership position in these regions.

"The Board of Directors unanimously approved the selection of Esther Berrozpe as CEO of Ontex. Her strong blend of skills and experiences combined with a profound understanding of Ontex uniquely qualifies her to lead Ontex through its ongoing transformation and

to drive the implementation of its strategic initiatives," said Hans Van Bylen, chairman of the Ontex board. "We would also like to thank Thierry Navarre for having led Ontex as interim CEO during such a challenging time and for his great dedication and contribution throughout his 15 years at Ontex."

To ensure a smooth transition, Navarre will remain at Ontex until March 31, 2021.

Lynda Kelly has been appointed senior vice president for **Suominen's** Americas business area as of January 1, 2021. Kelly has a long experience in different management positions at Suominen. She will continue to report to president and CEO Petri Helsky as executive team member.

"I am happy that we were able to appoint an excellent internal candidate to this position utilizing her experience and versatile expertise in nonwovens business. Lynda is energetic and efficient and she knows the company very well, as she has worked for Suominen since 2014," Helsky said.

The Center for **Baby and Adult Hygiene Products** (BAHP) has announced its 2021 board of directors, led by newly elected chair Sarah Faye Pierce of Kimberly-Clark.

"I am excited to lead BAHP in 2021 and look forward to growing the organization's membership and elevating the voice of the industry by purposefully executing an integrated communications and public policy strategy," says Pierce. During BAHP's Annual Meeting, held virtually in November, the membership also elected its slate of officers and directors.

Officers serving BAHP in 2021 are:

- Chair: Sarah Faye Pierce, Kimberly-Clark
- Vice-Chair: Sharn Sandor, Thinx
- Treasurer: Pankaj Nigam, Edgewell Personal Care

Directors are:

- Tom Carlyle, Lenzing
- Megan Ekstrom, Procter & Gamble
- Jonathan Layer, Fibertex
- Bart Watershoot, Ontex

Pierce will take the helm in providing strategic guidance and value creation in alignment with the organization's mission.




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## February 2021

**26 February - 19 March**

### **EDANA Online Intermediate Course**

Webinar

Web: [www.edana.org/trainings/trainings-calendar](http://www.edana.org/trainings/trainings-calendar)

## March 2021

**9-12**

### **Virtual Intermediate Nonwovens Training Course**

Mar 9 - Mar 12, 2021

Web: <https://www.inda.org>

**10-11**

### **EDANA Advanced Courses Carding**

CETI, France

Web: [www.edana.org/trainings/trainings-calendar](http://www.edana.org/trainings/trainings-calendar)

**17-18**

### **EDANA Advanced Courses Meltblown/Spunbond**

CETI, France

Web: [www.edana.org/trainings/trainings-calendar](http://www.edana.org/trainings/trainings-calendar)

## April 2021

### **OUTLOOK 2021**

The world's premier nonwovens personal care and hygiene & wipes products conference  
Lisbon

Web: <https://www.edana.org/events/outlook/outlook-europe>

## May 2021

**4-7**

### **Techtextil**

Frankfurt  
Germany

Web: <https://techtextil.messefrankfurt.com/frankfurt/en.html>

## June 2021

**9-10**

### **International Nonwovens Symposium**

Lyon - Marriott Hotel

France

Web: <https://www.edana.org/events/nonwovens-symposium/international-nonwovens-symposium>

**12-16**

### **ITMA Asia + CITME 2020**

National Exhibition and Convention Center,  
Shanghai  
China

Web: <http://www.itmaasia.com>

**22-26**

### **ITM & Hightex 2021**

Istanbul

Turkey

Web: <https://www.itmexhibition.com/itm2021/>

## July 2021

**12-15**

### **World of Wipes 2021**

International Conference  
Atlanta Marriott Marquis  
Atlanta, GA  
USA

Web: <https://www.inda.org/events/calendar.php>

**19-20**

### **Filtrex Asia**

Shanghai, China

Web: <https://www.edana.org/events/filtrex/filtrex-asia>

**22-24**

### **ANEX-SINCE 2021**

Shanghai World EXPO Exhibition & Convention Center  
China

Web: [https://www.asianonwovens.org/news\\_detail\\_18.html](https://www.asianonwovens.org/news_detail_18.html)

## August 2021

**23-25**

### **Techtextil North America**

Raleigh

North Carolina

USA

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

## September 2021

**7-10**

### **INDEX20**

INDEX is the world's leading nonwovens exhibition, and a global showcase for the nonwovens and related industries.

Geneva

Switzerland

Web: <https://www.edana.org/events/index>

**30**

### **Circular Nonwovens Forum**

This new annual forum creates a platform for an in-depth engagement with stakeholders on challenges and opportunities in the pursuit of a circular economy for nonwovens.

Location: TBC

Web: <https://www.edana.org/events/circular-nonwovens-forum>

Although every care is taken over the compilation of this diary to ensure accuracy of the dates, these can sometimes be changed due to local circumstances. It is therefore advisable to check with the appropriate organisers before travel arrangements are made.

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