

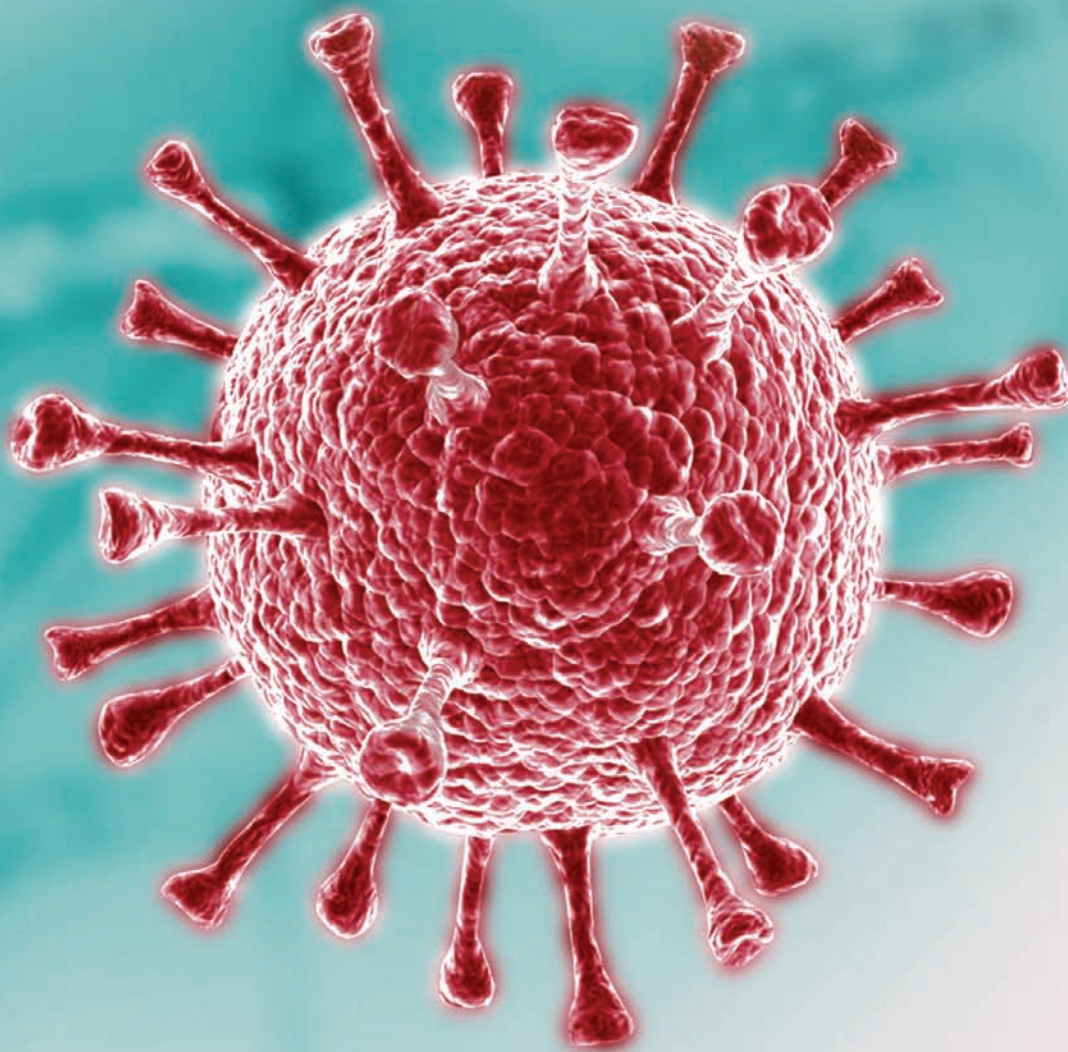
# SNW

June / July 2020

## SUSTAINABLE NONWOVENS

### The new Golden Fleece

Exploring the nonwovens supply chain  
amidst the coronavirus pandemic



#### Fibre versatility

Sustainable resins for  
meltblown applications

#### Sensory perception

Testing technology to  
improve fabric production

#### The fine print

New options for hygiene  
and personal care producers

Technical Innovation and Industry Best Practice

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# Crisis management

The key topic under discussion in this issue of *Sustainable Nonwovens* requires little introduction. The issues around facemasks and the complexity of the personal and protective equipment (PPE) supply chain in the wake of the coronavirus pandemic are amongst the most talked topics across the nonwovens and the textile industries, local and national governments as well as the global media.

A consequence of this is that the nonwovens industry is grabbing the headlines in the perfect storm of a healthcare, political and economic crises.

Our aim in this issue is to look at the complexity of the PPE supply chain and provide valuable insight.

According to European nonwovens association EDANA, for example, there are three types of shortages in the current demand situation that need to be addressed: the production volume of nonwovens, the waiting period for certification and converting capacities.

With this in mind, some of the questions we ask in this issue are why are meltblown nonwovens so crucial to facemask production and why has there been such a bottleneck? We also explore what the response to the shortage of meltblown fabric on the market has been while also looking at the huge response from manufacturers wanting to be involved.

Unsurprisingly, the need for unprecedented levels of facemasks and PPE has also raised the issue of sustainability. These products are almost all single-use plastics and it begs the question of whether we will be reliant on them forever.

During the recent *Sustainable Nonwovens* webinar we heard from Natureworks and the work being done at the Nonwovens Institute in North Carolina, which is currently producing two million reusable N95

masks per week from a new spunbond nonwoven structure.

The nonwoven fabric is constructed from a bicomponent fibre made of Ingeo biopolymer (PLA) and polypropylene (PP) which has been shown to provide significant strength and bulk with equal effectiveness in filtration.

The important point here is that this technology is essentially allowing what has historically been a disposable product to essentially be a reusable product; one of the unique features of its construction is that it can be disinfected and used again with the confidence that it is going to perform well.

This is an example of the kind of thing that excites those pursuing increased sustainability in the nonwovens industry. As Natureworks' Robert Green notes, it is that combination of leveraging unique performance with a base sustainable material and coming up with 'new to the world' innovations that is basically a compounding effect from a sustainability standpoint.

As you read through the issue, one message becomes clear; that is that no country can fight and defeat Covid-19 alone. Cooperative efforts are needed to increase the production of the necessary commodities and distribute the produced protective gear fairly.

Also evident is that the expertise of the nonwoven supply chain and its cooperation with governments is crucial for success and will remain relevant long after this current crisis has ended.



Haydn Davis, Editor

## Editorial office

MCL News & Media,  
Hallcroft House, Castleford Road,  
Normanton, West Yorkshire, WF6 2DW, UK.  
Tel: +44 (0) 1977 708488  
Fax: +44 (0)1924 897254  
E-mail: [info@mclnews.com](mailto:info@mclnews.com)  
Web: [www.nonwovensnews.com](http://www.nonwovensnews.com)

## Editor

Haydn Davis | [hdavis@mclnews.com](mailto:hdavis@mclnews.com)

## Consulting editor

Adrian Wilson  
[awilson@mclnews.com](mailto:awilson@mclnews.com) | [adawilson@gmail.com](mailto:adawilson@gmail.com)

## Deputy editor

Tony Whitfield | [twhitfield@mclnews.com](mailto:twhitfield@mclnews.com)

## Global advertising

David Jagger | [djagger@mclnews.com](mailto:djagger@mclnews.com)

## Subscriptions & sales

Paula Jones | [subscriptions@mclnews.com](mailto:subscriptions@mclnews.com)

## Design

Gavin Gibson | [info@ggibsoncreativedesign.co.uk](mailto:info@ggibsoncreativedesign.co.uk)

## EDITORIAL ADVISORY PANEL

**Dr George Kellie**, Kellie Solutions  
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## Insight: Covid-19

### 18 The new Golden Fleece

Consulting editor Adrian Wilson summarizes the major events arising from the global shortages of PPE.

### 22 Investigating the PPE supply chain

A recent Sustainable Nonwovens webinar explored some of the key issues surrounding the PPE supply chain in the UK.

### 27 Europe calls for collective action

Europe's nonwovens sector is addressing the challenges in getting essential PPE supplies to the patients and healthcare workers that need them.

### 34 Don & Low meltblown investment

A new meltblown installation will make Don & Low one of only a handful of companies in Europe capable of supplying essential filter media material.

### 35 Meltblown simulation

EA new software simulation system for meltblown production could potentially help reduce the industry's dependence on producers in Asia.

### 39 Productive partnerships

The US nonwovens industry is continuing to ramp up its efforts to provide the necessary PPE materials to combat the Covid-19 pandemic.

## Features

### 36 Fibre versatility

The use of sustainable resins in meltblowing systems is a key growth area for Fibre Extrusion Technology.

### 38 Rapid startup

ACG Group's multi-million euro initiative is viewed as a long-term investment.

### 46 Sensory perception

Mahlo has unveiled a new sensor for nonwoven fabrics.

### 47 The fine print

Web Industries is offering a number of new solutions for printing in the hygiene and personal care sectors.

## Every issue

### 12 Nonwovens News

### 49 Material Matters

### 54 News Extra

### 56 People

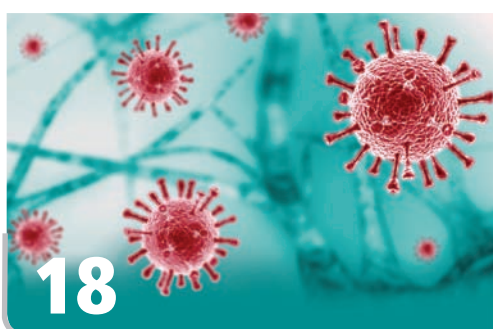
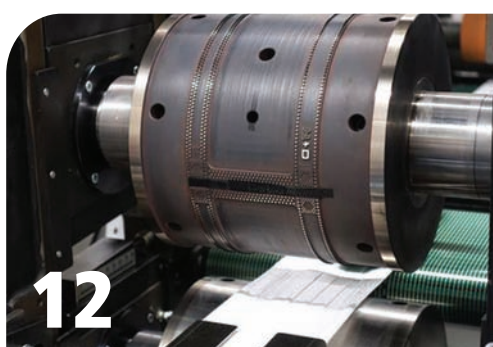
### 57 Trade shows and conferences



39



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# NONWOVENS NEWS

LATEST INDUSTRY NEWS FROM  
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## North American capacity flat for 2019

CARY - North America's nonwoven capacity increased to 5.479 million tonnes in 2019, a net increase of only 0.9% (51 thousand tonnes) compared to the previous year.

These latest figures can be found in INDAs new Annual Nonwovens Supply Report, which noted that the growth figure accounted for the addition of new lines, as well as machine productivity increases and line closures to arrive at a net increase growth figure.

In the last three years, the report says, 64 lines have come

online and 23 lines have been shut-down. The majority of the new lines are making engineered materials for the transportation, home/office furnishings, and filtration markets.

Based on extensive research, producer surveys and interviews with industry leaders, the report provides an overall view of North American supply, including the key metrics of capacity, production and operating rates, in addition to regional trade. The 70-page report contains 34 figures and 11 tables, with four new figures this year.

Unveiling this seventh edition of the report, Dave Rousse, INDAs President said that the publication was the most complete and accurate in existence for North American nonwovens supply information, including data for both rolled goods for sale and

## Oerlikon meltblown line in place at Innovatec

PFÄFFIKON – Germany's Federal Minister of Economics Peter Altmaier has handed over the first notice of funding to Innovatec GmbH in Troisdorf, as part of the country's recently-launched nonwovens production funding program. The North Rhine-Westphalian company intends to produce an additional 1,500 tons of nonwoven per year with two newly-installed and subsidized meltblown lines, one of which is from Oerlikon Nonwoven. The additional volume will enable the production of more than 1.5 billion protective masks. Innovatec GmbH has invested a double-digit million euro amount in the two new production lines for meltblown nonwovens, both made in Germany.

"We are very proud to have been involved in this project from the beginning and to be able to actively support such an important nonwoven producer as Innovatec with our meltblown technology," said Rainer Straub, head of Oerlikon Nonwoven.

"We want to significantly expand production capacities for protective equipment in Germany and thus effectively reduce our dependence on imports," said Altmaier. "Our long-term goal is to cover the entire value chain – from machines to nonwovens and protective masks. The investment by Innovatec GmbH has brought us a big step closer to our goal of an additional 4,000 tons of meltblown nonwovens annually."

In order to also promote the further value-added chain, the support programme of the Federal Government was supplemented by two further modules on June 1, 2020. With these, the establishment and expansion of facilities for the production of up to seven billion certified protective masks will be supported with an investment grant of up to 50 per cent.

Oerlikon Nonwoven significantly ramped up its production of the machines and systems for its meltblown technology some months ago and the demand has resulted in a pleasing increase in order intake in a very short time.

"We are already looking ahead to 2021 thanks to an attractive order pipeline," said Raub. "Our order intake is now in the upper double-digit million Euro range. We have adjusted our delivery times to the extent possible. This is what has enabled us to deliver the first meltblown line here at Innovatec. Further deliveries and installations are scheduled globally."





also material produced for internal consumption. "It also presents the industry operating rate; the essential element for strategic planning and business investment decisions," Rousse said.

Further findings show that North American imports and exports, in tonnage, decreased 3.0% and 18.6% respectively year-over-year, led by declines in trade with China.

However, the trends of downward exports and upward imports continued, as over the last five years' exports have declined 7.7% annually and imports have increased 7.8% annually.

As INDA notes, even with the significant shifts in North American trade dynamics, nonwovens tend to stay where they are produced, with the net trade balance (imports less exports) accounting for less than 5% of the region's capacity.

"It is INDA's objective to provide valuable data and actionable industry information to enhance decision making," added Brad Kalil, Director of Market Intelligence & Economic Insights, INDA. "As always, the increasing participation of nonwoven producers—both members and nonmembers—providing their insights and results makes our success possible. In the 2017 report we introduced production by end-use market, this year we are pleased to present production by raw material usage."

The report - and the quarterly INDA Market Pulse and monthly Price Trends Summary - are provided to the approximately 365 member companies and associates as part of their membership. The data gathered for this report serves as the foundation for the biannual North American Nonwovens Industry Outlook, which will be available for purchase by Autumn.

## Continued investments by Berry

EVANSVILLE – Berry Global has announced further expansions to its global spunmelt nonwovens capacity, with an \$8 million investment in new machinery and enhancements at its plant in Statesville, North Carolina, and the first line to produce Meltex meltblown materials in South America.

The Statesville investment will allow the company to further optimise its production of in-demand spunmelt applications used in the fabrication of medical gowns, facemasks and other personal protection equipment. In addition, it will make materials used for absorbent hygiene products. The additional equipment and expanded capacity are not expected to be operational until December 2021.

Berry has not stated where it will locate its new meltblown line in South America, only that it is in response to the global demand for facemasks and will add an annual 400 metric tons of capacity – enough to make 500 million surgical-grade masks per year. The new line is expected to be operational by March 2021. It will focus on the production of materials for ASTM L2, L3, and N95 masks and will be upgraded with Berry's patented charging technology, post installation.

During April, Berry announced that it would make meltblown capacity expansions in both the USA and Europe to relieve the severe bottleneck that the need for meltblown layers in facemasks has caused over the past few months.



## Autoneum restarts production in key markets

WINTHUR - Automotive component supplier Autoneum has restarted production following the resumption of activities by major vehicle manufacturers.

In China, the world's largest automobile market, production has been running again since March, while in Europe and North America it has been gradually resumed since mid-May in line with customer demand. Making the announcement, Autoneum also confirmed that despite additional, significant cost-cutting measures, the drastic decline in revenue caused by the corona pandemic in the second quarter cannot be compensated, which will have a significant impact on the net result of the first half of 2020.

While production in China, which was affected first by the corona pandemic, resumed in March and has almost reached pre-crisis levels, customers in Autoneum's main markets Europe and North America completely halted production at the end of March, the company said. In line with the restart of vehicle production by customers in these regions, Autoneum plants also gradually resumed component manufacture in mid-May and are currently producing at reduced volumes in response to customer call-offs.

It is expected that the customers' vehicle production will further increase in the second half of the year.

"At present, it is not possible to predict at what level it will stabilize," Autoneum said. "Measures for additional cost reduction will be consistently aligned with customer requirements and continuously adapted. In North America, the turnaround is proceeding according to plan. The production-free period was used intensively to implement planned production relocations and process improvements."

The company also noted that the financial impact of the Covid-19 crisis is still not quantifiable for the full year 2020 and depends to greatest extent on the further development of the pandemic.

However, it is already apparent that, despite the massive cost-cutting measures that were taken immediately, it will not be possible to compensate for the unprecedented market slump in the second quarter of 2020.

A net loss in the higher double-digit million range is therefore expected for the first half of the year.



## Lydall adds capacity to make 1b face masks per year

MANCHESTER – Lydall is investing in an additional fine fibre meltblown line in response to the exponential increase in domestic and global demand for specialty filtration media for face masks.

The new production line will enable Lydall – one of the few US manufacturers capable of producing high-quality fine fibre meltblown filtration media for N95, surgical and medical face masks – to significantly increase its supply and help alleviate the shortage of meltblown materials, both in the U.S. and internationally.

“In the wake of Covid-19, the need for the filtration media that makes face masks effective has increased dramatically, so much so that it is now being called the ‘golden fleece,’” says Sara A. Greenstein, president and CEO of Lydall, “As one of the only companies in North America and Europe with the technical expertise, supplier relationships and access to the right machines to produce this filtration media, we feel great responsibility to do everything within our power to increase our output, support domestic supply chains. This investment is one example of Lydall’s commitment to do just that.”

The new asset will complement Lydall’s existing global meltblown capacity and is estimated to supply the filtration media for one billion face masks per year, almost a third of the 3.5 billion that the US Department of Health and Human Services has projected as necessary to protect healthcare workers. Lydall expects commercial production to begin in its

Rochester, New Hampshire facility in the fourth quarter of 2020 and plans to hire up to 15 additional employees to support the increase in production.

A technical market leader in the creation of specialty filtration solutions for nearly 100 years, Lydall has quickly pivoted to address the worldwide surge in demand for PPE and other products that support frontline workers and their patients. In addition to manufacturing the critical filtration efficiency layers for N95 respirator masks, ASTM 1, 2, 3 medical masks, and general-purpose masks, Lydall also supplies other support materials for face masks, including comfort layers, protective layers and ties straps.

“Being a trustworthy business partner is a top priority at Lydall. It is always our goal to provide our customers with a consistent supply of high-quality, specialty products and superior customer service,” says Ashish Diwanji, incoming president of Lydall Performance Materials. “As the principal supplier of meltblown filtration media to many of the largest face mask producers in the USA, we are currently operating at full capacity, with our extraordinarily dedicated team running our existing production lines 24 hours a day, seven days a week. We are pleased that the new installation of this asset will enable us to substantially increase our output of this critically-needed product.”

The company has also ramped up production of other much-needed filtration products like needlepunch felt for hospital gowns, medical wipes and absorbent bed pads. In preparation for the U. economy’s reopening, Lydall’s innovation team is advancing its filtration science to develop new, high-efficiency, HEPA-rated filtration media to improve the air quality of public spaces, including office buildings, shopping centers, hospitals and airports.

## Ontex to build first US plant, acquires Albaad assets

AALST-EREMBODEGEM – Ontex Group has announced plans to build a new personal hygiene manufacturing plant in Rockingham County, North Carolina. The new facility is scheduled for first production in mid-2021. Ontex has also entered into an agreement to acquire the feminine hygiene production assets of Albaad in Rockingham County. The North Carolina location for the new plant was selected because approximately half the US population lives within a 1,000 km radius of the state. The strategic location of Rockingham County, the quality of the workforce, as well as state and local incentives were compelling factors in the company’s decision to locate the new facility there. The Albaad acquisition covers the production lines and related equipment in Rockingham County as well as a license for all corresponding inventory and intellectual property. The production lines produce feminine hygiene pads. Ontex will benefit from an experienced team of new colleagues who will join the group and operate the acquired equipment.

“The successful acquisition of Grupo Mabe in Mexico in 2016 provided Ontex with leading own brands and positions in baby care and adult care in Latin America, as well as a fast-growing business of baby care products in the US and Canada,” said Armando Amselem, president of the Ontex Americas, Middle East, Africa and Asia Division. “Our solid performance and business growth prospects triggered the need for local production in the eastern United States, and adding Albaad’s Rockingham County feminine care production assets will expand our offering to retailers and provide new options for us to grow further in this important market.”

“With these meaningful steps we will accelerate the execution of our strategic priority to increase our US presence,” said Ontex CEO Charles Bouaziz. [www.ontexglobal.com](http://www.ontexglobal.com)



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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

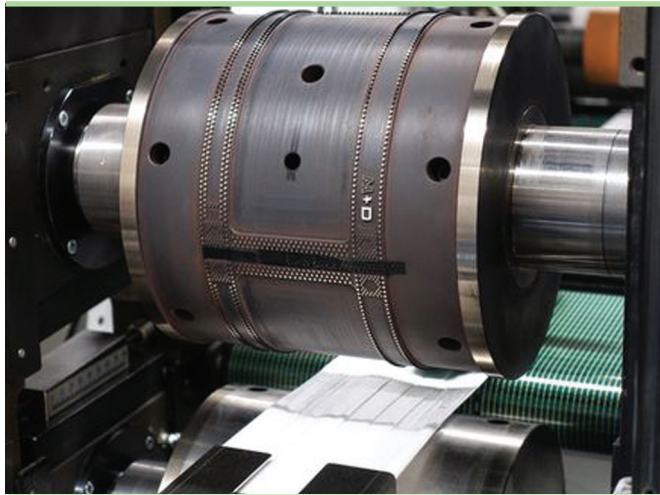
## Fitesa announces four new projects with Reicofil

PORTO ALEGRE - Nonwovens fabric manufacturer Fitesa has signed a deal with technology supplier Reicofil for four new installation projects.

The projects include state-of-the-art equipment that will significantly increase capacity to serve the healthcare and hygiene markets, making nonwovens for medical gowns, drapes, surgical and N95 facemasks, diapers and sanitary products.

The timescale and precise locations of the installations will be disclosed in due course but Fitesa confirmed that its intention was to strengthen its global footprint without a particular focus on any one region.

"For many years Fitesa has been an important player in the healthcare and hygiene markets," said Silverio Baranzano,



## High production mask production machine

MAYEN - A new fully automatic, high-speed facemask converting line has been developed which can produce disposable facemasks for surgical grade applications at up to 800 face masks per minute.

The new Auxilium FM from the W+D/BICMA hygiene group of Winkler and Dünnebier laminates and converts three layers of fabrics, consisting of spunbond, meltblown, thermo-bonded nonwovens and others, and ensures the highest quality hygiene standards for flat masks or surgical masks with a metal stay for better comfort and fit over the nose.

The process involves W+D/BICMA's technology in automatic unwinding and splicing for nonwoven webs, cutting and positioning devices and heat (or ultrasonic) edge welding.

The mask line has a speed of up to 150 m/min (492 ft/min) and is able to produce up to one million high quality face masks per day, which the company says makes it one of the fastest production mask machines in the world.

The masks also have lower cost ear loops with Lycra which, the company says, maximises the low cost per piece in mass production.

Fitesa's CEO. "Together with our commitment to safety, quality, efficiency and sustainability, these new projects will be key to our continued growth and success."

Fitesa specializes in providing fabrics for use in the hygiene, medical and industrial markets. The company manufactures spunmelt, carded, airlaid and speciality fabrics for applications in baby care, feminine hygiene and adult incontinence as well as for medical, agricultural and industrial products.

Headquartered in Gravati, Brazil and with Executive Offices in Simpsonville, SC, USA, Fitesa has fifteen manufacturing locations in ten countries.

## India nonwoven show postponed

DELHI - The Nonwoven Tech Asia 2020 exhibition, scheduled to take place in Delhi, India, in June has been postponed until October following the impact of the coronavirus.

Originally scheduled from 5 to 7 June, 2020, the show will now take place from 8 to 10 October, 2020 at the Pragati Maidan in Delhi.

"Together with the major exhibitors and supporting institutions of Nonwoven Tech Asia 2020, the organizers took the decision to postpone the exhibition after closely monitoring the Covid-19 situation in recent weeks," organisers said. "The Coronavirus outbreak is now a global pandemic according to the WHO. This has alerted all countries to take the urgent precautionary actions. Travel bans and restrictions around the world have increased significantly. All these actions support the decision to postpone Nonwoven Tech Asia 2020.

"Moving the event to October gives us confidence that we can deliver Nonwoven Tech Asia to our international standard and maximize business opportunities to all parties."

## Asahi Kasei to close Nobeoka plant

NOBEOKA - Asahi Kasei is to close its spunbond nonwoven fabric plant in Nobeoka, Miyazaki, Japan.

The plant has supplied the company's Eltas branded nonwoven fabric mainly for hygiene products such as disposable diapers in the domestic Japanese market for around 19 years since it began operation in 2001.

However, the plant was severely damaged when hit by the tornado that occurred in Nobeoka on September 22, 2019, and its operation has been suspended ever since. Although various studies were performed regarding the restoration of operation, the decision was made to close the plant considering the high cost of repair, the deteriorated state of equipment, and the time required for restoration being more than one year.

Moving forward, Asahi Kasei says that its spunbond plant in Thailand will play a central role in the ongoing expansion of polypropylene spunbond nonwoven fabric business.



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## Freudenberg completes Low & Bonar deal

WEINHEIM - Global technology group Freudenberg has completed its acquisition of UK technical textiles manufacturer Low & Bonar as it looks to expand its spunlaid nonwovens business.

Founded in 1903 and headquartered in London, Low & Bonar has 11 production facilities in Asia, Europe and North America employing approximately 1,900 people. In the past financial year, it generated global sales of approximately £350 million. The company will be integrated into the Freudenberg Performance Materials Business Group.

As a spunlaid production pioneer, Freudenberg has offered its customers solutions based on a one-step production process since 1968. It is hoped that Low & Bonar's two-step process solution will give the company greater flexibility and allow Freudenberg to more individually tailor its solutions to customer requirements.

The deal will also allow Freudenberg to offer its customers a broader product range, especially in existing applications for the construction, building interiors, home textiles and automotive sectors.

Like Low & Bonar, Freudenberg uses highly developed technologies in its fabric and textile development and production as well as for textile and material finishing. The two companies also claim to share the same approach when it comes to sustainability with processes integrated in the product cycle: from raw material and energy usage to the entire manufacturing process.

Announcing the deal, Dr. Mohsen Sohi, Freudenberg Group CEO, said that the deal would strengthen Freudenberg's performance materials business. "With Low & Bonar's innovative technology it can further expand its technological know-how," he said.

Dr. Frank Heislitz, CEO of Freudenberg Performance Materials added: "We are opening new fields for Freudenberg

with new applications thanks to Low & Bonar's complementary technologies."

The acquisition means Freudenberg Performance Materials now has 35 production facilities in Asia, Europe and North America (previously 24) and employees some 5,500 employees (previously some 4,000).

## Trützschler & Voith partner for new Spanish line

AMEZKETA - Trützschler Nonwovens and Voith are to supply to a new line to Spain's Papel Aralar with installation scheduled for September 2020.

The PM 5 wet-laid technology was developed as a joint project by both companies specifically for the wipes sector, producing adult and baby wet wipes that are completely plastic-free, flushable and biodegradable.

As part of the package, Voith will supply the HydroFormer, which is one of the main components of the new system. The HydroFormer technology draws on Voith's extensive experience in the paper-making and pulp industries. In this technology, the suspension is heavily diluted to produce nonwoven materials made completely of cellulose.

The Heidenheim-based firm will also supply the stock preparation system, a master reel, and the wet end process for the new system constructed in accordance with the Process Line Package (PLP). A comprehensive automation and control package is also included in the delivery.

Trützschler Nonwovens completes the production process with the proven AquaJet technology for spunlacing and a multi-drum dryer. The many years of expertise and experience of the Trützschler company form the basis of the components that have been adapted to the needs of the wet-laid process.

## Karweb orders Andritz spunlace line

GRAZ - International technology Group Andritz has received an order from Karweb Nonwovens to supply a complete neXline spunlace line for its plant located in Gaziantep, Turkey. The line is scheduled for installation and start-up at the beginning of 2021.

This new neXline spunlace eXcelle line is dedicated to the production of viscose and polyester wipes as well as biodegradable wipes. The production capacity can be up to 18,000 t/a.

Andritz will provide a full line with state-of-the-art equipment – from web forming to drying. The scope of supply includes the complete opening and blending machinery, two inline high-speed TT cards, a proven JetlaceEssentiel unit (including a water filtration unit) for hydroentanglement, a neXdry through-air dryer, and a neXecody S1 system for energy saving.

According to Andritz, the order confirms the strong and successful relationship between the company and Karweb Nonwovens. In 2017, Andritz supplied a spunlace line to Karweb for production of roll-goods made from several types of fibres, such as polyester, viscose, Tencel, cotton and polyamide.

Karweb Nonwovens, founded in 2013, is a division of Kara Holding and the first and only Turkish manufacturer of airlaid products for health care, hygiene and special disposable materials. The company serves customers worldwide.







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## Aspen Surgical swoops for PPE specialist

CALEDONIA - Aspen Surgical Products, a major US supplier of surgical disposable products, has announced the acquisition of Precept Medical Products as it looks to increase PPE capacity for its customers.

Precept designs, manufactures and markets nonwoven, single-use disposable protective medical products, including N95 Respirators, which address infection control challenges faced by healthcare professionals, with a strong emphasis on the U.S. market.

The Arden, North Carolina based company is a key player in the U.S. surgical face mask market with its high-quality



## P&G adds its weight to the PPE push

Procter and Gamble, which has reported record third quarter sales as consumers stay at home and stock up on household essentials such as toilet paper, is moving forward with its plan to produce ten million face masks per month at converted diaper facilities across the world. P&G's CFO Jon Moeller said that the company is currently in the process of building out production capabilities for face masks in both China and the USA and will soon be producing them in Europe and Africa as well.

The company has also started delivering plastic face shields to front-line medical workers in hospitals grappling with new coronavirus cases. These were conceived, designed, produced and delivered in just 14 days and are being manufactured at the company's Cincinnati area and Boston manufacturing plants. P&G officials say they expect to make hundreds of thousands of the shields in the coming weeks and will work with hospitals and government agencies to funnel supplies where needed. Despite record sales up 10% for the last three months, the company has cut its revenue forecast for fiscal 2020, citing damaging headwinds from foreign currency.

Moeller said that the coronavirus pandemic could spark permanent changes in consumer behaviour when it comes to buying trends for certain products.

"We will serve what will likely become a forever-altered health, hygiene and cleaning focus for consumers who use our products daily or multiple times each day," he said.

Fogshield brand and also offers a full line of procedure face masks, non-surgical isolation gowns, lab jackets, scrubs, coveralls, patient gowns, lab coats, and cold therapy packs.

The deal will strengthen Aspen's broad portfolio of medical disposables and patient and staff safety products sold into the acute care market. With Precept's manufacturing facility in Agua Prieta, Mexico, and distribution warehouses in Douglas, Arizona, and Richmond, Virginia, Aspen gains approximately 200,000 square feet of highly efficient and cost-effective manufacturing and distribution capacity, which can be used both for the company's current portfolio as well as future growth initiatives.

"With common manufacturing, regulatory, sales, and distribution processes, we believe that bringing Aspen Surgical and Precept together will result in multiple opportunities to better serve our customers more efficiently and effectively," said Greg Muller CFO of Aspen. "To that end, we are also immediately investing in new capital at the Precept facility, which will increase capacity of PPE that can be provided to our U.S. customers in the midst of Covid-19."

"The Precept acquisition is a wonderful synergistic fit for Aspen, but it also enhances our portfolio with products that are critical for the health and safety of healthcare professionals," added Jason Krieser, CEO of Aspen. "We feel strongly in the quality of Precept's North American-manufactured PPE products, and we look forward to carrying on their mission to help fight preventable infections now at this critical time of pandemic and beyond."

## INDEX exhibition delayed until 2021

GENEVA - The INDEX 20 exhibition has been postponed until September 7–10, 2021 following continued concerns over the spread of coronavirus.

After the original March date was postponed, industry association EDANA initially rescheduled the exhibition for October of this year.

However, as a result of the ongoing uncertainty and the continuing ban on gatherings of large numbers of people in Switzerland, the co-organisers Palexpo and EDANA, have been reviewing the best course of action.

In particular, the organisers acknowledge that the latest developments of the worldwide Covid-19 situation are not yet leading to a normalised situation e.g. extension of confinement periods, no visibility concerning the reopening of international borders and/or international transportation, increasing expert opinions anticipating a negative evolution, etc.

"The safety of all INDEX 20 attendees remains the organisers' paramount concern," EDANA said in a statement. "Whilst Palexpo and EDANA sincerely hope that the ravages of the virus will have abated by the end of the year, the organisers are unable to guarantee that the very significant on-going disruptions will have been resolved by October 2020."

"Palexpo and EDANA consider it is their duty to ensure that the industry's leading nonwovens event takes place under the

best possible conditions. As such, the protection of exhibitors and visitors is the primary concern, in order for all attendees to meet, network and conduct new business together, as they have in past editions.

"As a result, also taking into account various exchanges with the INDEX 20 stakeholders, it appears that there are obvious imperative reasons to postpone INDEX 20 and the organisers have no other choice than to reschedule INDEX 20 once again.

"In the interim, the organisers strongly recommend that everyone continues to follow the sound advice of the national health authorities to protect, as much as possible, all people around the world from Covid-19, and the organisers look forward to warmly welcoming all the attendees to Geneva in September 2021.

Palexpo and EDANA remain available for any further information that may be required.

Please consult the INDEX website and the EDANA website for any updates.

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

## Growth rate to slow for wetlaid market

NEW YORK - The global consumption of wetlaid nonwovens will grow at a rate of 6% (tonnes), 6.5% (m<sup>2</sup>), and 6.4% (\$) from 2020-2025 with the slightly slower growth rates reflecting maturing markets for many wetlaid end uses, including both new and traditional applications, according to a new report.

The report from Smithers Pira, *The Future of Wetlaid Nonwovens to 2025* also shows that the global consumption of wetlaid nonwovens in 2020 will be 606,200 tonnes or 15.0 billion square metres (m<sup>2</sup>), amounting to a value of around US\$1.8 billion.

Growth rates for 2015-20 were 6.5% (tonnes), 6.5% (m<sup>2</sup>) and 6.8% (\$) with these increased growth rates illustrating the rapid

growth of the now included hydroentangled wetlaid segment used primarily in the flushable personal care wipes market.

The report considers the impact of the global political and economic issues, including slowing growth in China and parts of Europe, the ongoing 'trade war' between the US and China, and sanctions against Russia, Syria, Iran, North Korea.

However, the report also notes that the sector will be affected by market issues, primarily substitution by spunlaid and other nonwovens, in some of the older, established markets. However, wetlaid is also participating in some of the newest nonwoven applications.

The report reviews the wetlaid nonwovens markets and processes, with the new inclusion of the important hydroentangled process variant. Other variants included are DRC (double crepe) wetlaid, glass fibre-based wetlaid, all-synthetic fibre wetlaid and standard synthetic/pulp wetlaid.

Smithers' analysis for 'The Future of Wetlaid Nonwovens to 2025' identifies the following major key drivers for the future growth of the global wetlaid nonwovens industry over the next five years:

- User requirements play a key part in growth of the industry, with demand for some products that have specific performance requirements being driven by consumers or users. These include: Single-serve tea/coffee filters, Battery separators, Bio-material filtration.
- The sustainability movement is global and growing. The one constant is a growing desire among global consumers, companies and governments for more sustainable products. Thinking of wetlaid nonwovens as an efficient converter of low-cost sustainable, and eventually non-plastic, fibre into high-performance products offers a future need for this process.
- One of the retail trends in the marketplace in 2020 is the replacement of lower performance and lower cost products with higher performance and lower cost, sustainable products. The cost and sustainability of wetlaid will continue to make it a growing choice in select segments of the rapidly growing wipes market through to 2025.

## Price cap problems for Italy

WAKEFIELD – While wearing face masks has become compulsory in some Italian regions as the country emerges from its Covid-19 lockdown, attempts by the government to impose a price cap on them appear to have backfired. On May 3rd, emergency chief Domenico Arcuri announced that the price of masks would be capped at 50 eurocents and that wide distribution was guaranteed through agreements with supermarkets and pharmacies.

Almost immediately, however, there were reports of problems, with retailers warning that inventories were running low, while pharmacies in some regions said they would stop stocking masks because they were unable to secure them at a price below the 50 eurocents cap.

In major cities, price-capped masks are reported to be available in only one pharmacy out of four.

Italy has also tried to boost its domestic production capacity and back in March, a consortium of companies was established to produce about 14 million masks per week – half the country's demand. How rapidly this supply chain will be fully functional is currently unclear.

Shops, restaurants and bars are re-opening this week in Italy, which will only exacerbate the demand for masks, and it looks unlikely the initial price cap measure will hold.



## PureCycle honoured with sustainability innovation award

HANGING ROCK – Employing proprietary recycling technology developed and invented by Procter & Gamble, PureCycle Technologies has been honoured at the 2020 Relfocus Sustainability Innovation Awards, an event run by the US-based Plastics Industry Association.

PureCycle picked up the Leadership in Innovation Award for its use of post-consumer and post-industrial polypropylene (PP) in consumer-facing applications.

Due to the coronavirus pandemic, the People's Choice Award was voted on virtually by previous Relfocus attendees and plastics industry experts through the Relfocus website.

"We are excited to announce PureCycle Technologies as the winner of the Leadership in Innovation Award," said Ashley Hood-Morley, senior director of sustainability and materials at Plastics Industry Association. "These awards continue to demonstrate how the plastics industry is moving the needle in sustainability and recycling innovations."

The process has seen PureCycle Technologies turn discarded carpet into 'near virgin-quality', clear, odourless, ultra-pure recycled polypropylene (UPRP) resin at its new Feedstock Evaluation Unit (FEU).

The completion of the FEU is the first of two phases for PureCycle's plant in Hanging Rock, Ohio. The second phase, which will come online in the summer of 2021, will process around 54 million kilos of waste PP each year to produce over 47 million kilos of virgin-like PP per year, for use in consumer goods packaging, home furnishings and other applications that

currently have very limited recycled PP options today. PP is, of course, also the chief raw material in many nonwovens-based disposable hygiene products.

PureCycle is also working towards submitting for a letter of non-object from the FDA for the ultra-pure recycled polypropylene to be used in food grade applications.

The development of the technology began when P&G was looking for more ways to incorporate additional recycled content into its applications, specifically targeting PP. With limited amounts of rPP available in the market, P&G set out to develop its own process to purify waste polypropylene.

The PureCycle process removes colour, odour and impurities, producing virgin-like resin. This ultra-pure recycled polypropylene (UPRP) delivers a consistent product that meets virgin-like specifications to meet the demands of various industries. In fact, demand for recycled PP is so high, PureCycle's first plant is fully subscribed and the company has also started to look for a site for a large-scale operation in Europe.

"This technology, which can remove virtually all contaminants and colours from used plastic, has the capacity to revolutionize the plastics recycling industry by enabling P&G and companies around the world to tap into sources of recycled plastics that deliver nearly identical performance and properties as virgin materials in a broad range of applications," said Kathy Fish, P&G's Chief Research, Development and Innovation Officer.

While the FEU is located at the first plant's site, it is a perpetual asset to the company that will allow PureCycle to refine the operating conditions and process waste polypropylene from around the world to help with the sizing for future plants in other geographies. Plant 1 will process a broad range of feedstocks, ranging from carpet and food packaging to toys, automotive components and other plastic waste.

## EDANA outlines Outlook programme, registration open

BRUSSELS – Global economy and trade, the pandemic & the industry response, and Innovation, sustainability & product stewardship, will all be key topics at September's Outlook conference.

Billed as the world's premier nonwovens personal care, hygiene & wipes product conference, this year's event will take place online following the impact of the coronavirus pandemic.

Registration for the three day event, which is scheduled for 23 - 25 September, is now open.

Outlook 2020 will feature a daily 3-hour webinar offering exclusive and insightful content to help businesses cope with the post-Covid era and evaluate its new perspectives in these changing times.

The programme includes the following sessions:

23 September: Global Economy and Trade: scenarios for 2020 - 22

24 September: Pandemic & Nonwovens industry response: Challenges turned into opportunities - A resilient and recession-proof industry?

25 September: Innovation, Sustainability and Product Stewardship: same answers in a changing market environment?

"This new format of Outlook will obviously take stock of what observers have noticed as a major impact of the pandemic on the health - and personal care nonwovens supply chain, namely, a renewed focus on medical products, which could presage to some extent a relocation of a dedicated supply chain in EMEA," said Pierre Wiertz, General Manager of EDANA. "We are looking forward to sharing expertise and unique information with our Outlook participants."

Registrations are now open for this conference with a special package for companies registering for both Outlook 2020 and Outlook 2021, taking place in Lisbon on 21-23 April 2021.

All information can be found here: <https://www.edana.org/events/outlook/outlook-europe>



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## Scottish firm launches soluble anti-viral wipe as it eyes US expansion

GLASGOW - As it looks to expand into the US market, the Scottish firm behind the development of the world's first dissolving wet wipe is to launch a soluble anti-coronavirus product.

Award winning McCormack Innovation, which has successfully developed a suite of dissolving materials specifically designed for the medical & personal care markets, is currently rolling out an international expansion strategy with a first move into the US sector.

The company has a proven track record in developing pioneering products for the medical market. It recently announced the creation of the world's first 100% environmentally friendly soluble wet wipe that dissolves in seconds when immersed in water and has been awarded the Fine to Flush accreditation by Water UK. It has also recently announced that it is soon to launch a soluble anti-coronavirus wipe.

Working with the support of Dr Michail Kalloudis, Director of Impact Solutions laboratory, Grangemouth, Scotland, Dr Kalloudis has confirmed having used the appropriate chemicals at the correct volumes that these wipes are effective against viruses including the coronavirus.

Scientific testing has proceeded positively and final EN certification trials are to be carried out by Melbec labs with the certified product being ready for market within a matter of weeks.

## Softys ups converting capacity

SAO PAOLO - Softys, the leading South American manufacturer of absorbent hygiene products, has installed converting machines for the production of face masks at its plants in Chile and Brazil and has further machines on order to be put in place in Peru and Mexico, along with a second in Brazil, in the next few months.

Each machine is reported to be capable of producing 1.5 million three-fold masks – which will be distributed for free through local public health services – per month.

The company is aiming to generate a collaborative supply chain that is local, timely, safe and with production of the required quality.

"We have seen the urgent need for masks, so we are expanding our initial production from three million a month in Chile and Brazil to more than 18 million," said Gonzalo Daraidou, general manager of Softys. "We are not addressing this challenge as a business, but as the response expected from a company focused on caring for people, just as we do with our hygiene and personal care products."

The masks being produced are three-layer SMS models and the machines are fully automated.

"We are convinced that the local production of masks will provide a lot of tranquility at a time when the external dependence on these products has become complex, as a result of high global demand," said Darraidou. [www.softys.com](http://www.softys.com)



Charlie Baynes Reid left and Brian McCormack right.

"When the virus struck it was clear it was very contagious; we looked at developing a wipe that was effective against the virus that could be flushed away down the sink or toilet," said Brian McCormack. "After extensive trials we managed to overcome the issues of using highly complex chemicals with sensitive material that enables the structure to hold and do its job of killing the virus then dissolve in water in a matter of minutes."

The main areas of use for this wipe would be in any ICU (Intensive Care Unit) where Covid 19 is known to be present. At the moment wipes are bagged and taken out of the unit to be disposed of which presents a high risk of cross infection. "Our wipes would never leave the unit," added McCormack. "They would simply be flushed away. This would immediately break the chain of cross infection from this monster virus."

McCormack Innovation has also announced the appointment of Charlie Baynes-Reid as Special Advisor & North American representative based in New York City.

Baynes-Reid is dual qualified as an English lawyer and a member of the New York Bar.

He is a founding partner and Managing Director of NewHold Enterprises.

Over the past 20 years as a lawyer and investor he has spent time working in Europe, Asia, Australia and North America and has significant experience in consumer products and business services investments focused on health and wellness and environmental services.

Baynes-Reid currently serves as the Chairman of Macro Energy, is on the Board of NewHold AEC Corp., Powerful Foods LLC and is a Board observer for Luna Pharmaceuticals, Inc.

McCormack said: "We are extremely happy that Charlie has joined the McCormack team and brings with him experience in working in markets around the world and navigating commercial and business issues to establish successful and enduring commercial partnerships. His combination of legal and commercial experience will be a real asset for McCormack Innovation."

Baynes-Reid commented: "I am very excited to have the opportunity to partner with McCormack Innovation to bring their unique range of products to markets around the world, both for medical and general consumer applications. What the business has been able to achieve to date is nothing short of remarkable and their dedication and focus on solving problems and developing solutions which will have long standing environmental and health benefits is inspiring."

Web: <https://www.mccormackinnovation.co.uk/>



## 'Virtual' option for INDA's WOW conference

CARY – INDA, the Association of the Nonwoven Fabrics Industry, has added a 'virtual' registration option for its World of Wipes (WOW) International Conference, which is scheduled to take place from August 24-27 in Minneapolis, Minnesota.

Virtual WOW offers wipes professionals a unique website link that will contain each speaker's presentation with audio and visuals to replay at any time.

Content of the 14th edition of the World of Wipes is focused on breakthrough wipe technologies, buyer demographics, sustainability, industrial and flushable wipes, substrates, preservatives, single use plastics, and strategy-setting market intelligence. Presentations will also address industry changes prompted by Covid-19.

"While nothing can replace the value of face-to-face meetings and we look forward to seeing the industry reconvene in person, Virtual WOW is an option for our industry members who cannot attend in person yet want the benefit of the highly relevant program content," said Dave Rousse, INDA President. "Virtual participants will hear and see each speaker's presentation and slides as if they were sitting in a front row conference seat. We're adapting to the 'new normal' to better

serve the dynamic wipes industry. With this Virtual WOW option, no one should miss this exciting event."

Finalists for the prestigious World of Wipes Innovation Award are:

- Berk International, LLC: Food Fresh liners are the first nonwovens that can absorb accumulated moisture in sealed produce packages and reduce wilting and spoilage. The product reduces consumer produce waste by keeping produce fresher for a longer period of time.
- ITW Pro Brands: The DETEX Metal Detectable Scouring Pad is designed to be detected by metal detectors currently in place in most food production facilities and minimize the risk of foreign object contamination. The base is a nylon needlepunched nonwoven within a resin system with abrasive particles sprayed onto the web.
- Lonza LLC: The NUGEN NR Disinfectant Wipe is designed to be a one-step no-rinse food contact surface disinfectant, cleaning and disinfecting the surface without detergent pre-clean or potable water-rinse requirements. Also, the wipe kills a broad set of bacteria and viruses such as Norovirus – a key food safety gap not addressed by pre-saturated food contact surface sanitizing wipes.

For additional information, to register, or reserve a tabletop display, visit [www.worldofwipes.org](http://www.worldofwipes.org) or email [tleatham@inda.org](mailto:tleatham@inda.org), or call +1 919 459 3726.



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# The new Golden Fleece

At the start of 2020, few people would have guessed that nonwoven fabrics would dominate news headlines around the world. Consulting editor **Adrian Wilson** summarises the major events arising from the global shortages of PPE.

It's hard to believe now, that just a few months ago, as the nonwovens industry prepared for the INDEX 2020 exhibition which was scheduled to be held in Geneva from March 31st to April 3rd, a key issue for debate was the future of single-use, disposable hygiene products.

Nobody could have predicted that the Covid-19 pandemic and shortages of disposable facemasks would suddenly push the production of PPE and meltblown nonwoven fabrics to the top of the global political agenda.

"Forget gold, copper, silver and steel," wrote Guy Chazan for the UK's Financial Times, on May 1st. "The hottest commodity of the coronavirus crisis is a little-known synthetic fabric called meltblown."

"The USA has a strategic petroleum reserve. It has strategic military assets. Where are the strategic meltblown assets?" Forbes investment specialist William Baldwin demanded on April 3rd.

Less than a two months earlier, very few people outside certain industries even knew what PPE was, let alone meltblown nonwovens.

Suddenly the world couldn't get enough of single-use disposables.

## Trump v 3M

The *Forbes* editorial followed President Donald Trump's blistering attack on the multi-corporation 3M during a press briefing in Washington.

3M was under intense pressure at that time for continuing to supply facemasks to other countries. On Thursday April 2nd, Trump invoked the Federal Production Act – last used in the Korean War – giving his administration the right to use "any and all authority" to get hold of the facemasks and PPE it needed.

## Modern piracy

Earlier that week, French President Emmanuel Macron had toured a facemask manufacturing plant to reassure the French people that his government was doing all within its power to increase output.

The following day, French and German officials were accusing the US of using "wild west tactics" and a policy of "modern piracy" in a dispute over a mask shipment from China.

Unbelievable stories started

to emerge:

- Of shady US operatives halting planes on runways with cases full of cash.
- Of mask consignments being escorted from factories to airports by armed guards.
- Air-freight rates out of China climbed from three to 18 dollars per kilogram for such products.
- The relations between EU member states started to fracture, notably between Italy, Germany and France.

- Aer Lingus in Ireland – having never flown to China before – achieving approval for an entirely new route in and out of the country. This would normally take six months but was achieved in just a week.
- There were reports of faulty bulk consignments being dropped on European countries.
- Major Western corporations entered the field – BMW, Bosch Cummins, Ford, Milliken, New Armor, Nike and many more. Major luxury and retail brands got in on the act too. Gucci, H&M, Louis Vuitton, Prada and Zara opened up their supply networks.
- Drug dealers and other criminal elements also started to move in on the market.

“ Trump invoked the Federal Production Act – last used in the Korean War – to secure PPE supplies. ”

## Solutions

As politicians blustered and free market principles became cut-throat, manufacturing industries across the US and Europe were mobilising and coming together to provide concrete solutions.

Even prior to Covid-19, 3M already produced around 1.1 billion facemasks at its global sites annually – specifically the highly effective N95 respirator-type masks.

At the end of March, the company said it planned to increase its capacity to 2 billion globally within 12 months.



3M Facemask.



Honeywell, the other major US manufacturer of N95 masks also announced rapid expansions.

## China's response

There is general agreement that China quickly moved to control the global market for both meltblown and facemasks.

Early in February, it began preventing the export of meltblown nonwovens and the price for them on the market increased four-fold. It also effectively made itself the sole customer of the major mask-making factories, including foreign-owned firms within China.

Roughly two billion masks were also imported into China in February, many of them from Europe.

“Aer Lingus— having never flown to China before — achieving approval for an entirely new route in and out of the country in just a week.”

Once in Covid-19 recovery mode, China wasted no time in responding to the growing demand from the rest of the world and by mid-March was reported to be manufacturing 200 million facemasks a day – more than twenty times the amount it made at the start of the year.

Factories that previously made shoes, iPhones and cars were retooled to the task. BYD, one of China's largest privately-held companies rapidly created the world's largest mass-produced nonwoven facemasks plant.

Before the pandemic, half the world's masks were manufactured in China. Now, the figure may be as high as 85%. In many countries, if China isn't delivering your masks and PPE in general, you basically have no access.

## Price wars

China also produces over half of the world's supply of meltblown nonwovens, but still doesn't have enough.

Shandong-based Dawn Polymer had a 40% share of the meltblown nonwovens in Chinese-made masks in January and has seen its share price triple. Now, however, it faces growing domestic

competition. Sinopec, the Chinese state-run oil company, is currently setting up 12 meltblown production lines which will have a total capacity of 6,000 tons a year.

Meanwhile, crazy prices were being quoted on the open market.

One Hong Kong trader was offering to pay €100 per kilogram noted a surprised Pierre Wiertz, head of EDANA, the European Nonwovens and Disposables Association.

By the beginning of May, the price of meltblown in China stood at Rmb400,000 (\$56,500) a ton according to analysts – twenty times its pre-crisis price.

## Technology

A spate of new meltblown line installations in the West has been announced in the past few months and many other companies have repositioned their existing capacity to making FFP3/N95 facemask materials.

In addition, the two leading manufacturers of spunmelt nonwoven machines – Reifenhäuser Reicofil and Oerlikon Nonwoven – both based in Germany, introduced shortened delivery times and turned over their own pilot lines to the production of emergency supplies around the clock.

While Germany has not made its own masks in the past, relying on imports from China and elsewhere, the German government has quickly put the entire industry out to tender, guaranteeing prices until the end of 2021.

Around 50 German companies have secured a place on the scheme to produce ten million specialised FFP3 masks and 40 million operating room standard masks a week from August.

## Domestic demand

Innovatec, a family-owned firm based in Troisdorf, Germany, is the largest producer of meltblown fabrics in Europe, estimated to have more than 50% of the continent's capacity.

The company is well-placed to meet the rising domestic demand for materials, having ordered a new meltblown production line last year. After the coronavirus crisis broke, it invested in two more. This will enable it to cover 85% of German demand and enough for four billion facemasks per year.

“I'd never have thought meltblown could become such a prized commodity,” Christian Klöber, Innovatec's owner, told the *Financial Times*. “The prices some Asian buyers are offering us are just eye-watering.”

## Gold fever

Also based in Troisdorf, is Reifenhäuser Reicofil, the leader in meltblown production technology. Around 75% of all hygiene and medical nonwoven fabrics worldwide are estimated to be made on Reicofil lines.

“When you start thinking how many production lines will be needed to meet demand, your head starts spinning,” said managing director Bernd Kunze. “We have been inundated with orders from Europe, Asia and the US and have dramatically increased our delivery frequency in response. Before, it would take us at least eight to nine months to supply a production line, now we're doing it in three-and-a-half to six months.”

Reicofil will benefit from a new subsidy regime being put together in Berlin, under which the government will cover 30% of the cost of a meltblown production line, as long as the manufacturer pledges to sell exclusively into the German and European market by the end of 2023.

EDANA now estimates that Europe is set to triple its output of meltblown between March and the end of the year, from 500 tons a month to 1,500 tons

“There's a kind of gold fever at the moment,” Innovatec's Christian Klöber concluded.

## North America

The unique combination of factors that led to North America's shortages of facemasks was outlined in detail in a recent webinar presented by Brad Kalil of INDA – the North American nonwovens association.

Disposable medical apparel items – which include surgical gowns, scrubs, caps shoe covers and disposable bedding – all have to be individually sewn, as opposed to being converted by automatic equipment as diapers and other AHPs are. Labour rates for sewing machinists in the USA average about \$9 an hour, compared to \$1 in China.

Consequently, in 2019 the USA



imported some 92.5 million dozen packs of disposable medical apparel – 1.1 billion items – directly from China.

This figure does not even include facemasks, which INDA includes in its statistics under the separate filtration category.

At the start of 2020, the pipeline of supply from China to the USA for all of these products was completely cut off.

Kalil said that there were eight companies operating 44 lines for composite spunmelt nonwovens in the USA, but virtually all of this capacity was sold out for the production of hygienic disposables like diapers, for which demand has been higher than ever.

There are a further 24 US companies operating 79 specialised meltblown lines.

Around 45% of this output is for filter media, which uses finer fibres and requires electrostatic charging, while the remainder is for applications including transportation and wipes and a range of other niche applications.

## Unused capacity

INDA estimates there is still an estimated 18% of unused capacity in the US. It is working with manufacturers of sorbent products for oil containment applications as one potential source of new materials.

In looking to the future, Kalil said that to avoid similar shortages in the future, the US would need to become self-sufficient in these materials. The onshoring of production, however, would certainly require government intervention.

Instruments such as the Defense Production Act (DPA) could be employed, or a Berry Amendment type of measure to require hospitals to source from US producers, like military equipment.

In the UK, shortages of PPE continuously dominated news headlines.

Between February 18th and April 25th, the UK's NHS and associated industries burned through over a billion items of PPE – all of them, of course, single-use disposables.

Don & Low in Scotland is the only company with both industrial spunbond and meltblown manufacturing, with other players, such as Ahlstrom-Munksjö, Freudenberg and Hollingsworth & Vose potentially having useful materials.



## UK independence

Also, having in theory exited the European Union at the end of January, the UK has declined to become part of a general bulk EU procurement PPE purchase.

It can do so while still in the transition period.

This decision could either reflect the UK government's wish to assert early independence, or on the other hand, just panic and incompetence. The outcome in retrospect could turn out to be wise or foolish.

However, the UK is now competing directly against the buying power of the EU bloc on the free market.

“In 2019 the USA imported some 92.5 million dozen packs of disposable medical apparel – 1.1 billion items – directly from China. The figure does not even include facemasks.”

## Scottish action

In the UK, it took Scotland, to move things forward.

On May 5th, the Scottish Government announced it would provide Don & Low with a £3.6 million repayable loan towards the £4.5 million purchase of a new meltblown line dedicated to the production of N95 standard filter media for facemasks and respirators.

“Covid-19 isn't going away any time soon, so while we have enough masks to protect our frontline health and social care workers now, we are also taking a long-term view to build PPE manufacturing in Scotland to meet

future need,” said Scottish Government Minister for Trade, Investment and Innovation, Ivan McKee.

Linda Hanna, managing director of Scottish Enterprise, through which the finance is being arranged, said that the unprecedented demand for facemasks had highlighted the fragility of existing global supply chains.

“Investing in this equipment will boost domestic manufacturing and supply, while creating export opportunities,” she said. “Most importantly, it means the highest-grade medical facemasks will continue to be produced for those who need them most.”

The installation will make Don & Low one of only a handful of companies in Europe capable of supplying the essential filter media material, although it's not clear when it will be up and running, with the major German manufacturers of this technology reported to have a backlog of orders stretching anything up to two years, despite having reduced their delivery times.


## Faultline

PPE shortages have exposed a major faultline in the globalised world order that existed before Covid-19 and is already being forensically scrutinised for the future.

Many questions will be asked and sooner or later it will be time to address the issue of environmental impact of the world's complete reliance on single-use, plastic based products during this terrible pandemic. **SNW**

This article has been adapted from a presentation made for the Nonwovens Network UK on May 15th.





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# Face masks, PPE and Covid-19: investigating the nonwovens supply chain

A recent *Sustainable Nonwovens* webinar explored some of the key issues surrounding the PPE supply chain in the UK.

The issues around facemasks and the complexity of the PPE supply chain in the wake of the coronavirus pandemic are amongst the most talked topics across the nonwovens and the textile industries, local and national governments as well as the global media.

A consequence of this is that the nonwovens industry has been grabbing the headlines in the perfect storm of a healthcare, political and economic crises.

The aim of a recent Sustainable Nonwovens webinar was to look at the complexity of the PPE supply chain and provide insight to industry stakeholders, manufacturers, converters, end-users and politicians.

Joining Haydn Davis, the editor of *Sustainable Nonwovens*, were a number of experts from different parts of the nonwovens supply chain including:

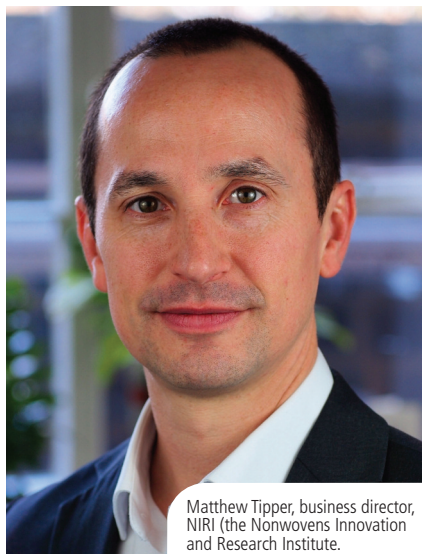
- **Andrew Halloway**, technical director, Warren Nonwovens.
- **Eamonn Tighe**, European business manager, NatureWorks.
- **Robert Green**, Americas business manager, NatureWorks.
- **Matthew Tipper**, business director, NIRI (the Nonwovens Innovation and Research Institute).

**Haydn Davis: What are N95 or FFP3 standard facemasks and why are they specified?**

**Matthew Tipper:** N95 and FFP3 are medical grade respirators capable of very high levels of particle capture. The two

accreditations have a number of similarities. N95 is used in North America whereas the FFP is mainly used in Europe. The FF stands for filtering facemasks and can be graded between one and three whereby one is the lowest performing and three is the highest performing.

FFP3 should be able to capture 99% of 0.3 micron particles. The filtering is important but the standards also capture a number of other important parameters. They need to be able to filter sol, aerosol and paraffin oils but they should also fit correctly so the air is breathed in through the filter media and not around the filter mask, you should be able to breath through them so the breathability should be appropriate for the protection, and CO<sub>2</sub> should not build up in the mask.



Matthew Tipper, business director, NIRI (the Nonwovens Innovation and Research Institute).

**HD: Why are meltblown nonwovens so crucial and why has there been such a bottleneck?**

**MT:** Meltblown fabrics are used in all of these medical grade masks as well as surgical masks, and the meltblown does most of the particle capture. Without the meltblown, you don't really have an efficient facemask. The meltblowing process itself creates very fine fibres with lots of surface area and that's good for capturing particles.

There's a bottleneck because there is not a lot of capacity, the process is not high volume and there is limited capacity for mask materials. That market has been very stable and very predictable for many years so people have not introduced a lot of capacity. However, since Covid-19, this has seriously interrupted the market dynamics and created a bottleneck.

**HD: Who's making meltblown in the UK?**

**MT:** In the UK capacity is quite limited. Only Don And Low are currently capable of producing fabric for facemasks and they are obviously very busy at the moment. There are other producers of meltblown in the UK but they are supplying other markets such as automotive or industrial spill control. They're not necessarily able to easily switch to making facemask material.

**HD: Andrew, what has been the response to the shortage of**



## **meltblown on the market from Warren Nonwoven's perspective?**

**Andrew Halloway:** Early on in this supply chain crisis we spotted that meltblown would be considered as a bottleneck. Being in a position where we supply various nonwovens into the UK market we quickly tried to re-engineer existing technologies to try and find an alternative. We supply into sectors such as medical, for example, with wet and dry wipes and we as a company are quite familiar with the hurdles you need to overcome to get a wet/dry wipe into the medical sector. We're also familiar with wound care applications so it really does take a combined effort from R&D through to commercial to get something like this established.

We have thermobond, through-air-bond and needlepunch and spunlace materials, which we think, can do a similar function to meltblown and then offer up alternatives so that the supply chain doesn't suffer such a bottleneck, and perhaps we can help some of the many potential mask manufacturers create a product that will pass the relevant approvals.

### **HD: What about other materials such as fabrics for gowns and drapes?**

**AH:** There has been a bit of a push towards sourcing from companies in the Far East over the years, but certainly we did have established technologies for manufacturing such products. We've quickly created a link for potential supply to the UK for fabrics for medical drapes and medical gowns. We do have an established technology in the form of a spunlace chemical bonded material and such that we are now in a position where we are supplying into the UK manufactured gowns from the continent. But again there is a bottleneck there as they can only produce so much. So an established UK manufacturer of end product is a much sought after thing.

### **HD: There has been a huge response from apparel manufacturers wanting to be involved. What are the key requirements of the nonwoven fabrics compared to general apparel textiles?**



Andrew Halloway, technical director, Warren Nonwovens.

**AH:** The first key point here is that because of the nature of nonwoven fabric, you can cut it and sew it and you don't need to overlock so its quite a resilient material for apparel. We've had so many conversations with companies who were making clothing for various industries and they've been quickly able to offer themselves to manufacture garments such as gowns. The key thing for them to understand is that it's not just a case of purchasing a nonwoven off a shelf even if it comes with a technical approval. It's essential that the end manufactured product gains the approval.

### **HD: Are there any alternatives to meltblown for face masks? If so, how widely available are they? I believe NatureWorks has donated a lot of polymer for the Nonwovens Institute at North Carolina State. Can you tell us a little about what they're doing there?**

**Robert Green:** Natureworks is a PLA polymer producer. We have had a longstanding partnership with the Nonwovens Institute and we have been producing PLA for over 25 years but even with that, it is still relatively new and we are still regarded as one of the new polymers. As we look back at that collaboration with the NWI, we were working with them 10 years ago to develop a spunbond process. As we look at other options for meltblown, the NWI has released an interesting spunbond product and within that technology you are

leveraging bi-component fibres and as previously pointed out, the reason meltblown is so interesting is that its a way to produce very small fibres with a high surface area. So the process here is leveraging spunbond process in combination with a bi-component technology to produce these small fibres at a much higher rate.

The other interesting aspect with this particular product from NWI is that we also get a significant amount of strength as compared to conventional meltblown fabric and so that basically allows this product to be cut and sewn for use in facemasks, potentially giving it a broader range of use.

### **HD: Perhaps you could explain how Ingeo is made and say a little bit about your progression over the past few years and where you're headed next?**

**RG:** Natureworks has been in the Ingeo PLA business for 25 years, converting plant based sugars into high molecular weight polymer. Part of what really allows these innovations like the NWI product is essentially melt spinning this high molecular weight polymer much like you would conventional polyolefin or polyesters.

A key driver for our business has been sustainability and we're now excited about the focus on the performance aspects, which is why the collaborations such as the one with NWI have really been highlighting and bringing to the market solutions to today's problems.

We never thought that there would be such an event like this that would make it so front and centre. We're excited to be part of the solution to help save lives.

**Eamonn Tighe:** What has been interesting is the opportunity to Ingeo in the nonwovens industry for spunbond and meltblown applications. For the last few years we've been validating our polymer on commercial equipment which is available throughout the industry and so now, when there is a need for this, background developments such as the one at NWI have come to the fore.

As a company we have talked very much about the sustainability aspects around PLA. In reality here, it's very much



about performance. And it's sustainable. When you put it that way, it brings a more exciting dimension to it.

In terms of whether meltblown is the only option, for those of us who have spent our careers working in nonwovens, what is very interesting is that there are many ways to achieve a product such as one with much finer fibres as a means of collecting what needs to be collected. There are certainly other routes to do that.

**HD: Meltblown for facemasks and filters also has to be electrically charged. Can you tell us a little about that process and how it works?**

**MT:** Charging is necessary to improve the filtration efficiency while still allowing the mask to remain breathable. By electrically charging the fibre surfaces it means that the particles are electrostatically attracted to those fibres so you can capture more particles. This means you can use more permeable structures but still have high levels of particle capture.

For meltblown, the most effective form of charging is corona charging and this is effectively a corona discharge plasma that passes an electric charge to the polymer surfaces.

PP, which is the most common polymer, is highly chargeable but that charge can dissipate over time so they incorporate additives into the polymer to stabilise the charge on the fibre surfaces and increase the lifetime of the filters.

**HD: Is this why face masks pass their sell-by date?**

**MT:** Yes, it contributes quite a lot because if you fully dissipate the electric charge on the facemask then you see a huge drop in particle capture, particularly finer particles and this charge dissipation can happen over time and reduce the effectiveness of the facemask.

There can also be issues with nose components and strap components. If they degrade, it can cause problems with the fitting of the mask as well.

**HD: Andrew could you tell us a little about the logistics of moving materials around right now? How difficult has this been during the past few months?**



Robert Green, Americas business manager, NatureWorks.

**AH:** Essentially it all goes to prove that long standing customer/ supplier relationships are essential, particularly at times like this. We haven't seen any major hiccups so that is testament to reacting quickly.

There were concerns about border controls and that the pull of nonwovens into the UK would effect logistics, but the robustness of our ability to ship into the UK has been proven during the crisis.

What we did see initially with regard to some products in the retail market was that there was an obvious pull from the market and we had to replenish that stock, but again, good robust relationships allowed us to make the best of that.

**HD: Has Natureworks noticed any issues from the supply side?**

**ET:** All of our polymer comes in from Blair, Nebraska in from the US. About 35% of that comes into Europe with another 30% going to Asia. We haven't experienced any hiccups in terms of transporting product around. I would say that we have seen significant demand for PLA over the last six to nine months anyway as a consequence of other movements in the market such as SUPs directives and PLA's performance attributes. So the demand has been high. On a local basis, we have seen more requests for more additional paperwork and signed forms where we enter companies or organisations.

**HD: Let's raise the issue of sustainability at this point. These products are all single-use plastics. Will we be reliant on them for ever?**

**MT:** I don't think so. But we are going to be reliant for some time to come. The guys at Natureworks have been developing PLA for 25 years and have developed the polymer to be compatible with nonwoven processes. I don't see anything anywhere near as processable as PLA is on the market at the moment, nor anything close to development. I think we are a number of years away from some mass produced, sustainable polymers that are compatible with nonwoven processes, outside of PLA.

**RG:** Sustainability is something we are always thinking about. One of things we really like about the nonwovens industry in general is that this is really one of the more innovative segments and new processes and innovation are the lifeblood of this industry. As we look at our material and how its used - such as for facemasks - the NWI has developed spunbond as a higher strength fabric and, with the different mechanism for achieving filtration, it is basically allowing what has historically been a disposable product to essentially be a reusable product.

That is one of the unique features of its construction is - that it can be disinfected and used again with the confidence that it is going to perform well.

This is an example of the kind of thing that excites us in the market. That combination of leveraging unique performance with a base sustainable material and coming up with 'new to the world' innovations that is basically a compounding effect from a sustainability standpoint.

**AH:** Pre Covid-19, the nonwovens industry was looking at innovations on sustainability, biodegradability and end of life content. We're now in a position where a lot of this material is designed for single use so it's difficult to picture a short term solution to getting away from the SUP issue. However, we are working on facemask designs utilizing alternative materials and we have some innovative



products which make use of embedded ionic technology to fight viral or microbial contamination, so we're working on being able to reuse a facemask or reuse a medical gown.

Whereas the immediate call is for single use, disposable garments, we have one that's on its way which can be laundered. At some point these items will have to be disposed of but we have to think about taking small steps towards the big end goal.

**HD: The new meltblown alternative developed at NC State is a bicomponent PP and Ingeo PLA. How does PLA perform on its own as a meltblown material?**

**RG:** We have done a fair amount of work with meltblown and, not surprisingly, with PLA being a different material, it has some different and interesting properties. Leveraging what we often describe as the broad, outstanding performance window - it is possible to make these small fibres. PLA though, say in comparison to polyolefin, is quite a bit stiffer, so when you make these meltblown structures you end up with a more three dimensional web. What we have seen is that these webs can offer similar surface areas but with significantly lower pressure drops. If we think about this desire to have finer levels of filtration, then meltblown could offer some interesting opportunities for PLA in the future.

**HD: I see in Hong Kong the government is issuing citizens with new copper containing facemasks they say can be washed up to 60 times? Does this point to a way forward? What's the benefit of copper Matt?**

**MT:** I have seen this and it does look like a little bit of government grey washing. There has been admission that the technology they are using is not the copper technology that is fast for 60 washes. So there has been some political backtracking. In itself, ionic copper is anti-bacterial, it is not necessarily anti-viral and even its anti-bacterial efficacy can take quite a long time to be effective, perhaps up to 24 hours to kill bacteria.

However, that said, wearing a facemask there are some limited studies that suggest the wearing of non medical masks can help reduce the spread of viruses but the suggestion is that the effect is relatively small, certainly compared to the effect of medical grade masks such as FFP2 and 3 masks. I've seen some studies that suggest that they can reduce the spread of viruses by up to 80%.

**HD: Finally, what do you think the UK and US governments should have done prior to Covid-19 and what needs to happen to ensure we are prepared for the future and this lack of supply never happens again?**

**AH:** It's a difficult one because we are much further down the line with this. Could any of us have guessed that this would impact us like this? I think certainly there were early indications that from a UK perspective that supply chains from the Far East would be affected. We initially saw a bottleneck in late December and early January in the automotive sector because they were reliant on key technologies that were supplied from overseas. That said, perhaps this now a good time to bring some of our innovation and our manufacture closer to home. From our perspective, being a large importer of materials from some very robust nonwoven suppliers, we've proven that we can be resilient during

times of crisis and we can keep supply chains going. I think that is all down to the longevity of supplier and customer relationships and we know how to react when there is a major issue.

It's a testament to our suppliers that they have worked throughout, under very testing circumstances, to keep the industry going.

**ET:** There has been a great challenge with so much of the specific PPE needing to come from the Far East. There is an argument to have more locally based supply chains, but that is a big question. Maybe there are opportunities for local companies to work to put those in place. In the absence of those, so much comes down to really good long standing relationships. We have unprecedented demand but we go back to prioritizing the businesses that we have with our key long term partners. I suspect there is opportunity in the UK and Europe and even the US for more locally based supply chains.

**RG:** It's difficult to say at this point what we could or should have done better early on without knowing the details. What is really key is that having seen this and having these weaknesses exposed, how do we better prepare for potential future bouts? The importance of supply chains and relationships with partners has been key to making this all work during a time of uncertainty.

**MT:** They could have stockpiled more, but I still don't think they would have had enough PPE available. Other governments in Europe have stockpiled more than the UK and they are still suffering the same problems. The UK in general is a nation of converters and branders so they import the fabric and convert into something of higher value, but obviously there are bottle necks.

We have been very good at converting our supply chain with lots of companies converting their equipment to make facemasks and other PPE. The issue though, has been getting hold of the material to do it. So for the future there does need to be a UK supply chain and we're already seeing moves in this direction. **SNW**



Eamonn Tighe, European business manager, NatureWorks.



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# Europe calls for collective action in Covid-19 response

Europe's nonwovens sector is addressing the challenges in getting essential PPE supplies to the patients and healthcare workers that need them.

Industry body EDANA has outlined how the nonwovens industry in Europe is pushing capacity limits to meet the exponential rise in demand and needs continued coordinated and collective action from the EU and Member States to maintain open trade and efficient supply chains, both within the EU and with the EU's trading partners, as part of the Covid-19 response.

The call comes in a letter from EDANA and 10 other European Associations signed a letter to the Trade and Health attachés of the Permanent Representations and to the European Commission ahead of the Trade Council Meeting of 16 April 2020.

"The European industry is working around the clock to increase capacity and ensure supply of critical medicines and medical and protective equipment (e.g. diagnostic tests, ventilators, protective masks, gloves and gowns, Intensive Care Unit medicines and equipment, and protective clothing) to patients and healthcare workers across Europe in light of the Covid-19 pandemic," EDANA says. "To that end, industry is pushing capacity limits to meet the exponential rise in demand and needs continued coordinated and collective action from the EU and Member States to maintain open trade and efficient supply chains, both within the EU and with the EU's trading partners. This enables us to better address the challenges in getting essential supplies to the patients and healthcare workers that need them.

"We invite EU governments to partner with industry, and to intensify their co-operation as this crisis evolves. Such collective work needs to not only happen among EU Member States as is already increasingly the case today; it also requires engagement with trading partners globally, as reflected in the recent G20 Trade Ministerial Statement. This would also manifest the EU's leadership role in defending an open and rules-based global trading system."

Across the continent, companies from all elements of the supply chain have ramped up their efforts to meet the growing demand for facemasks and other essential PPE.

## H&V

Additional staff have been recruited at the Hollingsworth & Vose plant situated near Kendal in the UK's Lake District, to

support continuing 24 hours a day, seven days a week operation in response to Covid-19 PPE demand.

"Having supplied the healthcare and PPE industry for over 25 years, H&V Kentmere has been well placed to support the response to the pandemic," says plant manager Jeremy Collingwood. "We manufacture media that is essential to assisting our healthcare infrastructure, including the fabrics used to construct FFP2 and FFP3 face mask and ventilator filters, as well as other nonwoven materials used in the production of surgical hoods and consumables for Covid-19 test systems."

The plant has substantially increased production while ensuring the safety of employees is given the highest priority, he adds.

"We have instituted social distancing protocols and enhanced disinfecting



H&V Kentmere has been well placed to support the response to the pandemic.

procedures and we are also providing employees with hand sanitizer and masks and performing temperature checks when they arrive at work," Collingwood stresses. "The team spirit on site is always good, but it is now on another level. Everyone is rallying around taking extra care of each other and following the safety precautions we have set in place, to prioritise our team's health."

Assistance is also being provided locally, with full company support for the Cumbria Community Foundation, which has set up a Covid-19 response fund to aid the vulnerable and isolated in our community.

"We are very proud of the work our employees are doing to help keep the nation, our community, and each other safe," adds Collingwood.

H&V, headquartered in East Walpole, Massachusetts, has 13 plants worldwide producing advanced materials for filtration, with a second UK plant in Winchcombe.

## Polygiene

ViralOff is an anti-viral technology that is being made available in most markets immediately by Swedish company Polygiene, for applications ranging from medical equipment and apparel to consumer products such as face masks, where such protection makes sense.

Polygiene is a spin-off from the Swedish chemical company Perstorp founded in 2004, initially to cater for the demand for anti-viral and anti-bacterial treatments developed by Perstorp scientists and technicians in response to the SARS epidemic.

When SARS died down, Polygiene turned its focus to consumer products

and the environmental benefit of washing less and making garments more sustainable. In subsequent years, it has partnered with many of the leading outdoor and performance apparel brands – from Adidas, Arc'Terex and Converse to Polartec, Reebok and Jack Wolfskin.

With the emergence of the Corona Virus, Polygiene has returned to its roots in the healthcare sector and launched ViralOff.

On a garment treated with it, over 99% of viruses will be killed in two hours as per the ISO18184:2019 test. All viruses so far tested by the Beijing Institute of Microbiology and Epidemiology – from Influenza A, BirdFlu, Norovirus and to Corona (SARS) viruses – are reduced in the 99% range. As this testing procedure is central, the ViralOff brand will serve as a stamp of assurance that the product lives up to a standard.

"Think of it as a sanitizer for garments," says Ulrika Björk, Polygiene CEO. "There is an enormous demand for things that help combat viruses now and with the ViralOff treatment, we can help set a standard for performance and help everyone get through these difficult times – from the heroes working in the medical services to the average person who would just like to get a pair of gloves or a face mask with tested antiviral capability. We also anticipate and welcome other novel product ideas from scientists and inventors that use this functionality.

Separately, Polygiene's biostatic stays fresh technology, that is active against both bacteria and virus, is being used to treat the initial 55,000 sets of medical scrubs that are currently being manufactured by O'Neills of Northern Ireland.

Having ceased its usual production of sportswear as work dried up, laying off its workers on March 18th, O'Neill's arranged an entire manufacturing and supply chain over just a few days and was back in operation manufacturing the scrub sets on March 25th.

"The anti-bacterial Polygiene finish used by O'Neills for its sportswear had proved ideal for surgical scrubs," says managing director of O'Neills, Kieran Kennedy. "I think there will be a huge demand going forward. At the end of the day, we'll do whatever we can to meet the demand.

"We are happy to contribute to the fight against this global pandemic and it's great to see how industries can adapt to new demands and provide medical supplies," adds Ulrika Björk. "We have seen this with several partners – everybody wants to contribute in any way they can, and we are proud to play a small part."

## Ahlstrom-Munksjö

Ahlstrom-Munksjö has expanded the production of filtration media for 500 million surgical facemasks in 2020 at its Turin plant in Italy.

As it continues to develop its capability to meet the demand for high performance filtration media for surgical equipment, the Turin plant has managed to expand capacity through line improvements and production optimization and is now planning to produce face mask material equivalent to over 60 million surgical face masks per month.

For the remainder of 2020, this adds up to a total of 500 million facemasks. The initial target was to produce material for 20 million facemasks per month, as announced on April 8, 2020.

"I am extremely proud of the work that the team is doing; in only a few months, by collaborating with partners in the region, we have developed a range of high performance filtration media for surgical face masks and established a sizable and reliable supplier to the local market, helping the fight Covid-19 in Italy," said Giuseppe Costa, vice president Filtration EMEA and Asia.

Since the beginning of the pandemic, Ahlstrom-Munksjö has expanded its

ViralOff is an anti-viral technology that is being made available in most markets immediately by Swedish company Polygiene.







offering and capacities to meet the strong demand for healthcare goods to fight the Covid-19 pandemic. The company says it continues to explore all options to further expand its production capacity to meet growing demand for protection materials globally.

## Andritz

Andritz Diatec, part of international technology Group Andritz, has developed a fully automatic, high-speed facemask converting line for the production of disposable face masks.

In the first configuration, this new converting line will be able to produce masks for surgical/medical applications; other mask types – like N95/FFP2 – are currently being evaluated.

The new Andritz D-Tech Face Mask line produces and laminates three or more layers of fabrics (spunbond, meltblown, thermo-bonded nonwovens and others) and ensures highest quality and hygiene standards, the company says.

It comprises unwinding and guiding units for nonwoven webs, cutting and positioning devices for the metal nose bar, an edge welding and cutting unit, a 90° rotation process, as well as positioning and welding of the ear loop elastics.

The line has a speed of up to 110 m/min and is able to produce up to 750,000 face masks per day. There are also different packaging options available: products can be packed in bags by an automatic flow wrapping machine or in cardboard boxes by an automatic cartoner.

Andritz Diatec is one of the globally leading specialists for converting machines for the production of hygiene end products: diapers for children and adults, feminine hygiene, underpads, absorbent pads for the food industry, and now also face masks.

## Bosch

Announcing plans for a gradual return to full manufacturing after closing around 100 plants worldwide, engineering and technology leader Bosch is to begin manufacturing its own protective face masks.

"It took our special-purpose machinery unit just a few weeks to design the necessary machinery," said company



Bosch is to begin manufacturing its own protective face masks.

chairman Dr Volkmar Denner, during a virtual press conference in which the company reported 2019 sales of €67.8 billion. "Bosch is currently setting up two fully automatic production lines at its Stuttgart-Feuerbach location, with further lines to follow at its Erbach location in Germany as well as in India and Mexico. This means the company will be able to manufacture more than 500,000 masks per day.

"The masks are intended to protect Bosch associates at our plants worldwide and the aim is to make them available to third parties as well. This will depend on gaining the appropriate country-specific approvals."

In March, Bosch also announced its Vivalytic analysis device with which it intends to produce more than a million rapid Covid-19 tests in 2020, and to increase this to three million next year. The Vivalytic analysis device is to be used initially in hospitals and doctors' offices. The rapid test is already available in the UK and Germany where initial approval has been fast-tracked.

"The demand is huge and we're doing everything we can to significantly increase production, and capacity will now be five-fold over our original plans by the end of the year," said Denner.

An even faster test – which can reliably detect Covid-19 cases in less than 45 minutes – is in the final stages of development.

In addition, Bosch is producing 5,000 litres of hand sanitisers each week in

Germany and the US for its associates in American and European plants.

"Wherever possible, we want to contribute our expertise to efforts to contain the pandemic," Denner said. "We also want to ensure reliable supplies to meet our customers' demand as it gradually returns, with a view to helping the world economy recover as quickly as possible.

"Our goal is to synchronise the ramp-up of production and secure supply chains, especially in automotive production. We have already achieved this in China, where our 40 or so local plants are producing again, and the supply chains are stable. We are working hard to do the same in other regions."

## Innovatec

While Germany did not make its own face masks prior to Covid-19, it has now rapidly enlisted around 50 companies via a tender system to produce ten million specialised N95 masks and 40 million operating room standard masks a week from this August.

In addition, it is guaranteeing the prices paid for all face masks produced until the end of 2021.

Innovatec, a family-owned firm based in Troisdorf, Germany, is well-placed to meet the need for meltblown fabrics for the masks, as the largest producer in Europe, estimated to have more than 50% of the continent's meltblown capacity.

The company ordered a new production line last year and after the

coronavirus crisis broke, invested in two more. This will enable it to cover 85% of German demand and enough for four billion face masks per year.

"I'd never have thought meltblown could become such a prized commodity," Christian Klöber, Innovatec's owner, told the Financial Times. "The prices some Asian buyers are offering us are just eye-watering."

A spate of new meltblown line installations has been announced in Europe in the past couple of months and many other companies have repositioned their existing capacity to making N95 face mask materials.

In addition, the two leading manufacturers of spunmelt nonwoven machines – Reifenhäuser Reicofil and Oerlikon Nonwoven, both based in Germany – introduced shortened delivery times and turned over their own pilot lines to the production of emergency supplies around the clock.

Reifenhäuser Reicofil, the leader in meltblown production technology, is also based in Troisdorf. Around 75% of all hygiene and medical nonwoven fabrics worldwide are estimated to be made on Reicofil lines.

"When you start thinking how many production lines will be needed to meet demand, your head starts spinning," said managing director Bernd Kunze. "We have been inundated with orders from Europe, Asia and the US and have dramatically increased our delivery frequency in response.

"Before, it would take us at least eight to nine months to supply a production line, now we're doing it in three-and-a-half to six months."

Reicofil will also benefit from a new subsidy regime being put together in Berlin, under which the government will cover 30% of the cost of a meltblown production line, as long as the manufacturer pledges to sell exclusively into the German and European market by the end of 2023.

EDANA now estimates that Europe is set to triple its output of meltblown between March and the end of the year, from 500 tons a month to 1,500 tons

"There's a kind of gold fever at the moment," Innovatec's Christian Klöber concluded.

## Herrmann Ultraschall

As well as supplying its latest ultrasonic welding technology for the production of different face masks, Herrmann Ultraschall has set up a mask task force to coordinate its efforts.

The company notes that ultrasonic welding is a preferred technology for the production of respiratory masks made of nonwovens and demand increases worldwide.

Consequently, it is receiving multiple inquiries from medical technology customers who are expanding their existing production capacities and from hygiene customers who are switching from diaper to mask production. Interestingly, players from completely different sectors, such as the automotive industry, want to enter the market.

Nine different mask types have been identified, says CEO Thomas Herrmann, ranging from simple face masks to complex 3D deep-drawn masks with breathing valves. The technological solutions range from simple intermittent manual welding to complex high-speed systems. The company offers products

from standard machines and components to complex rotary ultrasonic welding modules to serve the different solutions, Herrmann explains. Special shifts are worked in order to meet the high demand.

As the majority of face masks still come from Asia, Herrmann Ultraschall also supports various European initiatives to shorten transport distances. These include the conversion of diaper machines, for example, at the Italian company Fippi in Milan, where high output figures of up to 900,000 masks per day can be achieved.

Herrmann is also in discussion with the Reifenhäuser Group for mask production in Germany.

## Mondi

Leading global packaging and paper group Mondi is to install new production lines at its plant in Gronau, Germany, to produce meltblown nonwoven fabric and up to one million surgical face masks per day.

The plant has experience of producing and handling films, laminates,

Herrmann Ultraschall Ultrasonic station for the production of respiratory face masks.







Mondi facemasks.

nonwovens and elastic ear laminates for hygiene products. This knowledge will be applied to the entire value chain of facemask production with the plant set to produce both the necessary meltblown fabric and surgical masks.

Given the shortage of meltblown fabric in the market place, the Gronau plant will also offer approximately 50% of its production to other face mask manufacturers in Europe.

"We are well positioned for the increased production of face masks and melt blown nonwoven fabric in Gronau," said Jürgen Schneider, managing director, Mondi Personal Care Components (PCC). "Our people have the needed know-how and expertise on working with these materials and the technology required. The in-house production capability of all substantial components positions us to build up a long-term competitive local supply. Once up and running, we will be able to produce more than one million face masks per day."

The company also plans to produce at least 10,000 disposable gowns in the coming months.

Creating the gowns has required the collaboration of three Mondi plants in Germany, with another company, Borgerding, assisting in assembly of the gowns.

The process has involved Mondi Halle extruding a 750mm-diameter polyethylene film tube that forms the body of the slip-over gown. Mondi Gronau is using its R&D Centre to extrude smaller, 250 mm-diameter PE tubes that form the sleeves on the gown, and Mondi Steinfeld is converting the



Mondi gown production - Alfons Kruse and Detlef Stöppelmann of Mondi Steinfeld presenting the first gowns to officials from the Civil Protection Authority in Diepholz.

bodies and the sleeves. Borgerding is manually attaching and sealing the sleeves to the bodies of the larger tube.

Mondi employees worked extra shifts over the Easter holiday weekend to help develop this solution and the first 100 single-use garments have already been delivered to the regional district's Civil Protection Authority in Diepholz, which will oversee the distribution to facilities that need them most.

"We're very pleased that Mondi could respond to this request and quickly devise a solution to help protect front-line staff and health care workers in the region," said Alfons Kruse, Mondi's plant manager in Steinfeld. "As a packaging producer, it involved creatively rethinking materials and production processes in order to make protective garments. Mondi's employees rose to this challenge to support our local communities and we are proud of their work."

## RKW

Elsewhere in Germany, the FIGHT Consortium consisting of RKW, Sporlastic – a company specialized in the production of bandages and orthoses – the Gherzi Consulting Group, and other partners have succeeded in developing FFP-2 quality face masks from the initial design to certification and market readiness in just two weeks.

RKW Group is contributing with a laminate made of spunbonded fabric at its Gronau site.

Production has been running at full speed for a number of days, with the aim of achieving a weekly capacity of around 750,000 masks.

"The current COVID-19 pandemic is a challenge for society as a whole, which we are meeting with our resources and expertise," said Harald Biederbick, chairman of the RKW Group based in Frankenthal. "We are very pleased and



RKW Group is contributing with a laminate made of spunbonded fabric at its Gronau site.



proud that we have been able to successfully participate in the development and production of the urgently needed protective masks within a very short period of time."

The closest partner in the production of the protective masks is Sporlastic GmbH in Nürtingen.

"This venture was only possible thanks to maximum agility and teamwork of all participants," says Dr Timo Schmeltzpfenning, the company's head of research and development.

The RKW spunbonded nonwoven is processed in Gronau into a laminate with meltblown material that meets the high demands on the filter material for FFP-2 masks. It must capture at least 94% of the particles in the air down to a size of 0.6 nanometres. The Covid-19-triggering coronavirus is bound in water droplets averaging around 1 nanometer in size.

The first production batch will be delivered to the first client, the Ministry of Social Affairs and Integration of Germany's federal state of Baden-Württemberg. Further public sector clients are currently in negotiation with the consortium.

## Omega Systèmes

Omega Systèmes, the French subsidiary of US-based Web Industries company, is shipping 900,000 personal facemasks approved by the French General Directorate of Armament to the Ministère des Armées for distribution to food



Omega Systèmes mask.

manufacturers, supermarkets and nursing homes conducting business in France.

Obtaining the French General Directorate of Armament approval for mask production called for Omega to pass a series of tests carried out in accordance with stringent Armament specifications, including those for wearer protection.

The announcement comes at a time when demand for the facemasks is high throughout France. Prime Minister Édouard Philippe has extended Covid-19 containment measures until April 15, as the number of infections in France exceeds 81,000 with more than 10,800 deaths in hospitals.

The masks are being supplied by the Ministère Armées to businesses whose personnel are at a high risk of contamination, such as those working in the food sector and facilities housing the elderly. These single-use masks can be worn for up to four hours before being changed and offer a 96% protection rate.

To meet this demand, Omega is operating around the clock, running three eight-hour shifts to produce more than 150,000 masks per day. The company plans to fulfill orders for more than four million masks per month.

According to Web Industries vice president of Corporate Development Kevin Young, Omega converted parts of its Nantes France operation from aerospace component manufacturing to the production of facemasks to assist France's overall fight against the coronavirus.

"We are allocating assets and running multiple shifts at our plant to support the government and the people of France during this time of pandemic," he said. "We'll continue facemask production for as long as needed, and we'll be looking for additional opportunities to help."

Omega Systèmes said it is making every effort to address the urgency of Covid-19 by developing prototypes of individual protective masks and then putting the designs into mass production in an extremely short time frame.

At the same time, the company has put in place reinforced measures to ensure the safety of personnel. Omega Systèmes is equipped to produce and supply the essential elements in the fight against Coronavirus for as long as demand exists.

## Ontex

Belgian hygienic disposables leader Ontex plans to start the production of face masks by September 2020, with a capacity of around 80 million IIR-type surgical face masks per year.

"We are investing in the production of surgical face masks to support caregivers and other essential workers," said Annick De Poorter, Ontex vice president for R&D, quality and sustainability. "We want to help protect these people, including Ontex employees, who keep society going by providing essential goods and services."

The surgical face masks of the IIR type, which are typically used in hospitals, will be produced on a line at the Ontex factory in Eeklo, Belgium, in accordance with applicable regulations. Ontex has ordered specialised machinery and is training staff to become certified for production and start producing face masks in September or earlier. The new production is Ontex's own initiative and receives no government funding.

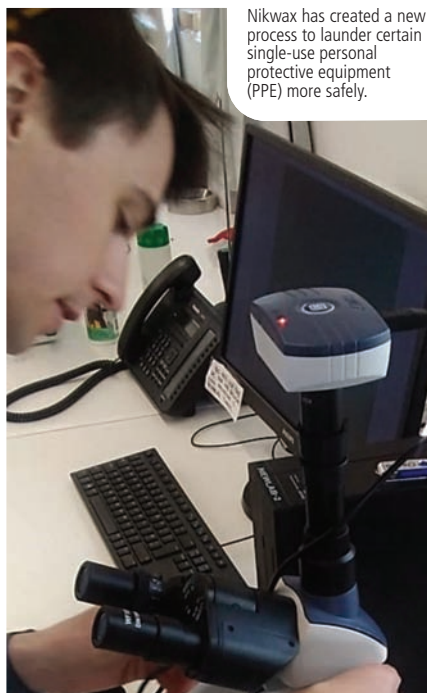
In order to offer face mask sourcing options for caregivers and other essential workers before September, Ontex is providing local authorities direct contact with a trusted face mask supplier which it is using as well. Ontex provides this assistance to the extent allowed, as some governments have strict regulations whereby only their competent administrations are entitled to coordinate the sourcing of protective gear against Covid-19.

## Nikwax

Nikwax, the UK's leading producer of cleaning and waterproofing solutions for outdoor clothing, has created a new process to launder certain single-use personal protective equipment (PPE) more safely.

Unlike existing cleaning methods, Nikwax 'PPE Extension' maintains the physical and water repellent properties needed to stop disease transmission. The innovation is a direct response to help in the global fight against Covid-19 and is aimed at situations where supply has run out and workers are at risk from over-extending the use of masks and gowns.

Existing hot washing methods disable disposable PPE by degrading its physical



Nikwax has created a new process to launder certain single-use personal protective equipment (PPE) more safely.

structure and destroying water repellency. Water repellency is key to ensuring PPE forms an effective barrier against infection from bodily fluids. Without it, PPE fabric and filters can become saturated, forming a fluid bridge across which infections are transmitted. Nikwax 'PPE Extension' ensures water repellency is restored and physical structure maintained.

Nikwax has over 40 years' experience in technical textile cleaning and waterproofing. The firm has received examples of typical masks and gowns from NHS Trusts, who have also supplied advice about existing cleaning processes in hospitals. Analysis, testing and development has shown that disposable FFP3 masks and clinical gowns could be cleaned up to five times without significant loss of functionality.

Nikwax is publishing its full work, methods and arguments on its website, with the aim of extending the dialogue with professionals in this area.

"Covid-19 has created a massive spike in demand for disposable PPE.

Healthcare workers need the right equipment to help them stay safe and limit the spread of infection," said Nick Brown, CEO and founder of Nikwax.

"We came up with a simple way of cleaning and restoring water repellency for outdoor gear in a washing machine many years ago. In the long-term, the

right solution to this problem has to be equipment that has been designed to be re-used many times, and not thrown away after one use."

Throughout the world, PPE is largely single-use. Vast amounts are created, used for a short amount of time and then incinerated or sent to landfill. Finding ways to extend PPE's lifespan safely would not only increase the effective supply, but also creates clear environmental benefits. There are still logistical and communications barriers to overcome before the Nikwax process is widely adopted. However, a safe process to facilitate the re-use of protective equipment would result in a cheaper, more strategically sound and environmentally friendly alternative to current systems, the company says.

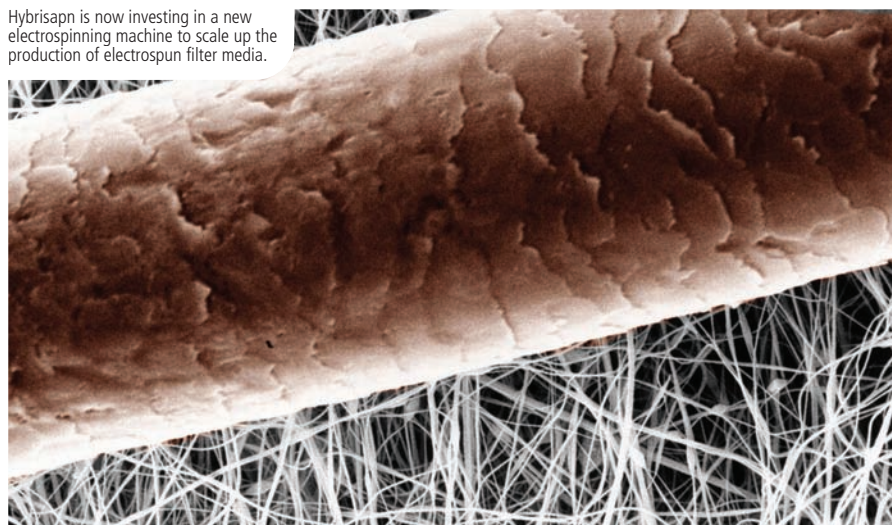
## Hybrisian

A method of electrospinning sanitiser liquid into nanofibre nonwovens for facemasks has been developed in Wales.

The developer, Hybrisian, a manufacturer of liquid sanitiser has received a £500,000 equity investment from the Development Bank of Wales, private investors and a Smart Cymru grant from the Welsh Government to commercialise the new products.

As a partner with Czech-based nanofibre technology specialist Elmarco, the company is now investing in a new electrospinning machine to scale up the production of electrospun filter media for use in facemasks, working closely with the Welsh Government and other PPE manufacturers.

Hybrisian is now investing in a new electrospinning machine to scale up the production of electrospun filter media.



"It has been well documented that nanofibrous materials – like those developed by Hybrisian – protect against harmful bacteria," said Dr Lee Bridgeman, CEO and founder of the company in 2014. "We have studied these properties in depth and have now developed products that are proving to be extremely effective against both harmful bacteria and viruses. Our expertise in this field has prepared us in responding to the challenges presented by the coronavirus pandemic and we are pleased to have been able to develop products which will help."

Technical director Dr Chris Mortimer is taking the lead on scaling up production of their products for use in PPE.

He said: "With the support we have received we have been able to order our first electrospinning machine. This completely transforms the plans of the business and allows us to develop nanofibres for facemask filtration up to FFP3 level. Later, we will return to our original business plan where we can revolutionise the wound care market with our novel antimicrobial dressing for chronic wounds," said Welsh Economy Minister Ken Skates "We asked industry in Wales to play their part in helping us respond to the many challenges presented by coronavirus and to provide critical supplies to our healthcare heroes on the frontline. I am delighted that with help from our SMART Cymru scheme and investment from the Development Bank of Wales, Hybrisian has adapted its business strategy and working procedures to do just that." **SNW**



# Don & Low meltblown investment

A new meltblown installation will make Don & Low one of only a handful of companies in Europe capable of supplying essential filter media material.

The Scottish Government is providing Don & Low with £3.6 million loan towards the £4.5 million purchase of a new meltblown line dedicated to the production of N95 (FFP 3) standard filter media for face masks and respirators.

"Covid-19 isn't going away any time soon, so while we have enough masks to protect our frontline health and social care workers now, we are also taking a long-term view to build PPE manufacturing capability in Scotland to meet future need," said Scottish Government Minister for Trade, Investment and Innovation, Ivan McKee. "During these challenging times it's encouraging to see so many Scottish businesses quickly diversify their product lines and invest in new equipment to help us deliver what is needed, when it's needed."

"We are pleased to be supported in making this new investment that will allow us to use our existing expertise to address the shortages of these key materials during the Covid-19 pandemic

and beyond," said Don & Low director Colin Johnson.

Linda Hanna, managing director of Scottish Enterprise, through which the finance is being arranged, said that the unprecedented demand for face masks had highlighted the fragility of existing global supply chains.

"Investing in this equipment alongside Don & Low will simultaneously boost domestic manufacturing and supply while creating export opportunities," she said. "Most importantly, it means the highest-grade medical face masks will continue to be produced for those who need them most."

The installation will make Don & Low one of only a handful of companies in Europe capable of supplying the essential filter media material, although it's not clear when it will be up and running, with the major German manufacturers of this technology reported to have a backlog of orders stretching anything up to two years, despite having reduced their delivery times.

In late March, the company suspended its woven manufacturing operations and moved staff over to nonwovens

On April 7th, it announced that, as the sole manufacturer of medical spunbond and meltblown nonwovens in the UK, it was all of its resources were being to supporting local manufacturers of face masks, medical protective apparel and medical wipes.

Don & Low has developed a meltblown nonwoven that meets the requirements for surgical masks and is developing a material to meet the FFP2 standard.

It is also partnering with UK mask manufacturers on innovative nonwoven combinations to achieve the FFP3 standard.

The production of a disposable gown material also commenced early in April, with 100% of capacity of the material supplied to the NHS, despite demand from other overseas healthcare providers.

Don & Low has been working with the government and health authorities to co-ordinate some of Britain's biggest manufacturers to turn the fabric into hospital gowns. Burberry, which is involved in the project, has retooled its factory in Castleford, West Yorkshire, from making trench coats to produce protective masks and clothing. Don & Low received an order from the government to make 7.4 million metres by May, to be sewn and welded into 3.5 million gowns at other sites.

This material is being produced 24 hours a day, seven days a week, and in addition, Don & Low is supplying five million metres per month of medical wipe nonwovens to NHS suppliers.

[www.donlow.co.uk](http://www.donlow.co.uk) **SNW**







# ITWM applies simulation in meltblown testing

A new software simulation system for meltblown production could potentially help reduce the industry's dependence on producers in Asia.

Simulations by the Fraunhofer Institute for Industrial Mathematics (ITWM) in Germany are hoping to make meltblown nonwovens manufacturing increasingly efficient.

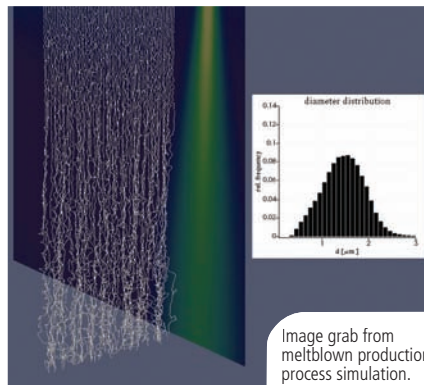
Nonwovens production is currently attracting more attention than ever before from the general public, because in times of the coronavirus pandemic, nonwovens are vital for infection protection in the medical sector and also for the protection of the entire population.

In the meltblown process, high-speed hot air is used to produce fine-fibred nonwovens with different structures with the fibres highly stretched by the turbulent airflow. During this process they swirl in the air, become entangled and fall more or less randomly onto the belt before undergoing the bonding process.

Following the outbreak of the pandemic, nonwovens manufacturers around the world are striving to massively increase this production capacity with meltblown nonwovens offering the crucial filtration capability for FFP3 and N95 facemasks.

However, it is not always easy to increase production efficiency rapidly because the processes are highly sensitive to process fluctuations and material impurities. This is where the software from the ITWM comes into play.

"Our Fiber Dynamics Simulation Tool FIDYST is used to predict the movement of the fibres, their falling and the orientation with which they are laid down on the conveyor belt," explains Dr. Walter Arne from the Fraunhofer ITWM. "Depending on the process settings, turbulence characteristics are generated and nonwoven qualities are created that differ in



structure, fibre density and strength."

The methodology is transferable to meltblown processes. In these processes, one of the specific features is the simulation of filament stretching in a turbulent airflow – how the stretching takes place, the dynamics of the filaments and the diameter distribution. These are all complex aspects that have to be taken into account, but also the flow field or the temperature distribution.

The simulations from researchers at the Fraunhofer ITWM then provide a qualitative and quantitative insight into the fibre formation in such meltblown processes - unique in the world in this form when it comes to simulating a turbulent spinning process.

## Benefits

What does this mean for the industry? The production of technical textiles becomes more efficient, researchers says, but the nonwovens can also be developed without having intensive productions tests in a real facility.

This is because the simulations help to forecast and then optimize the processes using a digital twin. In this way, production capacities can be increased while maintaining the same product quality.

According to Dr. Dietmar Hietel, head of the department, Transport Processes at the Fraunhofer ITWM, the simulations save experiments, allow new insights, enable systematic parameter variations and solve up-scaling problems that can lead to misinvestments during the transition from laboratory to industrial plant.

"We want to demonstrate this in the project using a typical meltblown line as an example - for this we are in contact with partner companies," Hietel says.

"Within the framework of Fraunhofer's anti-corona program, we want to use our developed expertise and our network to contribute to overcome the crisis."

His department at the Fraunhofer ITWM has been pursuing research in the field of technical textiles for around 20 years. Due to its current relevance, the project not only got off to a quick start, but the implementation and results should now also be implemented quickly with the current project scheduled to run from April 15th 2020 to August 14th 2020.

The *Meltblown Productive* project and the results are certainly interesting for nonwoven producers. The production of many mass products has often been outsourced to Asia in the past decades with the nonwovens manufacturers remaining in Germany and Europe tending to focus more on high-quality technical textiles.

"In the medium and longer term, this will be a scientific preliminary work when production capacities in Germany and Europe are expanded by new plants," the ITWM says, adding that a lesson to be learned from the crisis will be to reduce the dependence on producers in Asia, especially as a precautionary measure for future crisis scenarios. **SNW**



# Fibre versatility

The use of sustainable resins in meltblowing systems is a key growth area for Fibre Extrusion Technology.

**F**ibre Extrusion Technology (FET), the Leeds, UK-based specialist in process solutions and equipment for the manmade yarns and fibre extrusion industry, has received unprecedented enquiries about its nonwoven meltblowing systems since the onset of the coronavirus crisis.

"We're currently running trials, preparing samples and defining specifications for companies in Germany and Italy, as well as the UK, and we could already have sold the lab line we have here many times over," says managing director Richard Slack. "It's primarily designed for R&D and pilot scale applications, but trials have proven it to be suitable for the low volume production of critical meltblown face mask materials. Some of the customers to whom we've supplied similar lines have already pivoted their production to this, which has generated further interest."

"We are ideally placed to offer services to companies who may be exploring alternatives to polypropylene in meltblown, due to our experience in working with such a wide range of fibre types."

FET's meltblown system was originally developed for companies looking to process high melt viscosity medical grade resorbable polymers such as PGA (polyglycolic acid), PLLA (polylactic acid) and PGH (polyhydroxy butyrate), mainly for use in implantable products and other

medical devices. The key applications for these fibres are in hernia repair patches, staple reinforcement buttresses, artificial skin, adhesion barriers periodontal and ringival repair materials and those for tendon and ligament repair.

"Our meltblowing system provides medical companies and others dealing in such fibres with a simpler processing route than other techniques such as needlepunching and a wide range of structural and mechanical properties is obtainable from batch production," Slack says. "There are also options for post-processing of the webs, by calendering, point bonding or lamination."

Performance polymers such as TPU polyurethanes and TPE thermoplastic elastomers are also processed by a number of leading sportswear companies on FET meltblown systems, while engineering polymers such as ABS and PEEK, as well as polycarbonate and halogenated polymers, are other possible raw materials.

## Sustainable resins

It is in the area of sustainable resins, however, that FET believes much more can be achieved.

Meltblown polypropylene nonwovens are the critical component of the facemasks needed for Covid-19 frontline workers and their scarcity on the open market has in part been the reason for the reported shortages around the world.

An estimated 40 million face masks and other disposable nonwoven-based PPE items are currently estimated to be being consumed each day, amounting to a daily 15,000-ton mountain of waste – much of which must be incinerated.

"We've done a lot of work with sustainable polyamides and polyesters, as well as with PHAs and a range of PLAs," Slack says. "In the longer term, there has to be a more sustainable option than polypropylene in these products and the opportunity to explore potential alternatives – drawing on the know how from the extensive body of tests and trials we've carried out in the past, as well as the machines run commercially by our customers – is something I believe makes us pretty unique in the services we can offer nonwovens manufacturers."

Conventional meltblown and spunbonded systems are usually designed for high capacity systems and are not suitable for product development, he adds. "They consume high quantities of materials and as a consequence are not suitable for development work with high value materials or for niche applications. They also rely on specially formulated low viscosity polymers, which is a further limitation which does not apply to us."

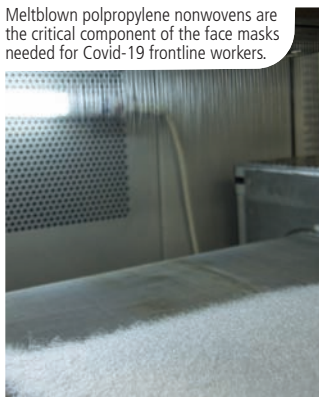
In processing finer filaments, FET has achieved structures with average mean filament diameters of 1.68 microns and 58% of between 0.5 to 1.5 microns, in web thicknesses of 37 microns with bulk density of 98 mg/ml and porosity of around 92%.

FET's system is designed for the processing of pure polymer with no need for processing aids or additives. "A wide range of structural and mechanical properties are obtainable, with numerous options for post-processing of the web, such as by calendering, point bonding or lamination," Slack concludes. "More effective and sustainable PPE solutions could well be achieved through further product development." **SNW**



Many trials and test with sustainable polyamides and polyesters, as well as with PHAs and a range of PLAs, have been undertaken by the company on its inhouse meltblown system.

Meltblown polypropylene nonwovens are the critical component of the face masks needed for Covid-19 frontline workers.



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# Rapid startup for ACG's new PPE plant

ACG Group's multi-million euro initiative is viewed as a long-term investment.

**M**embers of Sweden's ACG Group have rapidly responded to their country's urgent need for PPE (protective personal equipment), by setting up and staffing a dedicated new nonwovens fabric converting and single-use garment making-up plant in just three weeks.

The new plant was established to convert and coat the fabric and turn it into fully finished protective overalls for hospital staff each month. It now employs 80 staff in a two-shift operation and has been such a success that a second immediate order has been secured from the Swedish authorities. This will push production up to a monthly 1.8 million square metres of converted fabric turned into 692,000 finished medical garments.

By the middle of March, as Covid-19 began to spread outside China, the immediate future was looking decidedly bleak for ACG, which has seven subsidiaries in total. Many activities were cancelled with the imposition of an international travel ban and domestic orders were also beginning to fall away.

"We were shocked by how fast things were moving and realised it would hit us hard if we didn't react," says Christian Moore, CEO of ACG Kinna, which

spearheaded the new PPE initiative with sister company ACG Nyström – both members of TMAS, the Swedish textile machinery association.

## Options

At an emergency group meeting to explore all options, the pressing demand for PPE by hospitals and frontline workers fighting Covid-19 became immediately apparent and an action plan was put in place within hours. Consultations with local hospitals and the state authorities to assess their needs followed in the next few days, and the manufacturing space for the new operation was quickly allocated at the group's head office in Borås, along with a shopping list for the necessary equipment that couldn't be sourced from within the group itself.

"Our group has built up a wealth of know-how, with automation expertise being critical to getting the line up and running so quickly," says Moore. "We also have very extensive contacts which enabled us to get hold of the additional machines and materials we needed, which isn't easy at present."

The company has managed to obtain some 29 welding machines, with this bonding method being a prerequisite for

achieving the necessary tight seams for the garments. It has also secured coating equipment and a guaranteed supply of the antibacterial finishing treatment the fabrics require.

At present, all of the garments produced are being supplied to Sweden's municipal and regional health authorities, although there has been a huge demand from elsewhere. The group foresees its current production continuing for at least the next six months and may now opt to significantly increase it further to cater for the demand internationally.

For the ACG Group, this multi-million euro initiative is being viewed as a long-term investment, with the current crisis revealing that the need for such production – and the automation skills necessary to enable it – is greater in countries like Sweden than was previously perhaps appreciated.

"This is a fantastic example of Sweden's entrepreneurial spirit and innovation and also demonstrates the many problems that can be solved through automation," says TMAS Secretary General Therese Premler-Andersson. "Obtaining all of the materials and machines and getting the new plant up and running so quickly is an extraordinary achievement." **SNW**



Christian Moore, CEO of ACG Kinna and Thomas Arvidsson, Vice President of ACG Nyström, spearheaded the new operation. Image courtesy of BoråsTidning.



Jessica Eckerström usually works at ACG Group's Eskil printing plant, which has reduced order intake. She is now working on the production of protective garments.





# Productive partnerships

The US nonwovens industry is continuing to ramp up its efforts to provide the necessary PPE materials to combat the Covid-19 pandemic

**T**he response of the US nonwovens industry to the ongoing coronavirus pandemic and the subsequent unprecedented surge in demand for personal protective equipment has been characterised by a multitude of shifts in production as well as numerous, highly productive partnerships and collaborations.

Helping to coordinate this new era of alliances is INDIA, the Association of the Nonwoven Fabrics Industry, which has launched a new portal on its website aimed at connecting suppliers with buyers and increasing awareness of actions by nonwoven & engineered fabric producers in the fight against Covid-19.

Available on the [inda.org](http://inda.org) website, Allies Against Covid-19 details actions from 71 INDIA member companies that span the entire supply chain. The actions range from advancement in cutting edge viricidal and antimicrobial treatments to increased capacity and through-put to manufacture face masks, gowns, disinfectant wipes, and community outreach. Companies are listed alphabetically and include contacts and website links.

Medical, academic, and government entities are encouraged to connect with INDIA member companies and join in the fight against the pandemic. The website will be continually updated and invites contributions on [shareyourstory@inda.org](mailto:shareyourstory@inda.org).

"INDIA is a resource connector in this effort to provide the necessary PPE materials and disinfectant wipes to combat the Covid-19 pandemic. We're witnessing fast and strong contributions by the nonwoven & engineered fabrics community in this effort. INDIA is proud to support our members by giving notice to their efforts to contribute to this noble cause," said Dave Rousse, INDIA President.

The site encourages all industry professionals to share ideas that advance business and identify opportunities for available donations of materials to slow the spread of the pandemic.

With INDIA underpinning and coordinating efforts where possible, companies within the industry are continuing to ramp up their efforts to provide the necessary PPE materials to combat the Covid-19 pandemic.

## Johns Manville

The Johns Manville plant in Spartanburg, South Carolina, for example, has started the production of nonwoven fabric for urgently needed disposable medical gowns.

"There is a desperate need in North America and in Europe for medical gowns," said John Vasuta, president of Johns Manville's Engineered Products business. "Our teams are working quickly to create solutions and manufacture a new coated polyester spunbond nonwoven fabric. We are going through unprecedented times, so every step to support health care workers and others on the front lines helps right now."

The new polyester spunbond

nonwoven is designed for the production of Level 3 medical gowns.

"The fabric offers superior liquid barrier performance compared to materials used for Level 1 and Level 2 medical gowns, while also providing comfort and stitch-strength," said Souvik Nandi, director of nonwovens technology at Johns Manville Engineered Products.

The JM plant in Spartanburg employs 100 people and produces a variety of polyester nonwoven products for use mainly in filtration, roofing and specialty applications using JM's proprietary spunbond technology. Johns Manville operates a multitude of polyester spunbond lines across the globe with a distinct customer and market focus.

The new fabric is formally known as Evalith 017/120H3 and is a coated continuous filament, calendered polyester nonwoven. It meets the requirements for a Level 3 medical gown as established by ANSI/AAMI PB70:2012 liquid barrier performance and classification of protective apparel and drapes intended for use in health care facilities. Per this standard, the material was tested to AATCC 42-2017 Water Resistance: Impact Penetration Test and AATCC



The Johns Manville plant in Spartanburg, South Carolina, has started the production of nonwoven fabric for urgently needed disposable medical gowns.

127-2017 Water Resistance: Hydrostatic Pressure Test. Additionally, Evalith 017/120H3 has been tested to and meets the flammability standard per 16 CFR Part 1610 Class 1, according to the US Food and Drug Administration policy and guidance.

The company has also started production of nonwoven filtration media at its facility in Richland, Mississippi, which will be used to create needed facemasks.

Most nonwoven production of facemasks was abandoned in the US many years ago and moved to Asia, the company said. Given the shortage of facemasks in the U.S. and Europe, JM's Engineered Products business decided to build on its existing capabilities and help fill the market demand.

The JM plant in Richland employs about 50 people and produces a variety of filtration products for various air and liquid applications using polypropylene and polyester meltblown technology. The resultant fabric meets or exceeds Level 1 BFE 95% (Bacterial Filtration Efficiency) and VFE (Viral Filtration Efficiency) requirements. These results were verified by an FDA-registered national laboratory.

"Our high-performance nonwoven material is designed to provide high levels of filtration for various types of face masks," said Vasuta.

Richland's meltblown filtration media can be found in numerous industrial, automotive, consumer products and FDA-approved food and healthcare applications.

"We are proud of our teams in Richland and throughout JM for finding new ways to support the communities and people who are on the front lines of this global crisis," added Mary Rhinehart, President and CEO of Johns Manville. "Johns Manville is in a unique position to serve a market that is fulfilling a great need across the world. We are proud of our teams in Richland and throughout JM for finding new ways to support the communities and people who are on the front lines of this global crisis."

### 3M

3M has announced additional details about its capacity increases of N95 respirators, strong measures to combat

price gouging and counterfeiting, and new partnerships to help protect healthcare workers.

"As previously communicated, beginning in January we ramped up to maximum production of N95 respirators, doubling our global output to a rate of 1.1 billion per year, or 100 million per month," said 3M chairman and CEO Mike Roman. "This includes 35 million per month in the United States. We've already put into motion additional investments and actions that will enable us to double our capacity once again, to 2 billion globally within the next 12 months – and some of that additional capacity will begin to come online in the next 60-90 days. In the United States, we expect to be producing N95 respirators at a rate of 50 million per month in June – a 40% increase from current levels."

He added that the company was prioritizing and shipping products to serve the most urgent needs in the Covid-19 pandemic. In the US, more than 90% of 3M N95 respirators are going to healthcare and public health, with the remaining deployed to other critical industries such as energy, food and pharmaceuticals.

Of 3M's US supply directed toward healthcare and public health, roughly 80% is reported to be flowing rapidly through healthcare distributors – primarily consisting of six large and well-known companies with huge logistical capabilities – as the quickest and most effective method of getting those supplies into the hands of workers.

"We are working closely with these partners to expedite delivery even more, which in some cases includes moving

pallets directly from our plants into critical areas – as we have done over the last week to New York City and Seattle," said Roman. "The remaining 20 per cent is being directed to the federal government, with the largest portion going to FEMA, who will allocate based on their determination of the most urgent needs. The prioritization and distribution of all of our N95 respirators are being coordinated in close partnership with FEMA, and we are directly embedded with them at their headquarters to help streamline decision-making and action."

Even with 3M's accelerated production combined with capacity from other manufacturers, the reality is that demand for N95 respirators is much higher than the industries' ability to deliver and 3M continues to explore innovative partnerships and solutions to help protect our healthcare workers in this extraordinary time.

Given the high use rate of N95 respirators, 3M engineers are collaborating with several sterilization companies to find a way for hospitals to safely clean, reuse and extend the life of these respirators.

### Ford

Additionally, 3M is partnering with Ford to bolster production of 3M powered air purifying respirators (PAPRs), which are highly specialized pieces of equipment used in the most demanding healthcare environments.

As part of its Apollo Project Covid-19 response, Ford is now manufacturing both face masks and the respirators in close collaboration with 3M. It is also

3M N95 respirators.







Gown production at Joyson.

Ford Face mask production at Van Dyke Transmission.



assisting its supplier Joyson Safety Systems to manufacture reusable gowns from airbag materials.

In addition to the current production of more than three million face shields in Plymouth, Michigan, Ford-designed powered air-purifying respirator (PAPR) production began in April.

"In just three weeks under Project Apollo, we've unleashed our world-class manufacturing, purchasing and design to start making personal protection equipment and help increase the availability and production of ventilators," said Jim Baumbick, vice president at Ford Enterprise Product Line Management.

Since late March, Ford's manufacturing, purchasing and supply chain experts have been embedded at 3M manufacturing facilities to help increase production of urgently needed products.

Through this collaboration, 3M and Ford were able to increase the output of PAPRs and N95 respirators at 3M's US-based manufacturing facilities.

"3M is dedicated to helping to protect our health care workers and first responders globally, including sharing our scientific expertise to increase supply of needed PPE," said Bernard Cicut, vice-president at 3M Personal Safety Division. "We are proud to stand together with Ford in this effort and together."

Rapidly designing components and prototyping in accordance with federal guidelines, 3M and Ford teams reduced PAPR development time to less than four weeks.

"By working collaboratively with 3M to quickly combine more than 100 years of Ford manufacturing and engineering

expertise with personal protection equipment design and know-how, we're getting much-needed technology into the hands of frontline medical workers to help when they need it most," said Ford director Marcy Fisher.

The newly designed PAPR includes a hood and face shield to cover the heads and shoulders, while a high-efficiency (HEPA) filter system provides a supply of filtered air for up to eight hours. The air blower system – similar to the fan found in the Ford F-150's ventilated seats – is powered by a rechargeable, portable battery, helping keep the respirator in constant use.

Pending approval, 3M will distribute the newly designed PAPRs through its US network to help bring these technologies quickly and efficiently to health care workers who urgently need them.

Meanwhile, Ford is now manufacturing face masks for internal use globally and pursuing certification for medical use at its Van Dyke Transmission Plant.

It is also leading efforts to manufacture reusable gowns with airbag supplier Joyson Safety Systems from material used to make airbags.

The projected production of the gowns is 100,000 per week to reach 1.3 million cut and sewn products by July. They are self-tested to federal standards and are washable up to 50 times.

The scaled production of collection kits for Covid-19 tests at Thermo Fisher Scientific is another project Ford is involved in.

Thermo Fisher's engineering team at the company's site in Lenexa, Kansas, worked with Ford's nearby assembly

plant engineering team to set up additional collection kit production machinery. The Ford team also helped Thermo Fisher adapt machinery that currently runs glass vials for other products to run plastic vials required in drive-through coronavirus test collection.

Ford also continues to manufacture transparent full-face shields for medical workers and as of April 13th had produced more than three million. In addition to the USA, these are also being produced in Canada and Thailand, and with Ford joint venture partner Mahindra & Mahindra in India.

The development of new ventilator production capacities is being accelerated with GE Healthcare in the USA and separately, working with Penlon in the UK.

### Trinity Technology

Based in Higginsville, Trinity Technology Group's (TTG) has created a new three-layer composite medical facemask media called Airadigm it believes will deliver incomparable value for the healthcare industry.

Leveraging years of expertise in filtration and membrane engineering with extensive performance fabric design knowledge, TTG's Airadigm is based on a proprietary design involving:

- A spunlace polyester nonwoven outside layer for durability.
- An ePTFE membrane core for enhanced filtration and breathability.
- A spunbonded polypropylene layer inside for softness and moisture management.

The composite media is sonically

laminated for integrity and increased mask lifespan

This composite keeps fluids and particles out, but allows body heat and vapour to escape. The composite's membrane core is breathable and increases the wearer's protection and also provides filtration capabilities that do not degrade with humidity, unlike traditional meltblown mask materials. Microbe and particle protection levels stay consistently high for all-day protection without frequent mask replacement and the masks can be autoclaved and safely reused. These benefits can relieve the stress on the PPE supply chain and improve return on investment and ensure substantially fewer masks end up in landfills.

Third party testing and certification is under way at Nelson Labs to confirm that the Airadigm surgical grade facemask media exceeds ASTM F2101 for Bacterial and Viral Penetration, ASTM F1862 for Blood Penetration, and ASTM F2299 for Particulate Infiltration, key criteria for N95 and ASTM Level 3 face masks.

"We applied our significant experience in membrane and fabric construction to create a composite material that provides several unique performance features not currently available," said Greg Vas Nunes, TTG's CEO.

## Project

A three-way project in the US has developed a cotton nonwoven fabric that can be used as a filter substrate for facemasks.

The collaboration between the Nonwovens and Advanced Materials Laboratory at Texas Tech University, Scarborough Specialties, Inc. and E Innovate, LLC has developed a type of facemask dubbed 'fisors', which are designed to enhance the protection offered by face coverings that don't

Lubbock partners produce cotton facemask.



meet the protective capabilities of N95 respirators or surgical masks.

According to researchers, fisors can have multiple types of filter substrates, depending on the need. However, studies have shown that copper and cellulotics such as cotton do a better job in destabilizing virus compared to plastics.

Writing in The Cotton Grower, Dr. Seshadri Ramkumar a professor in the Department of Environmental Toxicology and The Institute of Environmental and Human Health at Texas Tech University, notes that structures that provide a tortuous flow to air may serve as a better filter. Due to their random arrangement of fibres, nonwovens are ideal as filters with the 'fisors' utilizing materials such as cotton to enhance filtration.

## Cummins

Cummins' NanoNet and NanoForce filter media employing DuPont's Hybrid Membrane Technology (HMT) could help address the shortage of N95 respirator masks, the company says.

The media is usually employed in air, fuel and oil filtration products used in heavy-duty diesel engines to prevent long-term engine wear, but can also be used in the N95 respirator masks worn by healthcare professionals to filter harmful airborne particles that can spread COVID-19.

The first mask prototypes using Cummins' donated media were assembled by University of Minnesota teams in March as part of an initiative to provide masks to M Health Fairview and other Minneapolis-based healthcare systems.

"Since the arrival of the filtration media, we have been able to make rapid progress, and we now believe we have several viable mask options, including both a disposable and re-usable option," said Jakub Tolar, campus health officer and medical school dean at the University of Minnesota. "These designs show real promise in keeping our healthcare workers safe should standard medical supplies of N95 masks no longer be available."

The project also aims to provide open source instructions that other healthcare systems and groups can use to create their own respirator masks.

DuPont's Hybrid Membrane

Cummins plant in Wisconsin.



Technology goes beyond the limits of traditional semi-porous or nonwoven membranes for air and liquid filtration. Made using a proprietary spinning process, the hybrid technology materials are comprised of continuous sub-micron fibres. The end result is a "membrane-like" sheet structure that balances breathability and high filtration efficiency of particulates.

When Cummins' NanoNet media was tested using an industry standard testing method, it exceeded the performance requirements for N95 designation. Cummins' manufacturing facilities have since provided media samples to mask manufacturers across the globe to test its effectiveness.

The media still needs to be vetted and approved by the National Institute for Occupational Safety and Health (NIOSH) but Cummins is working as quickly as possible with healthcare regulators and other partners to help certify the products while prepare manufacturing facilities to meet demand.

Cummins has also reached an agreement with 3M to manufacture high efficiency particulate filters for use in 3M PAPRs (powered air purifying respirators).

As previously reported, Cummins' NanoNet and NanoForce filter media employ DuPont's Hybrid Membrane Technology (HMT) and are usually employed in air, fuel and oil filtration products used in heavy-duty diesel engines to prevent long-term engine wear. They can, however, be used in the N95 respirator masks.

PAPRs use a battery-powered blower that sends filtered air into a hood or head top that covers the wearer's head



or face and can provide increased levels of respiratory protection, especially for critical healthcare situations such as aerosol generating procedures. PAPRs may also be more comfortable to wear for those who need respiratory protection for long periods of time.

The partnership has the potential to more than double the current production of filters for 3M's PAPR and are needed as 3M has ramped up production.

"Cummins has been striving to find ways to help during the Covid-19 crisis," said Tom Linebarger, chairman and chief executive officer of Cummins. "Working with 3M, we discovered our technologies and manufacturing expertise could be relevant as we partner in new ways to help protect healthcare professionals."

Cummins will use existing manpower and equipment at its Neillsville, Wisconsin facility to pleat the media, assemble it into cartridge housings and do final testing before shipping the filters to Valley, Nebraska, where 3M's PAPRs are manufactured.

## Dow

Ten leading companies across a range of industries have partnered in the USA to develop and donate 100,000 isolation gowns to help frontline workers in Texas, Louisiana and Mexico.

The end-product, Association for the Advancement of Medical Instrumentation (AAMI) Level 2 gowns, required concepting, design, testing, package development and a supply chain. In this case, each collaborator brought their unique expertise to the table, all donating valuable time and resources to the project:

- The gown is made with polyethylene nonwoven coated with a layer of polyethylene film made with resin donated by Dow.
- Fitesa manufactured the nonwoven material that provides tear resistance and soft touch.
- Cadillac Products Packaging Company provided extrusion coating of the film making it durable enough for AAMI Level 2 performance.
- 3M and Shurtape donated the tape to provide barrier performance on the gown sewn seams.
- Mobility technology company, Magna

International –identified through Dow's relationship with Volkswagen – provided resources to cut and sew the gowns.

- DuPont provided isolation gown design expertise.
- Landaal Packaging Systems has donated all the boxes to ship the gowns.
- Plastixx FFS Technologies donated the bags for each gown to be packaged in for distribution.

The gowns will be distributed equally to government agencies in Mexico and in the states of Louisiana and Texas.

"The Dow team is proud to continue developing PPE to help our frontline workers, but this effort would not have been possible without our partner companies, each of whom readily stepped up to make it a reality," said Michelle Boven, global marketing director for Health and Hygiene at Dow. "It's also a testament to how quickly companies can innovate when a diverse team from different organizations across industries come together to achieve a common objective."

"Our teams are problem solvers by nature and their passion around helping during these unprecedented times has been nothing short of inspiring," said Frank Eupizi, director of engineering at Magna International. "It's been an honour to witness the same passion at Dow and to collaborate with them to provide medical gowns for healthcare professionals using the skills and expertise normally applied to producing automotive seat covers. We are grateful for the opportunity to make a difference together."

"Many companies have shown tremendous ingenuity and speed in changing over production to meet the



Dow spearheads isolation gowns.

needs for respirators, masks, face shields, hand sanitizer and other products critical to fighting this pandemic," said Boven from Dow. "With the accelerated product development, testing and certification of these medical gowns, Dow is proud to be among these innovators and we will continue to look for ways to use our vast material science expertise to address the needs of frontline workers around the world."

The gowns conform with ASTM and ANSI standards and are labelled in compliance with FDA guidance on non-surgical apparel.

## DuPont

DuPont has launched the #TyvekTogether programme to increase the overall availability of Tyvek personal protective garments. At full capacity, it could deliver six million additional non-surgical isolation gowns per month.

"There's a critical need for protective apparel, and we believe that working with other companies to convert their existing cut-and-sew manufacturing capacity to protective garment fabrication is the fastest way to protect more people," said John Richard, vice-president and general manager of DuPont Safety Solutions. "Our dedicated employees around the world are working 24/7 to make more Tyvek material and patterns available to more organisations."

DuPont has invested in equipment and technology to significantly increase its production of Tyvek and Tychem garments globally to meet the ever-increasing demand for personal protection equipment (PPE).

Since January, it has increased the production of Tyvek garments by more than nine million per month specifically in response to Covid-19, which is more than double the amount produced for any prior crisis.

The #TyvekTogether programme will introduce a new specialised Tyvek fabric to enable an increase in the amount of garment production to 15 million garments a month and consists of the following components:

- A new fabric, Tyvek style 1222A, that has similar barrier properties to the core DuPont Tyvek 400 garment offerings with adjusted fabric drape



DuPont has joined the Covid-19 fight.



and hand to optimise material usage.

- Tyvek style 1222A being made available in roll-goods form to existing and new customers with available cut-and-sew capabilities to increase the total amount of garments as quickly as possible.

DuPont will provide garment designs – including patterns and virtual manufacturing support – for a non-surgical isolation gown and a coverall that are optimised for simple and productive manufacturing. With these patterns and technical assistance, the company aims to accelerate the speed that new converters are able to begin producing PPE. Partners can also use their own designs for coveralls and garments to meet local needs.

Additionally, DuPont will donate more than 57,000 Tyvek coveralls directly to the states in the US most impacted by Covid-19.

## ExxonMobil

ExxonMobil has responded to an initiative by the Nonwovens Institute (NWI), a long-standing partner since 2008, which was looking for polymers to fabricate specialty nonwoven fabrics used for personal protective equipment (PPE).

NWI is supplying the spunbond and meltblown nonwoven fabrics to manufacturers of medical masks, helping essential frontline medical workers get the PPE they need to stay protected against Covid-19.

"When NWI reached out for support we had no hesitation in helping them," said John W. M. Roberts, Strategic Marketing Executive Polypropylene, ExxonMobil. "Having identified the location of the polymers, we mobilized our logistics network to make sure the product was delivered quickly and efficiently."

From various inventories, ExxonMobil donated a combined total of 146,000 pounds of ExxonMobil PP3155, Achieve Advanced PP6926G2 and Vistamaxx 8880 performance polymers to LINC, a non-profit affiliate of NWI located in Raleigh, North Carolina.

Supply chain logistics required coordination with ExxonMobil's branded distributor Channel Prime Alliance which handled delivery of the product.

ExxonMobil also made several value chain introductions, connecting NWI with companies looking for high-quality nonwovens for PPE.

The nonwoven fabrics were produced at the NWI facilities on the North Carolina State University Centennial Campus. Production requires incredibly specialized machinery and skilled operators which, combined with high-quality ExxonMobil PP, Achieve and Vistamaxx polymers, optimizes speed of production and nonwovens performance.

Spunbond nonwovens are used for the outer layers of a variety of medical masks as they are breathable and have the strength to protect the inner layer by maintaining the integrity of the mask. Meltblown nonwovens are used in the inner layer because they provide an effective barrier to liquids and particulates, while being breathable.

Currently celebrating its 60th year in the polypropylene business, ExxonMobil has over 50 years' experience with both types of nonwovens and invented the meltblowing process in the late 1960s.

Nonwoven fabrics were sent to mask manufacturing companies in North Carolina and across the United States. NWI also purchased assembly machines so that nonwovens could be converted into masks using local campus staff and volunteers, speeding up delivery to local medical facilities.

"This entire effort clearly illustrates the value of long-term collaborations between industry and academic institutions," said Bhaskar Venkatraman, ExxonMobil Vice President, Polypropylene, Vistamaxx and Adhesion. "In this instance, when there was a critical need to produce PPE so frontline workers can do their jobs more safely, these relationships enabled us to respond quickly and effectively to help society."

Having joined the NWI in 2008, ExxonMobil has provided ongoing support to the Institute's development including: product development programs; the acquisition of state-of-the-art equipment; mentoring of students in related North Carolina State University graduate programs; guidance on Institute programs; and, training of ExxonMobil employees to better serve the market.

## Honeywell

Honeywell's reconfigured plant at its Rhode Island facility has been producing facemasks.

The plant, which usually makes safety glasses and face shields has been configured to now also produce the in-demand masks.

The setup usually takes about nine months, but was completed in five weeks to meet the urgent need of frontline workers during the coronavirus outbreak.

"Honeywell is proud of the role we are playing in providing critical equipment for the fight against the coronavirus, and I am especially pleased with how quickly we have started our new mask production line in Rhode Island," said Darius Adamczyk, Honeywell chairman and chief executive officer.

The masks will be delivered to the U.S. Department of Health and Human Services for the Strategic National Stockpile to support health, safety and emergency response workers.

In addition to the Rhode Island site, N95 manufacturing started at an aerospace facility in Phoenix, Arizona in mid-May. Once both sites are fully operational, they will produce more than 20 million masks per month. The two new lines will create more than 1,000 jobs in the U.S.

Honeywell facemask production.





## Natureworks

NatureWorks has donated enough Ingeo biopolymer needed to produce as many as two million reusable N95 masks per week from a new spunbond nonwoven structure.

A long-standing partnership between NatureWorks and the Nonwovens Institute (NWI) at North Carolina State University (NC State) has resulted in a new spunbond nonwoven technology enabling the production of at least ten million additional N95 surgical masks. NWI has converted the use of its research and training pilot production line to produce the face mask materials, and NatureWorks has donated the Ingeo resin needed to produce the spunbond material.

"Donating the Ingeo needed for this application was an easy decision," said Rich Altice, president and CEO of NatureWorks. "We wanted to support NWI, our long-time partner, as it creates devices that will protect the healthcare workers who will take care of us, our families, our colleagues, and our communities in this crisis."

Typical N95 respirators and surgical masks are a multi-layer structure of one or two spunbond nonwoven layers that provide mask shape and protect the inner filtration layer. Those layers are combined with an electrostatically charged layer of meltblown nonwoven material which serves as the filtration layer capturing microscopic unwanted particles such as viruses and bacteria. The charge is what boosts the meltblown's filtering capabilities, but it also means that the masks cannot be reused since the charge can be lost during the cleaning process.

"Because of the COVID-19 crisis, we took the spunbond technology and created a new generation of unique filters that have excellent filtering capability without needing to be charged, meaning they can potentially be reused after cleaning with peroxide, or an alcohol solution," says Behnam Pourdeyhimi, executive director of the NWI. "Because these materials are also strong, they can be cut and sewn by traditional techniques."

The new nonwoven fabric is a bicomponent fibre made of Ingeo biopolymer (PLA) and polypropylene (PP),

providing significant strength and bulk with equal effectiveness in filtration. Additionally, Ingeo improves the productivity of the spunbond process by at least 30%. Leveraging these benefits, NWI's pilot line can produce enough material to make two million masks per week.

"Typically, one metre of spunbond material provides enough for about 20 to 25 masks when using the current designs," Pourdeyhimi said. "One of the NWI's production lines started producing 2,000 metres of spunbond material per hour, with the potential to create some 20,000 metres of spunbond material in a day."

NWI currently has an agreement to provide large amounts of spunbond nonwoven material to several key partners, which will make masks at their manufacturing facilities. NC State has also ordered machines that will allow NWI to make surgical masks in its Centennial Campus facilities. Those machines should arrive in the next month.

The Nonwovens Institute is the world's first accredited academic programme for the interdisciplinary field of engineered fabrics. NatureWorks has been supporting NWI for over ten years and is also currently part of the institute's executive committee.

"NWI is known to be the global leader in nonwovens innovation, creating high tech fibres across applications," said Robert Green, vice president of Performance Polymers at NatureWorks. "Its development of this spunbond structure has come to fruition at a critical time when high performance nonwovens are needed to meet the urgent need for PPE by medical professionals during this pandemic."

## Braskem

Braskem, the largest polyolefins producer in the Americas, has created volunteer resiliency teams who are living on site for 28-day periods at its manufacturing plants in Pennsylvania, Texas and West Virginia, to guarantee the supply of polypropylene for the US production of respiratory masks and PPE.

"Braskem's commitment to meeting the needs of our medical manufacturing customers has never been stronger," said Mark Nikolich, CEO of Braskem

America. "We have deployed a range of measures across our manufacturing plants in the US to secure the supply of essential grades of polypropylene polymers for the production of respiratory masks, protective medical gowns and other gear."

Braskem has shifted production line capacities to focus on the enhanced availability of the raw material for the most critical grades of homopolymers for nonwovens needed to make N-95 medical face masks and medical protective gear, as well as other thermoforming grades for protective food packaging.

The company is supporting its resiliency team members with enhanced employee compensation as well as onsite kitchens and supplies. It is also deploying stringent facility cleaning protocols, social distancing practices and restrictions on plant visits.

## Tredegear

Tredegear Personal Care is increasing its output of breathable, liquid penetration-resistant apertured films that are used in medical face masks and N95 respirators.

In addition, the company produces a versatile line of elastic laminate solutions sold under the FlexAire brand which can be used for ear loops and headbands for face masks, N95 respirators and face shields.

"Our current technologies and R&D efforts enable us to quickly respond with product-driven solutions to support the rapid manufacturing required for personal protective equipment (PPE) applications," explained Steve Johnston, Director of Global Sales and Marketing. "Our FlexAire elastic fabrics are ideally suited to provide comfortable, reliable fit in PPE, such as facemasks and face-shields. Our sister company, Bright View Technologies, is now using our elastic laminate for a headband in its newly-developed face shield, and we are working with other PPE producers to quickly put protective equipment into the hands of healthcare first responders."

Tredegear Personal Care has a range of elastic film and fabric options available from its Terre Haute, Indiana facility and is able to supply breathable, liquid barrier films from its Terre Haute and Kerkraade, Netherlands manufacturing sites. **SNW**

# Sensory perception

Mahlo has unveiled a new sensor for nonwoven fabrics.

Mahlo has added a new sensor variant to its Qualiscan QMS-12 quality measurement system. The Infracol IMF-T sensor is the transmission variant for measuring basis weight and moisture of thick materials such as nonwovens.

Basis weight and residual moisture values are important parameters in the production of nonwoven articles, paper, films and composites.

Optimal values contribute significantly to the quality of the products and efficient production. The measurement of moisture and basis weight is therefore a decisive aspect during the manufacturing process. The new Mahlo technology in the Infracol IMF infrared sensor enables precise results in even more applications, the company says.

There are several reasons why determining these two parameters is so important: every product, regardless of the sector, has to meet certain requirements that have been previously defined to ensure proper functioning. If the real values do not correspond to these specifications, this can affect the performance. If, for example, a filter mat is too thin in pond systems, it does not catch enough dirt particles and reduces the water quality. Incorrect residual moisture values not only affect the product quality but also the energy consumption in the entire line. For example, if spunlace nonwovens are

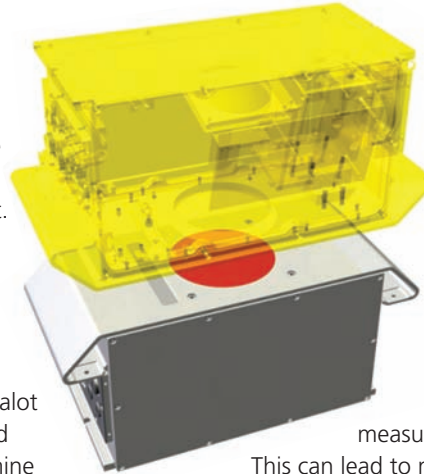
overdried, this results in unnecessary waste of energy – with negative consequences for the environment and the manufacturer's wallet.

## Sensor

To measure and control basis weight and moisture even more reliably, the Infracol IMF uses near infrared technology to determine the two essential values. For the first time, the sensor is available as the Infracol IMF-T version in the transmission process, which is used for thick materials and therefore covers an even wider range of applications than before. The previously proven reflection method of the Infracol IMF-R has been updated to the latest generation.

Water and materials such as cotton, PET or paper absorb light in the near infrared range. They are distinguished by different spectral ranges and can therefore be differentiated. By measuring the reflected or transmitted light energy by means of optical evaluation, the Infracol IMF determines the moisture content and basis weight of the products.

The NIR sensors of the Infracol IMF series are based on a classic filter measuring principle. However, this is



Infracol Sensor.

updated with the very latest optical components and in accordance with the most recent trends in optical measuring technology. With conventional filter wheel systems, the wavelengths for dry (reference) and wet conditions are

measured with a time delay.

This can lead to measurement inaccuracies, which are particularly disadvantageous for inhomogeneous products such as thin nonwovens.

Mahlo's new simultaneous filter measures all wavelengths simultaneously and at the same spot without rotating filter wheel. Instead, the light is distributed simultaneously to six detectors. This eliminates measurement inaccuracies and allows true same-spot measurement of reference and absorption resonances.

The variant used depends on the application. With the double-sided transmission sensor Infracol IMF-T product can be measured with penetrating infrared radiation. Transmission measurement is especially needed for thicker materials and when the overall composition of the material is of interest. Measurement for nonwovens is possible with a basis weight between 10 - 500 g/m<sup>2</sup>. For paper, moisture can be determined between 0 to 20%, basis weight up to 250 g/m<sup>2</sup>.

Measurement with IR reflection is used primarily to determine the top layer or coating without measuring the underlying substrate material. The measuring tolerance of the basis weight is between 10 and 60 g/m<sup>2</sup> for nonwovens. In paper coating, all polymers, adhesives, resins and water-based coatings can be determined. **SNW**



Measuring of basis weight and moisture with Infracol IMF and Beta sensor on spunlace nonwoven.



# The fine print

Web Industries is offering a number of new solutions for printing in the hygiene and personal care sectors

**W**eb Industries has developed a new printing capability for nonwoven materials that creates multiple repeat designs in the same print run.

The printing capability from the company's Personal & Home Care business unit is designed to enable brands to bring a variety of designs to market, rather than a single uniform design on products such as adult incontinence wear, feminine care products and diapers.

For example, design images of flowers can be varied by location instead of appearing in the same place every time. Variations in images, colours or text are also possible.

"Our variance-in-repeat capability is an outgrowth of Web's ingenuity and determination to enhance our customers' product offering," explained Business Development Manager Courtney Robinson.

With conventional nonwoven material printing and formatting services, product manufacturers seeking variations in design need to order several different rolls, each carrying a repetitive and uniform design, process the rolls on separate lines and then collate them.

Variance-in-repeat printing streamlines manufacturers' production by incorporating multiple different repeating designs on a single roll of nonwoven material. The printed roll can run on one personal care product manufacturing line, offering variety and simplicity.

"We recently brought our print engineering services into play to craft a design solution for a personal care product manufacturing customer," Robinson added.

"The company turned to Web Industries for help in producing a more attractive feminine undergarment's waistband. Web succeeded in printing three slightly different repeating designs on a single roll of extensible nonwoven material."

Robinson also noted that the variance-in-repeat capability enabled the manufacturer to package the three designs on the same production line. This eliminated the need to use three different lines and then later sort the designs. The result was greater manufacturing efficiency and a more appealing garment for consumers.

Elsewhere, Web Industries has also launched a new, multipronged solution for consumer brands and contract packagers that combines high-quality printing and precision slitting/traverse winding.

WebPrecisionPlus, incorporates brand-enhancing flexographic printing with precision, narrow-width slitting and tightly controlled traverse winding, or spooling.

Potential applications exist in the personal care sectors as well as food, pet food and the household sectors, says Web, as well as anywhere else goods are marketed in flexible packaging.

"WebPrecisionPlus enables consumer brands and contract packagers to create colorful, eye-catching flexible packaging while achieving greater production efficiency," explained Web's Adrienne Green, director of sales, Personal & Home Care. "It allows businesses to outsource certain challenging printing, slitting and winding operations entirely to Web. The companies can then focus greater



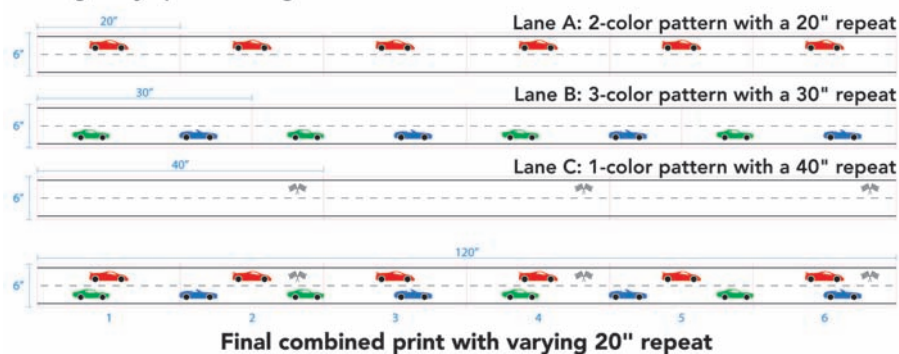
Web Industries' variance-in-repeat printing streamlines manufacturers' production.

attention on their core product manufacturing and packaging activities. Options include complete printing, slitting and winding; slitting and winding only or roll-to-roll printing of master rolls of material.

Web Industries' wide-web printing capability - 92 inches wide for single-colour printing, 62 inches wide for eight colours - also features 100% vision inspection paired with high-resolution cameras to inspect the full web while printing. The vibrant, high-quality printing is said to help promote brand preference for packaged goods on retail shelves and online, wherever needs exist to capture customer attention. Web prints on a huge variety of packaging substrates including paper, paperboard, film, foam, nonwovens, laminated materials and substrates with overprint varnishes (OPV). Brands can select either water-based or solvent-based ink systems according to their preference.

Web also notes its supports of growing categories such as 'functional inks' which alter their colour or appearance when exposed to moisture, sunlight or another agent. This can communicate a promotional message or convey a change in a material's or garment's condition, such as a wet diaper. **SNW**

## Web Industries' Variance-in-Repeat printing creates irregularly-spaced designs on flexible materials:





# Graphene protection

A team in Hong Kong has developed a graphene coating for facemasks

A graphene coating would make commercially-available nonwoven face masks much easier to sterilize and re-use, according to researchers.

A team at The Hong Kong Polytechnic University (PolyU) have developed a laser manufacturing process that deposits a few layers of the graphene onto the masks to make them superhydrophobic. This reduces the chances of infectious drops adhering to them, while graphene's strong light-absorption properties make it possible to sterilize them with exposure to sunlight.

To curb the Covid-19 pandemic, health officials in Hong Kong and most other places are recommending that citizens wear masks in public, especially in situations where physical distancing is difficult or impossible. While any mask is better than no mask at all, the consensus is that surgical masks made from nonwovens are among the best types available for widespread use outside hospital settings.

Such masks do, however, have limitations. While they help prevent viruses (including SARS-CoV-2, the cause of the current pandemic) from entering the wearer's nose and mouth via droplets generated when an infected person

sneezes, coughs or talks, virus-laden droplets tend to remain on the mask. This means that masks must either be discarded after each use or sterilized before re-use.

Neither option is attractive, since polymer-based masks are difficult to sterilize even with steam, while discarding them poses an environmental challenge.

## Superhydrophobic surfaces

One possible solution lies in making masks that are superhydrophobic, meaning that they strongly repel aqueous liquids. Researchers have previously made advanced superhydrophobic nanostructured surfaces out of materials such as fluorinated polymers, metallic nanowires and, most recently, graphene. Some of these materials could have medical applications, but according to Guijun Li of PolyU's industrial and systems engineering department, their potential has not been fully explored.

"To the best of our knowledge, such materials have never been used on surgical masks before," he says.

Li and colleagues began by synthesizing graphene using a low-cost laser technique that heats up precursors such as polyimide, SPEEK and Bakelite. They made the carbon sheet superhy-

drophobic by controlling the parameters during the laser processing.

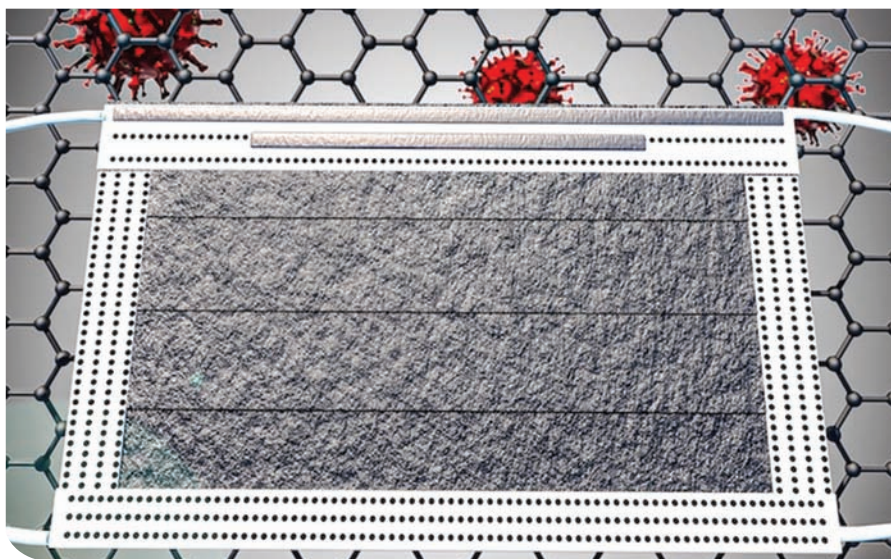
Next, they used a proprietary new technique to deposit a few layers of the graphene onto commercial surgical masks. This new process is known as dual-mode laser-induced forward transfer (LIFT), and it uses a pulsed laser beam with a pulse duration of 10 ns. The short pulse length means that the momentum of the photons is high enough to transfer the graphene without significantly increasing the mask's temperature. This is important because the melting point of the polymer fibres in the mask is only 130°C. The LIFT method is also compatible with a roll-to-roll system, meaning that it can easily be integrated with existing automated mask manufacturing production lines.

As the graphene is superhydrophobic, it is self-cleaning, and water droplets freely roll off the surface of the mask before they have time to adhere to it.

Another benefit, the researchers say, is that they can sterilize their graphene-coated masks simply by exposing them to sunlight for 40 to 100 seconds. This is possible because graphene absorbs over 95% of light across the solar spectrum from 300 to 2500nm, so the coated masks quickly increase in temperature, reaching 70°C after 40 seconds of solar illumination and over 80°C after 100 seconds.

This is high enough to inactivate most types of viruses, meaning that the mask can then be reused or (if damaged) safely recycled. In contrast, masks without a graphene coating do not show this photothermal effect, since they absorb sunlight only weakly. Even after five minutes of solar illumination, their temperature does not exceed 50°C, Li explains.

The PolyU team, which reported its work in *ACS Nano*, say they have successfully tested the LIFT graphene against *E. coli* bacteria. They now plan to test their graphene-coated masks against viruses, including SARS-CoV-2. **SNW**





# Material Matters

## Cotton Inc releases new lectures on fast-paced wipes market

CARY - Cotton Incorporated, the global resource for cotton research, has expanded its ongoing educational program with two new video lectures covering the nonwoven wipes sector.

Released through the

Cottonworks platform, the lectures provide an overview of nonwoven wipes markets and explore market data, raw materials, and process technologies used in the manufacturing and distribution processes.

According to the latest INDIA Worldwide Outlook Report for the Nonwovens Industry, the wipes market has a projected average annual growth rate of 5.3 per cent up to 2023.

"The nonwoven wipes

market continues to be a strong growth area," said Janet O'Regan, director of nonwovens marketing at Cotton Incorporated. "The purpose of these lectures is to provide information on market segmentation, forecasted growth, raw materials and the technologies associated with nonwoven wipes products."

The lectures, based on research from North Carolina State University and the INDIA Worldwide Outlook Report, are a continuation of the Nonwovens Technical Education series, an extensive collection of nonwovens resources available on Cottonworks.

The lectures are designed to educate professionals in the nonwovens industry about different products, processes, and market trends. "This would be a great introduction for business professionals who are just starting out in the industry or a great refresher for anyone already in the wipes market," said O'Regan.

Individuals seeking to expand their knowledge of the nonwovens industry can go to [cottonworks.com](http://cottonworks.com) and explore the growing, free library of video lectures, marketing and research brochures, sourcing directories, and webinars.

For more details visit: <https://www.cottonworks.com>



## New sustainable option from Advansa

HAMM - Advansa, the manufacturer of technically advanced & sustainable polyester fibres, has developed ADVA Blue, a new polyester fibre from the company's Engineered Fibres Segment, and is designed for use in sustainable products applicable for across a number of end-uses.

The result of a partnership with social enterprise Plastic Bank - globally recognized as one of the leading solutions to stop ocean plastic, this new polyester fibre is made from recycled ocean-bound plastic called Social Plastic, which helps solve the problem of ocean and beach plastic.

Plastic Bank is encouraging people to collect plastic waste before entering the oceans and rivers to make impactful changes towards saving the environment and create value for themselves in order to improve their quality of life. Plastic Bank offers collectors incentives in cash or as Blockchain-secured digital tokens that increase their income and provide better opportunities for themselves and their families.

The plastic collected by Plastic Bank is cleaned and recycled, becoming Social Plastic, then used by Advansa as a valuable raw material in the manufacture of high-quality polyester fibres for ADVA Blue.



## 'Fine to Flush' accreditation for Nice-Pak

FLINT – Nice-Pak International has achieved a 'Fine to Flush' generic accreditation for its flushable plastic-free moist toilet tissue products.

Moist toilet tissue supplied by Nice-Pak making use of the SureFlush XP12 technology will be able to display the 'Fine to Flush' logo on pack, following the introduction of the standard was introduced by Water UK,

which represents water companies across the country.

"We are delighted to have attained this certification on SureFlush XP12 following two years of hard work and collaboration with the Water Research Centre (WRC)," said Nice-Pak's research and development head of



nonwoven, Matt Storey. "This plastic-free moist toilet tissue has been designed to meet the specific needs of the UK sewer system."

WRC senior consultant Andy Drinkwater added: "The certification of Nice-Pak's Sureflush XP12 is a most welcome step forward. The product is very different from many traditional wipes in terms of its flushability credentials. Retailers should be confident that by using

SureFlush XP12, and subject to confirmatory testing, their own branded products should be 'Fine to Flush' compliant."

Fine to Flush certification is only granted for the small minority of wet wipes which are designed to be flushed and have passed the rigorous seven step process required by the standard. The vast majority of wipes including baby wipes, make up removal wipes and household cleaning wipes are not designed to be flushed and should be disposed of in a bin.

Nice-Pak actively encourages compliance with the industry Code of Practice on 'Do Not Flush' labelling and supports industry-wide awareness on responsible product disposal. [www.nice-pak.co.uk](http://www.nice-pak.co.uk)

## Ahlstrom-Munksjö launches Extia Protect portfolio for facemasks

STOCKHOLM - Following a range of recent PPE developments, Ahlstrom-Munksjö is officially launching its Extia Protect product range, specifically designed for facemask applications

Since the beginning of the Covid-19 pandemic, Ahlstrom-Munksjö has expanded its offering and capacities of protective medical products, including facemask materials, to meet the strong demand globally. The Extia Protect portfolio consists of a full range of high-performance fibre-based solutions for facemasks, including filtration layers, cover stocks, lace media and reinforcement layers.

Each component of the range has been designed to meet specific requirements of the different type of masks, including respiratory masks, surgical masks, but also civil masks. The facemask offering is produced on a global industrial platform consisting of plants in Europe, North and South America and Asia, giving the company the required capacity to meet the regional demand.

"I am very proud of the work accomplished by our team. In only a few months, we have developed a full offering for face mask applications and are now in a position to serve the growing demand for face mask materials globally by utilizing the available capacity we have in industrial platforms across the globe," says Daniele Borlatto, EVP Filtration and Performance Solutions.

Ahlstrom-Munksjö has extensive and in-depth knowledge of fibres used in medical fabrics. For decades the company's Medical business has been making fabrics used to construct surgical gowns and drapes, pleated surgical facemasks, protective apparel and sterile barrier systems. Launching the Extia Protect portfolio allows Ahlstrom-Munksjö to offer customers a full range of technologies and has the ability to produce all layers for civil-, surgical- and respiratory masks. The company continues to explore all options to leverage its unique knowledge of fiber-based solutions to expand production.

## Personal care wipes market growth

FELTON - The global personal care wipes market is estimated to reach US\$23.1 billion, growing with a CAGR of 5.6% between 2019 and 2025, according to a new report by Million Insights.

The report notes that product benefits such as performance, time-saving, and convenience associated with wipes are anticipated to drive product demand.

Personal care wipes are gaining popularity among consumers owing to factors such as rising infant population and surge in hygiene awareness. Moreover, the introduction of new products such as feminine, flushable and scented is expected to bolster the demand for wipe products, the report says. The growing demand for the product as a beauty application among women and men is also

projected to drive the global personal care wipes market.

The report notes that in 2018, North America held the largest market share due to the increasing demand from household applications. In North America, the U.S. dominated the market with a share of 61%. This growth is majorly attributed to the product's high convenience, time-saving benefits.

Further key findings from the report suggest that baby wipes in the product segment are estimated to grow at a CAGR of 5.5% during the forecasted period, from 2019 to 2025.

The report also notes that Europe is projected to grow at a CAGR of 7.1% from 2019 to 2025 while there is also expected to be significant growth in developing countries such as Brazil and South Africa.

## Energy saving benefits from new Mann+Hummel feature

LUDWIGSBURG -

Mann+Hummel has launched a new pocket filter, the Airpocket Eco ePM10 50%, which is said to consume significantly less energy compared to its predecessor.

This new filter, which is tested according to ISO 16890, has been designed to provide long service life even with high dust loads. Thanks to a new fibre mixture of a synthetic material and a progressive media structure, it has a unique selling point with an A+ energy rating.

It is also said to be the only air filter with the highest Eurovent energy class at comparable filtration efficiency. As such, it replaces its predecessor from the Mann+Hummel product portfolio, which was already the market leader in terms of energy efficiency with an A rating.

Compared to the predecessor, the Airpocket Eco ePM10 50% consumes 15% less energy, according to Eurovent 4/21-2018. This creates a price advantage as the energy costs at roughly

70% represent the largest part of the total operating costs. In addition, using its four bags, this filter reduces the initial differential pressure by 12% in contrast to other solutions available on the market which require 6 to 10 bags for an A rating.

With the Airpocket Eco ePM10 50% A+, Mann+Hummel says it offers an exhaust air filter which treats air streams with high dust concentrations at a low cost.

"By using energy-efficient air filters, the air condition operator can decrease the operating costs significantly," the company said.

"Mann+Hummel's range for an entire ventilation system, that includes supply and exhaust air filters, offers numerous energy-saving solutions which are leading in the field of energy efficiency. These include the ePM10 50% and ePM10 70% with an A+ rating from the Airpocket Eco line as well as the ePM1 50% and the ePM1 60% with an A+ classification for the Aircube Eco compact filters."



## Compostable diaper collection service

SCOTTSDALE - Environmentally friendly diaper service Dyper has introduced a collection program for its compostable diaper.

Dyper is a subscription-based diaper service that delivers a shipment of high quality bamboo diapers, which are made from responsibly sourced materials that are free of harmful chemicals, prints, and scents, directly to a customer's doorstep each month.

The company has now announced a partnership with TerraCycle to implement the Redyper composting program in the U.S., making it turnkey for existing and new subscribers to return their soiled-diapers for composting.

Though composting Dyper diapers at home has always been possible, the TerraCycle partnership will allow families to skip the DIY and help ensure that their used diapers don't add to the more than 20 billion diapers filling landfills in the U.S. yearly.

"We're committed to making diapering effortless for parents, gentle for babies and kind to the planet," said Sergio Radovic, CEO Dyper. "It wasn't easy to develop the most fully compostable diaper ever created. But, we are thrilled that our partnership with TerraCycle will make it easy for families to keep their used diapers out of landfills."

Dyper subscribers that opt-in to the Redyper program are provided with bags and a specially designed box engineered to the strictest United Nations Haz Mat shipping standards. When the box is full, subscribers can download a prepaid shipping label from the Dyper Composting Program page found on the TerraCycle website for easy return of their soiled diapers for composting. The waste composted through this program will be used in specialized applications, such as for vegetation in highway medians.

"As the first of its kind initiative, the Redyper Program offers consumers a unique opportunity to responsibly dispose of their soiled diapers, as well as minimize their environmental impact by composting them through TerraCycle," said Tom Szaky, founder and CEO of TerraCycle.

"We are pleased to partner with Dyper to drive awareness of this ground-breaking program."

The TerraCycle supported Dyper Composting Program is part of Dyper's ongoing initiative to make eco-friendliness in the baby segment more effective and convenient. Along with being compostable under the right conditions, Dyper's product is made from responsibly-sourced bamboo and free of chlorine, latex, alcohol, perfumes, lotions, PVC, TBT or Phthalates.

## Proof launches leak-proof underwear

LOS ANGELES - Proof has launched a new line of leak-proof, period-proof underwear. This new venture from the founders of Belly Bandit, a recognized leader in the maternity industry, is described as a 'meticulously designed and expertly constructed leak-proof range for women aged nine to ninety'.

This premier range of functional intimates utilizes the patented leak-loc technology to ensure reliability which combines ultra-light and breathable layers of leak-proofing plus leak-loc edges to ensure fluids can't escape.

Vital antimicrobial fibers and absorbent and moisture-wicking liners trap in

moisture, keeping women dry and comfortable.

"We're committed to creating products that instill confidence and actually work," said Jodi Caden, Co-founder of proof. and Belly Bandit. "We wanted proof underwear to completely lock in leaks and keep women dry. We're thrilled that our proprietary technology ensures women of all ages will stay protected and comfortable."

The first collection of Proof includes five absorbency levels from super-light to super-heavy. For example, the Everyday Undie handle small leaks and holds half of a regular tampon or teaspoon of liquid. The Hipster Panty



can hold up to five tampons or ten teaspoons of liquid, the most fluid absorption out of any underwear on the market, the company says.

"More affordable and earth-friendly than traditional

pads and tampons, which can take up to 500 years to decompose, Proof undies can relieve the need for sanitary pads, making it an excellent solution for women and the environment."

## Barnhardt launches upgraded version of HyDri cotton

CHARLOTTE - Barnhardt Manufacturing says it has delivered the latest breakthrough in purified cotton with the release of its new and improved HyDri, available in both conventional and organic varieties.

Barnhardt has developed a proprietary process for cleaning and purifying cotton fibre without stripping away all of its hydrophobicity. The new and improved HyDri is said to be the cleanest, purest, and whitest hydrophobic cotton fibre available in the market.

This latest generation HyDri is 35% more hydrophobic than the original purified cotton fibre from Barnhardt, setting a new standard for moisture management applications with natural fibre, the company says.

"HyDri promotes the design of nonwoven fabrics to meet the joint challenge of softness and comfort, while also managing and controlling moisture," Barnhardt said in a blogpost. "Through a unique, proprietary purification process, Barnhardt is able to retain the fibre's natural oils and waxes."

HyDri is designed to remain hydrophobic following strenuous hydroentangling

processes. It also exhibits high strength properties – as with all cottons, HyDri gets stronger when wet and as it withstands taxing hydroentanglement processing.

The new and improved HyDri is specifically designed to replace synthetic and manmade fibres traditionally used in hygiene and personal care products. "The replacement is a natural solution that is soft, pure and white," Barnhardt said. "HyDri's high degree of hydrophobicity means that nonwovens stay dryer and more comfortable through the softness and breathability that consumers can only get from natural cotton products. Whether it's conventional or organic HyDri, improved comfort and performance means goodbye, artificial and hello, natural."

Natural and organic HyDri varieties are ideal for multiple nonwoven applications, especially those where comfort and performance are essential. Barnhardt says it sees HyDri applied to hygiene products, both in topsheets and backsheets, as well as ADL wipes, beauty and personal care items.

Web: [www.barnhardtcotton.net](http://www.barnhardtcotton.net)

## Aldi toilet wipes certified as 'fine to flush'

LONDON - Aldi has been awarded Water UK's Fine to Flush standard and will feature the symbol on packs of Aldi Moist Toilet Tissue and Mamia Sensitive Toddler Toilet Wipes.



"Fatbergs and other blockages are a significant problem in the UK and elsewhere and are most commonly caused by people flushing wipes and other non-biodegradable products down toilets," said Fritz Walleczek, Managing Director of Corporate Responsibility at Aldi. "We have been working closely with our suppliers and Water UK for some time, and are pleased to be one of the first supermarkets to ensure the materials in our full range of toilet wipes and tissues easily break down in wastewater and can pass these tough new tests."

More than 14.8 billion baby wipes are used in the UK every year, many of which end up in waterways, oceans and wastewater systems. In fact, wet wipes made up more than 90% of the material causing sewer blockages investigated by Water UK in 2017.

Water UK's chief executive Christine McGourty added: "This is a big step forward in the fight against fatbergs, and Aldi should be congratulated on achieving the official 'Fine to Flush' standard. Improving the environment is at the core of what the water industry does, and the 'Fine to Flush' standard makes it easier for consumers to buy an environmentally friendly product instead of one which clogs up drains and sewers. If a wipe isn't 'Fine to Flush' it should go in the bin."



# SNW

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## Braskem to develop PP export hub

PHILADELPHIA - Braskem, the largest polyolefins producer in the Americas and a major producer of biopolymers, has selected Charleston, South Carolina as the location of its new Global Export Hub to serve its international customers.

The new Global Export Hub facility will provide packaging, warehousing and export shipping services to support Braskem's U.S. polypropylene (PP) production facilities. With the design and development phase well underway, the new Global Export Hub is expected to be completed by the third quarter of 2020 and will have a capacity to support export shipments of up to 450 million pounds of polypropylene and specialty polymers annually to Braskem customers worldwide.

Braskem is partnering with the Port of Charleston and warehouse provider Frontier Logistics, which will construct, lease and provide services to Braskem under a five-year agreement. Ahead of the facility's completion, the company plans to continue to leverage its existing international export capabilities out of Houston, Texas, which will also be maintained following the launch of the new Charleston Global Export Hub.

The announcement of the new South Carolina facility complements Braskem's existing network of Global Export

Hubs which include facilities in North America, South America and Europe.

Mark Nikolich, Braskem America CEO commented: "As the largest polyolefins producer in the Americas and the leading producer of polypropylene in the United States, Braskem is focused on reinvesting in its business and leadership positions to support our clients worldwide. The build out of our new Global Export Hub in South Carolina allows us to leverage our feedstock advantaged, polymer production assets in the U.S Gulf Coast, Pennsylvania and West Virginia, to best meet our international clients needs. With excellent access to national rail and highway networks this important new logistics and distribution facility in the South Carolina port region significantly enhances Braskem America's international export capability."

The new facility is being developed as Braskem works to complete Delta, Braskem's new world-class polypropylene production line in La Porte, Texas, which is nearing completion and is scheduled for the launch of commercial production in the third quarter of 2020.

One of the company's most recent developments is a new line of recycled PP.

Feedstock for the I'm Green recycled polypropylene is derived from polypropylene twine typically used for hay bales in the agricultural sector, which would otherwise be directed to landfills after use. In redirecting these polypropylene twine waste streams from landfills, the twine is reused as a raw material offering a circular source of feedstock with consistent material characteristics.

The twine is processed, dyed black for product colour uniformity, and then tested for purity and quality. The resulting sustainably focused homopolymer polypropylene pellets are well suited for use in compounding and packaging applications including uses in automotive, housewares and consumer goods. I'm green recycled polypropylene is said to have properties similar or as good as virgin polypropylene.

## ITMA Asia + CITME rescheduled to June 2021

SHANGHAI - Despite receiving strong response from exhibitors, this Autumn's ITMA Asia + CITME 2020 has been rescheduled as a result of the ongoing coronavirus pandemic.

Originally scheduled for October, the combined show will now take place from 12 to 16 June 2021 at the National Exhibition and Convention Centre (NECC), Shanghai.

According to show owners CEMATEX and Chinese partners, the Sub-Council of Textile Industry, CCPIT (CCPIT-Tex), China Textile Machinery Association (CTMA) and China Exhibition Centre Group Corporation (CIEC), the postponement is necessary due to the coronavirus pandemic.

Mr Fritz P. Mayer, President of CEMATEX, said: "We seek your understanding as this decision has been made with the safety and health concerns of our participants and partners in mind. The global economy has been severely affected by the pandemic. On a positive note, the International Monetary Fund has predicted that there would be global economic growth at 5.8 per cent next year. Hence, it is more prudent to look at a date around mid of next year."

Mr Wang Shutian, Honorary President of China Textile Machinery Association (CTMA) added: "The outbreak of the coronavirus has caused a severe impact on global economy, and also affected the manufacturing sector. Our exhibitors, especially those from other parts of the world, are deeply affected by the lockdowns. Therefore, we believe that the combined show with the new exhibition dates would be timely when the global economy is predicted to improve. We would like to thank the exhibitors who have applied for space for their strong vote of confidence in the combined show."

## Neenah announces Vectorply acquisition not completed

ALPHARETTA – Neenah has confirmed that it has been unable to complete its planned US\$155 million acquisition of Vectorply Corporation.

Neenah announced earlier this year that it was looking to expand its technical products platform by acquiring Vectorply Corporation from MSouth Equity Partners.

Confirming the delay, John O'Donnell, chief executive officer, said: "Regarding our ongoing business during this challenging time, the health and safety of our employees are paramount and we've taken actions across our company to protect them, while also carefully managing costs, capital expenditures and working capital."

He continued: "We exited 2019 with a conservative leverage position and our liquidity today is strong. Our primary near-term focus is the health and welfare of our employees and business,

and we feel confident in our ability to weather the current crisis.”

At this stage, no details of a potential completion date have been given.

With annual sales of over \$70 million, Vectorply is a leader in the manufacture of high-performance composite materials used in a variety of growing end markets which has been experiencing strong, double-digit growth in its sales and profitability over the past few years.

The company is focused in North America, with its customers and supply chain predominantly in the USA and operates out of a single manufacturing facility Phenix City, Alabama. It is well-known for its product capabilities, utilising product-enhancing fibres such as carbon, glass and aramid to produce purpose-built, nonwoven reinforcement fabrics.

Neenah came into existence following the spin-off by Kimberly-Clark of its technical products and fine paper businesses in 2004 and has grown significantly in the field of technical nonwovens in recent years.

## Ahlstrom and Suominen strengthen wipes supply chain

STOCKHOLM - Ahlstrom-Munksjö and nonwovens manufacturer Suominen have signed a multi-year commercial agreement aimed securing and strengthening the supply of biodegradable wipes products.

The agreement secures supplies from Ahlstrom-Munksjö's plant located in Ställdalen, Sweden, to Suominen's customers for several years and will also considerably improve the companies' joint service to the customers.

The Ställdalen plant manufactures wet wipes products for Suominen mainly to the European market. They are 100% biodegradable and produced from renewable materials. The products are considered category leader in the Moist Toilet Tissue segment (MTT). The agreement gives the customers a possibility to cross-qualify production sites on different continents and hence increase their security of supply.

“Thanks to continuous product development, Ställdalen is on the forefront of manufacturing of wipes substrates. This long term agreement further reinforces the long lasting partnership that Ahlstrom-Munksjö and Suominen have in this segment. Our cooperation will allow us to better serve the market place and improve customer satisfaction thanks to greater agility,” said Hans Sohlström, President and CEO of Ahlstrom-Munksjö.

“This agreement is a very important milestone for Suominen and secures our ability to serve our customers for the coming years. The products manufactured by Ställdalen are an important part of our sustainable offering and thus an integral part of our strategy. The closer co-operation with Ahlstrom-Munksjö will also improve our ability to launch new sustainable innovations such as HYDRASPUN Royal with the Fine-to-Flush certificate or new products with dispersibility like toilet paper,” added Petri Helsky, President & CEO of Suominen.



## Sinopec puts first meltblown line into production

BEIJING - Forty-eight hours ahead of schedule, Sinopec Corp, one of China's major energy and chemical company, put its first melt-blown nonwoven fabric assembly line into operation at its Yanshan factory in Beijing.

The Yanshan factory is a converted 3600 square metre old warehouse that has found new life as a global production base following the challenges brought by the coronavirus outbreak.

The 14,400-ton capacity Yanshan facility is one of Sinopec's two meltblown nonwoven fabric assembly bases and is co-managed with China National Machinery Industry Corporation.

The base has two nonwoven production lines and three spunbond production lines and can produce up to 4 tons of melt-blown fabric for 1.2 million N95 disposable masks or 6 tons for 6 million disposable masks per day.

The new facility also takes advantage of Sinopec's integrated upstream supply-chain by sourcing local materials from Yanshan and support from the on-site synthetic resin production line.

“It normally takes about half a year to complete the construction of a 10,000-ton melt-blown fabric factory - we have done it in 12 days, 48 hours ahead of schedule. In a challenging time like this, saving 48 hours means that we can produce an extra 12 million disposable masks,” said Lv Dapeng, Spokesperson of Sinopec Corp.

The largest medical material supplier in China, Sinopec is a significant supplier of polypropylene, a key component in the production of disposable masks for medical use. The new assembly line will ensure a stable supply of medical supplies, such as masks and clothing, can be distributed across the nation and worldwide.

“We are privileged to support those who are protecting us from the virus. Sinopec will utilize all of our resources to ensure supplies to the frontline are guaranteed,” said Lv.

Sinopec's other eight melt-blown nonwoven fabric production lines in Yizheng, Jiangsu are currently under construction.





# People

**Kimberly-Clark Corporation** has announced that Gustavo Ghory has been named senior vice president and chief supply chain officer, effective July 1, 2020.

Ghory will have global responsibilities for procurement, manufacturing, transportation, continuous improvement, sustainability, and quality, safety and regulatory operations. Ghory will report to Mike Hsu, Chairman and Chief Executive Officer of Kimberly-Clark, and become a member of the company's executive leadership team.

**Lydall, Inc.** has announced that Ashish Diwanji has been named president, Lydall Performance Materials, effective June 5, 2020. Dr. Diwanji will be replacing Paul A. Marold, who is departing Lydall to pursue an alternative opportunity.

Dr. Diwanji recently joined Lydall as Senior Vice President, Innovation and Chief Technology Officer, focusing on advancing product-line rationalization and maximizing strategic technological development across the three business segments.

**EDANA** has recognised the achievements and efforts of Dr. Rolf Frischknecht, with the 2020 EDANA LCA Lifetime Achievement Award.

The award, which recognizes the outstanding contributions in promoting life cycle thinking and improving LCA approaches, was presented at the 30th annual conference of SETAC, the Society of Environmental Toxicology and Chemistry, held online from 3 to 7 May.

The award was granted in recognition of Dr. Frischknecht's outstanding contributions to life cycle inventory databases and methodology. He is especially known for his leading role from 1998 to 2008 in the design, development, implementation and operation of the life cycle inventory database ecoinvent, laying a solid ground for its sustainable recognition and worldwide success. Throughout his professional career, Dr. Rolf Frischknecht dedicated his efforts to promote life cycle thinking and raise the awareness of environmental impacts hidden in the supply chains of products and services, and to lower the efforts in performing environmental life cycle assessment in

environmentally crucial areas such as dwelling, mobility and food.

Gil Stevens, EDANA's External Relations & Sustainability Director, said the award was an honour to grant: "SETAC's work to advance the science, practice, and application of LCAs has been invaluable in achieving consensus on techniques and methodology, greatly contributing to the successful assessing and addressing of environmental challenges," he said. "EDANA is greatly honoured to recognise such professional commitment to research and development in this field. Many congratulations to Dr. Frischknecht."

Robert van de Kerkhof, Chief Commercial Officer of **Lenzing AG**, has been elected by the CIRFS members to take on the role of President at today's AGM.



Robert van de Kerkhof

He succeeds Necat ALTIN, General Manager of Korteks and Head of Zorlu Holding Textiles Group, whose mandate has expired but who will remain a member of the Board as past-President.

**Neenah, Inc.** has announced that senior vice president, chief financial officer (CFO) and treasurer Bonnie Lind has communicated her plans to retire. Lind will remain with Neenah through an October 1 retirement date to ensure a smooth transition.

"It's been my pleasure and privilege to serve as Neenah's CFO and be part of the company's transformation from its origins as a pulp and paper company into a global leader in specialty material niche markets," says Lind. "Looking ahead, Neenah's strong financial and competitive positions and its talented and dedicated employees make me confident of the company's continued success."

Neenah has also appointed Paul DeSantis as senior vice president, chief financial officer, and treasurer, effective May 13, 2020. DeSantis most recently served as chief financial officer at OMNOVA Solutions, and was in this role from 2014 until the company was

Shane Vincent has joined **PFNonwovens** as the Chief Commercial Officer (CCO), Global Head of Business Development as of April 21, 2020.

Vincent has over 22 years of experience in global sales and marketing as well as years of experience with developing commercial strategies and business plans within the spunbond/spunmelt industry.

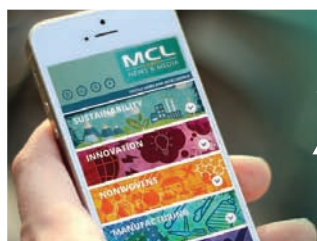
Vincent's role will include working with the CEO and the PFN Board of Directors on the commercial strategy and development of the organization as it relates to marketing, sales and customer service.

**INDA** is warmly remembering Klaus Maitre, a veteran of the nonwovens and textile industry for five decades. Maitre passed away surrounded by his wife and family in Gastonia, North Carolina on March 25th at the age of 81.

Maitre immigrated to the U.S. in 1963 after receiving his Master's and Bachelor's Degree in Mechanical Engineering from the Technical University of North Rhine Westphalia in Aachen, Germany. His career included working as Divisional Vice President for the former Standard Coosa-Thatcher Company, a textile company, before joining the U.S. wholly-owned subsidiary of Dilo Systems Group as Executive Vice President. Maitre served at Dilo for over 25 years before retiring and starting his own consultancy, The Sigma Group, LLC.

"INDA is saddened by the loss of a larger than life leader who was an integral part of the development of the nonwovens industry. We will remember Klaus for his many insightful contributions to our association and the industry," said INDA President Dave Rousse. "He was a strong advocate for INDA and continually strove to advance the growth of the nonwovens and engineered materials industry."

Maitre served on INDA Conference Planning Committees offering his expertise and vision to help guide programs and content. He maintained a strong presence through his time at Dilo at INDA conferences and expositions for over 20 years.



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### July 2020

14-16

#### Absorbent Hygiene Training

INDA Headquarters

Cary

North Carolina USA

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

21-2

#### Inter Nonwovens Training

INDA Headquarters

Cary, North Carolina USA &

The Nonwovens Institute,

North Carolina State University

Raleigh

North Carolina USA

Web: [www.inda.org](http://www.inda.org)

### August 2020

24-27

#### WIPES Academy

Co-located with WOW 2020

Hyatt Regency

Minneapolis,

Minnesota USA

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

24-27

#### World of Wipes (WOW)

International Conference

Hyatt Regency

Minneapolis,

Minnesota

USA

Web: [www.worldofwipes.org](http://www.worldofwipes.org)

### September 2020

2-4

#### CINTE

Technical textile and nonwoven products

in Asia

Shanghai

China

Web: <https://cinte-techtextil-china.hk>.

[messefrankfurt.com/shanghai/en.html](http://messefrankfurt.com/shanghai/en.html)

9-10

#### Absorbent Hygiene Products

EDANA training course

Brussels

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

15-16

#### Elementary Nonwovens Training Course

INDA Headquarters

Cary, Indiana

Web: [www.inda.org](http://www.inda.org)

23-25

#### Outlook

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

Webinar

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

[outlook-europe](http://outlook-europe)

29-30

#### RISE (Research, Innovation & Science for Engineered fabrics)

September 2020

Raleigh

North Carolina

[www.riseconf.net](http://www.riseconf.net)

### October 2020

1-3

#### Techtextil North America

Atlanta

Georgia,

USA

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

13

#### Circular Nonwovens

EDANA Webinar

Web: [www.edana.org/events/circular-](http://www.edana.org/events/circular-nonwovens-forum)  
[nonwovens-forum](http://www.edana.org/events/circular-nonwovens-forum)

### November 2020

16-19

#### Hygienix

The Roosevelt New Orleans

New Orleans

Louisiana USA

Web: [www.hygienix.org](http://www.hygienix.org)

### December 2020

7-8

#### Filtrex Asia

Shanghai

China

Web: <https://www.edana.org/events/filtrex/>  
[filtrex-asia](http://filtrex-asia)

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.



**We care for  
those who  
care for us**

## High-performance barrier effect solutions

In times like these, good protection is crucial. At Huntsman Textile Effects, we produce a range of high-performance Barrier Effects for critical applications including face masks and Personal Protective Equipment (PPE) for our healthcare heroes on the frontline.

For nonwoven and woven face masks and PPE, such as surgical gowns and scrubs, we offer a range of fluorinated (PHOBOL®) and non-fluorinated (PHOBOTEX® and ZELAN™) products with excellent barrier properties that protect the wearer and keep them safe. All these products meet a broad spectrum of repellency requirements for durable and non-durable applications.

### Edition 2020

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