

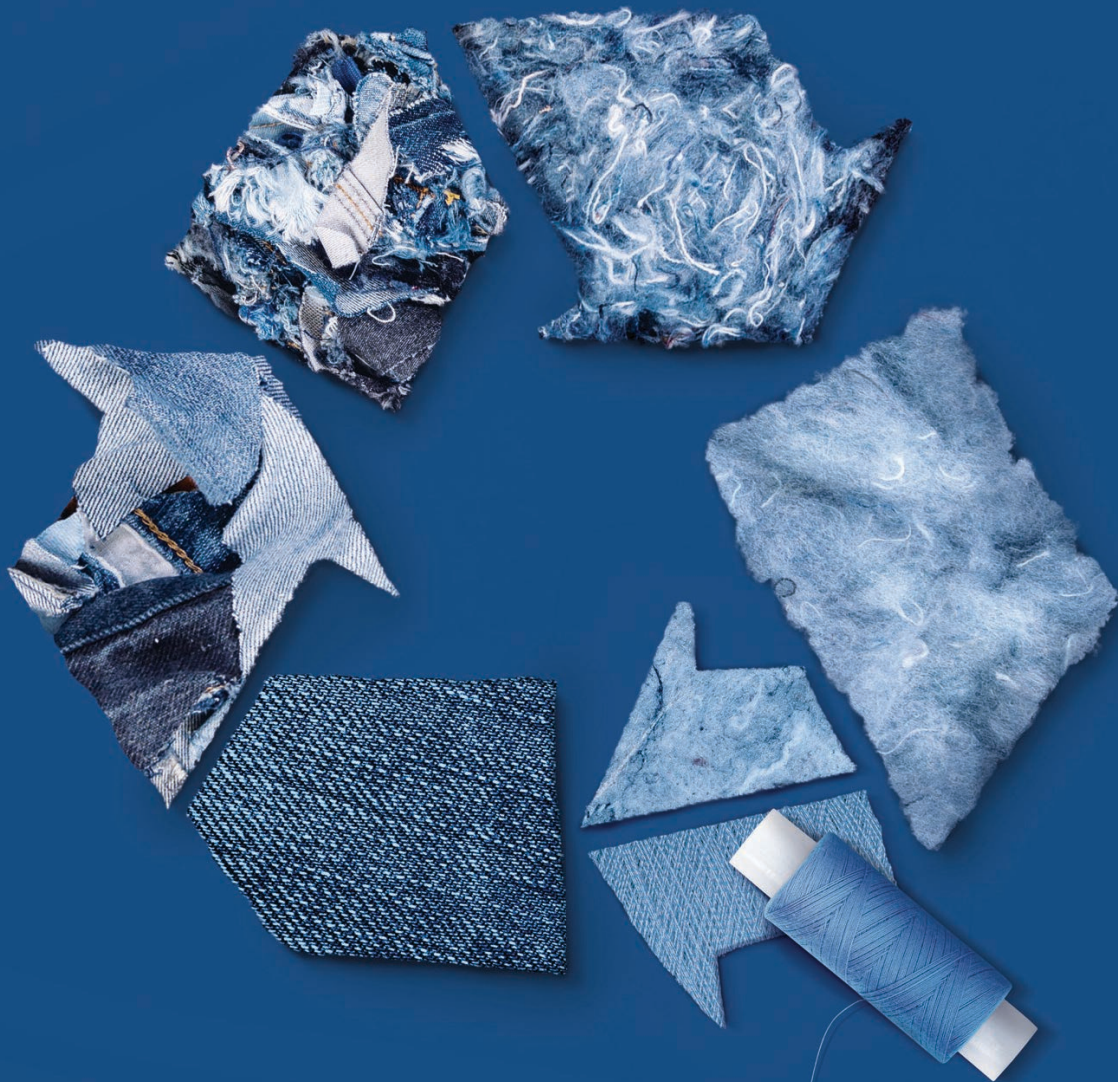
SNW

August / September 2022

SUSTAINABLE NONWOVENS

Feeding the circular need

How nonwovens technology is bringing new life to textiles



Corrosion concerns
Filtration for data centres

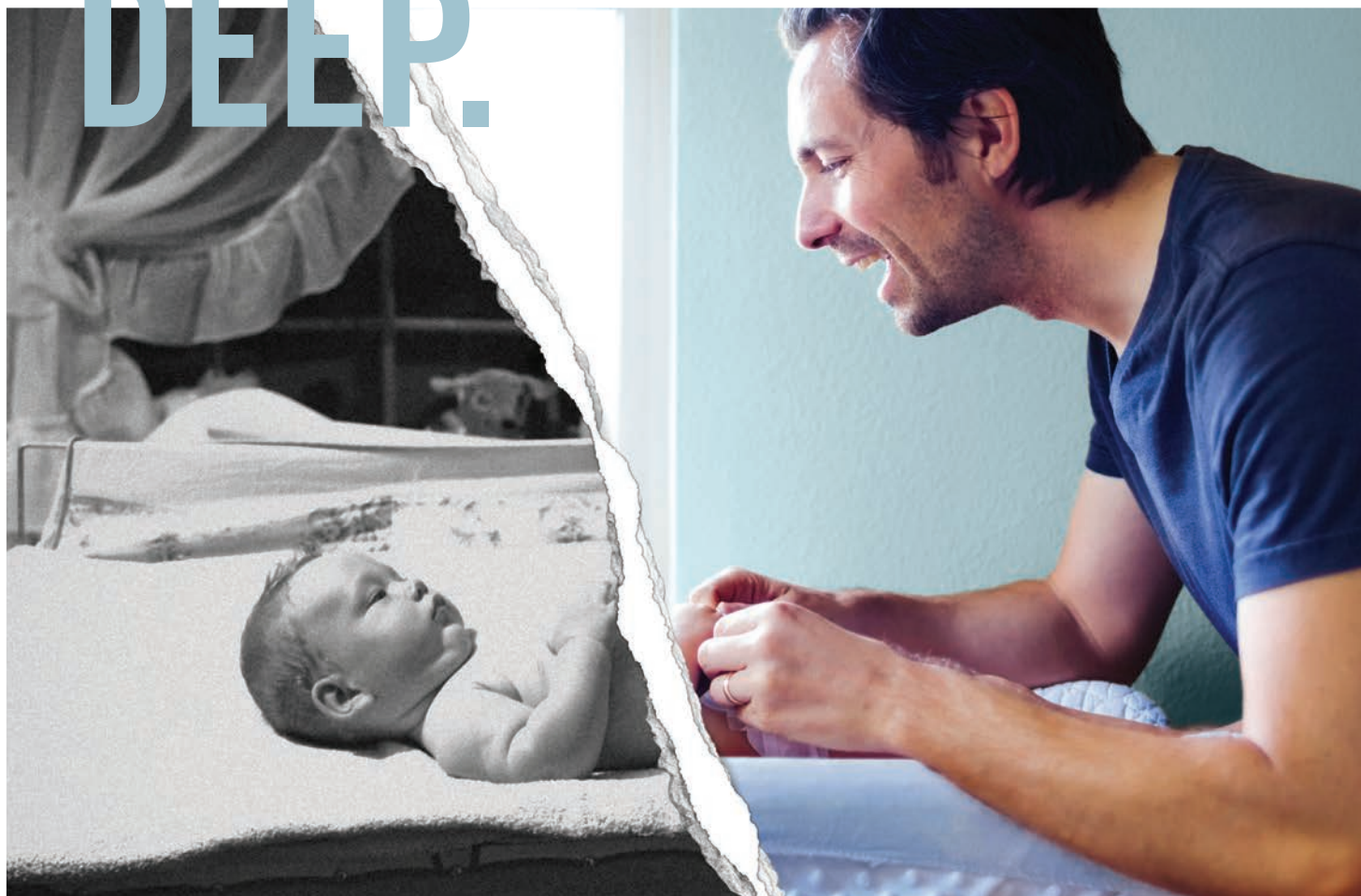
Sugar-coated salvation
Nonwovens role in vaccine delivery

On the floor
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Sustainability surge

Despite concerns over sustainability and flushability, global demand for nonwoven consumer and industrial wipes will remain bullish over the next five years, according to the latest forecasts from Smithers.

As we see on page 20 of this issue, exclusive data available now in *The Future of Global Nonwoven Wipes to 2027* shows the market in 2022 will reach a value of \$20.82 billion, equivalent to 1.5 million tonnes of nonwoven substrates. This follows two years when hygiene and surface cleaning linked to Covid-19 has generated an unprecedented demand surge.

While the latest strains of Covid are less lethal, they are still prevalent with China reinstating widespread lockdowns in the first half of this year. This will support additional purchases of wipes – especially disinfectant and healthcare variants – through 2022 and beyond, as Covid transitions from a pandemic to an endemic infection.

The report notes that a host of new nonwoven wipe lines were ordered in the early days of the pandemic, with several governments designating these strategic economic assets for the future. These will continue to come online over 2022-2023, addressing any residual effect of the supply shortages seen in 2020.

Smithers' forecasts are now that the market will increase at a compound annual growth rate (CAGR) of 6.8% by value, and 7.4% by tonnage, across 2022-2027. This will yield a market worth \$29.85 billion, consuming 2.14 million tonnes of nonwovens in 2027. Over the same period the total surface area of nonwovens used in wipes will increase from 27.55 billion square metres to 41.63 billion square metres.

The leading market trend is to make wipes more sustainable, responding to both consumer expectations and new

regulatory requirements. For the latter the EU's Single-use Plastic Directive is creating new labelling, consumer education, and obligations to pay for the disposal of consumer pre-wetted personal care and domestic wipes. Industrial wipes are, for now, out of scope.

Overall, spunlace will remain the dominant nonwoven technology in wipes, but sustainability concerns are promoting R&D into refinements, including the use of more wood fibres – and possibly polyhydroxyalkanoates (PHAs) bioplastics – in construction. A related issue is flushability, designing wipes to clear sewage systems, and not polluting the seas and rivers.

In terms of different sectors, the strongest growth across the forecast period will be in personal care wipes, closely followed by homecare. The personal care segment will benefit from increased home working and consumers prioritising convenience.

Demand will grow fastest for adult moist toilet tissue and cosmetic/facial wipes over the next five years. In homecare segments an elevated interest in domestic hygiene means all segments will sustain double-digit growth over the next five years, along with the introduction of more environmentally friendly nonwoven bases.

Industrial wipe demand will be more closely linked to an overall recovery in manufacturing, but, interestingly, baby wipes will see the slowest expansion.



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@mcnews.com
Web: www.nonwovensnews.com

Editor

Haydn Davis | hdavis@mcnews.com

Consulting editor

Adrian Wilson
awilson@mcnews.com | adawilson@gmail.com

Deputy editor

Tony Whitfield | twhitfield@mcnews.com

Global advertising

David Jagger | djagger@mcnews.com

Subscriptions & sales

Paula Jones | subscriptions@mcnews.com

Design

Gavin Gibson | info@ggibsoncreativedesign.co.uk

EDITORIAL ADVISORY PANEL

Dr George Kellie, Kellie Solutions
Vanessa Knowles, Pebble International
Ed Krišūnas, WNNW (Waste Not, Want Not)
John Mowbray, Ecotextile News
Colin Purvis, Purvis Consulting SCS.
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Larry C. Wadsworth, US Pacific Nonwovens
Vicki Barbur, Advanced Innovation

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E: subscriptions@mcnews.com

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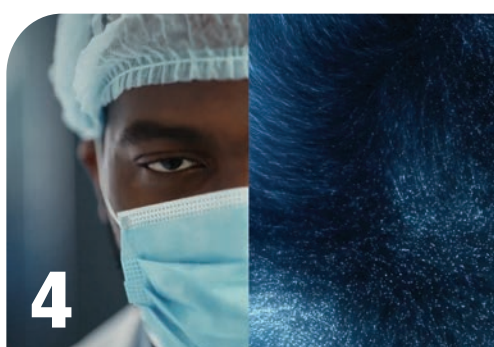
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NONWOVENS NEWS

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3M to spin-off of health care business

ST. PAUL - Materials science company 3M has announced plans to spin-off its health care business.

The new, standalone business, known as Health Care, will focus on wound care, healthcare IT, oral care and ~biopharma filtration.

"Today's actions advance our ability to create value for customers and shareholders," said 3M chairman and chief executive officer Mike Roman. "Disciplined portfolio management is a hallmark of our growth strategy. Our management team and board continually evaluate the strategic options that will best drive long-term sustainable growth and value. The decision to spin off our Health Care

business will result in two well-capitalized, world-class companies, well positioned to pursue their respective priorities."

Health Care, with approximately US\$8.61 billion in sales in 2021, is described by 3M as "a diversified healthcare technology leader with a deep and diverse portfolio of trusted brands, global capabilities, and leadership in attractive end market segments such as wound care, oral care, healthcare IT, and biopharma filtration".

"Health Care will be better positioned to deliver industry-leading innovation that enables better, smarter, and safer healthcare for patients worldwide," the company said.

The remaining part of the business will be known as New 3M which, with \$26.8 billion in sales in 2021, will continue to target the electronics, safety, mobility, digitization, home improvement and sustainability sectors.

3M expects to complete the transaction by year-end 2023.

Softys acquires Ontex's Mexican business

AALST - Ontex Group has agreed a €285 million deal to sell its Mexican business to personal hygiene company Softys.

The transaction includes Ontex's business in Mexico and related exports to regional markets as well as its manufacturing facility in Puebla, Mexico. The plant in Tijuana, Mexico remains within the Ontex portfolio as an integral part of Ontex's North American supply chain footprint. Softys, a wholly owned subsidiary of Empresas CMPC S.A., headquartered in Chile, has a number of established operations across Latin America.

For Ontex, the deal will be seen as an milestone in the company's new strategy announced in December 2021 to focus on its Partner Brands and Healthcare Business and accordingly, to explore strategic alternatives for its branded business in emerging markets.

Welcoming the deal, Esther Berrozpe Galindo, CEO, Ontex, said: "This divestment represents a major milestone in our strategy to reshape our portfolio. The proceeds from the sale will contribute to reducing our net debt and strengthening our balance sheet. I am convinced that Softys, with its 40 years of experience in the personal hygiene market in Latin America, is well placed to take the business forward, benefiting from the talent and expertise of our team in Mexico."

The business being sold develops, manufactures and distributes baby diapers, baby pants, adult diapers and feminine hygiene products, marketed through the brands BBTips, Chicolastic, Kiddies, BioBaby and others. It has approximately 1,300 employees and generated sales of MXN \$7.4 billion in 2021.

Ontex and Softys aim to close the transaction, which is subject to the customary conditions, including the applicable merger clearance approvals, by early 2023.



IFG strikes bio-fibre deal

LYON - International Fibres Group has announced a collaboration with PTT MCC Biochem, a producer of bio-based polybutylene succinate (BioPBSTM), which aims to provide environmentally friendly staple fibres for the nonwovens industry.

Promoted under the IFGBio brand, the biobased, compostable fibres based on PTTMCC's BioPBSTM technology will have applications in the food & beverage, filtration, geotextile and construction industries.

PTTMCC is a strategic joint venture company between PTT Global Chemical Public Company Limited (GC) and Mitsubishi Chemical Corporation (MCC).

It operates the world's largest commercial production of bio-based polybutylene succinate under the BioPBS tradename with its facility in Rayong, Thailand, producing 20,000 tonnes per year.

BioPBSTM is partially derived from renewable resources and has high level compostability performance at ambient temperature. BioPBSTM also performs well shows excellent performance in low temperature heat sealability, high heat resistance and flexibility compared to other biodegradable resins, the company says. PTTMCC is determined to become the global leader of compostable bioplastic material with fast tracking solution for customers to enjoy vast application possibilities.

International Fibres Group (IFG) is one of Europe's leading independent producers of polypropylene-based staple fibre, a component with reinforcing, insulating, separating or draining properties. The fibre is used in the production of flooring, rugs, furniture, filtration, foodstuff packaging, car interiors and nonwoven fabrics, which means a diversified customer portfolio.

IFG has production facilities in Belgium, the United Kingdom and Austria.

SUP ban drives nonwovens demand

Gujarat - Nonwovens manufacturers in the Gujarat region of India have seen a significant increase in demand since a ban on single use plastics was introduced at the beginning of July.

A report in the Times of India claims that just a month after the ban, production of nonwoven fabrics has increased by 15% as customers switch from plastic carrier bags to nonwoven, reusable alternatives.

Suresh Patel, president of the Indian Manufacturers Association of Nonwovens, told the *Times of India* that the average monthly production of 10,000 metric tonnes had increased to 12,000 tonnes per month with orders continuing to come in at an increasing rate. "With greater demand, we aim to expand production by 25% by the end of 2022," he added.

The number of nonwovens manufacturers in Gujarat has increased from 40 units in 2019 to 60 units at the beginning of this year.



Essity acquires second leakproof apparel company

STOCKHOLM - Essity has acquired a second leakproof apparel, this time one operating in the Australia, New Zealand and UK markets. Following on from its recent acquisition of Canadian firm Knix, the hygiene and health company has moved for Australian company Modibodi in a AU\$140 million (approximately SEK 985m) deal.

Through the acquisition, Essity will strengthen its position in leakproof apparel, the fastest growing product segment in Intimate Hygiene, which includes Feminine Care and Incontinence Products.

Leakproof apparel has an expected annual growth rate of more than 20% for the next five years. Essity is already active in the leakproof apparel market within Feminine Care with brands such as Libresse, Bodyform, Saba and TOM Organic, and within Incontinence Products with the TENA brand.

"The acquisition of Modibodi strengthens Essity's position in leakproof apparel and enables faster growth within better-for-you, better-for-the-planet solutions. Modibodi has the qualities we are looking for with leading market positions, strong brand and sustainability credentials as well as excellent digital marketing and e-commerce capabilities," said Magnus Groth, President and CEO of Essity.

Modibodi, founded in 2013, provides leakproof apparel for periods and incontinence including underwear, swimwear, activewear and maternity wear. The company operates an online, direct-to-consumer business model, with growing sales in retail and through e-tailers. In 2021, the company reported net sales of AUD 56.7 million (approximately SEK 365m) and a sales growth of 18%. The EBITDA amounted to AUD 5.7 million (approximately SEK 36m) and EBITA to AUD 5.6 million (approximately SEK 36m). Modibodi has 45 employees and is headquartered in Sydney, Australia.

"I am proud of all we have created at Modibodi over the past nine years and pleased that Modibodi is joining Essity. As a global leader in hygiene and health, Essity can provide the expertise and capital to take the brand forward during its next phase of growth, and achieve even greater impact," added Kristy Chong, founder and CEO of Modibodi. The transaction is expected to be finalized in the second half of 2022.

Ahlstrom-Munksjö targets carbon footprint cut

WISCONSIN - Ahlstrom-Munksjö is to invest €15 million in reducing its carbon footprint at its production plants in Wisconsin, USA

The investment includes new technology and the conversion of its existing boilers at its Mosinee and Rhinelander plants, which as well as reducing its carbon emissions, will also cut the amount of waste going to landfill.

According to Ahlstrom-Munksjö, the investments at the Mosinee production plant will enable a reduction in its carbon footprint by an estimated 20%, and a reduction of landfill waste by more than 10%. The project should be completed at the end of the second quarter in 2023.

In addition, the Rhinelander production plant is expected to reduce CO₂ emissions by an estimated 14% and landfill waste by more than 50%. A new energy center and associated buildings at Rhinelander will consolidate and simplify energy operations,

enabling the plant to house a future boiler and a heat recovery steam generator. The project will commence immediately and is estimated to be completed in the third quarter of 2023.

"Being able to proceed with these key projects constitute an important milestone in further strengthening our operations in the US, making Mosinee and Rhinelander stronger platform to support for future growth with our customer base," said Dan Adrianzon, EVP, Technical Materials.

"These investments will enable us to reduce carbon emissions and enhance our operational efficiency," added Thomaz Gruber, vice president of Operations for the Wisconsin U.S. plants. "We take our responsibility to protect our natural resources seriously and we have demonstrated this through our sustainable forestry practices as well as the contributions our plants have made to Wisconsin communities for more than 130 years."

In 2022, Ahlstrom-Munksjö updated its sustainability targets and committed to The Science Based Targets initiative (SBTi), which is a global body enabling businesses to set emissions reduction targets to be in line with new climate science. SBTi unveiled a new strategy to encourage businesses to obtain a minimum target of 1.5°C.

"Ahlstrom-Munksjö intends to reach that trajectory of 38% absolute reduction by 2030 and aspires to reach net zero emissions by 2050," said Robin Guillaud, EVP, Sustainability, Innovation & Marketing. "Reducing the emissions and the landfill waste at the Rhinelander and Mosinee plants will be a significant step towards achieving the company's ambitious sustainability metrics and goals."



Fluff pulp expansion for GP Cellulose

MONROEVILLE – GP Cellulose is investing approximately \$80 million to add fluff capacity at its Alabama River mill. The project is being implemented in phases and on completion will increase the mill's ability to produce fluff pulp.

The Alabama River mill operates two lines, one currently producing only paper pulp bales. The new investment will upgrade production by enabling the line to also produce fluff pulp rolls for absorbent hygiene products. The mill's second line was upgraded to produce both paper pulp bales and fluff pulp rolls in 2011.

"This investment will enable GP Cellulose to address the increasing fluff pulp needs of our customers worldwide," said Munir Abdallah, GP Cellulose president. "The completion of the project will add capability and flexibility to our system to meet a wider range of needs and position us to grow with our customers."

Major aspects of the project are complete, including investments in the headbox and forming table. The final phase is underway now and includes infrastructure as well as winding and wrapping components. Plans call for the newly upgraded line to have the ability to produce fluff pulp in late 2023. Fluff pulp is used in a variety of products including baby diapers, feminine hygiene, adult incontinence and airlaid nonwovens.

The Alabama River mill directly employs approximately 470 people. According to a Troy University study, the economic impact of the mill contributes to 1,407 full- and part-time jobs, \$103.6 million in labour income and \$421.3 million in total economic impact.

Reicofil supplies two lines to Algeria

TROISDOEF – Sinaatec, a major new player in the nonwovens industry established in 2017 as a wholly owned subsidiary of Madar Holding Group, is taking delivery of two Reifenhäuser Reicofil lines, as the technology supplier's first Algerian customer.

The two lines, a single-beam meltblown line and composite bico line, both with working widths of 3.2 metres, will target the medical and hygiene sectors.

"The demand for nonwovens remains high," said Mohamed Lamine Bouchelouche, president and CEO of Sinaatec. "We see further growth potential in the North and Central African markets."

The meltblown line is scheduled to be commissioned this September, while the start of the composite line is planned for Autumn 2023. Sinaatec's local sites and infrastructure provide space for another plant, so further expansion is possible.

"We are very pleased to install our state-of-the-art production lines at Sinaatec's advanced production facility for high quality nonwovens," said Dr Boerge Wessling, Reifenhäuser Reicofil managing director. "Despite an initially digital-only business initiation due to the pandemic, we already have a very cooperative relationship and look forward to further collaboration."

INDA opens registration for Hygienix

CARY – With reusable and recyclable products and new inputs offering growth opportunities in absorbent hygiene and personal care products, Hygienix will provide an insightful view into the market's future this November in New Orleans.

Industry participants from around the world and throughout the supply chain will convene and connect for the eighth edition of the premier event for the fast-growing segment on November 14-17, at The Roosevelt New Orleans Hotel. INDA today announced the full program and registration is now open at the Hygienix website.

The in-person conference will highlight the segment's continued growth and new opportunities with presentations by more than 20 industry experts on sustainable inputs, natural fibers, product transparency, reusable menstrual products, recyclable diapers and more as well as the latest market forecasts and insights into consumer buying trends.

Hygienix also will offer two specialized workshops, and a myriad of business connection opportunities including a welcome reception on November 14 and a first-time attendee mentorship program.

Participants will discover innovative products in absorbent hygiene and personal care at tabletop exhibits with evening

receptions on November 15-16, providing opportunities for 60 companies to showcase their unique offerings.

Three finalists will each present their innovative and technically sophisticated disposable absorbent hygiene products as they vie for the prestigious Hygienix Innovation Award. Nominations are open until August 29. Demonstrating the interest in sustainability, last year's award recipient was Kudos Diaper Subscription featuring its 100% cotton disposable diaper.

INDA President Tony Fragnito will welcome participants to New Orleans and also present the INDA Lifetime Service Award on Nov. 15 and the Hygienix Innovation Award on Nov. 17.

Hygienix Highlights

Absorbent hygiene – the single largest nonwoven end use category (by square metres) – is expected to continue its strong growth over the next four years, creating market opportunities in this thriving area driven by growing consumer interest for environmentally-friendly options in material inputs and end-of-life options.

Participants will hear the latest data and forecasts from analysts during presentations by Robert Fry, Jr., Ph.D., Principal of Robert Fry Economics LLC on the Global Economy – What we Can Expect in 2023; Pricie Hanna, Managing Partner, and Colin Hanna, Director of Market Research, Price Hanna Consultants on Disposables versus Reusables; and Simon Preisler, Vice President of Logistics, Central National Gottesman delivering a Logistic Market Update.

A panel of entrepreneurs will discuss the challenges, biases and taboos to bringing innovations into the marketplace. Experts sharing their insights will be Mia Abbruzzese and Alexandra Fennell, co-founders of Grace; Amrita Saigal, founder and CEO, Kudos; and Cindy Santa Cruz, President of ParaPatch.

A session on Next-Generation Menstrual Products and their Users will feature Liying Qian, Research Analyst, Euromonitor International providing market data on disposable and reusable period products; Frantisek Riha-Scott, Founder, Confitex discussing reusable products; and Greta Meyer, Co-Founder and CEO, Sequel on Reengineering the Tampon.

Also focusing on period products will be a presentation by Danielle Keiser, Managing Director, Impact, Madami on Changing the Conversation with Consumers moderated by Heidi Beatty, Chief Executive Officer, Crown Abbey, LLC.

Other not-to-be-missed presentations centered on sustainability trends include:

- Assessing Sustainable Fiber Options in the Context of Disposable Hygienic Products – Richard Knowlson, Principal, RPK Consulting LLC
- Five Generations of Hygiene + Sustainability – Matt Schiering, Professor of Marketing, Dominican University
- Recycling Approaches for Disposable Diaper Waste – Jeannine Cardin, Quality and R&D, RecycPHP Inc.

Hygienix will also provide additional focused learning opportunities with two essential short courses (with separation registration fees) on Nov. 14 focused on Absorption Systems for Absorbent Hygiene Products, from 1 to 3:30 p.m. and Global Diaper Trends from 3:45 to 6 p.m.

For the full program and speakers, see the Hygienix website.



Fresh investment for Stein Fibers

ALBANY - Stein Fibers has received a significant investment from private equity firm Aterian Investment Partners.

The undisclosed investment in Stein Fibers is the fourth investment from Aterian's Fund IV, an US\$834 million investment vehicle.

Founded in 1976 and headquartered in Albany, New York, Stein Fibers is a distributor and manufacturer of fibre products to the North American furniture, bedding, automotive, filtration, construction and medical markets.

It offers a wide portfolio of fibre and fabrics products across the industry, maintaining a focus on sustainability.

"We could not be more excited to partner with Aterian as we proceed into Stein Fibers' next phase of growth," said Chip Stein and Peter Spitalny, Co-Owners of Stein Fibers. "We chose Aterian due to their focus on maintaining company culture developed over decades, commitment to an expedient process, and experience in partnering with family founders like us. We are confident that Aterian is the perfect partner to help us execute on our growth plan both organically and through M&A."

Michael Fieldstone, Co-Founder & Partner at Aterian, added: "We are thrilled to partner with the talented Stein Fibers team to continue growing the leading supply chain solutions provider in the fiber industry. Over its history, Stein Fibers has expertly navigated an ever-changing global supply chain environment while maintaining excellent customer service and quality."

Ontex opts again for North Carolina

AALST – Ontex Group has opened a new facility in Stokesdale, Rockingham County, North Carolina.

The new plant currently employs nearly 100 people and manufactures baby diapers for retailers and lifestyle brands. It will be expanded to also manufacture other product categories and complements the company's plant in Tijuana, Mexico.

"We are proud to invest in local production within the United States to meet the growing demand for our essential hygiene products from millions of North Americans," said CEO Esther Berrozpe. "This investment provides Ontex with both a West and East coast supply chain footprint in a key market where we see significant opportunity to grow and develop our business."

"When Ontex wanted to bring manufacturing that used to be done overseas back to America, they came here and hired North Carolina workers," added North Carolina Governor Roy Cooper. "As we work to combat inflation, I applaud this investment in our state, which takes advantage of North Carolina's prime location on the eastern seaboard and will help shorten shipping times and lower costs for consumers. This is yet another reason why North Carolina is a great place for businesses to grow and thrive."



Suominen opts for solar power Alicante plant

HELSINKI - Nonwovens manufacturer Suominen is continuing with its plan to shift to fossil-free electricity in all its European plants with the installation of a new solar power plant at its facility in Alicante, Spain. The plant, which includes 2,222 solar panels with a capacity of 1MW will provide clean, fossil-free electricity supply to the Alicante production site and is part of the company's previously announced strategy to reduce its energy consumption and greenhouse gas emissions across its European sites.

"The location of our production site in Alicante is excellent for a solar plant. The solar plant is expected to provide a minimum of 8% and a maximum of 13.5% of the total electricity consumption at the production site," said Juan Carlos Esteve, Director, HSEQ. "The shift towards sustainable energy sources is a step forward for us but other measures remain important as well. For example, improvements in the energy efficiency have a direct impact on our emissions."

Suominen aims to reduce its energy consumption and greenhouse gas emissions respectively by 20% per ton of product by 2025, compared to the base year of 2019. In 2021, our energy consumption decreased by 7.1% and greenhouse gas emissions by 8.8% per ton of product, compared to the base year 2019.

Nearly half of the US population lives within 650 miles of the new plant.

Rockingham County's strategic location, quality workforce, state and local incentives were key factors in the company's decision to locate the new plant in Stokesdale. Ontex first invested in the county in 2020, when the group acquired the US feminine hygiene products business of Albaad.



Expanding Freudenberg's Eco-Check portfolio

WEINHEIM – Freudenberg Performance Materials is endorsing five further sustainable products with its Eco-Check label, introduced last year.

"The Eco-Check label is a quick and easy way for our customers to identify particularly sustainable solutions," said CTO John McNabb. "The company's sustainability label is only used to endorse products that either save resources during production, improve the manufacturing footprint of customers, can be disposed of in an environmentally friendly manner after use, or contain certain features that contribute to a long service life. The label indicates to our customers that a product offers significant direct advantages in terms of environmental protection, leading to more sustainable solutions."

New Eco-Check products include an Evolon microfilament reinforcement material for leather goods that is manufactured with no solvent or binder. It contains up to 80% recycled PET and is suitable for a broad range of applications. The material is produced at Freudenberg's facility in Colmar, France, where the manufacturing process is highly sustainable. It is certified to STeP by Oeko-Tex and fully complies with the Detox to Zero by Oeko-Tex criteria.

In the field of healthcare, the bio-based M 1714 wound pad with superior absorption for more challenging wounds has now also been endorsed with the Eco-Check label. The dressing consists of a mix of bio-based fibres derived from natural sources and exhibits a smooth wound contact layer. The product has been evaluated for industrial compostability and conforms to ISO 13432.

Another labelled product is TF 400 Eco F mesh fabric for textile architecture from Mehler Technologies. Its yarn is made of 100% recycled PET bottles and its characteristics are very similar to those of conventional mesh fabrics. In 2021, it received an award from the Architectural Membrane Association in recognition of its properties.

In the shoe industry, the binder-free strobels insoles have been endorsed as particularly sustainable. They contain a high percentage of recycled green bottle flakes and the insoles themselves are fully recyclable. A two layered, needlepunched nonwoven filter media that has also been endorsed with the Eco-Check label is made entirely of polyester and more than half the fibres consist of recycled material.

Freudenberg Performance Materials pioneered PET recycling in the early 1990s and today uses an estimated seven million PET bottles in its own manufacturing processes. The materials produced consist of 100% recycled PET and are of the same quality as conventional products.

Personal Care drives Kimberly-Clark

DALLAS - Kimberly-Clark Corporation has posted net sales of US\$5.1 billion for its second quarter, an increase of 7 per cent compared to the year-ago period, boosted by a strong performance from its Personal Care segment. Operating profit was \$621 million up from \$613 million in 2021.

On the back of the results, the company is now targeting full-year 2022 organic sales growth of 5 to 7 per cent compared to prior outlook of 4 to 6 per cent.

"I'm pleased to close the first half of the year with another quarter of excellent execution by our teams who delivered strong organic sales growth, with increases in all our segments. Our growth strategy is working," said Mike Hsu, Chairman and CEO, Kimberly-Clark. "Our results also reflect ongoing market volatility and significant input cost inflation. We continue to be thoughtful with our response to inflation, focusing on providing value to our consumers while leveraging price and cost discipline to mitigate macro headwinds for margin improvement over time."

Hsu continued: "As we manage our business prudently in the near-term, we're committed to investing in our people, brands and capabilities to ensure we continue to be well positioned to deliver balanced and sustainable growth over the long-term."

In the Personal Care business, sales were up 8 per cent to \$2.7 billion with the acquisition of the controlling interest in Thinx increasing sales by one point. Second quarter operating profit of \$466 million increased 3 per cent.

The results benefited from organic sales growth and cost savings although the comparison was impacted by input cost inflation, higher marketing, research and general spending as well as unfavorable foreign currency effects.

Andritz to exhibit at CINTe 2022

GRAZ - International technology group Andritz will be presenting its latest nonwovens production solutions at CINTe 2022 in Shanghai, China, a key trade fair for technical textile and nonwoven products in Asia.

Scheduled for September 6–8, Andritz will show its broad product portfolio covering state-of-the-art nonwovens and textile production technologies such as air-through bonding, airlay, needlepunch, spunlace, spunbond, wetlaid/Wetlace, converting, textile finishing, recycling, and natural fiber processing in hall E1, booth C02.

Andritz says it supports nonwovens producers in the move to sustainability with the aim of reducing or eliminating plastic components while maintaining the high quality of the desired product properties.

This applies to all types of sustainable wipes, such as flushable, biodegradable, bio-sourced, carded pulp or standard carded wipes. The latest development in this field is the Andritz neXline wetlace CP line, which integrates the carded-pulp (CP) »

process. This is a fully engineered production line combining the benefits of drylaid and wetlaid technologies to produce a new generation of biodegradable wipes.

The neXline wetlaid aXcess targets smaller and medium production volumes and has been devised for new and existing lines. The compact line provides the ideal entrance to the growing wetlaid market, with a variety of final applications and options. The line is easy and fast to ship due to the compact design, which also fits perfectly into containers. An operator-friendly configuration and versatile design ensure efficient production at affordable investment costs.

The aXcess range was specially developed at Andritz (China) Ltd. Wuxi Branch to handle medium capacities. The facility in Wuxi has an experienced platform for production and service specially geared to serve the Asian nonwovens industry. It designs and manufactures cutting-edge lines to complement



Natural decay for plastics through biotransformation

FRANKFURT – Avgol has been working with Polymateria, a spin-out from Imperial College London, which has pioneered the 'biotransformation' process which has the potential to enable the most commonly-polluted plastic items to be safely returned to nature.

Using this new process, a nonwoven fabric can be modified to react to certain triggers to then begin a cascade process to enable the fundamental chemical transformation of its polymer resins into a wax that is readily degraded by natural bacteria, microbes and fungi normally found in the environment.

"The transformation is triggered through the combined effects of the natural elements of decay – air, moisture, heat and sunlight," explained Avgol's vice-president of nonwovens marketing Nick Carter, demonstrating the process at the recent Techtextil show in Frankfurt.

"Once triggered, the material will transform into a low molecular weight wax structure leaving no microplastics or toxic residue behind.

"In addition, if the product comprising the biotransformation technology is disposed of in the normal way, and facilities are available, it can then be recycled by readily available means."

Avgol received the Innovation Award for this development at the RIGHT Hygiene conference held in New Delhi, India, in June.

the Andritz aXcess product range, which includes complete lines and individual machines for air-through bonding, needlepunch and spunlace processes. With the aXcess range, Andritz has developed a hybrid line combining European and Chinese machines, which is the ideal combination to obtain the best added value from each component in the line and be very flexible to accommodate different business cases.

The service organization was set up to provide prompt delivery and excellent customer support, even during the COVID-19 pandemic. A team of technicians and process experts can be deployed quickly to customer sites requiring full-range assistance. The Andritz facilities include a roll service center with state-of-the-art grinding equipment and a test stand for various types of rolls.

In addition, the aXcess range manufactured in Europe also offers technologies for spunlaid and wetlaid processes. Increasing production speeds and widths, compact and reliable design, and affordable investment costs are what customers look for in a competitive market environment. To meet these requirements ideally, the company recently enhanced its nonwoven calender and dryer ranges.

As well as pre-registering to schedule meetings in advance, visitors can also meet the Andritz Nonwoven team online via Match Plus – Cinte's powerful online sourcing platform - mikecrm.com

EDANA Quality and Audit programme now operational

BRUSSELS - EDANA has announced that its Quality and Audit Programme is now operational with converters and suppliers invited to register. The first onsite audit was conducted between 28-30 June in France.

The objective of the programme is to provide the absorbent hygiene products industry, as well as the wet wipes industry, with a harmonized quality and hygiene standard. This is done by listing the requirements industry needs to meet to ensure that finished consumer products are safe and meet consumer expectations.

According to EDANA, the entire hygiene industry will benefit from having a harmonized quality standard that is fully transparent and available on the EDANA website. Converters benefit from access to the results of professionally conducted audits, which help them manage their supplier base. Suppliers benefit from independent and objective audits, conducted at their request, against a single standard.

The intention is to also implement it in other regions such as the Americas and Asia Pacific. The EDANA QAP working group's vision is that this programme will be the leading standard in the industry.

More information is available at <https://www.edana.org/quality-audit-programme> where converters and suppliers can sign up for participation. Organisations can also register to participate in a training course to get familiar with the standard.

Medline continues with renewable energy investment

UXBRIDGE - Medline has completed the rooftop solar installation at its Uxbridge, Massachusetts, distribution facility. The 6.7 megawatt (MW) DC system is the fifth rooftop system the company has completed at a facility in the U.S and will produce an estimated 8 million kilowatt-hours (kWh) of electricity annually with the environmental benefits of avoiding 5,700 metric tons of carbon dioxide emissions annually—a reduction equivalent to fully powering 700 homes or consuming more than 630,000 gallons of gasoline a year.

The 820,000 square-foot Uxbridge facility distributes medical products and devices across the continuum of care – including hospitals, nursing homes, surgery centers, hospice providers, and physician offices. The company has invested more than \$34 million in renewable energy since 2016, with solar projects in several states, including California and Florida, and its headquarters in Northfield, Illinois. Medline has continued to expand existing systems with other projects underway at various locations.

“We established our renewable energy portfolio in 2009, when our first geothermal facility was built, and it’s been growing ever since,” said Francesca Olivier, Vice President of Environmental, Social and Governance at Medline. “We’re committed to helping healthcare run more sustainably – extending beyond our responsibility to provide sustainable products and services to our customers and looking to our own operations to determine how we can best preserve Earth’s natural resources.

“As a designated Green Community within the Commonwealth of Massachusetts, the Town of Uxbridge is pleased to see that one of our business partners, Medline, is also contributing to this effort by undertaking the roof top solar project,” said Town Manager Steven Sette. “It is our hope that other businesses in Town will follow Medline’s leadership with this project and will also work to reduce our carbon footprint for the future.”

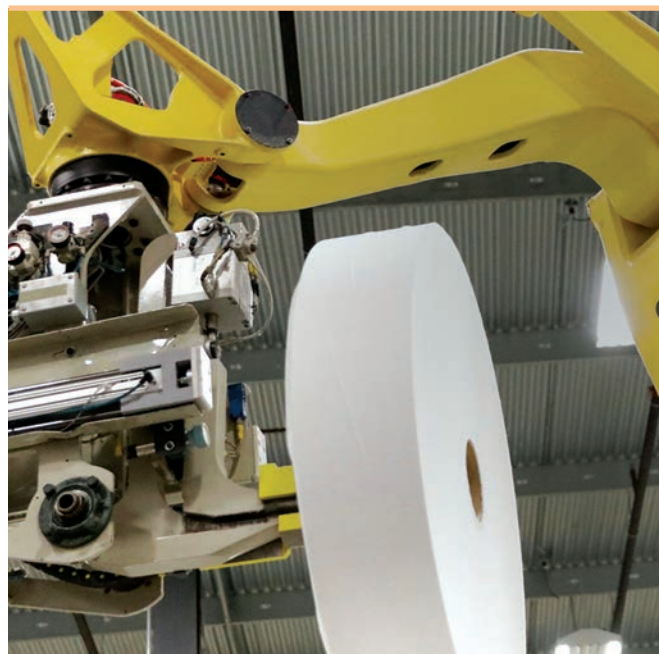
Coats acquires Texon

UXBRIDGE – Coats Group plc, the world’s leading industrial thread manufacturer, has acquired Texon, the maker of premium structural components and materials for the footwear, accessories and apparel industries.

With operations in Asia and Europe, Texon has a long heritage as a proven supplier of components including heel counters, toe puffs and nonwoven insoles to the world’s leading footwear brands.

Coats has a workforce of 17,000 people across six continents with revenues in 2021 of \$1.5 billion. Headquartered in the UK, it is an FTSE 250 company.

“The acquisition of Texon will strengthen our existing presence”



Consolidation at First Quality

GREAT NECK – As a leader in the nonwoven-based absorbent hygiene market, First Quality, headquartered in Great Neck, New York, is making strategic changes and investments to better bring its products and services to the incontinence, sanitary, baby care and wipe categories.

The company will consolidate its absorbent hygiene manufacturing footprint by moving its King of Prussia, Pennsylvania, operations into its other sites. At the same time, it will continue to make strategic investments in its manufacturing facilities in Lewistown and McElhattan, Pennsylvania, Macon, Georgia and Drummondville, Quebec. First Quality will maintain product development, commercial, technical and other support teams in King of Prussia.

“We are incredibly grateful to our manufacturing team in King of Prussia for their commitment to delivering high-quality absorbent hygiene products to the market,” said Allen Bodford, general manager of the absorbent hygiene business. “We will be working with team members to make the integration as seamless as possible, including exploring opportunities for King of Prussia team members at other First Quality locations.”

The manufacturing consolidation, which is tentatively expected to be completed within the next 12 months, will allow First Quality to fully leverage its network to better serve customers and support long-term growth. Additional investments in capabilities – including plans to expand First Quality’s innovation centre in central Pennsylvania– will help enhance products and services.

“First Quality continues to be committed to providing high-quality products and services to our customers and consumers,” said Bodford. “This means always looking for ways to bring products to the market in an accelerated timeframe, reduce our carbon footprint and enhance supply chain efficiencies. As we make these strategic changes and investments, our partners will continue to receive the quality and service they expect from First Quality.”

in the highly attractive athleisure footwear market,” said Rajiv Sharma, Coats Group chief executive. “The business is complementary to Coats and provides attractive future commercial opportunities as we work together leveraging our combined expertise and knowledge. We recognise and share Texon’s focus on sustainability and innovation and believe that this acquisition strengthens our ability to fulfil these shared ambitions.”

Groz-Beckert exhibits at Indo Intertex

Jakarta - Groz-Beckert was targeting Indonesia’s nonwovens industry when it exhibited at Indo Intertex in early August, the exhibition’s first in-person edition following the Covid-19 pandemic.

The largest trade fair in Southeast Asia was once again open to numerous exhibitors and visitors from the textile and garment industry with the Albstadt-based textile systems supplier presenting product highlights from the areas of knitting, weaving, felting, carding and sewing.

In the Felting area, Groz Beckert offered products for the production of nonwovens at Indo Intertex. The focus was on the GEBECON needle, which is characterized by improved

surface quality and a unique geometry that provides optimised bending resistance with high flexibility.

The Carding product area presented numerous further developments for the spinning industry: from a new stationary flat series to the revolving top TV56 and a cylinder wire with special tooth geometry.

Amongst other recent developments from Groz Beckert for the nonwovens sector are HyTec P jet strips for spunlace manufacturers which are characterised by a significantly higher hardness compared to conventional jet strips, offering excellent scratch resistance.

Groz-Beckert has also developed a new range of metallic card clothing based on a patented environmentally-friendly and resource-saving production method which results in a controlled and very precise hardening of the teeth, a reduced rib height of 1.3 millimetres and completely scale-free surfaces without burrs. This results in improved process reliability and increased up-time of the card production.

The SiroLock plus worker and doffer wire was meanwhile developed as the first special geometry of the Groz-Beckert InLine card clothing series to provide more effective fibre take-up, control and transfer.

In addition to its product portfolio, the company also presented a digital service at Indo Intertex: the Groz-Beckert Customer Portal with integrated product catalogue and online shop.

SWM and Neenah become Mativ

The merger of equals between Schweitzer-Mauduit International, Inc. (SWM) and Neenah has now been completed to create a new \$3 billion turnover nonwovens-based operation which is being named Mativ.

With over 7,500 employees worldwide on four continents supporting customers in more than 100 countries, and manufacturing capabilities on four continents, the company began trading on the New York Stock Exchange (NYSE) July 6.

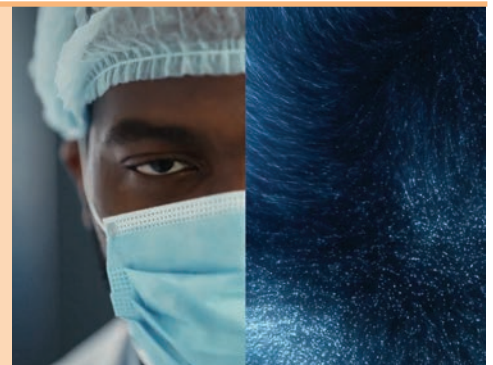
Pursuant to the merger agreement, Neenah shareholders received 1,358 shares of SWM common stock for each share of Neenah common stock owned. SWM’s shareholders will continue to hold their shares of SWM common stock. All SWM shares are now shares of Mativ common stock.

“I am extremely excited and proud to mark this important milestone in the journey of our two companies with the formation of Mativ,” said Julie Schertell, president and CEO. “This merger is a unique opportunity to boldly reimagine our future as a stronger and faster-growing global enterprise. As we come together, we see significant near and long-term value creation opportunities to accelerate growth and amplify margins. With compelling strategic touch-points in key market categories, complementary geographies and technologies, increased global scale and a passionate workforce with deep roots in material science, we are ideally suited to help solve our customer’s most critical challenges, which is the foundation of our cultural, commercial and financial success.

“As we bring the best of these two organisations together, our priorities are centred around supporting our customers, accelerating our growth, delivering the \$65 million, or more, of deal-enabled cost synergies, and driving margins and cash flows to support deleveraging and a strong dividend. We will also continue to execute our strategy, including investments in our fastest growing and most profitable business units and decisive actions to optimise our portfolio over time. Mativ has tremendous potential, and, as we celebrate this new beginning, I want to recognise the efforts of our outstanding employees who work tirelessly every day to push the limits of what is possible.”

Mativ will disclose financial results for two reporting segments – Advanced Technical Materials (ATM) and Fiber-Based Solutions (FBS). The ATM segment is comprised of five non-reporting business units: Filtration, Protective Solutions, Release Liners, Healthcare and Industrials. This segment generally represents the combination of SWM’s legacy Advanced Materials and Structures and Neenah’s Technical Products reporting segments. ATM will deliver solutions that filter and purify air and liquids, support adhesive and protective applications, advance healing and wellness, and solve some of material science’s most demanding performance needs.

The FBS segment will represent SWM and Neenah’s respective legacy paper segments. FBS will leverage the combined company’s extensive natural fibre capabilities to provide speciality solutions for various end-uses, including sustainable packaging, imaging and communications, home and office, and consumer goods, among other applications.



Suominen explores nonwovens biodegradability

HELSINKI - Nonwovens manufacturer Suominen has strengthened its capabilities in sustainable products by enhancing and upgrading one of its production lines in Nakkila, Finland. The €6 million investment includes the construction of its own compost test centre which aims to determine the biodegradability of nonwovens made of renewable raw materials.

The test centre has both industrial and home compost conditions with the aim of studying biodegradability across a wide variety of environments.

In determining the biodegradability of nonwovens made of renewable raw materials, the first steps were to analyze disintegration in compost conditions to support product development. In-house compostability tests have already given impressive results by providing information that helps Suominen to claim its products to be truly compostable and make more powerful sustainability statements for the products.

Compost testing conditions are set as ~+58°C and ~+20° C which represent industrial composting and home composting methods, respectively.

Tests have been made during the spring and they have shown impressive results in both industrial and home composting

environments. For example, Suominen's 100% viscose product disintegrates fully in home and industrial compost conditions in less than three weeks.

"This opportunity will support our sustainability journey and we can provide truly compostable products for our clients and make stronger statements about our products. This also gives us the opportunity to learn more about both raw materials and products and develop them further," said Niina Salonoja, Manager, R&D.

Chinese acquisition for Alkegen

BUFFALO – Alkegen, one of the largest speciality materials platforms in the world, formed following the merger of Lydall and Unifrax, is obtaining a controlling ownership interest in Luyang Energy-Saving Materials headquartered in Yuquan, Shandong province, China.

Luyang produces energy-saving materials in the fields of ceramic, soluble and alumina fibre and other high temperature insulating materials, and has partnered with Alkegen since 2015.

"From the very start of our partnership with Luyang seven years ago, we have been continuously impressed by the company's management team and its ability to deliver on financial and commercial performance targets" said John



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Optimism for India's AHPs market

NEW DELHI – Much has happened in the development of the market for absorbent hygiene products (AHPs) over the past two years in India, ensuring a large attendance for the 5th Edition of the Right Hygiene Conference, held from June 2-3.

"New players are entering the market and existing participants are in expansion mode," said Samir Gupta managing director of organiser Business Coordination House (BCH). "Raw material supply is gradually becoming localised and import substitution is on the rise. As India gears up for the next hygiene revolution, it is witnessing new market trends coupled with a change in production dynamics. A never seen before 'user awareness' is making the business very exciting."

Attracting 320 delegates from 20 countries and 155 companies, the 2022 conference exceeded participation at earlier Right conferences. The products covered were sanitary napkins, baby and adult diapers, underpads and wipes, with companies keen to showcase innovations in products, processes, raw materials and machinery.

In keynote speeches, R. Senguttuvan, operating partner at Premji Invest, addressed the implications of private equity for companies, while Akhil Meshram, senior director for feminine care at Procter & Gamble and Kanav Gupta, BCH associate director, both outlined trends and innovations in the Indian hygiene industry and its prospects to 2030. EDANA's general manager Pierre Wiertz provided much food for thought with his presentation on evolving the value proposition of AHP'S within three generations.

Other companies making presentations included A.Celli Nonwovens, Andritz, Avgol, Cellulose Converting Solutions, Fitesa, H.B. Fuller, Inviya (Indorama), Mondon, Nobel Hygiene, Nordson, Optima, Osprey Corporation, Reifenhäuser Reicofil, S.B. Packagings, SDP Global, Swara Baby Products and Teknoweb Converting.

The winners of the 2022 Right Hygiene Awards were Niine, for its vital role in supporting hospitals and local bodies during the Covid-19 pandemic in India, Inviya for the first made in India hygiene grade spandex, and Avgol Nonwovens for its latest biotransformation technology. A special BCH Legend Award was presented to Wilfried Laser, key account manager at Optima.

Dandolph, president and CEO of Alkegen. "With this increased investment, we plan to leverage Luyang as our platform in Asia to extend and cross-sell many of Alkegen's other products and technologies that are core to the strategic direction of our global economy. These include systems that are defining our collective future such as filter media, battery technologies, electric vehicle products and speciality insulation materials."

Alkegen now has 75 manufacturing facilities operating in 12 countries, with 9,000+ employees globally.

Fibertex recognised with EcoVadis Gold award

AALBORG - Nonwovens fabric manufacturer Fibertex Personal Care has achieved Gold Medal status from EcoVadis for its latest CSR performance.

With a score of 67/100, Fibertex has facilities in Germany, USA and Malaysia that have also achieved the prestigious Ecovadis Silver Medals.

"This is the first time that Fibertex Personal Care has been assessed by EcoVadis, and the score obtained by Fibertex Personal Care A/S put us in the Top 7% of the best performing companies out of more than 90,000 companies assessed by EcoVadis," the company said.

EcoVadis is an independent acknowledged rating agency that evaluates, rates and ranks companies' sustainability performance on a global basis. The detailed assessments measure performance across 21 indicators in four areas: Environment, Labour and Human Rights, Ethics and Sustainable Procurement.

Fibertex Nonwovens is a subsidiary of the Danish industrial conglomerate Schouw & Co. Recently it announced an investment of just over DKK 300 million in a capacity expansion of one of the company's two plants in the USA while it is also now investing the same amount in Europe with a capacity expansion of the company's existing plants in the Czech Republic and Turkey.

The company is increasingly using spunlace technology, which sees high-speed jets of water used to entangle the fibres of the nonwoven textiles. Fibertex Nonwovens has years of positive experience with this particular technology, and the lion's share of the investment will be spent on a new spunlace production line at the company's plant in Svitavy in the eastern Czech Republic.

In 2015, Fibertex Nonwovens acquired the nonwovens operations of the Turkish manufacturer Ribatek. The plant is located in the city of Cerkezkoy in western Turkey, nearly 100 kilometres northwest of Istanbul, and it specialises in spunlacing. Here, Fibertex Nonwovens is now investing in an expansion of the current production facilities as well as adding additional lines in finishing and coating with a view to manufacturing specialised nonwovens products.

The investments in Europe and the USA totaling DKK 600 million form part of an ambitious growth strategy for the period to 2026. Fibertex Nonwovens generated revenue of DKK 1.8 billion in 2020 and is expected to increase the top line to around DKK 2.5 billion over the next five years.

Nonwoven alternative to paper-plastic packaging

TROISDORF - Reifenhäuser Reicofil will be at the upcoming K 2022 exhibition where it will demonstrate how its film-nonwoven mono composites can be a lightweight and recyclable alternative to paper-plastic packaging.

For packaging products to be recyclable, they must primarily be made from only one material. Some emerging packaging trends, such as paper-plastic composites, are therefore not conducive to the circular economy. At K 22, Reifenhäuser will be presenting highly functional, recyclable alternatives in the form of film/nonwoven mono composites.

For bulk material applications, Reifenhäuser Reicofil offers a turnkey line concept that enables customers to produce high-performance nonwoven film composites made of PP mono material and significantly reduce their material consumption: fully recyclable sacks for a variety of free-flowing bulk materials, such as cement, grain or animal feed, can be produced with 25% less material. At the same time, compared to paper-film composites, the barrier effect against moisture increases while at the same time allowing air permeability, which enables air-conveyed filling. The composite can also be used for medical packaging: The material enables steam sterilization of already packaged products.

The manufacturing process combines the Reicofil RF5 BiCo spunbond line with an extrusion coating line from sister company Reifenhäuser Cast Sheet Coating. Customers therefore receive a matched solution from a single source. Together with project partner Starlinger, a market leader for machine and process technology for woven plastic sacks, Reicofil also offers a complete turnkey solution including printing unit and sack converting. Together, a production-ready process including the end product - the valve box sack "REICO*STAR" - was successfully introduced to the market.

Dr. Andreas Rösner, responsible for strategic product development at Reifenhäuser Reicofil, explains: "With REICO*STAR and the process behind it, we have shown that nonwoven film composites are a sustainable and economical alternative. They also offer a better moisture barrier and a higher-quality feel than standard paper-film composites. This offers enormous potential to participate in the growing demand for fully recyclable packaging products."

In addition to extrusion coating, laminated nonwoven film composites made of mono-material also offer great potential for more sustainable and visually and haptically appealing packaging.

In cooperation with its sister company Reifenhäuser Blown Film and raw material partner Borealis, Reicofil offers here an overall concept that is also ready for series production and economical for producing nonwovens for mono PP pouches in the area of high-quality food packaging, for example. The nonwoven can be perfectly laminated with flatness-optimized PP blown film to form mono-composites.

The K2022 takes place in October in Duesseldorf. The Reifenhäuser Group will be represented at three of its own booths and one joint booth. The main booth with approximately 1,200 square meters is located in Hall 17 (C 22) and will showcase the Reifenhäuser Blown Film, Cast Sheet Coating and Reicofil business units.

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Targeting 90-95% recovery of polymers from textile waste

CLERMONT-FERRAND – Carbios has succeeded in producing both 100% enzymatically recycled white PET fibre and bottle-grade PET from mixed coloured textile waste, using its C-Zyme process.

The significance of this achievement was underlined by Bruno Langlois, the French company's business development and partnership director, at EDANA's International Nonwovens Conference held in Lyon, France, on June 8-9.

"Fibre to fibre recycling is the only way to achieve true circularity and for the pledges fashion brands have already made to be realised," he said. "Our technology has the ability to tap into vast new sources for recycling PET and is based on a very selective enzyme that will only depolymerize PET and not other materials in waste clothing, such as adhesives, dyes and other polymers.

"The process is low temperature and operates at atmospheric pressure with no solvents. The PET is extracted and separated and the recovered monomers are virgin quality."

Prior to the C-Zyme process, the waste textiles are shredded and densified to reduce crystallinity and increase the surface area. C-Zyme can then degrade 98% of such a mass in 16 hours.

Langlois pointed out that around 90 million tons of PET is

produced each year, with around 27 millions tons going into packaging and the remainder used to make fibres.

Currently, only 13% of textile waste is recycled, and mainly into lower quality applications such as nonwoven padding, insulation or wipes.

Not surprisingly, things are moving fast for the company, whose demonstration plant has been operational since September 2021. Since validating the C-Zyme process, it has subsequently partnered with Indorama Ventures to build an enzymatic PET bio-recycling production plant in Longlaville, Meurthe-et-Moselle, France, with a processing capacity of around 50,000 tons of post-consumer PET waste per year by 2025 – the equivalent to 2 billion PET bottles.

From January 1st 2025, the separate collection of textile waste, which is already in place in some countries, will be mandatory for all EU Member States and the Carbios process will be one of the solutions that will enable this waste to be sustainably recovered and included in a true circular economy model.

"C-Zyme means that virtually all PET that goes onto the market now has the potential to be recycled," Langlois said. "We are targeting 90-95% recovery of polymers from the textile waste material."

Trützschler partners with Texnology for needlepunched nonwovens

DUELLEN - Trützschler Nonwovens & Man-Made Fibers has embarked on a joint venture with Italian textile machinery manufacturer Texnology to offer complete production lines for needle-punched nonwovens under the name of T-SUPREMA.

Web bonding with steel needles represents the largest production process in the drylaid nonwovens segment, areas of application that are predominantly of a technical nature, with the largest applications being durable geotextiles, automotive textiles and filter media.

The high adaptability of the needling and finishing processes as well as the broad material base result in a large number of different end products. Needle-punching is suitable for a wide range of man-made and natural fibres including mineral and high-performance fibres.

Trützschler Nonwovens says it is contributing its many years of experience in fibre preparation and web forming to the cooperation while Texnology will mainly be responsible for the needle-punching process.

"With Texnology, we have an innovative and reliable partner at our side. The company already sets an important course in the field of needle-punching machines through excellent and patented solutions," said Klaus Wolf, Managing Director of Trützschler Nonwovens. "Trützschler Nonwovens is returning to needle-punching solutions. In the partnership, we are able to serve this interesting market segment with precisely fitting production lines. With T-SUPREMA needle-punching becomes as easy as never before."

Nicola and Paolo Olivo, owners of Texnology S.r.l., also see the joint activities as an opportunity: "Texnology has developed its own needling technology with patents and profound know-how. Collaborating with a well-known, globalized company like Trützschler Nonwovens will significantly increase our target group."

A first joint project has already been successfully completed, implemented and put into operation.

Texnology offers a number of systems for the nonwovens industry. The company develops and manufactures next-generation needle looms, web drafters, profiling systems and high speed crosslapper systems. With the X1 series for entry level; X2 series for high performance and X3 series for very high performance / end product differentiation lines, Texnology says it is able to supply a broad range of projects and budgets.

The Texnology site in Fontaniva, Italy, offers a show room with a complete needlepunching line for in-depth trials with customers' materials.





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Rising demand to drive wipes market growth

Further growth and material innovation are forecast for nonwoven wipes worldwide, says John Nelson, editor at Smithers

Global demand for nonwoven wipes will reach US\$20.82 billion in 2022 with the market surge driven by Covid showing few signs of plateauing, according to the latest insight from Smithers – the leading consultancy for the paper, nonwovens and packaging industry.

Analysis from the new in-depth Smithers study – *The Future of Global Nonwoven Wipes to 2027* [<https://www.smithers.com/en-gb/services/market-reports/nonwovens/the-future-of-global-nonwovens-to-2027>] – forecasts future growth at a compound annual growth rate (CAGR) of 6.8% pushing global sales to \$28.95 billion in 2027.

Across the same period, the total tonnage of nonwovens consumed will increase from 1.50 million tonnes to 2.14 million tonnes – equivalent to a CAGR of 7.4% across 2022-2027.

The return of infections with new Omicron variants, means that through 2022 there have been more lockdowns, most notably in China – with a return to

market equilibrium now not forecast until 2023. As the market evolves to meet the realities of the post-Covid era there will be challenges and market opportunities across both consumer and industrial segments.

Baby wipes

Baby wipes continue to be the dominant nonwoven wipe segment – with spunlace, airlaid, and coform the most common substrates. They are also the most mature segment. This means baby wipes as a percentage of total wipes value will decrease over the next 5 years, as other wipe segments grow faster and there is competition from newer product lines – such as moist adult toilet tissue and feminine hygiene wipes.

As sustainability permeates much of contemporary consumer thinking, there is pressure to control the flushing of baby wipes in particular.

This is leading to new labelling and consumer education policies, in Europe and some US states this is now being backed by regulatory obligations. One longer-term solution is to develop more plastic-free flushable baby wipes. Personal care brands

have already developed such substrates for adult and toddler training wipes, and there is some spread of these into the top end of the baby care market using on hydroentangled wetlaid and hybrid nonwoven substrates. Still, major trade associations EDANA and INDA have come out across these products, fearing further confusion among consumers.

Personal care wipes

There is more variety in the personal care wipe segment – including adult moist toilet tissue, toddler toilet care wipes, cosmetic removal wipes, adult incontinence/bathing wipes, medicinal wipes, feminine hygiene wipes, insect repellent wipes, and wipes infused with cosmetics. These are smaller more specialist segments, where higher prices can be charged – up to 10 times more than for some baby wipes – and further diversification is still being pursued.

Personal care wipes are often discretionary purchases which consumers could remove from their budgets or substitute downward to less specialist wipes. As a consequence they are more vulnerable to any broader economic recession and a fall in consumer spending power.

As flushability becomes a leading demand for brand owners, it will benefit the adult moist toilet tissue segment, which Smithers forecasts will be the fastest growing application across 2022-2027.

The application will also be vivified by several new technologies to improve flushability/biodegradability, with many due to hit the market this year. This includes a hybrid spunlace system from



◀ Baby wipes continue to be the dominant nonwoven wipe segment – with spunlace, airlaid, and coform the most common substrates.

Jacob Holm/Glatfelter, and improved hydroentangled wetlaid offerings from both Andritz and Voith-Truetzschler. Some of these substrates will be able to diversify into other segments too, where flushability has been desirable, but not technically feasible – such as adult incontinence wipes – if they can be shown to have the requisite strength.

Simultaneously the clean beauty trend is leading to the wider use of substrates made completely from lyocell, cotton, and viscose in cosmetic wipes. The main topic for innovation here however is in the liquid load via improved formulations for moisturizing or skin treatment, including formulations for specific skin types, as well as rejuvenators or anti-aging formulations.

Homecare wipes

The past two and a half years has seen increased sales of wipes intended to clean consumer homes, with an understandable demand for anti-microbial treatments that could destroy the Covid-19 virus. Despite the enduring threat, there are also segments where substitution is relatively easy, towards paper tissue and a surface cleaner, for example.

Countering this will be the elevated consumer concern over hygiene that will endure – for some at least – beyond the immediate threat of the pandemic. Prices are also likely to be pulled down as the last of the additional capacity – mainly spunlace – ordered in first half of 2020 comes on stream in 2022. As stability returns, there will also be demand for sustainable substrates in homecare applications, with both Mondi and Berry set to begin operation of hydroentangled carded/airlaid pulp/carded (CAC) lines later this year.

Industrial wipes

While consumer wipes have surged since the beginning of the pandemic, consumption of industrial wipes has been affected more negatively. This has not been uniform, but closures of industries like auto and electronics manufacturing have cut demand for some specialist wipe grades; and ongoing social-distancing rules have especially lowered sales of food-service wipes.

Some companies were able to switch

Nonwoven rolls, bound for applications such as disinfecting wipes at a Berry Global facility.

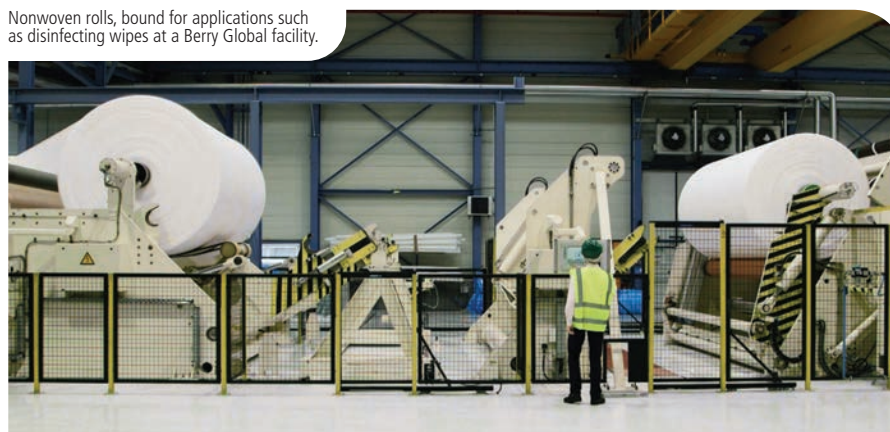


Image: © Business Wire

production during 2020-2021, and are now anticipating a return to prior use levels as any broader economic recovery takes place.

The one segment that resisted this trend was medical wipes. As healthcare providers look to tackle the substantial backlog of elective procedure delayed by Covid-19, demand will remain above historic levels for the short-medium term.

For general-purpose industrial applications, there is interest in wet industrial wipes, like Georgia-Pacific's Brawny Wet Shop Towels that combine task-specific liquids with one hand accessible dispensers; and dry wipes intended for solutions supplied by the user, as in Kimberly-Clark's Waterless Hand Cleaners product line.

Comprehensive data forecasts and expert technical analysis of emergent market demands are available to purchase now in – The Future of Global Nonwoven Wipes to 2027 [<https://www.smithers.com/en-gb/services/market-reports/nonwovens/>]

the-future-of-global-nonwovens-to-2027] from Smithers. Its detailed market study subdivides market data by:

- Raw material (Wood pulp, Rayon/lyocell, Cotton, PP fibre, PP polymer, PET, Bi-Co fibre, STD binder, SPEC binder, PLA, Other)
- Web forming process (Spunlace, Airlaid, Needle punch, Coform, Spunlaid, Wetlaid, Carded, Other)
- End-use application (Baby care, Adult moist toilet tissue, Toddler care, Adult Incontinence/Bath, Cosmetic/facial, Feminine hygiene, Other personal care, Cleaning/disinfectant, Wet floor, Electrostatic, Furniture/glass, Automotive, Other homecare, General purpose industrial, Specialty industrial, Food-service, Healthcare)
- Geographic region/national market (Asia, China, India, Japan; North America; South America; Western Europe, Benelux, France, Germany, Italy, Scandinavia, Spain, UK; Eastern Europe, Russia, Poland, Turkey; Rest of the World). **SNW**

Sustainability trending

The leading market trend is to make wipes more sustainable, responding to both consumer expectations and new regulatory requirements. For the latter, the EU's Single-use Plastic Directive is creating new labelling, consumer education, and obligations to pay for the disposal of consumer pre-wetted personal care and domestic wipes; industrial wipes are, for now, out of scope.

Overall spunlace will remain the dominant nonwoven technology in wipes, but sustainability concerns are promoting R&D into refinements, including the use of more wood fibres – and possibly polyhydroxyalkanoates (PHAs) bioplastics – in construction. This will also stimulate demand for other innovations including integrating modified carboxymethyl cellulose binders in airlays, and wipe manufacturers switching to modified hydroentangled wetlaid.

A related issue is flushability, designing wipes to clear sewage systems, and not pollute the seas and rivers. Several US states – including Illinois, Oregon and Washington – have now passed laws on wipe flushability into law, with more anticipated in the near future.

Major plan for European recycling

The ReHubs project aims to achieve the successful fibre-to-fibre recycling of 2.5 millions tons of Europe's textile waste by 2030

The ambitious ReHubs initiative, if successful, is poised to have a major impact on the European nonwovens industry, in the local raw materials it will make available and in other opportunities ranging from the adoption of technologies and processes to active new inter-disciplinary collaborations.

Not least, it calls for the establishment of between 150-250 dedicated new recycling hubs throughout Europe in the next few years, each with annual capacities of between 50-100,000 tons.

ReHubs is being initiated by Euratex – the Brussels-based organisation which represents around 154,000 companies employing 1.47 million workers in the European textiles and clothing industries.

Fibre-to-fibre

The aim is to achieve the successful fibre-to-fibre recycling of 2.5 millions tons of Europe's textile waste by 2030 in response to the separate collection of textile waste, which will become mandatory for all EU member states on January 1st 2025.

Europe has a 7-7.5 million tons textile waste problem, of which only 30-35% is collected today, and very little of that is returned to fibre form to enable true value retention.

"With the adoption of the EU Textile Strategy in March this year, the European Commission has launched a very ambitious journey that will change the nature of our industry," said Euratex

president Alberto Paccanelli in a press conference during Techtextil 2022 in Frankfurt. "It calls for more focus on sustainability and durability, more transparency within the supply chain, more communication with the consumer and also a better level playing field for our European companies, with more investment in innovation, digitalisation and skills development.

"This is a very ambitious agenda which needs to result in a more resilient European textile industry. The coming two years will be critical to translate that vision into specific legislation and concrete programmes."

Council

With the backing of a business council of key companies spanning the entire textile supply chain – from fibre leaders like Indorama Ventures and Lenzing to leading sports brand Decathlon and fashion giant Inditex – ReHubs is seeking to transform textile recycling in Europe.

The aim is to make possible the fibre-to-fibre recycling of 2.5 million tons of waste at an investment cost of €6-7 billion, largely to scale up sufficient sorting and processing infrastructure.

With the addition of many new recycling hubs the creation of such a recycled fibres industry in Europe could be a major opportunity for near-shoring.

Once matured and scaled, Euratex believes this industry could become profitable, with a total annual market size of between €6-8 billion generating

around 15,000 direct new jobs by 2030.

"Sooner or later, textile materials become non-reusable waste, making recycling a must once all other options are exhausted," said Robert van de Kerckhoff, Lenzing's chief commercial officer and president of CIRFS, the European manmade fibres association. "A supply chain requires sorting for both re-use and recycling and a range of mechanical and chemical recycling solutions to be established."

To go from a linear to a circular textile-recycling value chain, he added, five main parts of the value chain must be matured and scaled, namely collection, sorting streams for both reuse and recycling, pre-processing and recycling itself.

Turning point

"Recycling is not yet mature, but we may be at the brink of a turning point as different technologies race to scale," van de Kerckhoff said. "We are aiming for the fibre-to-fibre recycling of between 18-26% of Europe's total textile waste by 2030, but success is not a given. To reach critical scale, real collaboration and transition funding is required, along with investments at company level and a huge public sector push."

The first immediate project will examine current sorting technologies to accurately identify materials for subsequent circular recycling processes. Led by Texaid AG, of Schattdorf, Switzerland, the aim is to establish the first 50,000 ton facility by the end 2024. **SNW**

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Fibre Bottle 2.0 a hit at festivals

Beyond its sustainable packaging benefits, the use of PEF functions as a highly effective barrier between beer and a fibre outer shell

Over the past few weeks, Carlsberg has supplied some 8,000 samples of its Generation 2.0 Fibre Bottle to select festivals and flagship events across West Europe, in order to more widely gauge the reaction of consumers to the bio-based and fully recyclable innovation.

"We are delighted to put our new Fibre Bottle into the hands of consumers, allowing them to experience it for themselves," said Stephane Munch, VP of group development at Carlsberg. "This pilot is serving a greater purpose in testing the production, performance and recycling of this product at scale. Producing PEF as a competent functional barrier for beer, has been one of our greatest challenges – so getting good test results, collaborating with suppliers and seeing the bottles being filled on the line is a great achievement."

PEF lining

A significant milestone is the bottle's 100% plant-based PEF (polyethylene furanoate) polymer lining, which has been developed by Amsterdam-headquartered Avantium. PEF is compatible with plastic recycling systems and can degrade into nature should it end up outside national recycling systems.

Beyond its sustainable packaging benefits, PEF functions as a highly effective barrier between the beer and the fibre outer shell, protecting the taste and fizziness of the beer better than conventional PET plastic.

Carlsberg has now signed a conditional offtake agreement to secure a fixed volume of PEF from the plant Avantium aims to start-up in 2024, to be

used for various packaging applications, including the Fibre Bottle.

The outer shell of the Generation 2.0 Fibre Bottle, produced by Copenhagen-based Paboco, consists of sustainably-sourced wood fibre and is also bio-based. It has the added benefit of insulative properties, which can help keep beer colder for longer, compared to cans or glass bottles.

The bottle is currently 100% bio-based apart from the cap. Alternative fibre-based bottle caps are currently being investigated, with a generic solution expected in 2023. Carlsberg will continue to work with Avantium and Paboco to arrive at a tailored Generation 3.0 Fibre Bottle solution that is equally suitable for primary beer packaging.

Generation 2.0 of the Fibre Bottle already performs better than the single-use glass bottle in the product's lifecycle assessment, and Carlsberg has even greater ambitions for the subsequent Generation 3.0 design. Its aim, supported by current projections, is for the Fibre Bottle to achieve up to 80% less emissions than current single-use glass bottles.

If successful, for every single-use glass bottle created, five Fibre Bottles could be created using the same carbon footprint. Ultimately, Carlsberg is aiming for the Fibre Bottle to achieve the same low carbon footprint as the refillable glass bottle, which is currently the best-performing primary packaging when collected and reused in efficient systems. When the Fibre Bottle is commercialised at scale, it will expand consumer choice and complement, rather than replace, existing packaging like glass bottles and cans.



"We've been working hard on this project since 2015, and aim to continue to set the industry standard by further improving the bottle's environmental footprint and product performance," said Simon Boas Hoffmeyer, Carlsberg's sustainability director. "Collaboration is key and, together with our partners, we're excited to see how research and development into sustainable packaging solutions is now becoming the norm."

Organic barley

Advancements have not been limited to the bottle itself, as Carlsberg has also bottled a more sustainable brew for its 2022 consumer trials. In collaboration with barley malt supplier Soufflet, Carlsberg has brewed a beer with barley that has been cultivated using fully organic and regenerative agricultural practices. More specifically, cover crops have been grown in the organic barley fields to contribute some additional benefits of regenerative farming.

While consumers can still expect the same distinctive Carlsberg taste, the methods used to farm the barley are set to improve farmland biodiversity, enhance soil health, and increase natural carbon sequestration by the soil versus conventional farming methods. **SNW**

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Nonwovens bringing new life to textiles

Consumer demand and textile industry targets are driving the circularity agenda, but it is technology that will actually make it happen

The world of textiles and the textile industry should be under no illusions about their responsibilities. The price of fast fashion is that making clothes accounts for around 10% of CO₂ emissions from human activity. But despite the need for circularity in our use of resources, the clothing industry has been fed by a distinctly linear value chain. Clothing is notoriously over-supplied, and while it might be resold, recycled into cloths or insulation, much of it ends up incinerated or in landfill. Textile-to-textile circularity has been conspicuously absent.

But this is changing thanks to media pressure, consumer demand, regulations, and technology. Our ignorance about the

price the planet pays for our full wardrobes is at last being replaced by deep concern about the impact of textiles on the environment. There is also increasing awareness of the need to make greater use of sustainable raw materials in fibre and textile production. Meanwhile, existing technology is proving highly adaptable to textile recycling, and projects that take recycling a step further into true circularity are flourishing.

As part of its ESG (Environment Social Governance) program, the Andritz Group is at the core of the movement to provide industrially and economically viable solutions for recycling pre- and post-consumer waste made from natural and synthetic fibres. There is no single,

catch-all solution to the recycling of textiles, and this plays to Andritz's strengths because the group has such a diversity of solutions to offer and several cooperation partners covering the value chain from recovery of fibres to chemical modification and preparation for the production of yarn.

Some solutions are derived from strong expertise in the field of pulp and paper; others have been developed specifically for textiles. As a whole, they offer single and multiple complementary technologies to address the needs of different textile recycling challenges.

What follows is a brief resumé of Andritz's scope of supply for textile waste recycling machinery.

Feed material

Conditioning of textile waste lays the foundation for the subsequent textile recycling process, whether it is based on mechanical, chemical, combined, or other customer-specific treatment. Numerous parameters influencing the choice of technology include the nature of the waste (garments, linens, carpets, white/coloured textiles etc.), the feeding conditions (e.g. baled or loose feed material), the required size of the shredded textiles in output, the presence of impurities such as zippers, the output purity, the capacity and all other requirements of downstream processing.

Andritz Reject and Recycling offers single equipment units and complete conditioning systems, from material feed and shredding right up to the finally conditioned material. A landmark was Andritz Reject and Recycling's order in 2021 from Swedish company Renewcell for a 60,000 t/a textile recycling line, featuring ADuro shredders, for its first large-scale textile-to-textile recycling plant in Sundsvall. At the same time, shredding systems capable of managing volumes of up to 200 t/d are being developed and optimized in combination with the separation technique, based on trials conducted in the ART Center (Andritz Recycling Technology Center) near Graz, Austria.

"The key textile brands are strongly motivated to find circular solutions and are especially keen to add recycled fibre to their clothes," says Anastasia Zefkili, Head of ART Center, Paper, Fiber and Recycling Division. "So far, recycling of post-consumer textile waste has tended to be limited to the production of lower quality/value products, such as cleaning rags, in a "downcycling" process. Although downcycling is an important part of the complete recycling process,



Elina Pesonen, Andritz Fiber Technology.

textile waste can now find new life as textile yarn, in an "upcycling" process, and be turned into a product of equal, if not better, quality and value. With this addition of upcycling opportunities to existing downcycling processes, we are seeing a parallel evolution in recycling. The effect on feed material conditioning is that we need to be even more precise in the way we carry out sorting and shredding to create high-quality secondary textile material for subsequent textile recycling process steps."

Fibre length, for example, which affects fibre strength, depends on the downstream process, and there are contaminants that are attached to the textiles, such as zippers and buttons, and external ones like bale wires. "Overall, we are consistently improving process steps with purity up and textile loss down," says Zefkili. "The choice for the customer is how many process steps they want to include from an investment and capacity point of view. We are here to help ensure the most suitable technology is applied. The ART Center is a valuable tool to achieve this, where shredding is



Hannu Ramark, Andritz Fiber Technology.

tested in combination with the separation technique and optimized together according to the customer's material and process requirements."

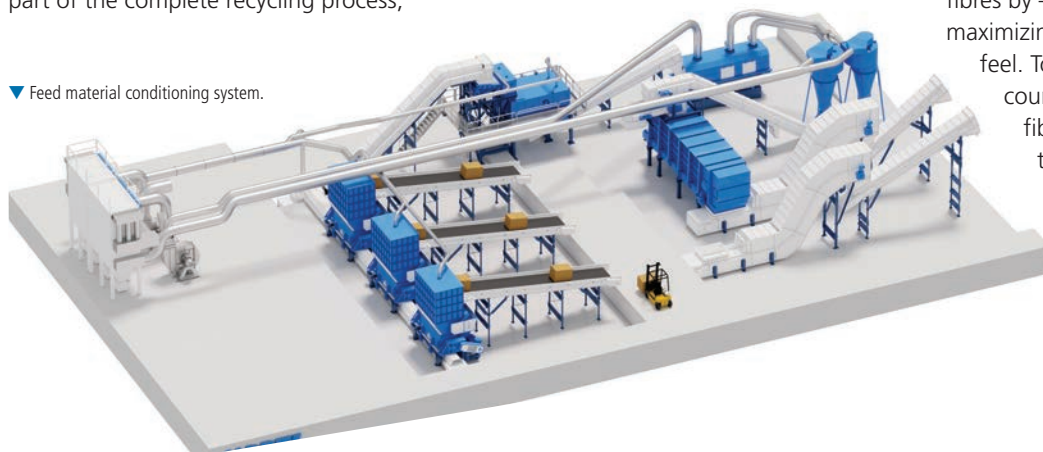
Complementary to the services of Andritz Reject and Recycling, Andritz Laroche offers a different mechanical conditioning process based on tearing. With more than 2,000 reference projects worldwide offering one of the largest installed bases for textile recycling mills, Andritz Laroche's mechanical recycling process can be preparatory to the following main options: nonwovens production lines, short staple fibre spinning mills for yarn "respinning" with the creation of woven or knitted fabrics, including blends of up to 100% recycled fibres, or to downstream chemical processes for the production of new man-made fibres if required.

Mechanical recycling

Andritz Laroche today offers a complete process range of tearing equipment, from 50 up to 3000 kg/h, applicable to almost all types of pre-/post-consumer waste textiles with the aim of maintaining the nature of the original fibres by – with cotton for example – maximizing fibre length, strength and feel. Today, Ne24 and Ne30 yarn counts use 70% recycled cotton fibres in some blends. In addition, the mechanical recycling process uses less water, no chemicals and allows a reduced machinery installation footprint.

As Alexandre Butte, General Manager, Andritz

▼ Feed material conditioning system.



Laroche and Charles Junker, Head of Sale at Andritz Laroche explain, chemical and mechanical processes are fully complementary in the drive to achieve the desired end result, but the addition of chemical treatment is certainly a game changer for textile-to-textile recycling.

"The great thing with our range of technologies is that we can adjust the process according to the end use," they say. "If you require a certain colour of yarn, then this can be achieved through a combination of the choice of textile waste, the use of dyes and the chemical input – these can all be balanced to optimize the process and minimize the use of bleach for example.

"Our customers come to us with their ideas and raw materials options, and depending on their target, we use our equipment to fulfil their ambitions. We have almost all the relevant technology in our technology centre at Andritz Laroche, France, but the ART centre in St Michael, Austria, is a great partner because they have what we don't – shredders for example – and then there is the pulp testing centre in Graz in Austria. We have projects in the pipeline for which we can combine technologies to achieve great things for our customers."

They continue: "Looking at the costs associated with textile recycling technologies, clearly it makes a difference how much you are paying for the end product. The cost of yarn in a €2.99 T-shirt will have considerably more

impact than in a premium item. But industrial scale will bring the price of fibre down, and we need to look at the whole value chain: through our own development work and in-depth collaboration with, for example, the CETI (European Center of Textile Innovation) technical centre equipped by Andritz in northern France, we are looking to produce fibre that is easily processable, and this needs to be taken into account when assessing the total cost.

"Also, with more educated customers, if it comes to a choice between a virgin fibre and one that is recycled for a price difference of plus or minus 10%, then it won't be a hard decision to choose the recycled option. It will come naturally. It is critical that this is being driven by the big brands – they are the ones that can really push this forward."

Nonwovens

Transformation of recycled textile fibres into technical nonwoven felts is one of the key methods for recycling textiles into new products, and Andritz offers complete nonwoven roll-good production lines to process recycled fibres from textile waste.

This includes lines such as spunlace, wetlace, needlepunch and airlay processes. In general, these lines include fibre opening and blending, fine openers and web forming (in which fibres are treated and laid to form a sheet), web bonding (in which the sheet is

entangled/bonded) as well as slitting and winding equipment. New products, such as wipes, building insulation, mattresses, car interiors and furniture fillings, can be created with these roll goods.

Chemical recycling

Chemical recycling of textile waste is a vital, emerging business area. It is the piece of the puzzle that completes the picture of textile-to-textile circularity. Andritz is a key player because the core process steps involved can use the same equipment as in existing pulp and paper technology, where Andritz is an acknowledged expert.

The process often requires the input of raw material based on a blend of different fibres that have been mechanically treated prior to chemical modification. Andritz has the equipment and expertise to offer technology solutions for new chemical processes according to the customer's needs, including complete production lines and individual equipment for chemical recycling processes such as washing, mixing, cooking, bleaching and drying.

Depending on the customer's technology solution, cellulose-based fibres and polyester from fibre blends, for example, are further modified to allow them to be used in any textile fibre spinning process (such as viscose or Lyocell production) in the same way as market dissolving pulp.

Cooperation

Elsewhere, Andritz has also signed a cooperation agreement with Infinited Fiber Company to develop the process and equipment solutions for the latter's textile fibre regeneration technology. Under the cooperation agreement, the two companies will work together to develop the factory process and equipment solutions, aiming to optimize every process step in preparation for the technology to be scaled up to commercial production.

Infinited Fiber Company is building a 30,000 t/a flagship plant in Finland, representing an investment of €220 million, which is due to go into operation in 2024. The plant will be one of a kind in the world, and Infinited's technology, with Andritz equipment, can be used in new

Andritz Laroche Tearing-line.



fibre factories or as retrofits in existing viscose fibre lines. At the moment, Andritz is conducting pre-engineering for the pre-treatment of textile waste for the flagship plant.

Infinite's technology can turn any cellulose-rich raw material, including discarded textiles, used cardboard or rice/wheat straw, into Infinna cellulose carbamate fibres. These unique, high-quality textile fibres have the look and feel of cotton. In the process itself, impurities including buttons and zippers are mechanically removed prior to a chemical pre-treatment step in which textile colorants and non-cellulosic fibres are separated before pure cellulose is synthesized into carbamate ready to be spun into a CCA fibre.

Hannu Råmark, vice president Technology, and Elina Pesonen, Product Manager, Fiber Technologies Pulp & Paper, explain: "It was a big feature in the establishment of our cooperation with Infinite Fiber Company that they saw we have so many different technologies, essentially a one-stop shop, and that Andritz Fiber Technologies has the already-validated chemical pulping equipment that is suitable for their needs.

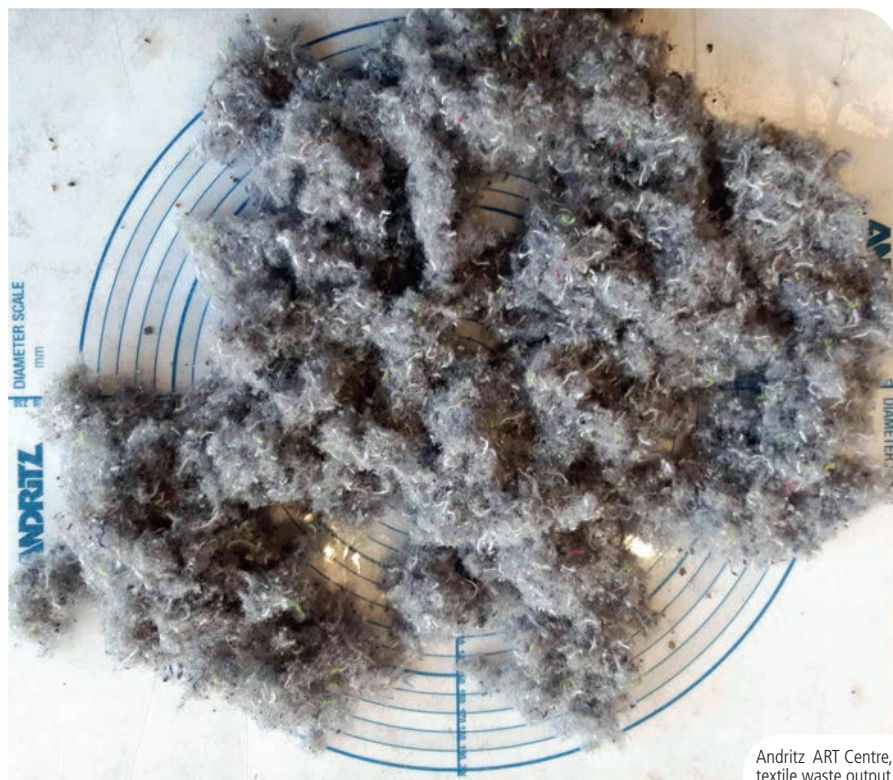
"Andritz is happy to work with Infinite Fiber Company to create solutions for textile recycling, especially bearing in mind that the EU Waste Framework Directive legislates that Member States should set up separate collection for textiles by January 1, 2025.

"Alongside our work with Infinite Fiber Company, we have successful collaborations with universities and research institutes, which are particularly strong in the area of chemical pulping and have great facilities. This is helping us take large strides in developing our equipment for chemical treatment of textiles."

Polycotton progress

Meanwhile, on the other side of the Atlantic, Andritz signed a cooperation agreement in 2021 with CIRC, located in Virginia, USA, to pool each party's expertise in the field of textile recycling and upscale CIRC's recycling technology for commercial use.

The concept is based on the extraction



Andritz ART Centre, textile waste output.

of both recycled PET and cotton from polycotton to produce new textiles, while only non-recyclable elements like buttons and zippers in the feed material are rejected.

The CIRC/Andritz concept is a combination of mechanical, thermal, and chemical process steps. First PET is dissolved, separated and transformed into recycled PET. The cotton released is processed in the fibre line, where the quality is adjusted and all the residuals of PET and other impurities, including dyes, are removed. Recycled cotton can then be used as a feed material in the Lyocell process, for example.

Of course, processing polycotton has its challenges, one of which is to understand end-use requirements and find ways to measure relevant parameters to control final quality and the process as a whole. But Andritz has proved the feasibility of the concept in repeated small-scale production runs at its Springfield, Ohio, pilot plant in the USA. CIRC intends to have its first factory up and running in commercial operation in 2024, with Andritz equipment installed.

The full suite

Andritz has the full suite of expertise and technology to provide tailor-made textile

recycling processes that manage diverse types of textile waste. But it also offers wide range of research and development facilities, with a worldwide network of pilot plants and technology centres, offering an excellent platform for customer trials and R&D work. In addition, the Andritz Group's capabilities in the field of digital solutions offer an excellent platform to optimize equipment and system performance.

Already a formidable brand across several sectors, Andritz has established itself as a globally operating partner when it comes to textile recycling processes, in a sector in which there is no such thing as a one-size-fits-all solution. Complementary technologies backed by an over-arching vision are the way forward.

With the experience and skills for material conditioning, mechanical, chemical, and combined recycling methods, Andritz cooperates with innovative technology partners and focuses on continuous further development of machinery and recycling processes to accompany the customer throughout the product lifecycle and beyond. Quite simply, Andritz is positioning itself as the partner with the vision, expertise and capability when it comes to textile recycling processes. **SNW**

Feeding the circular need

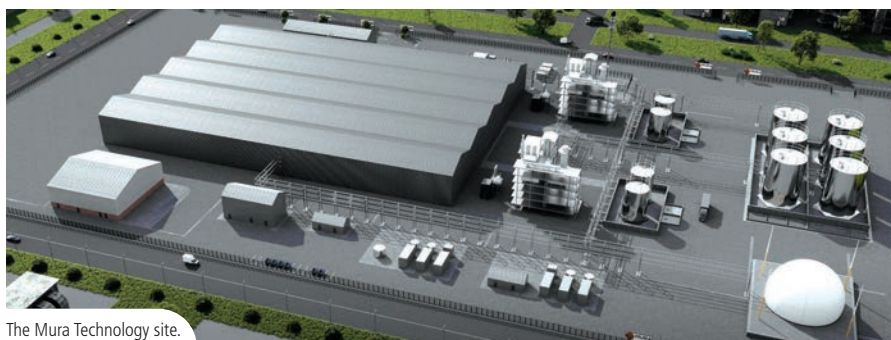
Two major projects will accelerate Dow's recycling capability

Dow has announced two major developments to accelerate mechanical and advanced recycling, part of its strategy to develop solutions that ensure a higher number of used plastics can be recycled into high quality new products so that less waste goes into landfill or incineration.

An agreement with Mura Technology, the company behind an advanced plastic recycling solution, will see the construction of multiple advanced recycling facilities in Europe and the US with the goal of adding as much as 600 kilotons of capacity by 2030, rapidly scaling up Mura's unique HydroPRS advanced recycling process. Dow will become the main off-taker of circular feed from Mura and will supply major brands across the globe as part of its effort to help scale the elimination of plastic waste.

Elsewhere, Dow has struck a deal with Valoregen to build the largest single hybrid recycling plant in France, hosting both advanced and mechanical recycling. With Dow's investment, the collaboration aims to achieve an operational plant by end Q1 2023 and to reach capacity to process up to 70 kilotons of plastic waste per year. Dow will again be the main off-taker while in the future, the plant will combine advanced and mechanical recycling into one ecosystem.

Welcoming the collaboration, Fabrice Digonnet, mechanical recycling strategy leader for Dow Packaging & Specialty Plastics, said: "We are delighted to work with Valoregen on this innovative new project that can help give recycling in Europe a real boost. Recycling rates for plastics are still far too low and we need to help scale the technology and ensure a viable market for plastics waste. Our investment will help increase mechanical recycling rates and in doing so, help accelerate a circular economy for plastics and reduce carbon emissions. We are excited to offer our investment and expertise on this ground-breaking



The Mura Technology site.

initiative, while continuing to scale up circularity solutions for our customers."

Valoregen's ultimate aim is to create a unique ecosystem capable of recycling all forms of plastic waste in one place. As such, this project will also mark an important step in bringing together both mechanical recycling (which processes certain plastic waste into secondary products) and newer, advanced recycling processes (which breaks down mixed, hard-to-recycle plastics into their original naphtha-like liquid form to manufacture new virgin-like polymers). Both of these technologies are complementary and are essential to achieving Dow's commitment to incorporate at least 100,000 tonnes of recycled plastics in its product offerings sold in the European Union by 2025.

Furthermore, by bringing these technologies under one roof, the plant will increase energy efficiency by enabling a yield greater than 80%, well above the average conventional mechanical recycling efficiency of around 60-70% – minimizing waste - thanks to a smart energy management system. Valoregen will also reduce the overall carbon emissions produced from these processes as it strives to limit the transportation of waste products to different sites.

Dow will be the main recipient of post-consumer resins, which it will use to develop new plastic products marketed under its REVOLoop product range. It will also provide significant expertise in recycling technology to

Valoregen to support the development of its capabilities.

With the Mura partnership, Dow says it will play an important role as a key off-taker of the circular feed that Mura produces. This circular feed, derived from plastic waste currently destined for landfill or incineration, reduces reliance on fossil-based feedstocks and will enable Dow to produce a recycled plastic feedstock for the development of new, virgin-grade plastics which are in high demand from global brands.

The partnership also marks an important milestone in the rapid scaling of Mura's HydroPRS (Hydrothermal Plastic Recycling Solution) advanced recycling process, which can be used to recycle all forms of plastic, including flexible and multi-layer plastics, which have previously been deemed 'unrecyclable'. Once deployed at scale, it has the capability to prevent millions of tons of plastic and carbon dioxide from entering the environment every year and create the ingredients for a sustainable, circular plastics economy.

The world's first plant using Mura's HydroPRS process, located in Teesside, UK, is expected to be operational in 2023 with a 20 KT per year production line set to supply Dow with a 100% recycled feedstock. The extended partnership is set to considerably increase this supply, playing a significant role in Dow and Mura's planned global rollout of as much as 600 KT of advanced recycling capacity by 2030. **SNW**



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Robert Fry, Jr., Ph.D., Principal, Robert Fry Economics LLC

Market Data for Disposable and Reusable Period Products

Liyang Qian, Senior Analyst, Euromonitor International

Disposables vs. Reusables. The Debate for Consumers of Hygiene Products

Pricie Hanna, Managing Partner, and Colin Hanna,
Director of Market Research, Price Hanna Consultants

Logistic Market Update

Simon Preisler, Vice President – Logistics,
Central National Gottesman

Assessing Sustainable Fiber Options in the Context of Disposable Hygienic Products

Richard Knowlson, Principal, RPK Consulting LLC

Period Products Panel: Changing the Conversation with Our Customers

Danielle Kaiser, President, Madamí, and Rachel
Braun-Scherl, President, Semprae Laboratories, Inc.

Five Generations of Hygiene + Sustainability

Matt Schiering, Professor of Marketing,
Dominican College



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For questions please contact the INDA Registrar:
e: registrar@inda.org p: +1 919 459 3724
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