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for the Tissue and Nonwovens Industry

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Fine Hygienic Holding to begin study for a sixth paper mill

Fine Hygienic Holding (FHH), one of the world's leading Wellness Groups and manufacturer of hygienic paper products, will begin evaluating strategic locations for the establishment of a sixth paper mill. The Group, which earned the well-deserved award, "Sterilised Brand of the Decade" earlier this year, has been moving from strength to strength and continues to see rapid business expansion. Regarding the project, the CEO of Fine Hygienic Holding, James Michael Lafferty has stated, "We are completely sold out of papermaking capacity; and, our branded business is growing in strong double-digits. We must keep an eye towards the future, and given lead-times for paper mills to be fully commissioned, to be prudent we must begin now." Fine currently has 5 paper mills, located throughout the MENA region, operating at full capacity, with a total annual production of over 170,000 tons. In a calculated move, the Group is undertaking site evaluations at four main production sites in Jordan, Egypt, KSA and the UAE. Lafferty explained that each of the Group's sites present unique advantages and challenges. He assured that, "We will approach this investigation in a disciplined and rigorous manner and make the right strategic choice for FHH. We are preparing to seek proposals from several proven suppliers to begin the feasibility study and cost estimates." Fine Hygienic Holding provides high-quality hygienic paper products to its customers in 75 countries around the world, and with the impending establishment of its sixth paper mill, the Group is set for further growth and expansion.



James Michael Lafferty, CEO of Fine Hygienic Holding

New paper packaging launched for household towel Regina blitz xxl

Sofidel pursues its path towards more environmentally-sustainable product development by launching in Spain Regina Blitz XXL household roll wrapped in kraft paper – replacing the previous polyethylene packaging. In addition, the roll format has also been modified to XXL size, adding more sheets in order to adapt the product to the Spanish markets trend in terms of multipurpose paper, also allowing a lower consumption of paper packaging for the same amount of finished product. The product will be hitting supermarket shelves in early 2020.

The recent debut on the Spanish market of the Regina Zero toilet paper - distinguished by kraftpaper packaging, coreless rolls (and, therefore, zero waste) as well as more compact rolls (allowing for higher logistical efficiency in the transport phase with a reduction in CO2) - has been a pilot for the launch of Regina Blitz XXL wrapped in kraft paper, showing further effort towards responsible and sustainable development by the Sofidel Group. Standing out for its packaging in kraft paper - a plant-based material that is renewable and easy to recycle - Regina Blitz XXL household roll is part of an extensive product innovation strategy currently being implemented by the Group. A new phase of its sustainability strategy developed with particular focus on the 12th Sustainable Development Goal of the United Nations 2030 Agenda - Responsible Consumption and Production.

BCNONWOVENS expanding capacity to meet growing customer needs

BCNonwovens is investing into a new production line, machine hall and warehouse at its Sant Quintí de Mediona (Barcelona) plant to meet growing needs from customers globally. The investment comprises a state-of-the-art production line and necessary auxiliary equipment to position BCNonwovens for current and changing requirements in the marketplace. The investment is a logical next step in the company's customer centric growth strategy to help customers succeed in their respective businesses with world class product quality, service levels and innovation.

The increased capacity will allow the company to further broaden the product portfolio and accelerate innovation for both high volume and specialty customers alike. Expected start up for the new line is in early 2021. VISION Winding and unwinding perfect reels with maximum efficency

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Papeterie Le Bourray's mill rebuild PM4

Papeterie Le Bourray selected Toscotec to rebuild its PM4 tissue machine at Saint-Mars-la-Brière, near Le Mans, France. The start-up is scheduled for mid-2020. The rebuild scope includes the modification of the existing Approach Flow System with a new fan pump and a fully hydraulic TT Headbox designed to operate in Tisco Former configuration, but capable of being upgraded into Crescent Former configuration in the future. Toscotec will provide full beginning to end support consisting of the detailed engineering, dismantling of the existing components, and installation of new components, commissioning, start-up supervision, and training. The estimated overall shutdown time will be less than a week. The target of the rebuild is to improve sheet formation quality and CD basis weight profile, as well as increasing the machine speed. The tissue line is dedicated to the production of towel tissue using chemical pulp and wastepaper. Francois Bourdin, CEO of Papeterie Le Bourray, says, "We are glad to work with Toscotec, who is a leader in the manufacture of tissue machines. This headbox is our first major project since we restarted the mill in April 2019, and it will allow us to improve our quality and seek new markets."

Metsä Tissue is investing EUR 10 million in a new production line

Metsä Tissue, a part of Metsä Group, is investing in a new production line for professional tissue papers at its Raubach mill in Germany. The total value of the investment is approximately EUR 10 million.

The new MF4 production line with annual production capacity of 16,000 tonnes will produce folded hand towels, which are used typically in public washrooms."Demand for professional tissue paper products is growing and according to our strategy, we are increasing our capacity to meet the market situation. The investment will strengthen our market position especially in Western Europe," says CEO Esa Kaikkonen. Production on the new line will begin during the second quarter of 2021.



Mondi, global leader in packaging and paper, has developed a new Carded Airlaid Carded (CAC) line to create a more sustainable three-layer nonwoven for wipes. These can be used for personal hygiene and cleaning purposes. This new line will use 100% cellulose content, including viscose and pulp from certified sources, resulting in a nonwoven material that is fully biodegradable.

The new technology being used for the planned CAC line-located at Mondi's plant in Ascania, Germany-will make it possible to combine three layers into a highly functional and stable composite material. This will deliver optimal absorption and lotion load for high-quality biodegradable wipes and uses fewer resources than comparable carded mono-structures. The technology will be able to produce the entire sustainable nonwoven material in-line, while enabling hydro-embossing to increase softness and improve cleaning power. Mondi's vision is to contribute to a better world, and its focus lies in producing innovative products that are sustainable by design. "The innovative technology means we can produce 100% biodegradable, high-performance nonwovens for wipes that are more accessible, and we are looking forward to introducing this to the market." explained Kelly Wright, Mondi's product expert for Personal Care and Components. The new line is set to be fully operational by 2021.



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Wood-based alternative: feminine hygiene fibres from Kelheim

Kelheim's premium tampon fibre Galaxy® has proven effective in sanitary pads: It can substitute up to 70% of the synthetics in ADL (Acquisition-Distribution-Layers) in feminine hygiene pads. The amount of feminine hygiene waste is enormous - and often the time it takes for these products to degrade is hundreds of years longer than the lifespan of the woman who used it, because the synthetic components are not bio-degradable. Changing consumer behavior drives the need for environmentally friendly yet safe alternatives. The viscose hygiene fibres from Kelheim offer significant ecologic advantages: they are made from cellulose, which means they are based on renewable wood and they are fully biodegradable. These fibres are manufactured exclusively in Germany, in one of the most environmentally friendly plants worldwide. Galaxy® in sanitary pads offers not only a benefit for the environment. Due to its excellent wicking and absorption capacity it conducts liquids quickly and efficiently away from the body and leaves a pleasant feeling on the skin - in other words, it does exactly what the ADL layer is made for. In addition, Galaxy® helps to distribute the liquid evenly in the absorbent core enhancing so the overall performance of the pad. "Plastic must disappear from these single-use products. The substitution of single synthetic components in sanitary pads is the first step", says Dominik Mayer from the Bavarian fibre expert's R&D team. "Down the road we want to offer a completely biobased solution for sanitary pads and for various other hygiene applications." Kelheim Fibres GmbH is the world's most sustainable producer of viscose speciality fibres and the most important supplier of viscose fibres for the tampon industry. About 90.000 tons of viscose fibres are produced every year at Kelheim in South Germany from the renewable raw material wood. These are used in most diverse applications - from fashion, hygiene and medical products to nonwovens and speciality papers.

GKD at INDEX 2020

Technical weaving operation GKD -Gebr. Kufferath AG (GKD) will once again be showcasing its integrative consulting and engineering expertise for the nonwovens industry at INDEX in Geneva. In keeping with the corporate vision of only creating products and solutions that make the world healthier, safer, and cleaner, GKD will be presenting a comprehensive range of mesh and spiral fabric belts for forming, drying, and bonding of nonwovens here. The company's presence at the exhibition will focus on two pioneering developments: CONDUCTO® 7690 with metallic multifilaments, and glass hybrid fabric belts with anti-stick coating. The exhibition appearance will be rounded off with tailor-made metal fabric filter media, which have been proven to set new standards in the central filters, spinning beams, and blower screens used for polymer filtration.

With CONDUCTO® 7690, a fabric design comprising polyester monofilaments and metallic multifilaments, GKD has succeeded in preparing electrostatic dissipative metal in such a way that it can also be used for sophisticated medical and hygiene products without any risks. This latest addition to the CONDUCTO® range facilitates between one and ten times greater dissipation of electrostatic charges than conventional belts. The new fabric design combines these properties with the familiar benefits of all CONDUCTO® forming belts: excellent traction, homogeneous web formation, optimum nonwoven removal, and easy cleaning.

The glass hybrid fabric belts with anti-stick coating from GKD have a proven track record of significantly increasing process efficiency. Used as upper and lower belts in real-world applications over multiple years, they have far surpassed the high expectations in terms of process performance and product quality in exacting thermal bonding processes with highly adhesive products. The single-ply fabric design, comprising metal weft wires and fiberglass strands as the warp, makes the belts energy-efficient lightweights. Glass hybrid fabric belts are temperature resistant up to 250°C and do not stretch.



The spiral fabric belts from GKD often represent an attractive alternative, particularly when using very wide or high- speed systems for production of hygiene products.



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Novita successfully starts up high-speed spunlace line

International technology Group AN-DRITZ has successfully started up a new neXline eXcelle spunlace line at Novita, based in Zielona Gora, Poland. The line is dedicated to the production of a wide range of spunlace fabrics from 30 to 100 gsm and even down to 25 gsm for ultralight products, allowing Novita to enter the hygiene and medical markets with a total installed capacity of nearly 3,000 kg/h. ANDRITZ has supplied its high-performance web forming system with two TT cards, its well-known hydroentanglement unit JetlaceEssentiel including the neXecodry energy saving system, water filtration and retreatment systems, and one neXdry double-drum through-air dryer. The complete spunlace line was commissioned very quickly, and the line reached 250 m/min after only a few

weeks. Training sessions with ANDRITZ experts then enabled the Novita technicians to operate the line at a stable pace of 300 m/min. For Novita, this is the first spunlace line with in-line configuration, allowing the company to access new markets. Mr Radosław Muzioł, CEO of Novita, said: "With the new ANDRITZ spunlace line, Novita is able to offer first-class spunlace roll goods with high-quality fabric characteristics and a customized product perfectly suited to hygiene end-uses."ANDRITZ offers high-performance spunlace lines combining high production capacity at the highest speed available on the market with top web quality in terms of appearance and MD:CD ratio. With ANDRITZ solutions, there are no compromises between speed and quality of nonwoven fabric characteristics.

ITALY

Fabio Perini and Valmet start Industrial Internet ecosystem partnership

Fabio Perini and Valmet have established an Industrial Internet ecosystem partnership to strengthen collaboration in the tissue industry. The target is to allow tissue producers and converters to work together more efficiently, and to exchange knowledge and resources for the benefit of their customers.

The partnership combines Valmet's comprehensive tissue making technology and process optimization know-how with Fabio Perini's strong expertise in complete solutions for converting and packaging machines as well as in the converting process and technology. The two companies' solid expertise combined with data from tissue mills and converting plants will provide a new dimension to tissue mill optimization.

The collaboration aims at providing an unbroken chain of production data from the tissue machine to the converting line and utilizing artificial intelligence-driven applications in the tissue production process to make the converting operations downstream more efficient. This will bring significant mill-level quality and efficiency improvements for tissue producers and converters."We believe an open innovation model is a key concept through which companies within tissue business can create different partnerships to make their innovation process more efficient, as well as exchange knowledge and resources. By combining the strengths of our companies, we can facilitate broad innovation and fast adaptation, enable new business and service models and help improve the profitability of companies in the tissue business," says Oswaldo Cruz Junior, CEO of Körber's Business Area Tissue.



High-speed neXline eXcelle spunlace line

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Cartiere Carrara acquires two companies

Cartiere Carrara, one of the leading European tissue paper producers and processors, has completed the acquisition of Carind and CRC, a group company headed by the Caldaroni family, specializing in the transformation and marketing of tissue for the consumer and away from home segments. Thus, creating the Gruppo Cartiere Carrara.

The acquisition of Carind and CRC is in line with the growth strategy for aggregations of Cartiere Carrara which with this operation aims to significantly strengthen its offer in a sector with high growth potential such as highend tissue products for the away from home segment as well as its presence in the consumer segment of the Italian market, thanks also to a multi-year plan of ad hoc investments on the new companies that became part of the group.

In fact, Carind and CRC represent a significant point of reference in the sector, both in the away from home segment, with the brands Carind, Dayli, Value and Carousel, and in the consumer segment with the Maxi and Voilet brands.

"We are particularly pleased to have finalized the acquisition of Carind and CRC - commented Mario Carrara, chief growth officer - the integration of these companies in the new Gruppo Cartiere Carrara allows us to further strengthen our position in a strategic market such as that of the tissue, it presents interesting growth prospects for the coming years. This operation is fully part of our M&A guidelines, oriented towards companies of excellence that can be integrated into our production and commercial structure, making it even more distinctive in terms of quality and sustainability ".

The operation was managed by the group managers with the legal assistance of Legance.

Cartiere Carrara, founded in 1873, is a leading European manufacturer of tissue paper products for the consumer and trade markets. Cartiere Carrara is the parent company of Tuscany and Bulky Soft. The business' product range includes; high-quality hand towels, kitchen roll, toilet paper, handkerchiefs, facial tissues, tablecloths and napkins. With a turnover of circa €300m, the Group employs more than 600 people in Italy, and operates six tissue mills producing 240,000 tons per year. Over 35 converting lines produce tissue and sanitary products, distributing to over 40 countries worldwide.

Carind was founded in 1988 and is based in Arpino. The business manufactures tissue and sanitary paper products such as toilet paper, hand towels and napkins. As a result of the technologically advanced production and automation systems, Carind is one of the leading companies in the health and sanitation sector. CRC is based in Sermoneta and manufactures toilet paper, hand towels and napkins for the consumer market. CRC is the parent company of Maxi and Voilet.

OMET introduces the new ASV Line Storm for interfolded towel and facial tissue

OMET introduces the ASV Line Storm to the market, with a new automatic interfolding head. OMET doubles the offer for the new ASV Line, introducing the new Storm version after having recently presented the Tornado version at the latest "OMET Interfolding Experience" open house in Lucca. ASV Line is the new automatic interfolding line that combines extensive modularity, ease of use and high productivity for the production of 1,2 or 3-ply paper hand towels, 2,3 or 4-ply facial tissue and 2-3-ply toilet paper. This line is the result of a careful technological research with innovative and patented operating principles, that allows a complete modularity with in-line, mirror or 90 degrees configurations. The ASV Line can be designed and configured in a flexible way according to the needs of the user with the addition of several functional modules: unwinders, lamination unites, embossing units, calenders, lotion application systems and wheel knurling units, banding units, log and gang saw, as well as the automatic interfolding head and the longitudinal slitting units that form the core of the machine. The ASV embodies the essential requirements that have always been sought by the user: high levels of quality of the product, simplicity of use and easy maintenance. Its complete automation allows considerable savings of personnel costs and a consequent reduction of risks. OMET offers two versions of the ASV Line, the Tornado and the Storm Line, distinguished by their different folding units and a wide range of finishing units, in order to specifically fulfill different production needs. The new ASV Line Storm is equipped with side suction system and two folding and cutting rollers of the panel. This folding system allows to use a head up to 1500 mm and enable an extremely high production capacity.

The new ASV Line Storm interfolding head is now available at OMET Lucca Demo Center for any tests, where it is possible to require customized demonstrations in order to notice the outstanding performance, the ease of use for the operator, the complete automation and the user-friendly and essential interface.

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AeroFlexx and Fameccanica form partnership to accelerate the development and manufacturing of revolutionary packaging solution

AeroFlexx announced a partnership with Fameccanica, an innovationbased group focusing on diversified industrial automated machinery. With an innovative approach to design and wealth of experience in web converting and liquid filling machinery, Fameccanica will make its technological expertise and knowhow available for the development of the lead commercial line which will produce AeroFlexx's revolutionary liquid packaging solution.

Procter & Gamble selected Innventure to commercialize AeroFlexx after five years of extensive R&D and consumer testing. AeroFlexx has sole exclusive rights to commercialize the technology across all global categories with any partner. The AeroFlexx package is a sustainable, customer-focused package solution that uses at least 50 percent less plastic, enhances the consumer experience and is easier to ship throughout the supply chain. "Organizations are increasingly seeking ways to accelerate growth while reducing their environmental footprint, due in part to e-commerce and the fast-paced evolution of products," said Andrew Meyer, CEO of AeroFlexx. "There is a large demand for innovative packaging solutions that delivers on both while creating a better consumer experience." AeroFlexx chose to work with Fameccanica, which is headquartered in Pescara, Italy, after undergoing a global evaluation of world class machine manufacturers. The two companies share a common vision in making AeroFlexx the most significant packaging disruption of the next decade and share in the commitment for non-stop innovation. Fameccanica's expertise is in converting and liquid filling equipment, which is key to the AeroFlexx manufacturing process.

The company operates manufacturing facilities in North America, Europe and China, with global reach for sales, service and support. "We were immediately attracted to AeroFlexx based on the uniqueness of the product and its inherent potential. Fameccanica is best known for our leading position in diversified industrial automated machinery and we strive to live by our motto 'Non-stop innovation," said Alessandro Bulfon, GM of Fameccanica Group. "The combination of the two companies will leverage technology adjacency, knowledge and entrepreneurial spirit as well as the attention to sustainability and environment protection and will be the driver to provide new and superior solutions for all AeroFlexx Customers." AeroFlexx is revolutionizing the liquid packaging industry by offering the only flexible package with an air-chamber that provides rigid qualities to a flexible package. AeroFlexx proprietary package, invented by Procter & Gamble, is customer centric, contains at least 50 percent less plastic, allows for greater flexibility in size and shape; provides efficiency in manufacturing; has no label limitations, thanks to seamless edge-to-edge artwork; and meets e-commerce and sustainability requirements. In September of 2018, AeroFlexx won the prestigious Dow Diamond Packaging Award.

Futura has received the first two orders for Together converting and packaging lines

After introducing the revolutionary Together technology at the MIAC event in Italy. Futura has received the first two orders for Together converting and packaging lines, a solution born out of Futura's technical partnership with Plusline announced in October 2019. The clients remain confidential and start-up is due at the end of 2020. Futura's technical partnership with Plusline was conceived with the aim of introducing radical innovations, the first of which is Together, a game-changing solution to convert logs into shelf-ready packs. Together is an integrated system which can be installed downstream of any existing or new converting rewinder line, not necessarily produced by Futura, thus opening opportunities both for setting up new plants, and for making existing lines much more efficient.

"The market is always curious but naturally also cautious about innovations which represent a major departure from standard solutions," said Piero Ceccon, CEO of Futura. "The fact that the validity of Together has been confirmed so soon after its launch is a welcome affirmation of this cutting-edge technology."

Research and development, Manufacturing base of intelligent equipment for household paper-China Lucca-jiangxi xitushui

Facial Tissue Folding Machine



Automatic tissue log transfer (match to interfolder on the left)



Model: 5T/6T/7T/8T/9T/10T Max. width of base paper: 1350-2100 mm Folding speed: 500-1000 sheets min/line

Start-Stop Model Toilet Tissue Rewinder





Packing Speed: ≤250 bags/min

Jumbo roll width:2200/2800mm Machine's speed:≤200 m/min Finished roll tissue diameter:φ70-150 mm



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FINLAND

Valmet to supply an energy management solution to Kemira Chemicals' plants in Äetsä and Joutseno

Valmet will supply an energy management solution to optimize production and energy consumption at Kemira Chemicals' bleaching chemical plants in Äetsä and Joutseno in Finland. The order was included in Valmet's orders received of the third quarter 2019. The value of the order is not disclosed. The solution will be delivered to the customer in November 2019 and commissioned in May 2020.

"The new solution will enable us to combine electricity purchasing and production planning in Äetsä and Joutseno. Thanks to the system's calculation model, our plants will be able to optimize production at the right time, according to electricity price variations. We will gain significant electricity cost savings at an annual level," says Ilkka Palsola, Project Manager at Kemira Chemicals. "The solution is based on Valmet's existing production optimization system developed for energy production plants. We are now applying it for the first time to the energy-intensive industry. The solution improves electricity purchasing and provides plants with a more active role in the electricity market, among others. This is an important step forward for Valmet as a supplier of intelligent energy solutions," says Tiina Stenvik, Director, Performance Solutions, Valmet. The energy management solution will be delivered in cooperation with Valmet's Industrial Internet partner Energy Opticon, based in Sweden.

Nice-Pak launches the UK's first recyclable packaging for wet wipes

Nice-Pak have launched 100 per cent recyclable packaging as part of its efforts to improve the sustainability of its products and packaging. This breakthrough marks the culmination of eighteen months of development work aimed at aligning more closely with consumer environmental aspirations.

Calling on over 70 years of collective industry experience, the Nice-Pak packaging team has worked closely with material suppliers to develop both film and resealable labels which, together, can be recycled through existing facilities for carrier bags.

With factories in Flint, Wigan, Germany and the USA, Nice-Pak offers wipes across four categories including baby, cosmetic, household & personal care. In the first instance, the new packaging will be made available through the company's Aqualettes® baby wipes brand. Peter Bushell, Nice-Pak International Packaging Development Manager, said: "We believe that both customers and consumers alike deserve more choice in meeting their environmental aspirations. The mono-polymer project has been technically challenging but we are proud to have achieved this UK first as part of our on-going efforts to improve the environmental footprint of our products. We have strived to render this product 'recycle ready' to support the future development and harmonisation of the recycling infrastructure. "



Kemira's new N3 chlorate plant at Joutseno

Valmet to supply a new evaporation line to Century Pulp and Paper

Valmet will supply an evaporation line to Century Pulp and Paper's (CPP) pulp mill in Lalkuan, India. The new evaporation line will meet the future needs of the mill's ongoing pulp production capacity expansion, together with the existing evaporation line. This investment will also improve the overall steam economy of the mill. The value of an order of this size and delivery scope is typically below EUR 10 million. The new evaporation line is planned to start up during latter part of 2020.

"In an Integrated pulp and paper mill, the recovery line is a vital part in securing the mill's operations. In view of this, we decided to go with the latest and most advanced evaporation technology. We evaluated different alternatives and decided to choose Valmet. Our new plant should be commissioned by December 2020," says P.K. Mittal, Head of Process, Century Pulp and Paper.

"This is Valmet's first evaporation plant installation in India. We were able to offer clear technical advantages through our customized and detailed design done by our technical team, and the solution was appreciated by the customer. The project execution has started in a verv smooth way and both the customer and Valmet's teams work as one team for successful execution of the project. We are looking forward to creating a good reference with leading technology in India," says Varun Jain, Director, India Region, Valmet. Valmet's delivery includes a new 7-effect evaporation plant with a design capacity of 275 tons of evaporated water per hour, producing heavy liquor of 75% dry solids. The plant is designed to handle black liquor based on 60% bagasse and 40% wood. The delivery covers main evaporator effects, a surface condenser, an integrated foul condensate treatment plant, flash tanks, main supporting structures, and a vacuum system.









Core turning unit in Panty diaper



Back ear zero trim

unit in T shape

diaper



On-line laminated elastic waistband unit in big waistband diaper



On-line 3D hot air through N.W dotting and embossing unit

ith its professional and advanced technology in manufacturing. PEIXIN manufactures three series of equipment: diaper and underpad, sanitary napkin and pad, various kinds of paper products machines. All passed CE and UL and other international certificates.Established in 1985,PEIXIN is renowned in over 80 countries for its excellent quality and complete service.



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INDONESIA

Berry Global Group starts up Reicofil R5 line

Berry Global Group, Inc. has commercialized and started shipping product from its Reicofil R5 asset in Nanhai, China. With bi-component and high-loft soft capabilities, Berry's is only the third R5 start-up in the world.

"The Asia region, and China in particular, has historically set the global standard for high-loft, soft materials for the hygiene market," said Berry's Chairman and CEO Tom Salmon. "Investing in a state-of-the-art Reicofil R5 asset in China allows us to maximize innovation and provide differentiated capabilities, to ultimately enhance performance and comfort for consumers."

Berry's investment in the R5 technology, in combination with its proprietary raw material blends, fiber configurations, and unique bond patterns, demonstrates the Company's commitment to the Asia region and to continuous innovation.

Gold HongYe Paper (Hubei) purchases three new Tissue A.Celli E-WIND® T-200S Rewinders

Over ten-year partnership between A.Celli Paper and the APP Group continues. At the end of December 2019, the APP Group management signed the purchase order for three A.Celli E-WIND® T200S (shaftless) tissue rewinders for Gold Hongye Paper factory in Xiaogan, in Hubei province, China.

Two of the three rewinders are equipped with four unwinders, while the third has three; they will all handle mother rolls with diameter of 3000 mm and paper width of 5630 mm, having basis weights varying from 10.5 to 45 gsm, and with a maximum operating speed of 1100 mpm. This order assigned to A.Celli Paper follows one of many tissue rewinders supplied in 2017 for APP Indonesia, confirming full customer satisfaction.

PMP to provide two rebuilds for APP Sinar Mas mill

Paper Machinery Producer (PMP) recently signed a contract for the delivery of two rebuilds for the Press and Dryer Section for Asia Pulp & Paper Sinar Mas' (APP) Pindo Deli Mill in Indonesia. The agreement is the result of an earlier successful cooperation between PMP and APP, signed off in August 2018. The scope includes the supply of press section rebuild with new Intelli-Nip® Press and Intelli-Nip® Module 1500. This state-of-the-art technology will ensure higher dryness following the press section and will improve the paper quality in the mill. As part of the contract, PMP will also be delivering new core items for the dryer section rebuild.

APP invests in 4 new tissue machines

PMP (Paper Machinery Producer) will be delivering (4) new Intelli-Tissue® 1800 EcoEc Premium machines for APP, this time for Oki mill in Indonesia. The partnership between APP and PMP has become stronger due to a project for (18) Intelli-Tissue® 1600 EcoEc Premium lines for Rudong, China that will bring 620 000 t/a of high-quality tissue. PMP Intelli-Tissue® EcoEc Premium technology corresponds well with a Sustainable Development Strategy of APP and guarantees achieving ultra-low media consumption (total energy usage: steam & electricity as low as 1,74 MWh/t), while keeping premium quality of final product. PMP machines ensure efficiency higher than 95% which is in line with APP requirements.

RUSSIA

Hayat Kimya Alabuga TM 4 sets a new world

Hayat Kimya Alabuga TM 4 sets a new world record by using Voith's QualiFlex CrownT sleeve on the ViscoNip application in Russia. The paper mill produces virgin fiber-based toilet paper, paper napkins and kitchen towels. In December 2017, a QualiFlex CrownT sleeve was installed at Hayat Kimya TM 4 maintaining stable machine production during the entire sleeve lifetime. Voith's QualiFlex CrownT sleeve reached a world record life of 661 days and 473,810,000 nip cycles. The former world record sleeve on such an application was set in China, achieving 585 days. The customer was very satisfied with the result.

"My congratulations to the whole Voith team for this excellent result and belt quality. My personal thanks to Voith for the support and proper service during the runtime of this belt," says Mr. Lenar Safin, Tissue Production Chief at Hayat Kimya.

With QualiFlex CrownT, Voith offers a superior press sleeve for tissue shoe press applications which enables stable machine operating conditions and optimum efficiency. Selected polyurethane materials ensure the highest possible abrasion resistance under challenging high temperature conditions. Compared to the conventional press sleeves, QualiFlex CrownT is especially designed for tissue applications. Conventional press sleeves show strong reactions to harsh conditions, and often suffer from hydrolysis, higher wear and reduced void volume.



Hayat Kimya Site in Tatarstan, Russia.

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performances. All activities are oriented to offer proven and granted solutions through extensive research and development activities that, since the foundation, have been of strategic importance for the company.

A.Celli has long-standing, proven expertise in the construction of complete

tissue plants. Basic and detail engineering, electrification and automation are performed by internal engineer teams to optimise the overall plant

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P&G to invet \$310 million in plant expansion

Procter & Gamble (P&G) will expand its operations in Box Elder County, with a planned investement of \$310 million to expand a manufacturing plant in Utah, which will create up to 221 jobs over the next 20 years and is expected to generate more than \$13.9 million in new tax revenue. According to the Utah Governor's Office of Economic Development (GOED) will be qualified for a tax credit related to the plant expansion in Box Elder County, P&G may earn up to 30% of the new state taxes it will pay over the over the 20-year life of the agreement.

The GOED Board has approved a post-performance tax credit not to exceed \$4,191,954. Each year that Procter & Gamble meets the criteria in its contract with the state, it will earn a portion of the total tax credit. "This expansion will create hundreds of new high-paying manufacturing jobs in Box Elder County," said Val Hale, GOED's executive director. "This is a big win for Utah as we continue to help build our rural counties and create more jobs in these areas."

"We continue to greatly value our partnership with GOED and Box Elder County," said Joe Tomon, plant manager of the P&G's Box Elder facility. "Our expansion is a result of consumer and customer demand, and we couldn't be more pleased to meet that demand with the excellent workforce of Box Elder County."

Solenis Dedicates New Global Headquarters in Delaware

Solenis, a leading global producer of specialty chemicals for water intensive industries, dedicated its new world headquarters today in Wilmington, Delaware. The 90,000-square-foot office replaces the company's previous headquarters on Beaver Valley Road. Located in Wilmington's redeveloped Avenue North complex, the new two-story building is designed for sustainability and employee well-being. With features such as automatic lighting adjustment, wellness rooms, a fitness center and plenty of natural light, the building provides a comfortable and collaborative workspace. "More than 200 employees have relocated to the building and there's ample room to facilitate the growth we expect," said Solenis Senior Vice President and Chief Financial Officer,

Philip M. Patterson, Jr. Executives, global managers and company departments such as human resources, marketing, IT and customer service reside in this location. The \$3 billion specialty chemical company employs over 5,200 professionals in 120 countries spanning five continents. Avenue North is an upscale mixeduse campus that combines office, commercial, residential and hotel uses. Solenis' decision to relocate there was announced exactly one year ago when the company reaffirmed its commitment to remain in Delaware.

"Solenis is in a growth mode," said Patterson. "We are working to retain, recruit and add employees to enhance our value proposition and better serve our customers. Our roots are here in Delaware and we are excited about continuing to grow here with our new headquarters."



From left to right, Philip M. Patterson, Jr., Solenis Senior Vice President and Chief Financial Officer; John Panichella, President and Chief Executive Officer; and John Carney, Governor of Delaware commemorate the opening of Solenis' new global headquarters. The paper used in the ribbon-cutting was produced by Solenis at their R&D test facility.



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Avgol starts production of Waveform 3D technology

Global leader in the manufacture of high-performance non-woven fabric solutions for the hygiene market, Avgol, has geared up to deliver its pioneering Waveform 3D solution to meet growing North American demand for value-added technology in hygiene applications.

The business has installed and commissioned a new production line to deliver the capability. Waveform 3D is a unique process that impacts three-dimensional qualities and properties to non-woven precursor fabrics. Nick Carter, Director of Market **Business Intelligence and Intellectual** Property at Avgol, commented: "At Avgol, we thrive on creative nonwoven solutions to meet the evolving demands of the market. The hygiene industry doesn't stay still for too long - our customers rely on us to continually deliver tailored fabric technologies that turn the spunmelt substrate into competitive edge."

"Waveform 3D can also be combined with our FIT strategy; a forward-thinking suite of chemistries and processes. We pioneer in market-led value technology because that's the direction the hygiene landscape is moving, particularly across North America. Customers demand more from the products they buy, and the combination of Waveform 3D and FIT technology makes this not just achievable for our customers, but profitable." Using apertured, solid or combination patterned surfaces, the three-dimensional composition enabled by Waveform 3D technology imbues the material with customer-facing advantages and design benefits, including advanced fluid management and breathability, as well as enhanced cushioning and cotton-feel qualities.

Edison Nation introduces South Korean brand Mother-K to the US market

Edison Nation, Inc., a multifaceted ecosystem which fosters innovation and drives IP, media and consumer products is excited to announce the exclusive distribution partnership to introduce Mother K to the US market. Mother-K was founded in 2010 in South Korea with the sole purpose of providing safe, trustworthy baby essentials for new families. The global, award-winning company thoughtfully designs and produces with an effort to bring eco- friendly products that are safe for babies as well as the environment. The collection includes maternity care items, baby bottles, eco-storage bags, wipes, diapers and a line of cleaning products. The line is set to launch on Amazon at the end of December 2019.

Edison Nation will launch Mother-K in the US as an extension of their Cloud b brand, which is already a renowned brand name in the Baby Products market. The Cloud b brand (www. cloudb.com) is a pioneer in creating products to help children sleep by soothing the senses.

"We are excited to introduce Mother-K products to US consumers. The modern designs and mindfully sourced materials will appeal to the most discerning parents," said Linda Suh, Cloud b Co-Founder and Edison Nation's Chief Business Development Officer. "Like Cloud b, Mother-K is constantly focusing on research and development to create high-quality innovative products that can help make raising a child a truly enjoyable experience, which makes them a perfect partner for Edison Nation." MinJung Kim, CEO of Mother-K, commented, "I am really excited about the partnership and launching Mother-K in the US."

Nice-Pak to expand in Mooresville

Nice-Pak, the New York-based manufacturer of wet wipes has announced plans to grow its operations in Morgan County. Nice-Pak Products says it is "investing significantly" to construct a 760,000-square-foot production and warehousing facility in Mooresville and create up to 90 jobs over the next few years. Nice-Pak did not specify how much it is investing in the project. The new facility will be built on land purchased last year by the Mooresville Redevelopment commission. Construction is slated to begin in late 2020. "We're delighted Nice-Pak Products has made Mooresville their home for the past 45 years, with this decision securing their future in our community for decades to come," said Tom Warthen, president of the Mooresville Town Council. "Retaining these jobs, the creation of new jobs and the additional capital investment is a win for our community." Founded in 1957, Nice-Pak employs some 2,500 people around the world, including more than 400 in Mooresville. The company says it is currently hiring for several positions at its existing location. The Indiana Economic Development Corp. has offered Nice-Pak up to \$900,000 in conditional tax credits, which the company will not be eligible to claim until Hoosier workers are hired for the new jobs. The town of Mooresville is set to consider additional incentives.



North Carolina State University Department of Forest Biomaterials Raleigh, North Carolina May 12 -14, 2020

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TAPPI, the Paper Science and Engineering School, and the Business School at North Carolina State University present the Strategic and Financial Workshop for the Pulp and Paper Industry. This three-day workshop has been tailored to help you understand the effect of market dynamics (i.e., developments in raw material costs, product price and demand/supply) on the profitability of local (mill specific) and regional pulp and paper operations. This workshop will provide you with basic and sophisticated tools to analyze and evaluate the effect of capital investment on your cost structure and long-term profitability, estimate financial outcomes (investment returns, cost absorption, associated risks) and support decision-making across the whole value chain. This financial workshop is appropriate for technical and non-technical individuals in the pulp & paper, forest product, and related industries with a desire to evaluate processes, services, and research ideas. Learn the financial language used by decision--makers in the industry, such as controllers, directors, mill managers, and vice-presidents.



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Complex:

- Benchmark your business against world--class operations
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TAPPI introduces "TAPPI NET" division

The division is made up of technical professionals and serves as a forum where members exchange information, develop webinars and technical programs that serve nonwovens.

"While there are several large nonwovens associations that cover technology, they end up placing bulk of their emphasis on commercial aspects. This is where TAPPI NET cuts through the noise and allows its members to focus on the technology and shape the field of nonwovens," said Dr. Gaurav Pranami.

"NET division of TAPPI is a unique place for professionals in nonwovens and technical textiles field to interact in a friendly and enlightening settings such as the conferences for professional development, which are critical these days," stated Dr. Seshadri Ramkumar.

This year NET annual conference will be held with TissueCon in Atlanta, from Sep 28 - Oct 2, a decision aimed at leveraging the synergies between nonwovens and tissues, particularly from the viewpoint of wipes.

"We kicked-off a new sub-committee called WipesGlobal, which is a great forum for the innovators in the field to ideate and set the tone for the industry, providing a scientific exchange platform to drive and make positive changes." said Bechara Michael Dib.

Serving on the subcommittees is a great way to develop professionally. Dr. Vamsi Krishna Jasti, noted, "at every alternate committee meeting we invite experts to talk about the latest innovations in the field, which has been transformative." NET subcommittees are actively engaged in putting together webinars and courses. The filtration subcommittee is planning a series ranging from basics of filtration to sustainability of glass fibers.

"This series of webinars leading to NET conference serves to educate and engage the broader nonwovens community," said Dr. Mark Wolfinger.

New initiatives are the DNA of any thriving organization and TAPPI NET is no exception.

Dr. Brian George, is leading a key effort to pair design schools and nonwovens. "My vision for this effort of engaging young students and exposing them to nonwoven materials is that when they graduate, they would be able to find novel applications of nonwovens in ways that we have not yet imagined," said Dr. George.

Irving Tissue officially opens \$470 million tissue production plant in Macon

Irving Tissue's newest \$470 million tissue plant is officially open in Macon, Georgia and based on a new, additional \$400 million investment, will soon double its capacity. "It is a great day for Macon, the state of Georgia and Irving Tissue. We're pleased to be expanding our business in the United States. We knew that this plant's strategic location would allow us to reach key markets and help to drive our growth. Our customers' enthusiastic support of its state-of-the-art technology has meant that our new plant is already at capacity, so we're thrilled to announce the second phase of this expansion project," said Robert K. Irving, President of Irving Tissue. "This exciting expansion is possible because of our valued customers and the commitment of our employees and suppliers to deliver the best value and quality." Irving Tissue's new \$470 million plant is located on Allen Road in the Sofkee Industrial Park and employs more than 200 people. It produces ultra-premium quality household paper products including soft bath tissue and high-quality paper towel that is both strong and absorbent. The new second phase of the project represents an additional \$400 million investment, adding another 150 jobs and will be completed by January 2022. "We've already ordered an additional ThruAir Dry machine that will be a duplicate of what we already have in our Macon plant," said Robert Irving. "This facility is part of an integrated value chain from sustainably

managed forests to the store shelf. Most of the pulp for Macon products comes from our mill in Saint John, New Brunswick."

"Today is a great day for Macon and Middle Georgia," said Macon-Bibb County Industrial

Authority Chairman Robby Fountain. "Irving Tissue's additional investment totaling nearly \$1 billion since 2017 in our community is another testament to why Macon-Bibb County is a great place to do business."

The first phase of the expansion involved 1.5 million person hours of work for contractors during construction with over 1,000 people on site at peak. Upwards of 50 Georgia companies were contracted during the build with dozens more subcontracted. Phase Two of the project will begin immediately and is expected to involve approximately one million person hours of work for contractors. Construction of the Macon plant doubled Irving Tissue's annual ThruAir Dry capacity increasing it by 75,000 tonnes, the equivalent of 15 million cases; Phase Two will increase that to 30 million case capacity in Macon.



WIPES GLOBAL COMMITTEE

The newest venture within NETInc Division

With many advocates around the world, Wipes are still a controversial item for many, especially in terms of environmental impact. The Committee role includes among others: addressing the problems and misconceptions surrounding wipes usage; filling the knowledge to practice gap, by providing a scientific exchange platform; and more importantly, drive and make positive changes in the wipes specialized industry. Introducing the Wipes Global Committee

Why this committee?

Because wipes are becoming more and more an integral part of our life, with a wide spectrum of application whether industrial or personal. The committee is starting with a distinguished team of international experts in the industry, out-of-the-box thinkers, to share their perspectives with regional/global exposure. It will make innovative and significant contributions to the wipes industry.

"I wish to have an engaging and productive committee works for the benefit of all TAPPI members. We aim to make this committee richer in itself, with a win-win situation for all".

Bechara Michael Dib, chair of the Wipes Global Committee.

Calling for members to join

"We would like to call all of you; machine suppliers, raw material manufacturers, scientists, teachers, students, to join this committee..."

Bechara - Michael Dib Wipes Global Committee Chair

EL SALVADOR

Alas Doradas boosts tissue capacity

Valmet will supply an Advantage DCT100HS tissue production line, including a de-inking plant and an extensive automation package, to Alas Doradas in El Salvador. The order also includes a Valmet Performance Center agreement to support efficient production with Industrial Internet. The new tissue line will fulfill Alas Doradas' demand for new capacity of high-quality tissue products in the region. The start-up is planned for the first half of 2021.

"Our cooperation with Valmet started with the rebuild of our existing machine where the press section was upgraded with an Advantage ViscoNip press combined with Advantage ReDry technology. With the results achieved, we are convinced that Valmet's technology is what we need to differentiate from competition and become the frontrunner in the Central American tissue market. Even more important is the collaboration with a reliable partner as Valmet. We see this as the first step in a long-term partnership. Valmet has met and exceeded all expectations as a reliable partner during our cooperation," says Paul Ekman, CEO, Alas Doradas.

The new tissue machine will have a width of 2,8 meters and a design speed of 2,000 meters/minute. It will add 35,000 tons tissue paper

per year to Alas Doradas' current production of high-quality toilet tissue, napkins and kitchen towels. Valmet's scope of delivery will comprise a tissue production line featuring complete Deinking plant and an Advantage DCT 100HS tissue machine. Alas Doradas is one of the three main manufacturers of tissue paper in Central America. Alas Doradas is renowned for its "green practices," using 100% recycled paper as raw material for its production. At present, Alas Doradas serves basic population needs, producing toilet paper in single ply and double ply paper napkins and kitchen towels.



Alas Doradas' and Valmet's team







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Fitesa buys South American hygiene business from Freudenberg

Fitesa, the global nonwoven producer, buys the South American Hygiene nonwoven business from Freudenberg, the global technology group. Fitesa is one of the main suppliers of nonwovens to the global hygiene market and intends to further expand its portfolio. Freudenberg sees the sale of the hygiene business as the best opportunity to successfully develop this business. Both parties have agreed not to disclose the purchase price. The transaction is subject to approval by competent antitrust authorities.

"The acquisition of Freudenberg's South American hygiene business provides us with a state-of-the-art production facility as well as with a professional and well-trained workforce, which will help us to better serve the needs of our customers," states Silverio Baranzano, CEO of Fitesa.

In Brazil, Freudenberg has been successful with nonwovens for the South American hygiene market since 1985. However, in recent years, the hygiene market has shifted from a regional to a global one. "Fitesa is geared to the global hygiene market. Under this umbrella, our current regional business can develop better and grow long-term in the new structures," says Dr. Frank Heislitz, CEO Freudenberg Performance Materials. "We are very happy that with Fitesa we found a reputable and leading global player in the hygiene business, with similar values to Freudenberg. This will be a good new home for our staff." The sale is limited to the hygiene business, which is run by Freudenberg Hygiene Brazil Ltda. The company has 100 employees. Closing is subject to the usual conditions for this type of transaction, including clearance by the antitrust authorities. Fitesa is a supplier in the nonwoven industry and specializes in providing innovative fabrics for use in the hygiene, medical and industrial markets.

Toscotec fires up its 200th TT SYD

Toscotec has successfully started up its 200th Steel Yankee Dryer at César Iglesias Group's mill in Santo Domingo, Dominican Republic. César Iglesias Technical Director, Jesús Feris Ferrús, commented: "Following three months of stable operation, we can confirm that our new steel Yankee dryer is delivering exceptional performances. We registered a 25% reduction of our overall thermal consumption including Yankee and Hoods. The TT SYD's drying capacity is so high that we could significantly decrease the hoods temperature, thereby saving a substantial amount of energy. We also witnessed a great improvement of our tissue quality, in terms of hand feel and CD moisture profile. This led to an increase in our converting efficiency, which we estimate to be in the range of 10%". Since the first TT SYD was started up in the year 2000, this breakthrough innovation has come a long way. Toscotec's TT SYD was the first

Yankee dryer made of steel to come to the global market and it has since outclassed cast-iron Yankees to become the new technological standard of the tissue industry.

With over 220 TT SYDs sold around the globe, Toscotec is by many magnitudes the world leading manufacturer of Steel Yankee Dryers; 200 cylinders currently operating all over the world is a notable milestone. These TT SYDs are running efficiently in more than 40 different countries across 5 continents, including over 110 cylinders in Asia and over 50 in Europe. The US market has only recently opened up to steel Yankees, and TT SYD sales have already reached over 10 units.

Out of the top 12 tissue producers in the world, 10 groups have recognized TT SYD's superior energy efficiency and performance, and installed it at one or more of their production sites. These producers include Essity, APP, Hengan, Sofidel, WEPA, CMPC, Kruger and others who remain confidential.





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NORTH AMERICAN ISSUE MARKET OUTLOOK WITH OVERVIEW TO GLOBAL DEVELOPMENTS

n the **spotlight**

ESKO UUTELA, Principal, Tissue, Fastmarkets RISI Amid changes in consumer habits and recent economic and political turmoil, one thing is certain, the tissue market is dynamic and responding quickly to market needs. In the following article, we will take a look at several drivers (and obstacles) of consumption and growth in the North American and global tissue market and their potential impact on market trends in upcoming years.

Recent global trends

China has been the largest producer country since 2015, surpassing the US to become the largest consumer country in 2018. Indeed, preliminary data indicate that China's tissue market consumption grew larger than Western Europe's, coming in second and nearly approaching the consumption magnitude of North America; i.e.: the world consumption leader taking in 24.5% of world tissue market share (see Figure 1). Rounding up the top five are Latin America and far East Asia which are becoming increasingly important regions as well, considering they took in 11.1% and 6.2% of global market consumption, respectively. The rest of the world trails behind with Eastern Europe taking in 5.6%; Japan 5.1%; the MENA region 4.1%; Africa 2.3%; and lastly Oceania with 1.2% of the global consumption share.

It should be taken in consideration that growth in the global tissue market has been recovering in the past decade. There has been relatively stable growth until the Great Recession in 2009 which saw a 66% decrease in volume growth reflecting the general state of the markets. Yet demand recuperated by 2015-2017 and this period saw strong growth. Most recently, this was followed by slowed development in 2018 due to a slower growth in China and Western Europe (see Figure 2). Indeed, the main change in 2018 was that growth in China was only half of that recorded in 2017 reflecting the country's economy cooling down in 2018's fourth quarter under pressure from faltering domestic demand and bruising U.S. tariffs, dragging 2018 growth to the lowest level in nearly three decades. Similarly,



Figure:1 World tissue consumption by region in 2018

development in Japan contracted and Western European growth slowed further. Meanwhile, as emerging markets, Eastern Europe, Asia Far East, and Africa showed more positive developments (see Figure 3). Despite the recession, and the ensuing slump in growth, total global growth between 2008 and 2018 was a whopping 10.8 million tonnes, equivalent to an average of 1.08 million tonnes per year. During this period, China accounted for 43% of growth, followed by North America (12%), and Latin America (11%) (see Figure 4).



Figure 2: Growth in the global tissue market



Figure 3: Growth rates in percent from 2017 to 2018



GROWTH IN THE GLOBAL TISSUE MARKET HAS BEEN RECOVERING IN THE PAST DECADE
North American outlook

North American market and trade wars

The North American tissue market has been strong recently. Especially following the 2005 – 2010 period which saw a major setback due to the great recession when middle-class households' wealth fall 35% from 2005 to 2011.

Before the recession, the average growth increased from an average of 1.5% from 2001 to 2006, up to an average of 1.9% per year after the recession, starting 2011 (see Figure 5). Interestingly, the Away from Home (AfH) sector in particular benefitted from the strong economy, low gasoline prices, and changing lifestyle of younger generations. More specifically, in the past decade, Canada continued to be the United States' main source of tissue import with 346 thousand tonnes in 2018, but China has taken second place ahead of Mexico and Indonesia (see Figure 6).

As trade wars dominate headlines, industry insiders will keep a watchful eye on the supply pattern changes that will likely ensue. Canada imposed a 10% duty on imports of certain goods from the USA, including tissue, effective July 1, 2018, as a protest to US taxes for steel and aluminum. However, the US trade statistics do not show any major decrease in tissue exports to Canada since then, and this tariff has since been removed. Import tariffs will restrict imports from China; in fact, the first five months of 2019 already show decreases in the volume of Chinese tissue imported by the USA. China has raised import taxes to 20% for all tissue products imported from the USA except for the category 48.18.90 (hospital and diverse tissues), whose rate is 5%. However, this is of little consequence as US tissue exports to China were not more than about 9,000 tonnes in 2018. The trade war between China and the USA escalated in September 2018 when the USA announced a 10% tariff on US\$200 billion worth of Chinese goods imported to the USA, including







all the main categories of tissue except for 48.18.90. This is a major issue as China is the second-largest source of tissue import after Canada as mentioned previously. In 2018, tissue imports from China were about 330,000 tonnes, which corresponds to the capacity of five large tissue machines (see Figure 6). Luckily, the 10% tariff has been partly offset by the weakening of the Chinese exchange rate.

However, tariffs on China were recently raised to 25% and may remain at this level if no new agreement in the trade war can be reached. This would certainly cut tissue imports from China, and alternative sources cannot fully replace the whole quantity. This is noteworthy because with a 25% tariff Chinese tissue cannot be competitive in the US market. Under these circumstance, it is likely that the main categories are to suffer; however, the «other tissue» category may grow further as there is no duty on that customs code (see Figure 7).

Changes in the retail sector

There are some important changes in the US retail sector, which mean new challenges for tissue product suppliers. One of the most important recent developments is the entry of the German global discount supermarket chain Lidl into the US market in 2017. Lidl, which rhymes with needle, opened its headquarters in Arlington, Virginia along with about 70 outlets opening by mid-2019 and more coming, although the original target of 100 outlets within one year was not reached. The grocery retailer giant uses a strategy similar to their German counterpart Aldi, whereby they offer a limited assortment of products in their stores and offer customers a mixture of private label goods and a small number of branded Consumer Packaged Goods products that encourage customers to keep coming back for replenishment, a strategy that has worked very well for them in Europe. However, things were a bit different in the US. Upon their entrance into the crowded grocery retail market, competing retailers, including the two largest US chains, Walmart and Kroger, carefully watched Lidl's activity and pricing strategy, and reacted by utilizing a strategy known as Strategic Entry Deterrence whereby they lower prices to match or beat the prices on products sold in Lidl stores. This bodes well to consumers who are benefitting from this competition, but retailer and supplier margins are under pressure. With Lidl's main focus on their private labels, these are expected to gain market share. On the other hand, online sales are growing and changing the traditional retail sector logistics and thinking, though interestingly some players, such as Amazon, have also entered the brick-and-mortar business.



Figure 7: US tissue imports from China by main category, 2010-2018

WITH A 25% TARIFF CHINESE TISSUE CANNOT BE COMPETITIVE IN THE US MARKET

FPInnovations

The countdown to FPInnovations' much anticipated Applied Tissue Course taking place at FPInnovations' Pointe-Claire, Quebec facility on May 12 and 13, has begun. Registration is open to participants including students, who are interested in learning more about tissue manufacturing.

"The new tissue course is a response to industry needs. A workforce approaching retirement age and the need for knowledge transfer are priority issues for the pulp and paper sector," says Stéphan Lariviere, FPInnovations industry sector leader. Through presentations, hands-on demonstrations, and workshop-style learning, the Applied Tissue Course provides a comprehensive understanding of tissue properties and tissue manufacturing. The course is offered in collaboration with FPInnovations' tissue partners, including Cristini, Fabio-Perini, Kadant, Solenis, and Toscotec. "Kadant is very excited to join this course to share our knowledge in tissue making, specifically in creping. This is a great opportunity for learning as we can explain and teach tissue creping right on FPInnovations' unique pilot tissue machine," says Denis Martin, Kadant's regional sales director.

Why you should attend the course?

- Gain hands-on manufacturing experience with field experts and suppliers on FPInnovations' pilot tissue machine.
- Learn how to test tissue properties in labs and improve tissue performance through optimization.
- Gain in-depth knowledge in the tissue-making process, fibre physics, and tissue performance.
- Understand the role of pulp furnish in tissue making and how it affects tissue properties.

The AppliedTissue Course also meets the continuous professional development requirement for several professional designations, including engineers. A certificate will be issued to participants who complete the two-day course.

MET Magazine, Africa Pulp & Paper, Pulp & Paper Canada and Paper Advance are the media partners for this course.

Registration now open for FPInnovations "Applied Tissue Course" Information on pricing and hotel accommodations is available on the FPInnovations events page. For information on course content, please contact Xuejun Zou, Fibre Production Group Manager





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Estimated retailer label share developments have been different in the USA and Canada from 2006 to 2018: growing in the USA while declining in Canada. In the US, Walmart has paved the way for more retailer labels and other retailers have followed suit. On the contrary, in Canada, brand owners have supported the marketing of their brands with massive promotional activities and retailers have had limited interest in developing retailer brands recently (see Figure 8).

In terms of retailer label shares by product group, napkins recorded the highest share at 56% in 2018, while the dominance of leading brands in facial tissue seems to continue with relatively little movement toward retailer labels. This is due to the structure of this segment, specifically, the big players have less interest in napkins and are not pushing their brands in the same way as they are with other products. As of 2018, household towels have the secondhighest retailer label share of 34% while in toilet paper retailer brands are finding themselves in a very tough competition with the leading market brands (see Figure 9). However, it is expected that retailer label share will grow gradually from about 30% in 2019 to more than 36% by 2027. Though, a lot depends on how many brand owners invest in promotional measures to defend their market shares.



Figure 8: Label shares in North America: Canada vs USA

North American Outlook

The expected growth in US tissue consumption in the next decade will be the strongest with At-Home (AH) retailer labels, while At-Home branded volume growth will remain moderate. While the AfH growth will rise above average AH growth (see Figure 10). In the period between 2017-2027, it is expected that the AfH sector will account for 48-49% of the total market growth and its share will climb to 35% of total tissue consumption. Toweling products are expected to have more volume growth than toilet tissue. Toilet tissue outlook will be mostly driven by population



growth while in toweling product

penetration can still grow (see Figure 11). Napkins and facial tissue will also show some growth albeit clearly lower volumes.

Overall, almost 202 thousand tonnes of new capacity is expected in NA in the next few years, see examples of the projected major tissue capacity changes by type and location in North America for 2018-2021 see Table 1. Despite using a conservative decline in calculating net imports in this forecast, the outlook is surprisingly good despite the number of projects, but a lot depends on how much tariffs on imports from China change the net trade balance. A lot of new capacity coming on stream that will affect 2019-2020; utilization rate will slightly decrease beyond 2020 if no further closures occur (see Figure 12).





Figure 11: Expected tissue market growth by sector and market in NA

2018

2018		
Georgia-Pacific, Augusta, GA, USA	-31,000	tpa
Sofidel America, Circleville, OH, USA (2 x NTT)	140,000	tpa
Kimberly-Clark, Fullerton, CA, USA	-60,000	tpa
First Quality Tissue, Anderson, SC, USA (TAD PM)	64,000	tpa
	113,000	tpa
2019		-
Soundview Paper, Elmwood Park, NJ, USA (closure after two fires)	-110,000	tpa
Clearwater Paper, Shelby, NC, USA (NTT PM)	64,000	tpa
Irving Consumer Products, Macon, GA, USA (TAD PM)	64,000	tpa
Cascades Tissue Group, Scarborough and Whitby, ON, Canada (mill closures)	-61,000	tpa
Soundview Paper, Elmwood Park, NJ, USA (restart of PM11)	60,000	tpa
Georgia-Pacific Corp., Crossett, AR, USA (closure of the oldest PM)	-30,000	tpa
Georgia-Pacific Corp., Palatka, FL, USA (TAD PM)	72,000	tpa
Sofidel America, Inola, OK, USA	60,000	tpa
	119,000	tpa
2020-2021		
First Quality Tissue, Lock Haven, PA, USA	64,000	tpa
Sofidel America, Inola, OK, USA	60,000	tpa
Georgia-Pacific, Naheola, AL, USA (replacement)	8,000	tpa
Kruger Tissue, Brompton, Sherbrook, QC, Canada (TAD PM)	70,000	tpa
	202.000	4

Table 1 Major tissue capacity changes in NA (2018-2021)

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Latin American outlook

Brazil, Mexico, Argentina, Chile, and Colombia were the five largest markets in Latin America in 2018, accounting for 77% of total consumption in 2018 (see Figure 13). The Latin American tissue market showed fluctuating annual growth rates from year to year ranging from 1.2% growth rate in 2003 to a high of 10.3% in 2006, all in all, averaging at a 4.4% growth rate over the span of 15 years (2003-2018). The lack of market growth stability can be blamed on economic turbulence and political instability which caused problems and disappointing growth in 2014-2016, with the Brazilian recession seen as the main culprit.

In the coming decade, Brazil is expected to recover strongly with an expected 890 thousand tonnes of volume growth and Mexico should also be back on the growth track with an expected 485 thousand tonnes. Colombia is expected to be the third growth market, followed closely by Peru and Chile. Though Venezuela remains uncertain due to the state of unrest the country has been witnessing (see Figure 14). Major capacity changes were expected for 2018-19 amounting to a total of 467,000 tonnes for both years with several new plants opening in Brazil, Bolivia, and Argentina (see Table 2). Further down the line, new capacities are expected to a total sum of 311,000 tonnes beyond 2020. Overall, Project delays and stronger demand are expected to help, but the current outlook does not suggest any major near-term improvement (see Figure 15).



Figure 12: Net capacity change and tissue operating rate in North America



Figure 13: Main Latin American tissue markets share in 2018



Figure 14 Expected volume growth of Latin American tissue demand by country, 2017-2027



Figure 15 :Capacity utilization in change and tissue capacity Latin America

2018

Softys Argentina (CMPC), Zárate, Buenos Aires, Argentina	54,000	tpa
Papelera San Andrés de Giles, San Andrés de Giles, Argentina	34,000	tpa
Argentina		.15.01
Papelera Nicaragua (Grupo Vual), Los Cardales, Pilar,	23,000	tpa
Confidential, Bolivia	25,000	tpa
Celulosa Campana, Lima, Buenos Aires, Argentina	30,000	tpa
Blue Tissue SAPI, Apizaco, Mexico	30,000	tpa
Essity, unrevealed location, Mexico (TAD PM from Toscotec)	27,000	tpa
2019	,	
	244,000	tpa
GCP – Grupo Corporativo Papelera, Tepetlaoxtoc, Mexico	34,000	tpa
Papelera Vinto, Vinto Chica, Cochabamba, Bolivia	25,000	tpa
Copelme, Santa Cruz de la Sierra, Bolivia	27,000	, tpa
Cia Canoinhas de Papel, Canoinhas, SC, Brazil	30,000	tpa
Guatemala	30,000	ipa
Argentina RAINSA - Repetere Internacional (Kruger), Bio Llando, Zacana	20.000	1
Papelera Nicaragua (Grupo Vual), Los Cardales, Pilar,	23,000	tpa
Mili, Tres Barras, SC, Brazil	35,000	tpa
Papeles Industriales (Essity), Lampa, Santiago, Chile	-30,000	tpa
Carta Fabril, Carta Goiás, Anápolis, GS, Brazil	70,000	tpa

Table 2: Capacity changes in the Latin American tissue industry, 2018-2019

2020		
Papelera Vinto, unrevealed location, Ecuador	18,000	tpa
Convertipap, Atlantagatepec, Tlaxcala, Mexico	33,000	tpa
Confidential, Colombia (?)	33,000	tpa
Papel San Francisco, Mexicali, Mexico	30,000	tpa
Kimberly-Clark do Brasil, Mogi das Cruzes, Brazil	60,000	tpa
	174,000	tpa
Potential projects		
Anin Group, Tres Lagoas, Mato Grosso do Sul, Brazil	30,000	tpa
Santapel – Santa Catarina Papel, Tangará, Santa Catarina,	23,000	tpa
Brazil		·
Caribbean Paper Producers, Kingston area, Jamaica	54,000	tpa
BAP Industries, unrevealed location, Nicaragua	30,000	tpa
	137.000	tpg

Table 3: Capacity changes in the Latin American tissue industry, 2020 and later

In the coming decade, Brazil is expected to

recover strongly with an expected 890 thousand tonnes of volume growth

in the spotlight

Global outlook

Tissue consumption has been benefitting from improving global hygienic standards, but trade wars and other uncertainties about future economic growth shadows the outlook (see Figure 16). Despite Chinese investments exploding, closures and project delays are still expected; and even though there is a real investment peak with a lot of capacity being built, a wave of capacity closures is occurring in the industry-as much as 1.3 million tonnes in 2017 and more than 700,000 tonnes in 2018. Nevertheless, more than 90% of Chinese tissue is currently made on modern machines, so closures will likely decline, thus net capacity expectation is positive with 1.4 million tonnes projected in 2019 and about 900 thousand in 2020 (see Figure 17).

On a global scale, announced tissue capacity expansion exceeds organic market growth. In some years, such as 2019, the amount of new capacity coming on stream is double the consumption growth (see Figure 18). The tissue sector is attracting a lot of investments. Major capacity closures could improve outlook, but only marginally (see Figure 19).



Figure 16: Volume growth in the global tissue market







Figure 18: World tissue capacity change based on committed projects



Figure 19: Net capcaity change in the global tissue industry

CONCLUDING REMARKS

01

Cost-competitiveness based on low-cost hardwood pulp and energy through integration seems to be a major benefit. Import duties could change the current trends of continuing internationalization in the global tissue business.

North American developments are characterized by steady and encouraging growth, but also ongoing battles between brands and private labels. Their market outlook is surprisingly good, despite many recent and ongoing investment projects. A lot depends on how much net imports will be affected by the trade issues.

03

Europe had a quiet phase due to the recession, but things are picking up with investments increasing in Southern and Eastern Europe.

In Latin America, Brazil markets are recovering, while Venezuela is a catastrophe however Mexico is back on a growth track again.

> Despite its weak consumption growth in 2018, China will continue to be the main driving force of global tissue industry expansion, although overcapacity is a threat in nearly every region. Chinese exports to the USA are now in decline and current import tariffs of 25%, if in place for a significant time, could radically cut the volume.

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Worldwide Outlook

for the Nonwovens Industry (2018–2023)

INDA and EDANA recently published the sixth edition of their Worldwide Outlook for the Nonwovens Industry report. EDANA and INDA are allies in a strategic partnership to create an environment beneficial to the sustainable and profitable growth of the nonwovens industry. It is also our role to provide credible statistics to our members and the overall industry. To that end, we publish this report to provide a benchmark of the industry's progress through the years. This information is intended to assist those in the nonwovens industry in making better business decisions. It is amazing to believe this multi-billiondollar industry had its modern start only fifty years ago. Until the last decade, the nonwovens industry was primarily based in Europe, North America, and Japan. It is in those three regions that modern nonwoven technologies were conceived and developed. Now, nonwovens are produced on thousands of lines around the world. The nonwovens industry is now truly global. The worldwide nonwovens industry's prospects continue to be favorable, and it remains a rewarding and dynamic industry in which to be involved.

By fulfilling fundamental and more sophisticated needs, nonwoven-based products bring value and benefits to society in a variety of applications from personal to health care, filtration to transportation, and construction to apparel.

Macro Drivers

The strength of the economy and demographic trends are the significant drivers of demand within the nonwovens industry. Consumer discretionary spending and business investment both correlated to the strength of the economy—drive demand in nearly every nonwoven end use category, while certain demographic trends—such as births and aging—drive demand in the remaining end use categories. The basic building blocks of nonwovens demand are thus based upon the global economic and population forecasts. Over the forecast period (2018–2023), three items are of the greatest significance in regard to the economic forecast:

- China's structural moderation and transition to more moderate growth;
- trade protectionism and the cyclical slowdown in the U.S.; and
- the persistence of high levels of policy uncertainty in Europe.
 - Overall global growth remains modest—3.3% annually—and uneven across countries and regions through the forecast period. Through the forecast period, economic growth is forecast to be stronger in the advanced economies, compared with the recent past, but weaker in emerging markets and developing economies. The emerging markets and developing economies, though, will account for a growing share of world output and still account for a large share of the world's growth.

- Meanwhile, three demographic trends play a role in the population forecasts:
- global population growth is slowing, as is the absolute number of babies born;
- the increasing total population of the elderly; and
- the rising level of GDP per capita globally.

The relationship between nonwovens and population impacts more than just the absorbent hygiene market; as the elderly age, the medical/surgical market grows, and as families start, the home and office furnishings market increases, as does the building construction market. GDP per capita serves as a benchmark in categorizing countries, not only as poor, developing, or rich, but also in terms of nonwoven end use product purchase. For example, in general a country begins to use baby diapers when GPD per capita reaches US\$3,500 and reaches the opportunity for 100% penetration around GDP per capita of US\$23,500. So, while Asia accounted for 54% of the population in 2018, the GDP per capita for the region was \$6,751 (Figure I-20). This number is above the threshold for some of the single-use products such as feminine hygiene (≈\$1,000) and baby diapers (\approx 4,000), but just under the threshold for baby wipes (≈\$8,000) and below for incontinence products (≈\$10,00) and other wipes products (≈\$11,000). While much discussion centers around India and diaper consumption, in 2018 India's GDP per capita was \$2,036 compared to China's \$9,608.



The strength of the economy and demographic trends are the significant drivers of demand within the nonwovens industry.

Nonwovens Supply

The worldwide production of nonwoven roll goods reached US\$56.2 billion in 2018. INDA and EDANA forecast that worldwide nonwovens production will continue to grow, and expect that in the period from 2018 through 2023, the industry will expand at an annual average rate of 4.8%.

For the last decade from 2008 through 2018, nonwoven tonnage increased at an average annual growth rate of 5.7%. This 10-year period average annual growth is quite impressive, considering that the nonwoven industry was affected by the Great Recession (2007-2009) as well the year commencing in 2010 and continuing to 2011. Important sectors for this industry—like the production of cars, housing and building construction, geotextiles, and home furnishings—all declined. Other market segments being

somewhat recession-proof, showed a continuous growth in global demand of nonwovens materials both in tonnage and in square meters.

Asia is by far the dominant nonwoven producing region, accounting for 45.5% of the world's production in 2018, up from 32.9% in 2008. China accounts for a significant proportion (76%) of the Asia volume and is now one of the most important nonwovens producer worldwide.

The production of nonwovens in North America is forecast to improve, resulting in tonnage production expanding at rate nearly double (+3.5%) that of real GDP growth. Greater Europe—which includes Turkey, a significant producer of nonwovens—will experience a lower nonwoven growth of around 2.5% until 2023. The South American region's nonwovens output, after experiencing 6.2% annual growth over the last decade (2008–2018), is forecast to grow 4.2% annually through the forecast period (2018–2023). In Middle Eastern & North African (MENA) region after experiencing an average growth of 6.4% over the last decade, it will keep growing by 7.5% annually during the forecast period.

The spunlaid and drylaid processes accounted for the majority of nonwovens production in 2018, 87% of the tonnage. World drylaid nonwovens output, including all bonding processes, have shown considerable growth over the past decade from 2008–2018, rising 5.2% per year. The overall production of spunlaid—all polymer-based nonwovens—grew at an average rate of 7.3% annually from 2008 through 2018.

From 2018 through 2023, the industry will expand at an annual average rate of 4.8%



Nonwovens Demand

Production growth through the historical period (2008–2018) varied across the individual end use categories as each has its own unique demand drivers. While some end uses are more impacted by population growth and rising incomes (typically the single-use end uses), others are impacted by the health of the economy and taking share from other competing materials (typically the durables end uses). Further, each may be at a different development stage and/or penetration rate within a global region. Not including the other category, absorbent hygiene is by far the single largest end use category accounting for 25% of the global production in 2008 and 22% in 2018. In 2008, the second largest category was home and office furnishings—accounting for 10% however, with its rapid growth, the wipes category moved to the second largest by 2018, accounting for 11% of the production in 2018. In the previous ten years, average annual growth rates (AAGR) across the end uses ranged from 10.8% (transportation) to 3.5% (home and office furnishings). Through the forecast period medical end uses is expected to be the strongest growing, while the slowest growing is forecast to be the other category.

Within the durables end uses-as seen in some regions with a slowing economy-end use can vary greatly, as the building construction and transportation markets did not react in the same way during the historical period. This is a result, in general, of some of the durable end uses-notably transportation-taking share from other materials, due to the flexibility of an engineered fabric that through innovation can be adapted to meet the needs of materials for today and into the future. Nonwovens provide options for weight and cost savings due to their versatility, functionality and recyclability.

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Absorbent hygiene is by far the single largest end use category accounting for 25% of the global production in 2008 and 22% in 2018.



Trade Flows

The new U.S. trade policy and the negotiation of different trade agreements have recently drawn public attention to the importance of trade in goods between regions. Moreover, the ultimate goal of major investments, like the Chinese Belt and Road Initiative, is to increase these trade flows.

After the slowdown recorded in 2009, the trade in nonwoven roll goods has been steadily growing over the past decade. The trend is associated with a number of developments: growth and increased sophistication of production has given birth to strategies involving fragmentation and reorganization of firms' activities, both in terms of ownership boundaries and location for production.

Looking at the 2018 list of major global exporters of nonwoven, it is easy to deduce that the regions with the larger capacities of production—China, U.S., and EU28—are the main exporters of nonwovens globally. It is also important to underline that U.S. and the European Union are also still the main importers, while Chinese imports decreased.

Despite the bulky characteristic of many nonwovens, a continuous expansion of trade of roll goods has been recorded. This is particularly true for the European Union where around 18% of the local production in tonnage is now sold to non-EU countries (it was 14% ten years ago), while 18% of the apparent mill consumption within the EU is coming from outside the Union (it was only 8.5% in 2008). Therefore, despite the complexity of the trade links between countries on a worldwide basis, it is crucial to monitor these flows. In 2018, China alone exported 964,000 tonnes of nonwovens, nearly 4 times more than in 2008. The European Union and the United States imported roughly one third of Chinese exports. However, EU28 has never exported and imported more than in 2018. Nevertheless, in both the EU28 and the U.S., imports grew faster than exports over the last couple of years, causing a deterioration of their respective trade balances.

Final Thoughts

In summary, the outlook for the global nonwovens industry is very encouraging, not only with the positives of improving economic outlook and demographic trends that are positive for nonwoven usage, but the growth by the inherent nature of nonwoven being an engineered fabric. The demand for nonwovens is not only driven by the economy and demographic trends but, as nonwovens can be engineered to meet specific performance attributes for a specific end use, the gaining of share from other materials in existing end use and the ability to enter entirely new end uses will continue to be a catalyst for nonwovens growth.

Order the report today to receive a complimentary updated historical and forecast summary in the summer of 2020. This—287 page, 92 figures, 40 tables— report presents detailed production data by region for the global nonwovens industry for 2008, 2013 and 2018, and a forecast for 2023. Specifically, the goals of the report were to:

- provide economic and demographic trends, as they are significant drivers of demand within the nonwovens industry;
- explain industry trends within regions, processes, end uses, raw materials, and trade flows;
- present industry production for region by process and end use markets;
- provide an overall picture of global nonwoven roll goods trade; and
- define and clarify production processes and end-use market segmentation to provide greater clarity in the industry.

To order the report contact Cindy Garcia (cgarcia@inda.org, 01-919-459-3711) or visit https://imisw.inda.org/store/.



MET MAGAZINE	in the spotlight
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BABY DISPOSABLE HYGIENE MARKET ACROSS EUROPE RE **IS IT HEADING?**

Key factors to consider for 2020

The European Baby Disposable Hygiene market is currently suffering negative value growth as a result of the maturity and saturation levels for traditional Open Diapers, coupled with an overall decline in birth rates.

A move towards premium products, a focus on convenience and the rise of Private Label products are the main trends driving change in the market towards the Baby Pants segment. Although the Baby Pants market is already well-established in the region, it continues getting traction, with positive forecasts by 2020¹ for Hungary (+12%), Portugal (+11%), Belgium (+5%), Romania (+4%), Norway (+4%), Czech Republic (+3%), Denmark (+3%) and UK (+3%). Consumers are on the hunt for ever-greater convenience but with an eye on sustainability, while retailers are seeking increasingly differentiated and premium products.

In 2006-2013, some countries such as Germany and the UK, have witnessed the growth of Private Label products. This has been driven by consumers' focus on cost savings following the financial crisis, but the situation is not the same in the whole region, as France continue to show loyalty towards brands.

Meanwhile, the rise of online channels means smaller, niche brands have found an easier route to market providing potential new customers for manufacturers. With sustainable innovation becoming more scrutinized in many industries, e-commerce allows consumers searching for these options to find them with ease. This fast-growing, changing landscape brings new opportunities as well as challenges. Keep on reading our article for a deep dive!

Premium quality

Disposable Baby Pants, being usually associated with higher prices than Open Diapers, register a positive value growth in Europe due to the premium nature of the product. With costs of production on the rise, premiumization is poised to be the driving force for the industry. This trend is already having a positive influence in the UK, France and Spain, where Pant products have shown the best acceptance rates and Open Diapers the worst value loss in the region.

Although, premium quality is no longer a staple of established brands alone: Private Label products have consistently improved in quality and the public has taken note.

Convenience

At a global level, the convenience theme is indissolubly connected to the Millennials one (the generation of people born between 1981-1996) and Europe is not an exception.

From the 2018 European Shopper Insight Survey by IRI, time saving, freedom to buy (time/place) and wider assortment of products are the main purchasing drivers for Young consumers.

Convenience is then becoming the keyword also in the Baby Disposable Hygiene market: Pants are perfect to save time, enjoying the benefit of wearability and this is reflected in 2018 consumption volumes, reaching 2,3 bn products, with an estimated growth rate of +2% CAGR 18-F20.

Moreover, in the last couple of years, European consumers are exposed to aggressive advertising campaigns sponsored by global multinationals towards Baby Pants adoption, leveraging on convenience also earlier than pottytraining, especially for busy working parents (2-4 years).

¹Data refers to Europe, CAGR 2018-2020. Source: Euromonitor 2019



Sustainability

As sustainability is becoming central in the public debate, consumers are giving increasing consideration to the "green issues", with brands demonstrating to take steps to minimize their environmental impact forecasted to expand².

Online retailing is strongly influencing the Baby Disposable Hygiene market, providing the opportunity to search and find more products, not always available on supermarket shelves. A key factor behind this trend is the strengthening of e-commerce across Europe, with the UK leading the growth³. Although sustainability concerns are still a soft driver in the consumers' decision making and therefore remain a market niche⁴, online retailers, in gathering to the long-tail consumer, may appeal to their appetite for information, environmental sensibility, and focus on product performance and quality over affordability.

A closer look at BP6 Red

BP6 Red is the GDM Baby Pants line running at 600 ppm, designed for product quality and flexibility in terms of sizes, cost optimization and ease-ofuse. Thanks to the adoption of proven and reliable process solutions, BP6 Red delivers **premium quality Baby Pants** with **Extra Thin Core featuring Permanent Channels** for improved core integrity, no sagginess and no bulkiness.

Extra Thin Core technology is one of the GDM solutions developed for embracing sustainability, in fact it allows to **save up to 800 k€ per year: a 40% saving on core materials** (fluff & SAP, compared to previous core formation process) thanks to an optimized mix and allocation featuring permanent channels construction and **process stability with fixed standard deviation at 0,5.** GDM new Core formation process also **minimizes the use of air conditioning,** which is reflected in remarkable savings in conditioning system sizing and their cost in use.

Moreover, the BP6 machine design focused on **raw material control and tensioning** enables production costs optimization with **power consumption reduced up to 30%.**

Choosing your right partner

GDM Baby Pants portfolio of machines, including the BP6-Red, range from 600 ppm to 900 ppm and offer a range of solutions with flexibility in mind, allowing you to target different markets – whether that's Private Label, branded or fast-growing niche retailers online.

Get in touch with GDM to find out how their Baby Pants machines can help support your objectives in your market info.it@gdm-spa-it



²Data refers to 2018 and 2020 forecasts. Source: Euromonitor 2019 ³GDM internal elaboration on Euromonitor data and marketing intelligence ⁴Disposable Hygiene Europe





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Pulsar way to Industry 4.0 THE DIGITAL TWIN

Pulsar Engineering, which is part of the Pulsar Group, specializes in the engineering and manufacturing of machines and lines for packaging and conveying of tissue products and in-line quality control systems.

The Group includes the commercial facility in Green Bay, USA where there is a wide demo room for customers to see and test many of its products first hand and the brand new Chinese branch, Pulsar Shanghai, inaugurated in July 2019. Pulsar Engineering holds over 89 patents and patents pending around the world for its technologies and innovations.

In recent years, Pulsar Group has launched many solutions dedicated to the tissue industry, focusing on the "Industry 4.0" concept for the creation of the "smart factory".

In this specific case, Pulsar approach to Industry 4.0 is based on the concept of Digital Twin, which is the exact copy of something real. This can be physically (3D models) or virtually reproduced (discrete element simulation). In both cases, it represents something real that is digitally replicated with the aim of simulating a process, in order to check its functioning.

The Digital Twin is an exact copy of real object or process on which performing tests and trials. The purpose is to avoid issues implying unexpected costs. Checking every possible problem in a preventive way leads to a process efficiency that helps organizations to be more profitable.

The Digital Twin helps putting in practice the Industry 4.0 concept of SIMULATION.

For this specific purpose, Pulsar Engineering has created and developed a simulation service called DYNAMIC PLS (PLANT LAYOUT SIMULATOR). DYNAMIC PLS reconstructs a model with the technique of discrete elements (schematization of a system as a set of elements connected to each other through contacts between them) and recreates the behavior of Tissue plants and processes in a logical manner, evaluating its functionality and efficiency (OEE). DYNAMIC PLS predicts the functional behavior of a new line before its physical construction, allowing customers to reduce risks and costs. Moreover, it optimizes also the existing plants and helps evaluate the effects of changes on the line, without having to operate directly on the machines. The main benefits and results that can be achieved through the simulation service are:

- Virtual duration of the simulation starting from a working shift until reaching one year of production.
- 2. Calculation of the overall production of the line per product unit (rolls, packs, bags, bundles, cases and pallets).
- 3. Calculation of the average and instantaneous speed of the machines.
- 4. Calculation of raw materials used for production (i.e. quantity of tissue and related raw materials.)
- Identification of bottlenecks with indication of the machine or the group that limits the maximum speed of the system.
- 6. Calculation of line OEE (in particular the values of line and machines exploitation).
- Customization of a production plan with different products run, considered the changeover times (the software takes account of the time required for the restocking of consumable materials – mother reel and polyethylene reel change, etc.)

- 8. Comparison between different layouts, operational logics and alternative machines to evaluate the efficiency and the productivity of the line with different products.
- 9. It is an effective training tool for line operators (with check of machines' regulations during a determined period of time and related consequences).
- 10. Once defined the parameters to set the software by Pulsar specialized engineers, the user is be able to manage independently the production line simulation thanks to a userfriendly interface.

"At Pulsar Engineering, we do not only believe in innovation, we believe in the integration and cooperation between people, organizations and nations. We work alongside our customers in the process of production lines in the tissue converting industry to create top of the line machines, equipment and software that work together to increase product quality and improvement of everyone's standard of living."



THE TISSUE QUALITY SYSTEM



A perfect match between quality and efficiency of the whole tissue converting, packaging and palletizing lines











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A.Celli iREEL®

Data as Strategic Asset





Big data has been a buzzword for a few years now, as computer capabilities increase and data acquisition grows. In the manufacturing sector, industries are seeing massive increases in the amount of data coming from their production lines, thanks to Industry 4.0 technology that makes use of machines embedded with sensors and wirelessly connected to the cloud for machine-to-machine (M2M) and Internet of Things (IoT) communication.

However, along with these massive amounts of data comes the need to effectively manage them, and this links directly to the concept of data as an asset.



The concept of Data as an asset that implies that data acquire value when put in relation to other data and to business operations.

Data as an Asset explained

A data point is only a number which, considered in isolation, may have no value, and the same reasoning can also be extended to an entire data set. The concept of Data as an asset that implies that data acquire value when put in relation to other data and to business operations. In other words, these data, when analyzed together, increase their total value by helping inform business and factory decisions and strategy more effectively than they could do if considered by themselves For more information surf on www.acelli.it, visit A.Celli Blog page and download A.Celli free eBook: How to set up data driven production processes in tissue & nonwovens industries.

How to manage Data as an Asset

Traditionally, a tissue and nonwovens company collected data that would provide a view into the productivity and profitability of a production line. This might be data such as costs, the production volume and the demand for the product.

Now, thanks to the Industry 4.0, the companies are provided with detailed machine data (speed and tension) and environmental data (temperature and humidity).

- The first step in managing data as an asset is to combine the traditional data with the operational ones to come up with a complete picture of the operations and the productivity.
- The next step is to ensure that all data is accessible via a machine-

and software-independent platform. This platform must provide features such as artificial intelligence (AI) and machine learning to analyze the data and recognize patterns, thanks to which the companies can enjoy fully automated adjustments to the production processes and predictive maintenance scheduling.

Finally, these data must be accessible to and wellmanaged by everyone at the company. It should be everyone's responsibility to ensure these data are used to balance corporate operations for maximum profitability. This allows every worker at the company, from the top down, to optimize the data for their needs, while still recognizing the needs of the company as a whole. For more information surf on www. acelli.it, visit A.Celli Blog page and download the free eBook: "How to manage data governance in an Industry 4.0 system"

Using Data as an Asset for intelligent collaboration

With Industry 4.0 technologies and proper management of data as an asset, tissue and nonwovens companies can ensure intelligent collaboration between the production line and the converting line. Each machine on these two lines, as we previously said, will be outfitted with sensors capable of transmitting operational data in real-time, and all of these data will flow to a single platform where they can be integrated and analyzed by AI. The advantage of this setup is that the Al will be able to detect anomalies and small changes in the operation of any single machine or one of its part that might disrupt the flow of production and converting.

An example might be when the master roll rewinder is not moving at a speed fast enough to accommodate the rolls coming off the production line. The data will reflect this inconsistency and the speed of either the toilet roll rewinder or the production line will be adjusted automatically by the Al program. Another example could be when there is a faulty part in the paper log cutter, resulting in the need to take the converting line offline. The data analysis will result in the automatic redirection of the roll coming off the production line to a functioning converting line.

For more information surf on www.acelli. it, visit A.Celli Blog page and download the free eBook: "How to measure tissue and nonwovens mill machinery performance with real time analytics"



The advantage of this setup is that the AI will be able to detect anomalies and small changes in the operation of any single machine or one of its part that might disrupt the flow of production and converting.



A.Celli Digital Solutions for Data as strategic Asset

A.Celli Digital Solutions has been designed to fully and automatically manage data as an asset. This cloudbased platform provides:

- a distributed real time monitoring system called "Machine Monitoring";
- a business intelligence platform called "Efficiency 4.0";
- a Product Passport methodology called "iREEL®".

iREEL® is particularly important when it comes to intelligent collaboration between the production and converting lines, because it provides a fully integrated framework that enables communication between the data coming from the different machines on each line and the ones coming from industrial and business applications. Data is no longer something companies can afford to collect and store somewhere they will gather virtual dust, but they must be viewed as an asset that can be used to positively impact production and corporate operations. In the tissue and nonwovens industry, data as an asset is a critical component in ensuring the smooth flow of product from the production line to the converting line and the optimal efficiency of the production process.

For more information about one of the best Industry 4.0 solution that can boost productivity on your tissue and nonwovens production line, surf on www.acelli.it, visit A.Celli Blog page and download the free eBook "A.Celli Digital Solution: Your Fellow Traveller on Your Journey Through Industry 4.0"!

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Andritz Innovative Nonwovens Production And Textile Solutions At Index 2020

International technology Group ANDRITZ will be presenting its innovative nonwovens production and textile solutions at INDEX 2020 in Geneva, Switzerland. The broad ANDRITZ product portfolio covers state-of-the-art nonwovens and textile production technologies such as airthrough bonding, needlepunch, spunlace, spunbond, wetlaid, converting and textile finishing.

technical solutions

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WHAT'S BEEN HAPPENING AT ANDRITZ SINCE INDEX 2017?

ANDRITZ DIATEC, Italy now part of the ANDRITZ Group With the acquisition of ANDRITZ Diatec, ANDRITZ enlarged its product portfolio to include state-of- the-art converting lines for the hygiene, lamination, medical and food pad sectors. A wide range of special machines and technologies for the production of baby diapers and pants, adult incontinence underpants, adult diapers and pants, adult light incontinence products, sanitary napkins, panty shields, food pads, medical and laminating applications extend the supply and value chain of ANDRITZ. The converting process for hygiene products requires premium quality standards, high capacities, and top-level production efficiency by reducing labor costs and machine downtime. Every detail is essential. This is why customers can develop and run trials on ANDRITZ pilot facilities to optimize raw materials, roll goods and final product applications.

At INDEX 2020, ANDRITZ Diatec will present its new adult pants line, which offers top-class components and an innovative technology process. The growing market for adult incontinence products has resulted in a state-of-theart process with highest quality standards, such as the development of ultrasonic side seam solutions with excellent results in terms of bond strength and system reliability. The machine speed no longer limits quality bonds. As a result, operations and size changes are faster and easier. The modern forming system for higher SAP concentration and the turning and placing system guarantee maximum process stability and put customers' adult pants at the top of the adult hygiene market. Learn more at INDEX.

One great highlight of ANDRITZ at INDEX will be the introduction of innovative technologies for the production of "green"/ biodegradable products.

Trends and innovations in the hygiene machinery business

Sustainability is more than just a trend in the nonwovens industry. It is a serious responsibility for the entire world for the years and decades to come. The strong demand to reduce the use of plastics, save energy and increase efficiency is a clear innovation factor for the nonwoven industry and has led to newly developed production processes. ANDRITZ has always invested in future-oriented technologies that reduce the use of the various substances and raw materials required as well as cutting energy consumption. For the hygiene business, ANDRITZ provides first-class air-through bonding, spunlaid, spunjet, spunlace and Wetlace[™] machines, as well as converting technologies and corresponding services to meet these demands for years to come.

One great highlight of ANDRITZ at INDEX will be the introduction of innovative technologies for the production of "green"/biodegradable products. Such processes for the production of biodegradable wipes are achieving high performance entirely with natural and/or renewable raw materials. The added benefit of using a blend of fibers, like wood pulp, short-cut cellulosic staple fibers, viscose, cotton, hemp, bamboo or linen, without chemical additives or binders results in a 100% biodegradable fabric, thus meeting customers' needs exactly as well as supporting the strong tendency to move away from plastics and synthetics. In response to the demand to save raw materials, ANDRITZ will be presenting its neXline spunlace for lightweight fabrics. Decreasing weight per square meter while maintaining high MD and CD tensile strength is the main challenge. Indeed, fibers account for a substantial part of the production costs. Very high productivity is needed for the lighter fabrics required with perfect uniformity. ANDRITZ provides the well-known TT card web forming and the high-performance Jetlace hydroentanglement units that can more than fulfill these challenges. The spunlace roll goods may achieve weights of 25 gsm and even less for ultralight spunlace fabrics, and web uniformity is excellent.

Another highlight at INDEX will be the latest technology developments in the spunlaid sector. Besides the well-known calender technologies, ANDRITZ also delivers Spunjet technologies, finishing solutions, and state-of-the-art dryers. Customers can produce the exact fabric characteristics they need with superior ANDRITZ technologies. The patented nonwovens process called Spunjet is the in- line hydroentanglement of continuous filaments, creating a new generation of spunlaid nonwovens with unrivalled bulkiness and softness compared to standard spunbond fabrics. Spunjet offers customers the best properties ever achieved in existing and new nonwovens applications.



to expand customers' business opportunities for years to come

In order to optimize processes and gain a faster return on investment, ANDRITZ is continuously developing innovative products, for example in the needlepunch segment with the brand new ProWin technology for profile weight correction. This unit combines the well-known technologies ProWid and ProDyn, enabling even better performance. By uniting these processes, customers have an even more homogeneous web and can reduce the input of raw materials. ProWin minimizes the level of instantaneous acceleration as well as the maximum internal speeds. As a consequence, the same machine can run faster with less mechanical stress. ProWin can also be retrofitted to recent ProDyn installations. ANDRITZ always has the customers' needs in focus. With new development of the unique PA3000 pre-needleloom, ANDRITZ is responding to customer demands for higher capacities and lighter products. The PA3000 is an optimized cylinder pre-needleloom, which offers greater speeds and widths and has been specially developed for lighter webs. There is no friction between the web and the rolls, and there are no issues with the visual appearance.

In addition to further technological development of its machinery and equipment, ANDRITZ relies strongly on smart IIoT products and solutions developed in-house by ANDRITZ and marketed under its technology brand Metris.



In addition to further technological development of its machinery and equipment, ANDRITZ relies strongly on smart IIoT products and solutions developed in-house by ANDRITZ and marketed under its technology brand Metris. Metris products are specifically tailored to the needs of ANDRITZ's customers and help them to achieve their goals in terms of productivity and sustainability. Metris products offer effective and intelligent methods to successfully digitalize industrial production processes, data are continuously analyzed, and the machines, plants and their production operations are networked and optimized. At INDEX, ANDRITZ will highlight the benefits of the first industrial Metris installation. Running complete lines calls for in-depth expertise in nonwovens technology, excellent service and prompt support. Most recently, ANDRITZ introduced the new 24/7 remote diagnostic service. Customers save time and money by obtaining fast support through this service. ANDRITZ remote assistance is based on three pillars: 24/7 service hotline, online diagnostics and augmented reality support. The dedicated teams of ANDRITZ experts supervised by customer care specialists are ready to assist customers with any mechanical, electrical, process and fully remote connection service - any time.





COMBINING THE BEST OF BOTH WORLDS

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The latest addition to the Tissue World portfolio, Asian Paper & Tissue World Bangkok signals the joined forces of 2 long standing brands.

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LIQUID RINGS

BLOWERS An Executive Primer

> Andy Smiltneek, Independent consultant and president of Growth Solutions Consultants LLC. www.growthsolutionsconsultants.com

MET MAGAZINE

technical solutions 65

So you need a vacuum system - take a deep breath and read on:

Blowers versus liquid ring vacuum pumps, the short list:

- If you need less than 3"Hg vacuum (90 kPa) you want a fan
- If you need more than 18" Hg (40kPa) you will need a liquid ring pump.
- If you want a machine that will run for a very long time with little or no attention, you will want a liquid ring pump.
- If you want to run without measuring or controlling anything, you want a liquid ring pump.
- If you want to save energy, you will want a turbo blower.
- If you want to use a blower, you will have to measure, understand and control the blower speed to the process parameters.

The approximate energy comparison of the best turbo blower versus the best very large liquid ring pump is on this chart; note that the liquid ring pump is running at a constant speed, the turbo blower would have to be variable speed to meet this curve:



Blowers vs Liquid Ring Pumps, the details:

Any air pressure lower than local atmospheric is called a vacuum. This is the definition. A machine that can remove air from a chamber faster than it can leak in is called a vacuum pump. The vacuum pump gathers air at a low pressure and discharges it to a higher pressure (the atmosphere). It is by definition a compressor.

A paper machine carefully removes water from the paper sheet. Some of this water removal is done by passing air through the sheet, thus moving the water from the sheet to the wire. Air is moved by creating a pressure



Picture of a liquid ring pump attached to the flat box. The flow away from this pump was restricted by the piping design, costing a 15% energy loss.

differential across the sheet. This is normally done by putting the sheet on a wire and then putting a box under the wire and then evacuating the air from the box. The resistance of the air movement through the sheet and wire causes the pressure drop from the machine room to the box.

Two different devices are commonly used to create a vacuum, the liquid ring pump and the turbo blower. Within practical bounds of operation, they work as follows:

The liquid ring pump is a positive displacement isothermal compressor. In thermo dynamic terms, isothermal compression is the most efficient. It is also a constant volume device if it is run at a constant speed. Unfortunately, the liquid ring pump uses water as the piston, and moving the water in the largest most efficient liquid ring pumps consumes one third of the power put into the pump. In smaller, more commonly used pumps this number is closer to half of the power. The turbo blower is a constant pressure adiabatic compressor. In thermodynamic terms it is less efficient than the isothermal compressor. However, the enormous energy drain of moving the water in the liquid ring pump makes the turbo compressor more efficient. Also, because the compression is adiabatic (without exchange of heat), the air coming out of the blower is typically 200°C, this is energy that can be reclaimed. In a liquid ring system, the vacuum in the box is created by the resistance to the air flow through the sheet and carrier because the pump is constant

volume. As a felt fills and compacts the resistance to flow increases and the air velocity through the felt increases thus increasing the velocity of the air through the felt. This is an automatic compensation for felt filling as the increased air velocity will increase the water removal.

In a turbo blower system the pressure in the box is created by the blower, and the air flow is dictated by this pressure. As the felt fills the resistance to air flow increases however the pressure remains constant and the air flow decreases. The power used by the blower also decreases as it is dependent upon the air flow. In modern systems, the water removal by the vacuum system is measured and the blower speed increased to optimize the water removal. In this sense it mimics the liquid ring without controls. The liquid ring pump is robust, runs slowly and can handle an enormous amount of excess water and junk running through it. The turbo blower is finicky to control, runs very fast and cannot tolerate any contamination. Failure of a liquid ring pump is usually very slow and predictable. Failure of a turbo blower is usually rapid and catastrophic. Measurement of the water removed and careful experimentation with your product versus water removal is a very good idea as it will remove variability from your process (remember 6 sigma?). Either the turbo blower or the liquid ring pump can and should be speed controlled for optimum energy performance.

Most paper machines have too many vacuum pumps and also have uncontrolled vacuum systems. The very large energy gains reported by going from a liquid ring system to a turbo blower system are partially caused by elimination of vacuum capacity from the system. In many cases this vacuum elimination can be done without replacing the pumps. A vacuum survey, experimentation, performance measurement and controlling the speeds of the liquid ring pumps will often get good enough results to avoid the higher capital of a complete system rebuild.

For a new paper machine, a hybrid system with fans, blowers and liquid ring pumps is desirable. The vacuum system must be measured and controlled. I worked on one such system in Europe where after the machine was built with 4 liquid ring pumps with 3000 kW connected and after two years two of the pumps were shut down with the other two running faster, for a savings of 1000 kW over the original design.

And finally we have to talk about water. The liquid ring pump needs a lot of water to carry away the heat produced by moving the water within the pump. The rule of thumb is 1.25 liters per minute per kW. Some installations have cold water directly out of a river, so the water is essentially free. Others are very closed with a cooling tower so they can be in places where water is scarce. Others use fresh water into the vacuum pump and use the pump to heat the water to be used in the mill as makeup water. The argument against liquid ring water consumption is thus complex, and all of the water usage in the mill has to be considered as well. I did find one mill that was using treated city water to cool the pumps and they did

not know it. The cost of the water was \$800,000(US) per year.

Without the experimentation, measurement and controls this would

not have happened. The design of the vacuum system

and the troubleshooting of an existing system is complicated but not impossible. Before you undertake this activity, you should study and consult with independent people who have done this before.

So, take a deep breath and understand that your lungs work like a liquid ring pump. If you could breath 250 times per minute you would move about 1800 m³/ hr. This is what a liquid ring pump with your lung capacity would do. Call me for the calculation.



Capacity test on a liquid ring pump



product insights

CREATING BONDS

ABOUT COLQUÍMICA ADHESIVES

Colquímica Adhesives counts with more than 65 years of
experience in the creation, development and commercialization
of Hot Melt adhesives. We have always strived for excellence in
our activity, pursuing new tendencies that put the company in a
top position on the global market of hot melt adhesives.



Innovation is in Colquímica Adhesives' origins and DNA, as are our highly technological products. The company was a pioneer in Portugal in the development of water-based dispersion and Hot Melt adhesives and bases its activity on solid pillars of rigor, transparency and self-challenge, which guarantee the added value to its products.

The company is based in Portugal and has three production plants, two in Portugal and one in Poland, with a total production capacity of 65 Million tonnes of industrial adhesives per year, allowing us to serve customers in over 50 countries all over the world.

Over the years, Colquímica Adhesives has experienced a growing internationalization. The quality of their adhesives gives the necessary confidence to always strive to reach new markets. The multicultural character allows the company to be increasingly present in all markets and to meet the most varied requests, always with the assurance of quality, which is the hallmark of the production.

This company's steadily growing internationalization permits the boost of the technological and corporate developments, as it introduces them to different cultures and new needs. This is how it has been possible to market increasingly innovative products and technologies, always maintaining the brand's image of reliability.

Colquímica Adhesives' "just in time" policy gives a clear competitive advantage in responding to urgent requests. They are agile and have the capabilities to serve customers in a short period of time, as we always have equipment available for the immediate production of the adhesives requested. All of the manufacturing plants operate within a continuous improvement production model, with rotating shifts. This factor, combined with the benefit of having fully automated equipment, allows Colquímica Adhesives to respond with maximum efficiency, and deliver highly specific adhesives with the utmost promptness and quality.

CREATING GLOBAL BONDS

Colquímica Adhesives is currently the reference adhesive brand in a number of countries, especially in the Hot Melt category.



The distribution network, which includes logistic centres in various locations, allows the proximity to all partners and it is due to this globally consolidated presence that it has been possible to guarantee high satisfaction rates among the partners.

Colquímica Adhesives relies on a vast and specialised

sales team, distributed all over the world, which has allowed to reach their target markets.

Colquímica Adhesives has always cultivated interpersonal relationships and a close proximity to all those who join them. Any challenge is welcome with conviction and enthusiasm, in any market and anywhere in the world.

COLQUÍMICA ADHESIVES IN THE MENA REGION

After Europe, Middle East was one of the company's biggest priorities.

For that matter, in 2016 Colquímica Adhesives created a solution to be able to offer all of its advantages to the customers, fully dedicated technical service and customer service, short lead times, and highly performance competitive products. The strategy was to create a local team in Turkey

consisting of commercial and technical members and support them with a warehouse containing buffer stocks of all our products guaranteeing ready stock.

With this strategy, Colquimica has guaranteed to serve all its customers from middle East with the same type of excellency as in Europe.


NONWOVEN AND PERSONAL HYGIENE MARKET

Colquímica Adhesives has a portfolio of Hot Melt adhesives specially developed for the personal hygiene and medical care markets. These are markets that require particular attention, as they are intrinsically linked to people's health and well-being. That is why all products and raw materials developed for this area must comply with specific quality, safety and comfort parameters. Many of Colquímica Adhesives' products have been test-proven for over forty years and developed with the goal of creating the best solutions for this sector.

They are always developed in compliance with the relevant certifications for each application, namely ISO 10993, on the dermatological safety of products. The multidisciplinary knowledge of Colquímica Adhesives' teams, in pair with the investment made in Research and Development (R&D) and forefront technologies make their agile and efficient capacity of response certain in this competitive market.

KMELT Perfectcare" KMELT Spraycare"	The products for this area are sold under the brands Kmelt Perfectcare and Kmelt Spraycare and are intended for the manufacture of disposable hygiene and medical products. All of them are made from synthetic raw materials and are available for various applications in this industry, which are:
Construction	Most of these adhesives can be used in high speed machinery and permit low consumption as a result of the optimized viscosity at low application temperatures. Strong cohesion, good adherence, low odour and light colour are assured.
Core Stabilisation	Adhesives that enhance core stability and hold the core as a "spider web effect". Excellent sprayability characteristics and improved adhesion to SAP and Fluff.
Elastic Attachment	The products for this application guarantee good creep results and enhanced performance according to the needs of each customer.
Positioning	These products have optimized adhesion strength in order to be used for the assembly of various types of fabrics. Low melt characteristics with excellent ageing results, good automation suitability in applica- tions by slot and spray.
Hospital Supplies	Special adhesives for the production of hospital supplies, like surgical sheets, masks, shoe covers and caps. Good performance at low temperatures, with a low odour and light colour, these adhesives have very good adhesion and cohesive strength.
Adhesive Wound Dressings	These products are adequate for the contact with skin. The used tech- nology permits excellent adhesive performance in a variety of substrates and has antiseptic properties.

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