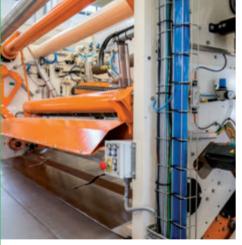
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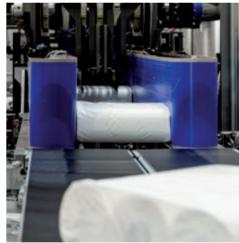


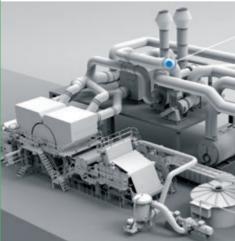
















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VOITH



- Production of nonwovens from renewable cellulose and from 100% biodegradable products.
- Consistent sheet formation for high-quality end products.

ith their innovative WLS (wet-laid/spunlace) technology, Voith and Trützschler ensure flexible and efficient production of wet-laid and hydro-entangled nonwovens from 100 percent cellulose at Albaad's new WLM1 production line. The client for the project in Dimona, Israel, is Albaad, one of the three largest manufacturers of wet wipes and feminine hygiene products in

the world. Already in the first phase after start-up, the WLM1 completely met Albaad's expectations: the nonwovens manufactured at a speed of over 200 meters per minute exhibited an extremely high product quality. Accordingly, **Gadi Choresh**, plant manager of Albaad in Dimona, is satisfied with the work by Voith and Trützschler: "The installation and start-up of the machine went very well. With their professionalism and high level of commitment, the team has ensured the success of the project.



Dimona WLM1: Voith and Trützschler make the efficient manufacture of eco-friendly nonwovens a possibility

With the new WLM1 of its new nonwovens production line, Albaad, one of the world's largest producers of cosmetic wipes, is banking on Trützschler Nonwovens and Voith, two well-established technology leaders in the field of wet-laid nonwovens. bv: Voith GmbH

Albaad appreciates the long term commitment and support to achieve the line properties even when things were not as expected".

Voith and Trützschler machines for optimum quality

For the wet-in-wet production of its nonwovens, Albaad uses exclusively fibers from cellulose. In the first step, web formation, a suspension highly diluted with water is produced and fed into the Voith HydroFormer. A homogeneous fiber mat forms on

the inclined wire of the machine. In many respects, this process is similar to the manufacturing process of paper. Voith has carried its extensive competence in paper machines over into the HydroFormer concept and thus makes it possible to produce high-quality nonwovens in this segment too.

Voith and Trützschler Nonwovens collaborated once again to implement the project. Trützschler was largely responsible for the machines for web bonding and drying. The AquaJet technology is

VOITH

► Trützschler's AquaJet for web bonding.

▼ Gadi Choresh, Albaad Plant Manager in Dimona, Israel.





leading the world in the bonding of nonwovens. Directed high-pressure water jets interweave the individual fibers together solely through the momentum of the water. The material thus obtains a high tensile strength and the desired textile feel without the use of any binding agents or bi-component fibers. In Albaad's WLS plant, Trützschler's innovative high-performance Streamliner dryer carries out the bulk of the drying of the nonwoven material. The spiral dryer section significantly increases the air speed and thereby achieves optimal drying performance.

With the second drying step comes another component of the system by Voith, the contactless MCB drying system. Its uniform and stable web run ensures the efficient residual drying of the nonwoven material. Moreover, Voith has equipped the WLM1 with a comprehensive process and quality control system. It monitors all the relevant parameters of production and thus reliably ensures a high product quality.

Simple manufacturing of 100% biodegradable, flushable wipes

The renewable raw material cellulose is very cost-effective and allows the manufacture of high-quality nonwovens with different characteristics. One special product segment is flushable wipes,

66 As a system vendor we aim to support our customers throughout the entire value creation process 99

which disintegrate very quickly in moving water but at the same time have a high strength when wet. Furthermore, these products are completely biodegradable. The hygiene products produced on the WLM1 are therefore perfect as moist toilet paper and can simply be flushed down the toilet. They thus make an important contribution to reducing blockages and faults in our waste water systems. Cellulose-based hygiene products are considerably more environmentally-friendly than those made from oil-based raw materials and ensure that our seas become less polluted with plastic waste. The second raw material needed for production, water, is also used in an environmentally-compatible manner through the wet-in-wet technology. In a circuit, a filter system treats the white water from the HydroFormer and AquaJet and returns it to the manufacturing process.

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DO YOU KNOW WE

100% SUSTAINABLE TISSUE PAPER NO-CORE ROLL

PCMC Italia

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Packaging is a primary player in the Tissue production chain. It protects the product from the outside environment, guaranteeing its hygiene and preserving it through time. It conveys information to the consumer and has an influence on brand image, enhancing its competitiveness. Often, however, we realize the impact that plastic packaging has in our lives only when, once the product is used, it becomes material to be disposed of. by: TMC S.p.A.

PLASTIC

ome numbers? According to a study conducted by a group of US researchers, every year, 50 kilos of plastic per person are placed on the market. And this quantity is growing. World plastic production up to 2015 was 8 billion and 300 million tons: this means over one ton per current inhabitant of the planet. And half of that amount was produced in the last 13 years alone. The study concludes that if current trends persist, i.e. if production continues to grow,

even with a more massive use of recycling and incineration, by 2050 the amount of plastic that will in some way have ended up in landfills or dispersed in nature will reach 12 billion tons. A truly chilling figure that raises fundamental questions: how can we resolve the issue of waste disposal and reduce the exponential increase of plastic packaging materials in the waste stream? In which direction can we focus the evolution of technological innovation in order to reduce the environmental impact of packaging, safeguarding the environment and the future for all of us? Two are the most creditable hypotheses currently being studied by the large multinationals:

1. Manufacturing packaging by using

truly sustainable materials that, in addition to functionality, also keep the issue of the environmental impact of packaging disposal into consideration;

2. Using materials that can, thanks to recovery and recycling, minimize the use of new raw materials in the future.

The answer proffered by **TMC**

(Tissue Machinery Packaging) is fruit of an evolutionary path that began some time ago. The Bologna-based company that for 20 years has been offering the most innovative solutions to manage and solve the complexities related to the packaging and handling of Tissue products has always been focused on innovations aimed at sustainability. Restoring efficiency, plant life span, reduction of production costs, but also the quest for solutions capable of reducing the thickness of the packaging material and of containing energy costs. For these reasons, the study of a sustainable and biodegradable packaging has been in the works for some time. And today, TMC is poised to provide the market and nature with a concrete and effective answer to solve this important environmental issue that the world and, more specifically, our seas are experiencing. The answer has a name: it's called Plastic-Free-Tech and it is an innovative system for



► TMC has always been focused on innovations aimed at sustainability.



▼ With Plastic-Free-Tech, TMC offers the market a concrete possibility to change course for the Tissue industry.





the production of paper packaging using machines that can yield this product without releasing plastic materials into the environment. This smart technological innovation can be implemented on all TMC machines. Through a specific upgrade, the lines can produce also paper packaging at the same performance levels with which they produce polyethylene, and thus become Plastic-Free-Tech.

Plastic-Free-Tech is an opportunity that can be adopted by all brands interested in manufacturing a 100% ecological, biodegradable and compostable packaging, thus adapting their production to the demands of a market increasingly oriented towards people's needs and towards truly sustainable products. The growth of the eco-friendly market is highlighted by a research project commissioned in 2015 by Tetrapak, attesting that for 74% of Italians, sustainability has nowadays become a veritable style of life and that 70% of consumers prefers an eco-friendly product and is even willing to pay more for it. But preference does not stop with choosing a product: a more sustainable packaging improves the product's reputation, making it more attractive. This is why in the course of the last few years companies have created packaging solutions that go in this direction.

Now, with **Plastic-Free-Tech**, TMC offers the market a concrete possibility to change course for the Tissue industry. A solution for all forward-thinking production and industrial facilities that, like you, are looking to evolve their sales strategies. An answer to today's problem in order to create a better future.

TMC S.p.A.

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phone: +39 0542 676891 - **fax:** +39 0542 676892 **email:** info@tmcspa.com - **website:** www.tmcspa.com



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With the arrival of the AirMill embossing technology, product innovation also confirms its priority in Industry 4.0

his year, It's Tissue has been a great success for us. A number of customers came several times to visit us during the week, and this is proof that we have paved the way for a revolution in our industry. There are innovations that are now taken for granted, just think of all the technology and support Industry 4.0 now provides on all types of machinery. The keystone is product innovation! Our newly born AirMill embossing technology, which the authoritative RISI magazine has defined as the 'top of innovation of It's Tissue', is the concrete answer to our continuous desire to innovate."

What is this revolution about?

Several years ago when Gambini's Sales Director Carlo Berti, whom I want to thank, talked about it, I immediately perceived it as something with incredible potential. If we could succeed in realizing it, we could significantly change the way we make tissue. I believed in it, invested in it, and now we are ready to proudly state that the era of **AirMill** has begun! The market is full of products with different characteristics, and to achieve them we have to start from the paper mill, that is from the reel of which the final product will then be made. Instead, **AirMill** can produce toilet paper and textured kitchen towel starting from a conventional paper reel, thus bringing a portion of the paper mill process into converting.

Up until now what you *wanted* to do in converting strongly related to what you *had* to do in the paper mill. With **AirMill**, everything now changes because - in short - it will be possible to produce a single reel in the paper mill, then in converting adapt the production characteristics to the specific needs of the market. In particular, with the **AirMill**



◀ Giovanni Gambini.

Gambini spa President.

The 3rd edition of iT's Tissue, a well-established and unique event taking place in Lucca. in the heart of the Italian "Tissue Valley", has recently finished; Gambini S.p.a. has emerged as one of the companies that presented the most important and significant innovation. We talked about it with the company's President Giovanni Gambini.



by: TissueMAG

Carlo Berti. Gambini spa Sales Director.

process, textured-paper obtained from conventional tissue paper is more voluminous, with less fibers, and with the same tensile strength; moreover, the toilet paper also keeps its softness unchanged while for kitchen towel the absorbency increases. The investment in the paper mill will therefore be more efficient, without compromising any aspects of satisfying the final consumer.

What do you mean by flexibility and optimization?

Flexibility translates into the possibility of efficiently passing from AirMill "OFF" configuration with a conventional product, to AirMill "ON" configuration, with a texturized product, and vice versa. For example, this provides to maintain the same diameter when producing, in the "ON" configuration, a roll with over 20% of paper savings, while keeping unaltered consistency and tensile strength. Same reel, different

products: AirMill provides optimization of the integrated process. As a matter of fact, AirMill not only can reduce the consumption of cellulose, but also allows to concentrate the production of reels in the paper mill only into a few types.

And after It's Tissue?

The success was so great that we decided to speed up the real estate recovery project of the very first Gambini factory, and today I am happy to announce that within the year we will inaugurate an innovative Gambini Pilot Center. In this area we will configure a **full-width** 600 m/min Pilot line, complete with the AirMill system, both to support our customers in product development, and to give them the opportunity to appreciate the concrete benefits of this revolutionary technology. The plant will also be equipped with a packaging line useful to achieve minimum lots of finished products.



66 Gambini researches, designs and manufactures technologically advanced machinery and converting lines 99



▲ Gambini Flex 700 Consumer Line.

What can we still expect from Gambini?

Since its inception, innovation has always characterized Gambini as a machinery supplier that aims to give added value to our customers. Our commitment is to continue to innovate on this path started 150 years ago. A synthesis of this statement is represented by the new **TouchMax.Twin** turret-style quick change Embosser Laminator which maintains the flexibility and efficiency of **TouchMax** but adds the capability to work in Point-to-Point and Point-to-Flat configurations. The latter, together with the **TouchMax** family, is further confirmation that product innovation represents the future of our sector.

What do you think about Industry 4.0, so much talked about?

The Industry 4.0 is already a reality in Gambini and in the tissue sector, as it is for other companies in

different markets. We are applying this philosophy both to internal processes, in order to make them increasingly efficient, and in our factories. In this regard, we are continuing to develop software, with an important partner, capable of collecting data from machines and lines in operation in order to process them, organize, and make them available in real time. An APP will allow us and our customers to have a direct line 24 hours a day, 7 days a week. This will allow us to pave the way for the development of increasingly accurate and intelligent plant monitoring systems.

Upcoming events?

We were present at the MIAC event last October in Lucca. Additionally, customers are always welcome to visit our factories in Italy, and our new service facility in the United States (Green Bay, WI). What else can I say? We are waiting for you.

Gambini S.p.A.

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website: www.gambinispa.com

Fulspec Specific Toscotec AHEAD-2.0L

5600 mm high-speed tissue machine.

AHEAD-2.0L is Toscotec's double width machine that combines design flexibility with high performance.

Toscotec's AHEAD tissue machines produce high quality tissue from virgin and recycled fibre with proven energy savings, top efficiency and reliability.

The AHEAD-2.0L PRODERGY configuration is designed with a unique drying section and allows for the installation of TT SYD up to 26FT in diameter, in addition to the exclusive TT NextPress technology.

Experience, flexibility and expertise make Toscotec the market leader in the manufacture of tissue machines and the ideal partner for your business.

YOUR NEEDS, OUR SOLUTIONS.







Circular knives for the cutting of toilet paper rolls and cardboard



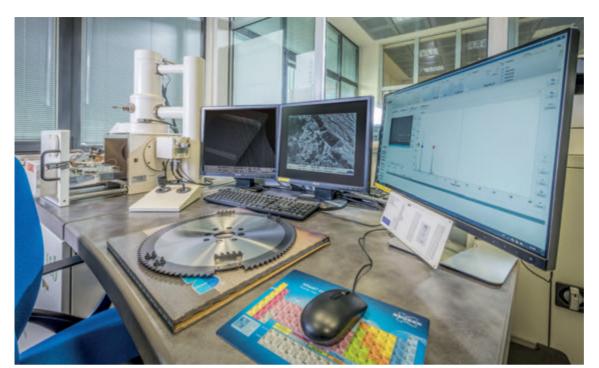
Julia Utensili S.p.A. is an Italian company located in Tarcento, in the north-east of Italy, founded in 1978 by three partners with extensive knowledge and experience in the production of circular saw blades and knives. The company provides a full range of products to suit every kind of application and to satisfy every customer's requirement. by: Julia Utensili S.p.A.



he winning idea of the founders was to create a single factory containing all the machinery required to complete the entire manufacturing process on the same site, thus enabling Julia to monitor and develop every individual part of the process, from the quenching and tempering of the steel plates, to the sharpening and eventually PVD coating of the discs. The growth of Julia Utensili has been possible because of the constant activity and innovation of the R&D department, in connection with its fully equipped metallographic laboratory, and the recently acquired Scanning Electron Microscope (S.E.M.) with Energy Dispersive X-ray Spectrometry (E.D.X.S.) instrument. That analysis capability allows the R&D department to extensively research every part of the process, studying new solutions and materials. In addition, Julia collaborates with specialized universities and research laboratories, both in Italy and abroad. The company's quality system is certified in accordance with

UNI EN ISO 9001 international standards, which ensures a constant qualitative monitoring of all phases of the production cycle. Julia Utensili imposes strict process control standards on 100% of its products to ensure high quality every time. Thanks to a capillary distribution network Julia Utensili is present worldwide, and the company's highly qualified staff provide superior technical support wherever necessary. The company has 40 years' experience in the production of high quality knives for cutting various materials, and in 2013 Julia Utensili enlarged its product range, focusing on circular knives for the cutting of toilet paper rolls and cardboard. These special knives are the result of an extensive study of the cutting process of toilet paper carried out by Julia's R&D department, together with the biggest producers of tissue machines. The firm goal was to develop an innovative knife able to perform exceptional clean cuts at a high production rate, together with a long tool life. Now the company is happy to offer a product





◀ The Scanning Electron Microscope (S.E.M.) within Julia's innovative metallographic laboratory.

▼ Julia Utensili's circular knives for Tissue Paper and Cardboard.

66 More than 40 years of ongoing experience ensure that we always supply the best tool to fulfil our customers' exact needs



which can reach this target. The production process starts with the dedicated heat treatment, quenching and hardening of the steel plates. Specific furnaces perform these treatments under constant monitoring: the result is a stable and homogeneous steel structure, which provides the correct hardness and reduces deformations on the discs. The grinding process has been optimized to reduce the surface roughness to a minimum. The super-smooth surface and the special profile of the cutting edge are both very important in reducing the friction that generates heat during the cut - the main thing responsible for blade wear. Julia Utensili's knives have very low axial and radial run out, checked on 100% of production, to provide the correct stability during the cut, even if the temperature in the cutting area increases - another important prerequisite for obtaining a good finish and a long saw blade life.

These blades are designed for high speeds, up to 300 strokes per minute, to cut toilet paper, kitchen paper, and many more tissue items on the following tissue saw machines: Fabio Perini, PCMC, Futura, Italconverting, Gambini, Bretting, Kawanoe Zoki, Bao Suo, Dechangyu. Julia Utensili can also offer the correct grinding wheels for all types of machines to grind our high-hardness knives.

Julia Utensili S.p.A.

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NEXTGEN TISSUE SOLUTIONS

3D TISSUE PAPER WITH LESS FIBERS AND THE SAME TENSILE STRENGTH

BATHROOM ROLL TISSUE PAPER			KITCHEN TOWEL TISSUE PAPER	
Same diameter	Bigger diameter	Same diameter	Same diameter	
Less paper	Same paper	Same paper	Same paper	
		Less fibers	More absorbency	More strength
		**	\bigcirc	

AirMill introduces a first ever flexible and efficient innovation adding limitless advantages to the tissue converting production process, while providing benefits and creating new opportunities for the paper mill. Starting with conventional dry creped tissue paper in converting, AirMill provides the possibility to produce various textured products while increasing bulk and absorbency, without losing any tensile strength. By retaining tissue paper tensile strength in converting, AirMill also becomes a strategic partner in the paper mill production by providing important energy and cost savings by reducing the refining process, using less long fibers, other grades of fibers, and less chemicals.



OCME and Robopac:

high added value systems for "end of line" in the Tissue sector





The "end of line" technology offered by OCME and Robopac for the Tissue sector continues to strengthen. These two long standing companies from the packaging machines sector, having signed an important company agreement last May, are today able to propose a series of

technological solutions of excellence, with high added value for the paper industry. by: OCME Srl

leadership that has consolidated further following the agreement between Robopac and Sacmi Packaging, regarding the end-of-line automation and handling of the finished product, which has passed under the control and management of Robopac. "Thanks to this partnership and the technologies available from Sacmi Packaging - says Enrico Aureli, CEO of OCME - our group expands and strengthens its end-of-line offer, particularly in the Tissue sector, but also in the Food, Home and Personal Care sector and Beverage." "As we had foreseen - says Carlotta Gatteschi, Vice-President of the OCME Board of Directors the agreement with Robopac is allowing us to grow in terms of industrial culture, technological excellence, product quality and internationalism that represent the identity of our company." OCME has been operating since the 80s particularly in the Tissue sector, where it is recognized as a leading provider of end-of-line systems. Now, thanks to the integration with Robopac and the agreement between the Aureli

family and Sacmi, it unites us in this specific

care in handling packages in high-speed lines with any format, without damaging the packaging and

market, with even greater force, as a single reference for palletizing, wrapping and handling systems from the packaging machine to the warehouse. More than 1,000 installations in over 100 different countries around the world guarantee the reliability, quality and efficiency proven in the field. The OCME and Robopac integrated equipment available to the Tissue sector include handling systems for bundles and cartons; robotic and traditional palletizing systems; wrapping pallets with stretch film; pallet handling systems with laser guided vehicles (LGV); complete end-of-line and control systems with product tracking up to the warehouse. The main products treated are: toilet paper and kitchen rolls in displays and bundles, napkins and handkerchiefs in cartons and industrial rolls. Our experience, accumulated over the years, allows us to guarantee maximum flexibility in dealing with different formats on the line, extreme

▲ OCME laser guided

vehicles with a double

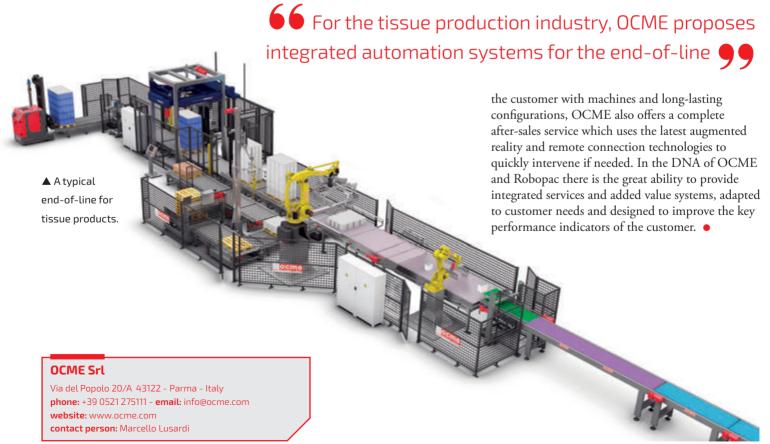
stack pallet.



► Layer forming system with robotic manipulator.



managing product configurations on the pallet through a dedicated simulation software. One of OCME's strong points is the management of "double stack" (two pallets overlapped in the palletizing area and wrapped separately). This method allows a reduction in the handling and loading of our laser guided shuttles (LGV), while maintaining the separation of the individual stack thanks to independent wrapping, bringing an additional management flexibility to the warehouse. Furthermore, the new motorized carbon layer gripper, designed and engineered exclusively for our Tissue customers, allows our palletizing robot a greater flexibility to manage complex pattern at high speed, modulating the grip without risk of product damage. At last, the palletizing program management is facilitated thanks to OCME's "Program maker" software, provided with all our installations, to manage standard pattern and to create new patterns in a simple and intuitive way. In order to meet the needs of the customer, **OCME** uses an internal network of engineers capable of realizing the best end-of-line layout through a dedicated study. In addition to providing





ANDRITZ, one of the leading suppliers of forming fabrics worldwide, introduces its new patented QSB tissue design concept. An increased number of fabric binding points lead to an improved cross-dimensional fabric stability. New monofilament material compositions

and the unique QSB co-planar fabric top layer improve fiber sheet support as well as formation and tensile strength of your tissue. Read more about our new Quattro Support Binder technology at andritz.com/QSB.





Toscotec's TAD innovation: the new TADVISION®





As confirmed by recent market trends, the future of tissue points in the direction of premium quality, softer structured tissue. In other words, TAD quality tissue.

by: Marco Dalle Piagge, Sales Director Toscotec Spa

66 Toscotec's Tissue Division handles design and process engineering for complete plants or individual plant sections



ecently, Toscotec has fully redesigned its TAD machine to achieve superior tissue properties (primarily bulk and absorbency) and outstanding results in energy consumption.

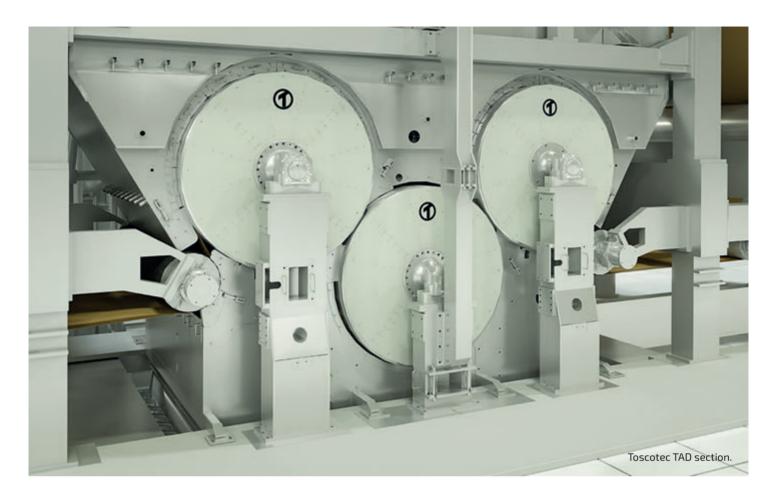
Drawing on the experience of its successful installation in the U.S. market in 2004, the new TADVISION® machine ensures highly improved runnability and machine efficiency.

Toscotec's design fully exploits the specific features of the Through Air Drying process, in order to capitalize on its unparalleled paper quality. The drying process of the TAD section is by nature very uneven and depends on the fiber web's moisture content and consequent air permeability, because the hot airflow tends to penetrate more and therefore better dry the areas with lower water content and higher permeability.

TADVISION® ensures optimal Through Air Drying uniformity on its longer drying path, along which the paper goes throughout a unique serpentine TAD section, composed of three or five TAD drums. Because of the straight flow crossing the drums and the fiber web, the paper dries out in a uniform manner, to a level of dryness in the range of 75% to 90%, and it turns out to be perfectly structured by the full penetration of hot air going through the TAD drums. Thanks to its vertical, down-to-top airflow design, TADVISION® ensures that the air fully flows though the drums, thereby avoiding any problem connected with the deviation of incoming or outgoing flow in the drum's axial direction. Toscotec's detailed computational fluid dynamic analysis ensures a highly optimized airflow in the air-system ducts leading to the TAD section and Yankee hoods, in order to guarantee the expected uniformity of drying. An accurate moisture control in the TAD section contributes to deliver top dryness results. Overall, TADVISION® ensures a more effective use of energy, bringing consumption down to 4.5-5.5 MWh/ton, a significant decrease compared to the consumption of current TAD machines, which is estimated in the range of 6.0-7.5 MWh/ton. Toscotec is continuing its energy reduction program and is committed to further reducing the overall consumption to less than 4.5 MWh/ton for a plant of the same production capability over the next few years. According to the mill's production targets, **Toscotec** offers two TAD solutions: TADVISION-S is

designed for 2.85 m trim width and 120 tpd,





TADVISION-L is designed for up to 5.6 m trim and 240 tpd. The exact configuration of TADVISION® is then tailor-made according to the specific production targets and process conditions of the paper mill, and it includes the option of installing Toscotec's TT SYD without Yankee hoods. With respect to tissue properties, TADVISION® takes full advantage of its unique TAD serpentine design, taking structured tissue's premium quality to a whole new level. The serpentine design allows for the proper reverse bending and stretching of the fiber web, in order to improve bulk and reduce fiber density, at a point in the first and second parts of the TAD section when the paper fibers are not too dry. This design

largely enhances the structural, bulky nature of the finished product. Toscotec's new TADVISION® machine was presented at iT's Tissue 2018, in Lucca from June 25 through 29. The optimized control of the drying process, the increased energy efficiency, the largely reduced energy consumptions and the enhanced softness and bulk properties are the catchall advantages of Toscotec's TADVISION® innovation. Industry professionals have expressed extremely positive feedback and great interest in this state-of-the-art technology.

Toscotec is currently completing manufacturing of its new TADVISION® at its headquarters in Marlia (Lucca) for a confidential project that is expected to start up in the first half of 2019. •

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Let's work together for a better world.







Pulsar Quatis machines:

a perfect match between quality of products and efficiency of the whole line







▲ Quatis machine for the inspection of rolls.

Pulsar Engineering is specialized in engineering and manufacturing of solutions for products handling and conveying.

by: Pulsar Engineering

ulsar Engineering is part of the Pulsar Group, including also the operation and commercial facility in Green Bay - Wisconsin, USA. The company holds over 89 patents and patent pending in the world. Over the past years, Pulsar has focused its activities on the Tissue Industry, developing special machines and special automatic units, besides the proposal of handling and conveying systems, with the aim to generate tools, systems and software to cover specific customer needs and to increase the overall efficiency of converting lines. In recent years, the Group has launched many innovative solutions dedicated to the Tissue Industry, focusing on the "Industry 4.0" concept for the generation of the "smart factory". Since the manufacturing of wrapped and unwrapped Tissue products is subject to variations during production, Pulsar Engineering launched in 2015 the new Quality Inspection machine called Quatis, specifically designed for the Tissue industry. Since then, the quality of production was usually determined by measurements made by line operators on sample products, which were not able to ensure a precise and detailed inspection. Using the Quatis machines it is possible to check the 100% of the production flow, with measurement of the level of the quality obtained, according with the parameters identified with the customer. Then, non-compliances, at different levels, are detected and measured in real time directly on the conveying lines, with the possibility also to discard the products above the level of acceptance. Identifying the level of quality or the non-compliances means measuring the results of all the work performed by the machines along the line, then providing essential information about performances, efficiency and quality of the work carried out. As consequence, is possible to identify critical points or operations, with the possibility to improve the functionality of the line, increasing the availability and efficiency of the machinery. Quatis is a unit composed by several cameras, illuminating

lamps and PCs able to analyze the image of every single product passing on the conveyors. After having set up all the requested measurements and the percentage of sensibility (or the percentage of errors admitted), the products pass through the machine, while the cameras take multiples pictures and the software checks the compliance to the standards set.

At the end of the process, if the product is compliant it will continue its way to the final customer, otherwise it can be rejected. Beside the functions of checking the quality performances and improving the process, the individuation of critical aspects or negative trends, can contribute to a real, immediate efficiency increase of the working line. To demonstrate how the installation of the Quatis machines in a converting, packaging and palletizing line can really improve the efficiency of the production and the whole line settings, we analyzed the data of one of the numerous Quatis machines installed all over the world, identifying interesting issues. For instance, we considered the effects of overturned rolls at the infeed of the packaging machine: although the non-compliance of the pack obtained with an overturned roll



▲ Example of inspection performed by a Quatis rolls machine.

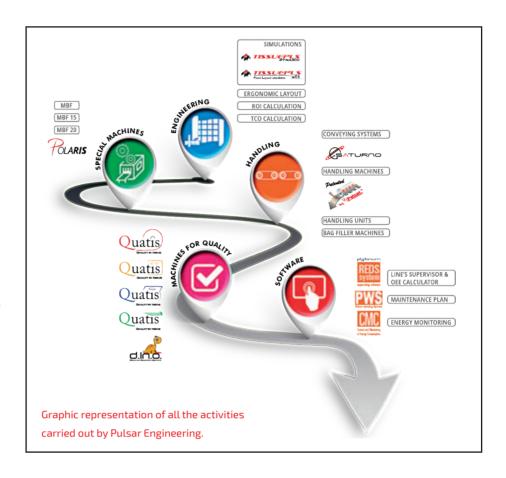


may cause unsatisfaction of the end user and to the distribution chain, the probability the mispositioned roll would cause a jam in the wrapping machines is very high. Considering a period of 3 weeks, we took into consideration the number of overturned rolls inspected by a Quatis rolls machine. The considered line was composed by a rewinder, an accumulator, a log-saw, a Quatis rolls machine, a bag-filler machine, a bundler and a palletizer. In 3 weeks' time, the number of overturned rolls was 4,550, representing the 0.08% of total rolls manufactured. Without the presence of a Quatis machine, we estimated that operators could only detect a half of the entire amount of overturned rolls (about 2,275 rolls), being optimistic, but at least 50% of the mispositioned rolls, enter the packaging system, causing a jam. In this case, the non-compliant rolls would cause a jam in the bag-filler machine, estimated in 60 seconds for each wrong bag, with an overall loss of availability of the machine of 18.95 hours of production time stop in 3 weeks' time. The installation of the Quatis Rolls machine allowed the considered company to save that time, since the system detects the non-compliant products and

discards them, without causing jams in the

packaging machine. Considering the data on annual basis, the increase in production time is estimated in about 328 hours (considering only non-compliant overturned rolls) and the resulting increase of the OEE is calculated in +3.72%. All the above, simply avoiding mispositioned rolls to enter the packaging machine. Of course, this also means that a search for the cause of the mispositioned rolls is a critical issue and the removal of the causes can provide an important contribution to the line efficiency level. Without a system able to detect this non-compliance, it would have been difficult for the line supervisor to identify and give exact evidence to such a problem, since he receives only a few information from the line. Sometimes the individuation of lack of compliances is based more on subjective impressions, than from objective feedback. The Smart functions of the Quatis systems are related to the following analysis:

• collection of data concerning the quality of products and efficiency of the converting line;



- record of events, such as operator changes, shift change, refill of raw material, line restart after stop, etc;
- record of the line functioning parameters, i.e. number of roll windings, lines' speed, wrapper sealing area temperature;
- match between the parameters of quality, predicted events and machine work conditions to improve the whole process.

 The analysis can be carried out either through a local connection between the Quatis machines and a local supervision system, or through a cloud service Pulsar Engineering is designing for its customers. Through this new service, Pulsar Engineering will provide its customers with a real-time service of data collection, analysis and reporting with the machines connected online. The portal will provide indications to operators, compile statistics, highlight critical elements, identify daily trends of the system performance and offer real-time surveillance to anticipate events, which will be predicted on the basis of the analysis performed before.

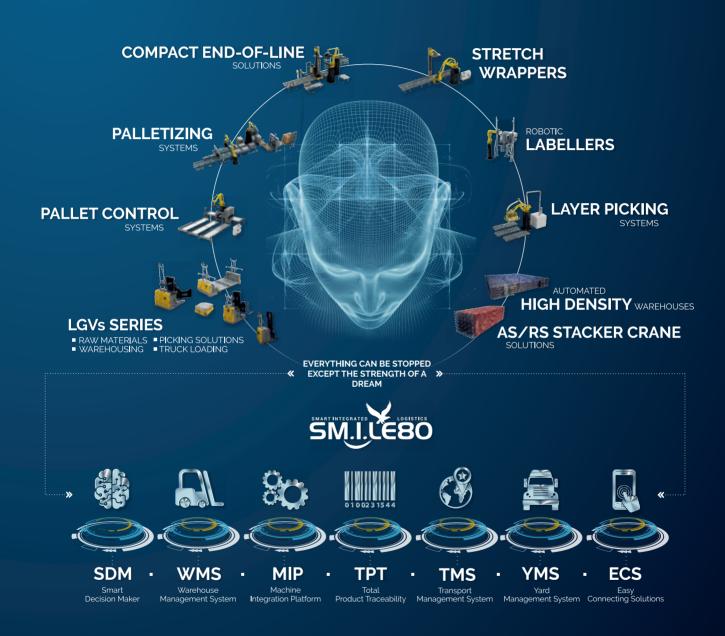
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Eco-friendly and effective repulping aid in response to new regulatory challenges









▲ Tea Hannuksela.

66 We help customers improve their process efficiency, productivity and end-product quality

Risks and limitations of conventional repulping aids

Handling wet-strength broke or recycled fibres with high wet-strength can be a challenging task. Conventional tools such as high mechanical shear, high temperature and caustic soda are not always sufficient to provide uniform fibre stock within a reasonable pulping time, especially for aged converting broke. For difficult wet-strength papers, additional oxidative chemicals are required that can break down strong covalent bonds of a wet-strength resin. Sodium hypochlorite has historically been used to aid in repulping of wet-strength papers although its use is currently less desirable. Hypochlorite is a hazardous chemical that requires special handling. It is also a source of free chlorine, which can cause metal corrosion as well as contribute to AOX in paper and effluent. If the residual levels after repulping are not carefully controlled, the Cl carryover to the wet end can destroy some of the wet-strength resin and reduce its efficiency. High level of free Cl can also negatively impact Yankee coating and machine runnability.

Due to its poor environmental and safety profile, the use of hypochlorite for repulping has been trending down, but surprisingly there are still many tissue manufacturers that use it. The upcoming changes in the AOX regulations will force tissue makers to look for alternatives, at least in Europe. The EU Directive 2010/75/EU, coming into effect in September 2018, will



Wet-strengthened paper grades often require a use of oxidative repulping aids. Traditional hypochlorite is undesirable due to its hazardous nature and a contribution to AOX. New stricter regulations, especially in Europe, will restrict its use even further. Alternative persulfate powders are more eco-friendly, but often limited in their effectiveness and have some drawbacks, e.g., alkaline yellowing of pulp. A new eco-friendly repulping aid, FennoSpec 9368, was developed by Kemira. This product is based on sodium percarbonate chemistry and provides an economic alternative without significant drawbacks. The benefits, advantages and industrial experiences with FennoSpec 9368 are reviewed in this paper. by: Dr. Vladimir Grigoriev and Dr. Tea Hannuksela - Kemira Oyj

reduce the AOX limit in effluent in the wet-strength paper production from 150 to 50 g/t of paper produced. Until recently, persulfate has been the only alternative chemistry. Various persulfate salts are available in the powder form. Their eco-profile is more favourable compared to hypochlorite (no Cl), yet with several drawbacks. The powder does not dissolve fast and the oxidation potential is lower compared to hypochlorite; therefore, it requires longer pulping times and higher temperatures. Caustic soda must be added to achieve the desired effect from persulfate, which causes alkaline yellowing of fibres. There have also been reports of a negative impact on Yankee coating performance.

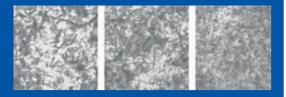
FennoSpec 9368 - a new eco-friendly repulping aid

Kemira has developed FennoSpec 9368 as an eco-friendly alternative to hypochlorite. This product is based on the sodium percarbonate chemistry and is supplied as a granulate, shown in Figure 1. The uniqueness of this chemistry comes from a combination of both alkaline and oxidative components in one product. The fast dissolving FennoSpec 9368 releases sodium carbonate and hydrogen peroxide into a solution. This brings both alkalinity (pH 9-10) and oxidative power to the system, creating favourable conditions for effective break-down of the wet-strength resin in paper. The key advantage of this chemistry is its superior eco-profile as it does not form any harmful residuals.



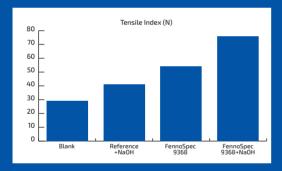
▲ Figure 1. FennoSpec 9368 is supplied in a granular form, providing a lower dusting tendency and a faster dissolution rate compared to other powder repulping aid. FennoSpec 9368 is conveniently packed in 10 kg white repulpable paper bags, which can be fed directly to a pulper without opening.

kemira



▲ Figure 2. Photos of handsheets on an illuminated screen. The handsheets were made from pulp taken from the pulper after 15 min.

The left photo is pulp without any pulping chemicals, the middle photo is with 10 kg/t of persulfate and the right photo is with 10 kg/t FennoSpec 9368. The uniformity of fiber distribution clearly demonstrates a more advanced dispersion of fibers after repulping with FennoSpec 9368 compared to no chemicals or persulfate.



the pulp taken from a pulper after 15 min of repulping the tetra pack recycled fibers. The higher the tensile index, the more effective repulping is.

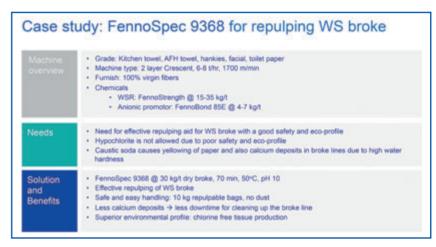
The incumbent persulfate powder (reference) required caustic to reach pH 11. FennoSpec 9368 alone at pH 9.5 could already accelerate the repulping process, which was further improved at pH 10.5 by adding extra caustic soda.

▲ Figure 3. Tensile index of handsheets made from

Only water and sodium carbonate remain after repulping. Therefore, this product has no contribution to AOX and has every major eco- and regulatory approval. Other advantages of FennoSpec 9368 over persulfate include a faster dissolution, which helps reduce repulping time. Figure 2 demonstrates an increased repulping rate when the persulfate powder was replaced with FennoSpec 9368. FennoSpec 9368 does not require additional caustic soda as it alone can bring pH to 9-10. When working with difficult fibres, e.g., aged converting broke or tetra pack recycled fibres, additional caustic soda could further boost the effect of FennoSpec 9368. This is demonstrated in **Figure 3** showing the results from an industrial trial of FennoSpec 9368 against the reference persulfate chemistry. A high temperature in the repulping stage is beneficial. The product will dissolve faster, and the peroxide will be more reactive. In general, a sufficient effect can be seen from FennoSpec 9368 above 35°C and pH 9.5 or higher. In general, the higher the temperature, the faster the reaction will be. The temperature requirements for FennoSpec 9368 are still lower than for persulfate powders, which require hot alkaline conditions, 70°C or above and pH 10 or higher.

Industrial experiences with FennoSpec 9368

FennoSpec 9368 has proven successful in repulping of not only tissue and towel grades, but also tetra pack, decorative papers or even labels. It naturally works well for repulping of converting broke. Under proper repulping conditions, FennoSpec 9368 reacts fast and can either shorten the repulping time or allow more difficult wet-strengthened recycled raw materials in the pulper. It may not



▲ Figure 4. Industrial case study for FennoSpec 9368 successfully used for repulping of wet-strength broke.

bleach the pulp like hypochlorite but, thanks to the in-situ release of hydrogen peroxide, it will prevent alkaline yellowing of the pulp, unlike persulfate and other alkaline powdered products. A case study demonstrating the use of FennoSpec 9368 for wet-strength broke is shown in **Figure 4**. •

Kemira Oyj

P.O. Box 330 00180 Helsinki - Finland

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Up to 50%

of sheet dryness with traditional presses



By engineering the felt's architecture, modelizing it and applying the physic equations of the fluid motion in porous media, we have optimized our newest felts getting unbelievable results in terms of energy saving and dryness improvement. by: Binet Sul Liri S.p.A.

> t Binet Sul Liri, we consider the felt as one of the most important, or a main vital part of the paper machine. In the past 25 years we constantly worked to improve our felt production quality and considering it as an engineering tool rather than a commodity. If it is valid for the paper and board production, the felt assumes a particular strategic value in the tissue sector.

Sheet Dewatering: Crescent Former Machines

The water removal is essentially generated by the vacuum boxes, suction rolls and traditional or shoe presses but, in all cases, the water has to be carried by the felt and through the felt itself. The paper sheet could reach the press with 12-14% of dryness and generally leave the first nip at 39-41% and 43-44% in case of a second press, actually only on extended nip presses it is possible to overcome these results and obtain up to 48-51% of dryness. The vacuum generated by one or more suction pumps is considered correct, for high speed machines, when the specific air flow calculated at the suction pump reaches 80 lt/min/cm² of open area. This value is going to determine the total open area in the vacuum boxes. For suction rolls, a lower specific air flow is generally utilized (25-30 l/min/cm²) in consideration of the longer dwell time (50-60 ms vs. 1-3 ms of the suction boxes). The vacuum value considered optimal is in the range of 0.3-0.6 bar, beginning from the start-up to the end of the lifetime. The felt's permeability has to be associated to the paper

◀ Final checking on the felt.

> 66 Right from the start, our goal has been to produce the best quality clothing for paper machines

machine characteristics in order to allow the correct water removal with the different paper grades and machine speed. The typical permeability value for fast machines is about 20 CFM with a start-up conditioning time that can go from a few hours to a couple of days.

Computerized Felt Design

We define the felt design in order to accomplish all the different phases of felt working, like: pick-up, sheet forming and dewatering and mechanical/chemical conditioning. A single tissue felt must have all the features normally distributed on 3 or more felts used for printing or packaging paper grades having much higher speed and much lower weight in grams/m².

FELT ENGINEERING is also the name of the computerized tool used for designing our felts and for controlling the features of each single layer of both base and batt, and to predict the behaviour of the felt, related to the pressure and vacuum applied during the paper production.

Striker Felts

The recent installation of a press pilot unit has allowed Binet to develop a new felt generation named STRIKER. This new concept felt has been deeply tested up to 2,100 m/mt in order to measure the felt behaviour, mechanical changes during its use and above all, to minimize the water carrying and to maximize the effectiveness of the conditioning equipment. Mechanical conditioning and water removal with different vacuum levels and at different air temperatures have been monitored, checked at different stages of felt life and for different combinations of base and batt architecture. The pilot units' data has scaled up to the FELT ENGINEERING to optimize the felt design and to produce a number of industrial test felts that are completing their life cycles in different tissue machines with a speed range of 1,100-1,700 m/min. The results on the tissue





▲ Technical meeting.

machines are very positive with dryness of approx. 45-46% with single presses, and we could suppose above 48% on the double press machines. The next step will be to apply our SOFT-TOP and TWIN-TOP technology on our STRIKER FELTS to improve an additional 1-2% of the sheet dryness and so to offer to the tissue sector the opportunity to obtain the same dryness of a shoe-press with only a very special felt.

First Industrial Results

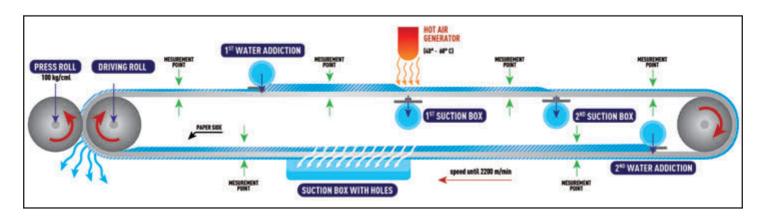
On one YPU machine at 1,100 m/min, saving of 14,000 m³ of gas per month (1.5 times the price of the felt), very regular vacuum stable under 0.5 bars, very good pick-up, no problem of any type, lower

water carrying, about 200 gsm vs. standard felts. On one YCF machine at 1,700 m/min reduction of hood temperature of 33%, reduction of 25% of vacuum power, better lifetime, lower water carrying about 250 gsm vs. standard felts. On one YCF machine at 1,450 m/min increasing of dryness from 41% to 45% on single press. Very good profile, lower water carrying, about 200 gsm vs standard felts. No problems at all. •

Binet Sul Liri Spa

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▼ Pilot press scheme.





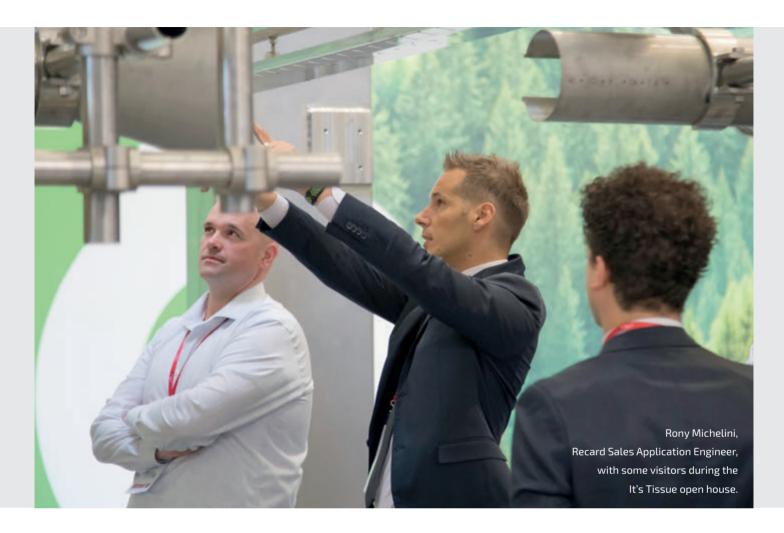
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EASY IS GREEN. Recard protects the environment, providing substantial economic benefits thanks to a 4.0-oriented solution



Optimization is a must. In the current scenario of international markets. optimization represents the core aspect of every sustainable and robust economic growth. It means first and foremost saving time and energy. Recard's R&D department focused precisely on these two aspects, which represent a priority for companies willing to invest in technology. by: Recard S.p.A.



he result is GREEN EASY CRESCENT, a brand new Tissue Plant harmonising these features to meet the needs of those market segments that have a daily productive need of about 80 tons tissue paper on single machine width (Figure 1). This TM is primarily designed for all the medium-sized companies aiming at optimising every aspect of the impact of the investment. After checking its effectiveness using several complex tests performed in partnership with EIL Srl, Recard officially launched their newborn in the occasion of It's Tissue 2018, an event that takes place in the Tuscan city every three years, where tissue manufacturers meet the most relevant technology producers of the world. That's the place where the latest and best technological innovations for production and converting of tissue are presented. So what are the most interesting features of this new solution? Indeed, Green Easy Crescent

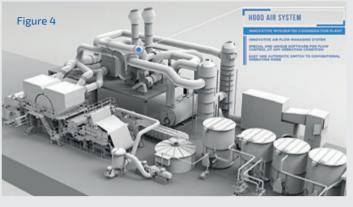
by Recard represents now an ideal solution to reduce times and costs of building works (Figure 2), as well as emissions into the air, drastically minimizing their impact on the environment and cutting costs derived from energy consumption, which represents an expensive budget item for paper mills in many countries. It's "Easy" because it is entirely built on floor level, with no need for the approach flow system pit - this way reducing design and construction costs (Figure 3), but also the time needed for construction - works in the paper mill. In addition to all this, the plant's need for space is also reduced: just 1,800 m² for the covered part and a maximum height of the shed of 7.3 metres. It is "Easy" in terms of manageability. Once fully operational, thanks to its total automation and handling via DCS, the machine can be run by only 3 operators - considerably less than a traditional plant. "Easy" because its flexibility facilitates the changeover, thanks to the plant's high automation



66 All of the machines Recard produces are manufactured in Italy to the highest standards of quality



66 Recard specializes in the custom design and manufacturing of equipment and machines for the tissue paper industry





and very short cycles of water and pulp. Certainly, the "Green" features are the most interesting and innovative aspects of this technology: as tests performed by Recard confirm, the plant's next gen gas turbine can produce much of the energy needed, while residual exhaust gases provide all the thermal energy required for the drying of paper (Figure 4). This means 65% savings in electricity consumption, with an increase of just 15% in gas consumption compared to a traditional machine, since the system makes the most of the available energy minimizing the losses. Though it may vary depending on the country and energy suppliers, the economic advantage is therefore evident in terms of electric energy. Moreover, countries where electricity is unstable and subject to changes can benefit from

a turbine that works with many different kinds of fuel, guaranteeing continuity in the production as well as a better efficiency of the system (Figure 5). Last, but certainly not least, is the important "environmental" revolution developed by Recard for Green Easy Crescent: tests show that the innovative technological solutions implemented throughout the whole process enable 70% reduction in NOx and 60% in CO emissions in the atmosphere. Starting from a traditional Crescent Former, Recard developed an innovative technology enabling the minimization of energy related costs and the reduction of emissions in the atmosphere in a simple, low-cost way, providing a concrete answer to current fundamental needs of tissue manufacturers.

Recard S.p.A.

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THE TISSUE QUALITY SYSTEM



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











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PCMC's FORTE line.

Care is a concrete process. Attention to people, attention to innovation.

by: PCMC Italia S.p.A.

ome months have passed since PCMC's Open Houses, but the doors to the company are still wide open to meet with its partners and with those who want to discover more about its continuous evolution. Because PCMC is relentlessly pursuing the path of its Carevolution. Sustainability, innovation, evolution and care: these are the guidelines that define this new term. Not just a theoretical concept, but a true word whose meaning is tangible in the life of the company, in its products and in its choices. This growth concept of ours was expressed at its best during the Open Houses held for iT's Tissue 2018: an incredible moment to welcome guests and also to reap the rewards of the work done in the last few years. A new roll becomes a reality and that unites all the inimitable characteristics of made-in-Italy technology signed PCMC. The first InvisibleO line was installed at Essity (SCA Group), leader in the field of health & hygiene, and the no-core roll is already present in supermarkets in France and Germany.

A roll without a cardboard core, usable from the first to the very last sheet, with a level of quality never attained before on coreless products. A practical product, attentive to savings, attentive to the environment. An advantage for everyone, not just for tissue product manufacturers.

"The InvisibleO Technology project caused us some sleepless nights for several months" says company President Sergio Casella. "It was an arduous but exciting journey, spurred by the desire to create an invention - a true innovation. We began working toward this goal three years ago and it took two years just to come up with the ideal solution that supports the roll internally, created using only natural materials and that replaces the cardboard core. Knowing that we have perfected a new, functional and functioning technology is an incredible satisfaction that we can share with our experts who worked on the project and embarked on this road with us. The product is commanding lots of attention by a buoyant market that is welcoming this new opportunity", continues Sergio Casella. The innovative InvisibleO technology, patented by PCMC, is applied to the **FORTE** technology, flagship of PCMC's success. **FORTE** caters to every detail of the log growth process by winding it using the utmost care, just as if the roll were taking shape in the hands of the operator. Perfect pick-up, stable log formation and a uniform winding profile along the entire log length; a bulky embossing unaltered to the very end and high production speeds: these are just some of the inimitable characteristics of made-in-Italy technology signed by PCMC. The simplicity of the concept that created it allows **FORTE** to improve and evolve continuously, yielding a finished product unmatched on the market, with and without a core.

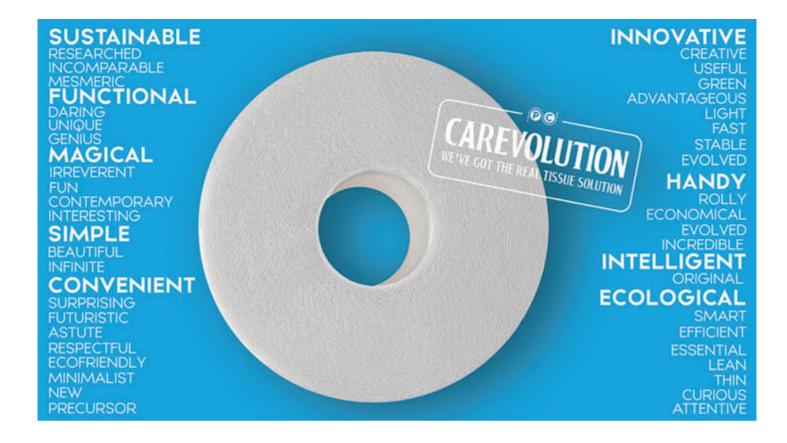
But PCMC's evolution does not stop at converting:

PCMC has elaborated a new concept of primary

attaining significantly higher production speeds

and secondary packaging. A packaging that allows





▲ PCMC's No-Core Roll & Carevolution. than **standard speeds currently present on the market** and at the same time affords savings as far as raw materials and maintenance. All this together with an innovative type of secondary packaging that yields packs in a new configuration and with particular attention to the graphic aspect. This evolution takes another important step forward with the birth of our **C.A.RE. Lab, Converting Area REsearch**, a center dedicated to the future, opened by PCMC in Lucca and located in front of the City Walls: a new space for the world of converting. "The time has come to make yet another move forward, to open another door" says **Walter Tamarri**,

Sales & Marketing Director. "Our goal is to intensify the company's focus on innovation, on research and on the opportunities offered by Industry 4.0, in particular those connected with the positive impacts that they can have on managing occupational health & safety. C.A.RE. Lab will be a lively, dynamic center, a place where skills and talents can find a mutual meeting place. A PCMC area where thoughts and knowledge can circulate freely and where we will cater to your ideas and to ours together" concludes Tamarri.

After this period of surprising novelties, what does PCMC have in store for the coming months? •

66 PCMC is made up of people working every day for a common goal: doing extraordinary things

PCMC Italia S.p.A.

Via W.A. Chapman 1 55051 Fornaci di Barga (LU) - Italy **phone:** +39 0583 8396 - **website:** pcmcitalia.com **contact person:** Walter Tamarri, Sales & Marketing EMEA and APAC Director **email:** walter.tamarri@pcmc.com





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Network Member



25-29 Giugno 2018



TECNO PAPER advanced technology and innovative solutions for winding Super Soft and Structured TISSUE



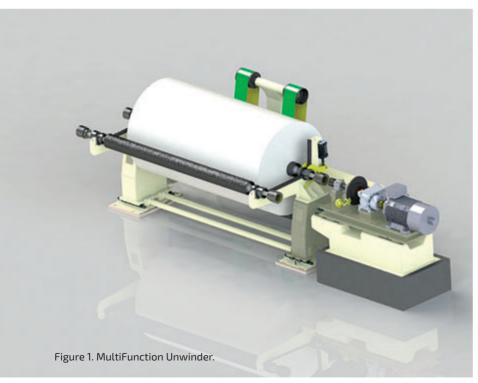
TP-Soft Touch, the innovative winding concept.

by: Mauro Della Santa, Tecno Paper Sales Director - Tecno Paper S.r.l.

n the Tissue market it is constantly increasing the demand of bulky and soft products. The reels coming from the Tissue Machines consequently have a low density that makes them difficult to handle in rewinding and converting lines. Most of the problems, and of the limits in speed and productivity, in rewinding Super Soft high volume tissue grades, are due to the high deformability of both mother and finished reels.

The study of the technical team in Tecno Paper has been therefore mainly directed to find process solutions avoiding deformation of the reels, but at the same time allowing an operator friendly use of the rewinding line and an increase of productivity. More than ten years ago, Tecno Paper had already developed and installed in several paper mills a type of unwinder, named MultiFunction (Figure 1), with double unwind system: peripheral with belts and centre drive with direct connection of the reel spool to the driving motor. This type of unwinder helped to solve many problems and to increase performances, thanks to the possibility to use both systems together or separately; but in certain cases and for certain applications it was not enough. This is why Tecno Paper has developed, and patented, also different rewinding solutions purposely dedicated to "difficult to wind" products to avoid the Super Soft reels are permanently deformed and the loss of bulk is huge. The last product which comes in to join the family of the TP-Soft Touch equipment is the new Unwinder (Figure 2), designed and developed by Tecno Paper's technical team. It is fitted with innovative and dedicated drive and control systems for low density

66 TP-Soft Touch, the innovative winding concept of Tecno Paper for Super Soft Tissue



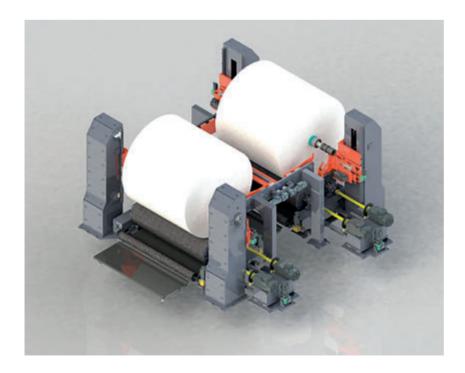
tissue reels, thus allowing to reach, and ensuring, high precision, accuracy and productivity for the unwind process on rewinding lines. The main features of the TP-Soft Touch Unwinder are:

- Two large diameter carbon fiber rolls (carrying drums), independently driven by variable speed motors;
- Centre drive assist, with two variable speed motors, that nullifies the rotation inertia of the reel spool;
- Fast reel change with automatic empty spool transfer to a parking station;
- Load cells under the bearing housings of the two carrying drums;
- Hydraulic or mechanical systems performing the vertical movement of the carriages holding the reel spool;
- Pneumatic device able to absorb reasonable off-roundness of the parent reels. The features of the TP-Soft Touch Unwinder allows to reach the following performances:
- Less specific pressure to have the needed rotation movement, thanks to extended nip on carrying drums;



- No «torsion» effect in the structure of the reel, thanks to centre drive assist;
- Increased operation efficiency, thanks to fast reel change;
- High precision and constant NIP control, thanks to load cells measurement of NIP and reel weight;
- Even unwinding operation, thanks to high precision vertical movement of reel spool carriages; The TP-Soft Touch Unwinder doesn't

▼ Figure 2. TP-Soft Touch Unwinder.



give any deformation to the tissue reels and it can be installed in existing Rewinding Lines and Converting Lines as well.

The use of the TP-Soft Touch Unwinder is simple and intuitive: its control is integrated in the control of the rewinding line, that is obtained by a high speed PLC. The HMI (main screen and local panels) display in real time all the parameters related to the process for total control and handling of the operations. An important function of the control system is the possibility to enter the data related to the grade of tissue and to the reels to be processed thus allowing the system to set, in a fully automatic way, all the process parameter during the operation. TP-Soft Touch Unwinder is ready for the full integration TP-Win 4.0, that is the Supervision Software for the rewinding process developed for the intelligent mill of Industry 4.0. Furthermore, on each section there is an additional panel used for the TP-Service, that is the remote TeleService for assistance directly from Tecno Paper headquarter. Benefits offered by the innovative winding concept TP-Soft Touch:

- Reels (mother and finished) fully supported during all the process by full width carrying drums;
- High precision NIP control of reels against carrying drums, at both unwind and wind-up positions thanks to special hydraulic or mechanical relieving systems, both working in "Closed Loop" mode with constant feedback from the on board sensors:
- Minimized bulk and crepe loss;
- No deformation of the reels is generated at both unwind and wind-up positions;
- High operation efficiency thanks to spools and shaft automatic removal and handling;
- Operator friendly control system and HMI;
- Easy to switch from "Closed Loop" automatic NIP control to "Open Loop" control by curves set in the control system and adjustable by the operator;
- Integration with TP-Win 4.0 e TP-Service. The **TP-Soft Touch** Unwinder is the natural completion of the High Performance rewinding lines of last generation developed by Tecno Paper for processing Super Soft and high bulk tissue.

Tecno Paper Srl

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This statement summarizes Mingazzini's attitude on the market



Despite the constant and continuous growth from the technological point of view, both at product and process level, Mingazzini has never lost sight of its original purpose: in-depth analysis of customer needs, customized responses and utmost attention to detail. All this as an expression of the culture, flexibility and creativity that have made the "Made in Italy" famous and appreciated worldwide. Like a tailored suit, each plant is carefully designed and tailored with expertise and experience. by: Mingazzini S.r.l.



n exclusively family-owned business since the beginning in 1929, Mingazzini S.r.l. still keeps unchanged its brand pride and its values, handed down for four generations. These values,

in perfect combination with the technological upgrading and innovation, over time have created a modern company that continues to pay close attention to the customer: not only in terms of the highest quality of the product, but also for an excellent level of pre- and after-sales service. All this in order to create a concrete proactive and one-to-one cooperation relationship with the customer. Production has been always focused exclusively on steam boilers for industrial use, in particular on medium pressure fire tube boilers. Nowadays, Mingazzini steam boilers PB EU series, three passes design with passing flame, cover ratings from 2,000 to 30,000 kg/h. PVR_EU series boilers, back flame design, cover ratings from 350 to 5,000 kg/h. Main technical features of firetube steam boilers include:

- three passes to reach high efficiency;
- wet back with reversal chamber totally immersed in water to widen the surface directly exposed to the flame and no refractory material to cut off maintenance costs, the loss of heat through radiation and the overheating of the rear tube plate;
- big water content and a wide evaporating surface, so granting a high thermal volume and the best steam quality;
- firetube with big diameter, to enhance the efficiency, always observing the most severe environmental standards for flue exhausts, Fox corrugated as a standard for boilers with ratings higher or equal to 10 t/h of steam, on request for lower ratings;
- tube plates with rounded edges to uniformly absorb the expansion of the main body and the tube nest, functioning as real compensators, avoiding the risks of "breakage" typical of corner welded flat plates;
- maximum accessibility and maintainability through hinged doors both in the front smoke chamber and the rear one for total and immediate accessibility to the smoke tubes and the tube plates (for cleaning, maintenance and ease of inspection on the part of the Authorities entrusted with periodic inspections).

The increasing requests from process and energy industries led to the development of superheated water boilers for district heating with a capacity up to 17 MW (PB_HS series) and waste heat recovery







 \blacktriangle Turn-key boiler room, composed of n. 3 steam boilers mod. PB 120, equipped with comburent air preheater, steam output of each boiler: 12,000 kg/h.

▲ Turn-key boiler room, composed of n. 3 steam boilers mod. PB 120, equipped with energy recovery system, steam output of each boiler: 12,000 kg/h.

boilers (WHRB) downward cogeneration and process plants (PAS series).

With specific reference to the paper industry, Mingazzini acquired directly on the field a deep knowledge concerning the special needs of customers of different sizes, becoming a market leader capable of offering a complete service to the customer, also providing innovative solutions and aiming at specific needs in order to optimize investments in plants and save energy. Mingazzini's R&D is constantly focused on the

Our history and know-how to answer to every new and challenging need of the Customer 99

introduction of state-of-the-art solutions for the design and the efficient management of boiler rooms of any size, including boilers especially configured for operating without continuous supervision up to 24-72 hours.

Furthermore, R&D is continuously developing innovative technological solutions that guarantee energy saving and environmental protection with actual efficiency up to 98% and minimum levels of CO₂ emissions. Systems for remote supervision and management of the whole plants can also be provided. With the same values and the same commitment that animate Mingazzini since 1929, the company is ready to face the new challenges for the future. •



Mingazzini S.r.l.

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contact person: Eng. Umberto Orlandini
email: umberto_orlandini@mingazzini.it







Over 5.000 electronic equipments over the world

Tissue Automation



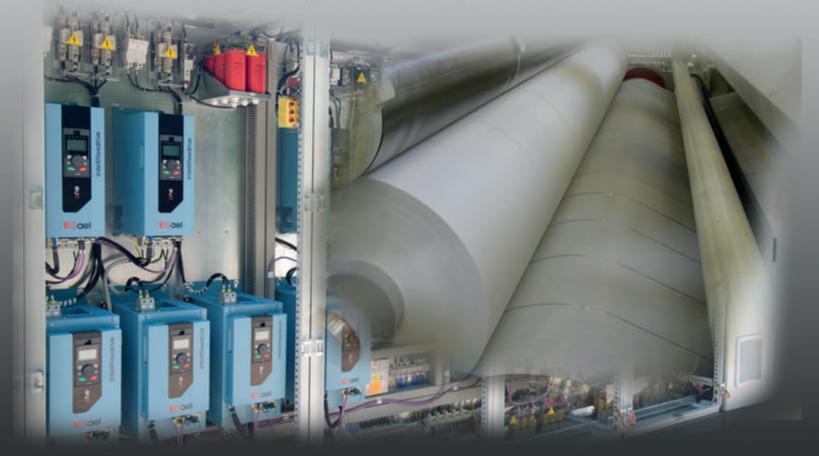
ac/dc digital drives for Paper Mill Industry

d.c.s. and Automation

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▲ Impianto biologico completo.

he mission of O.M.C. Collareda is to research new technologies with the aim of achieving three key results: the recycling of raw materials, water recovery and energy saving. All this with an eye to the environment both when it comes to ensuring compliance with national laws and the standards of the countries where its customers are located: OMC examines the given situation case by case, offering its customers the best solutions and making its advanced technologies available to them.

This is precisely our strength: to meet with

customers in person, presenting a comprehensive technical file with detailed drawings of the plants and offering them an industrial know-how that can count on our extensive experience in the field. What makes the difference is our ability to be a

reliable partner for our customers and not just mere suppliers. Our production of water treatment plants includes dissolved air flotation systems DELTAFLOAT and TIGERFLOAT, dissolved air settling-flotation systems SEDIDELTAFLOAT, continuous self-cleaning sand filters OMEGAFILTER, drum filters GAMMAFILTER, fractioning/separator filters SIGMAFILTER, disc filters DENSIDISC and filters for water micro-filtration MICRO-FILTER. When it comes to drainage systems, instead, O.M.C. Collareda designs and manufactures Biological Plants according to different technologies, such as activated sludge oxidation AST, MBBR - Moving Bed Biofilm Reactor MBR - Membrane Biological Reactor, with the aim of recovering some of the treated water. Another important line of business are primary



Watertreatment technologies and stock preparation equipment for paper industry

O.M.C. Collareda Srl is a company that for over 40 years now has been involved in the design, manufacture, assembling and commissioning of water treatment plants for water produced by civil and industrial processes, as well as of systems for stock preparation for the paper industry. by: O.M.C. Collareda Srl

and process waters from rivers, lakes and polluted groundwater: our Primary Water Division designs and manufactures systems for filtration, ultra-filtration and reverse osmosis. This division offers equipment and systems for filtration on sand beds, iron removal systems, activated carbon filtration, ion exchange plants, electro-deionisation, micro-filtration & nano-filtration, seawater desalination, UV sterilisation, ozonation and containerised systems. O.M.C. Collareda Srl can also offer its range of plants and systems for stock preparation for paper mills. In recent

years, we have made considerable efforts to meet the new needs of the paper industry. Flexibility and modularity coupled with knowledge of the process are now the key words in the design phase. Machines like pulpers, screens, cleaners, fractionators, flotation cells, washers, hot dispersion plants, under-machine pulpers, refiners, deflakers and stirrers are an integral part of our production. Individual machines or complete lines for stock preparation can be designed and manufactured to meet all customer requirements and for any type of paper or cardboard products. Extensive experience

66 O.M.C. Collareda is an international leading company in manufacturing equipment for Water Treatment Plants and Stock Preparation for Paper Industry









and organisation enable O.M.C. Collareda not only to build equipment, but also to develop any engineering project in specific fields of industry, provide turnkey installations anywhere and carry out studies for the improvement of existing water cycles. All this is made possible thanks to a widespread sales network that allows us to reach and serve every corner of the world, a specialised Technical Department, where skilled technicians are steadily at work

researching and developing
new projects in order to be abreast of the times, and
an R&D laboratory that has the most modern tools,
which are essential nowadays to be competitive and
to constantly upgrade the technologies we offer.
First established to provide solutions for wastewater
treatment in paper mills in particular, over the
years O.M.C. Collareda has widely diversified
its business, so that today it spans many civil and
industrial sectors: from the petrochemical industry
to the food and dairy industry; from meat and fish
processing to the textile and tanning industry. Our

Company also purifies primary and secondary water for civil and industrial biological plants, water produced by the wine and beverage industry, brewery effluents and much more. You can be sure that wherever the manufacturing process involves water to be purified,



▲ Sedimentatore.

O.M.C. Collareda will be there! It's hard to say in which countries in the world today at least one of our plants hasn't been installed: besides all throughout Europe, O.M.C. Collareda is present in the Maghreb, the Middle East, in Central and South America, Oceania, Japan, Russia and China. The fact that we can offer our own technology worldwide while yet boasting that all components are Made in Italy is today one of our greatest satisfactions. In fact, the design, manufacture and after-sales

service are all based in our headquarters in Schio, which is where not only all ideas and experiments are hatched and conducted, but is also the site of production of high-quality products. In the near future, O.M.C. Collareda Srl expects to grow even further, looking for new markets and new technologies for cleaning up pollution in general, and our goals will be to increase the diversification of our products and further enhance the customer service and engineering consulting available to our customers. A major bet for O.M.C. Collareda: the

desire to always put ourselves to the test, the ability to keep up with new advancements and an unwavering commitment to a future where technology helps humans to interact sustainably with the planet's energy resources.

O.M.C. Collareda Srl

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phone: +39 0445 575281 - email: info@omc-collareda.com

website: www.omc-collareda.com Sales Manager: Ing. Stefano Tomiello



experience the alternative

"Without change, there is no innovation, creativity or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable"

William Pollard **ENVIRONMENT SERVICES PRODUCTS PEOPLE OUALITY** Hi **HISTORY**

A matter of chemistry







Partnership between TecnoFerrari & A.Celli

Partnership between TecnoFerrari & A.Celli for parent reel handling and storage has been announced during It's Tissue. A great number of visitors assisted to the demonstration of TecnoFerrari AGV during It's Tissue at A.Celli facilities. by: Gruppo TecnoFerrari S.p.A. con socio unico

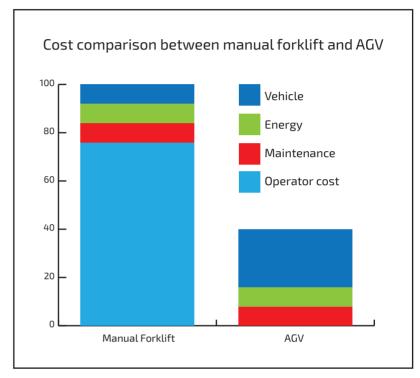


ith this partnership TecnoFerrari and A.Celli are combining the long term experience of TecnoFerrari in the field of AGV solutions with a deep knowledge of A.Celli in the tissue sector. Besides the partnership with A.Celli, TecnoFerrari maintains direct activity at the end of line with palletized final product. Leader in automation and logistics in different markets, TecnoFerrari S.p.A., with more than 3000 AGV vehicles installed, is continuously investing and growing. It has now over 300 employees and almost 10% of them working on R&D projects. The supervisor software, a complete suite developed by TecnoFerrari, offers the complete management of the production schedule and its HMI is easy to use. The possibility to customize it according to Customers' needs is an added value in terms of flexibility. The strength of TecnoFerrari's solutions is based on a consolidate experience in the AGV system. It allows to offer customized machines and reliable application. The management of parent reel with AGV allows a





66 We meet each customer's specific needs with customized and dedicated solutions **99**



▲ Parent reel stacking.

great number of advantages compared with manual handling. Safety of workers is guaranteed due to the presence of sensors which allows the AGV to reduce the speed and stop in case an obstacle is detected at a certain distance from the AGV. The safety distance changes in accordance with the speed of the vehicle. Presence of sirens and lights alerts workers of the oncoming AGV. AGV travels on designated paths which have been prescribed by users, thus areas with high traffic or a non-safe path can be avoided. AGV safety devices stop the vehicles from running into other equipment, inventory, walls and racks. AGV works 24/7 non-stop with a consequent

increase of productivity and they can work at a constant speed leading to lower maintenance. AGV reduced utility costs as it can operate in lights-out environment. AGV position and status are constantly tracked and controlled by the supervisor system. AGV control system can be integrated with Warehouse Management Systems (WMS) and RFID for the goods identification inside and outside the production site and they are easy to install and to change the factory lay-out. AGV does not create a permanent obstacle and keeps aisles clear. Furthermore the AGVs solution is modular and expandable.

Gruppo TecnoFerrari S.p.A. con socio unico

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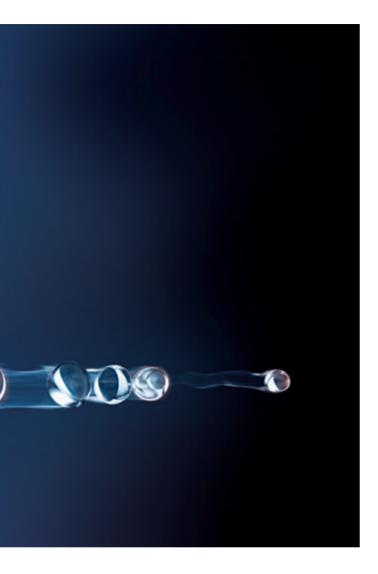




New ANDRITZ QSB forming fabrics for tissue

ANDRITZ Kufferath has developed a new forming fabric design called QSB (Quattro Support Binder). In comparison with current state-of-the-art SSB (Sheet Support Binder) forming fabric designs, QSB technology ensures significantly better binding and shape stability. The patented QSB forming fabric design allows producers to improve tissue product quality and machine performance. It has already been tested successfully in the new ANDRITZ Tissue Innovation and Application Center (TIAC) in Graz, Austria (detailed TIAC report in our May issue).

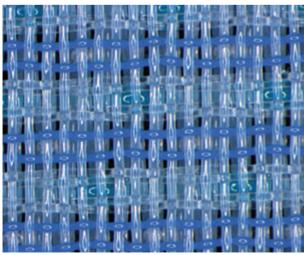




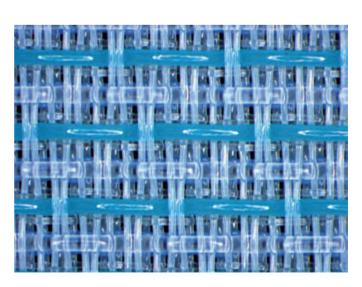
Up to 15% better running times on the machine

The patented, new ANDRITZ design with its increased number of binding points offers improved cross-dimensional fabric stability compared to conventional SSB forming fabric designs. This results in reduced internal fabric wear and allows up to 15% better running times on the machine compared to conventional SSB designs. The improved co-planarity and stable fabric guiding contributes towards achieving stable 2-sigma paper profiles during the entire fabric running cycle. New monofilament material compositions and the changed top fabric design reduce fabric wear and enhance energy-saving potentials. ANDRITZ QSB designs are meanwhile operating successfully in the graphic and packaging paper industries, with numerous installations providing added value to different customer processes. With WeCare PRIME, ANDRITZ has now completed its product series for tissue machine applications. Fabric callipers between 0.60 mm and 0.69 mm enable enhanced fabric surface characteristics with defined dewatering channels for better formation and an effective dewatering process during operation. Machine hygiene improves with the benchmarking of thinner fabric callipers. Patented QSB forming fabric designs from ANDRITZ are available in 2:1 and 3:2 versions for all paper products and former machine designs. The ANDRITZ WeCare PRIME forming fabrics for tissue applications are available in 4-shaft and 8-shaft fabric designs (Figure 1 and Figure 2).

66 ANDRITZ Kufferath is one of the leading European specialists in the development and manufacture of forming fabrics for the paper industry

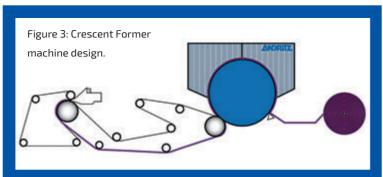


▲ Figure 1: Surface of WeCare Prime 8-shaft QSB design.



▲ Figure 2: Underside of the patented ANDRITZ 8-shaft QSB design.





Machine data and former design

- Former: Crescent Former
- Design speed: 2,000 m/min
- Product: Toilet tissue and paper tissue grades
- **Grammage:** 15-22 g/m²
- Raw material: 100% pulp and mixed pulp+DIP
- Forming fabrics:
- Conventional fabric designs
- WeCare PRIME 4-shaft QSB Design
- Improvement targets:
- 1. Machine hygiene and performance
- 2. Tissue formation and quality

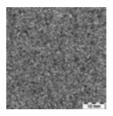
ANDRITZ tissue forming fabric parameters	QSB 4-shaft design
Machine-side weft diameter [mm]	0.25
Air permeability [CFM]	520-560
Calliper [mm]	0.60
Fibre support index	173-168
Support points/cm ²	1,229-1,170

About ANDRITZ Kufferath

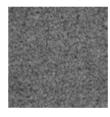
ANDRITZ Kufferath is one of the leading suppliers of modern forming fabric and technical wire cloth technology. With production facilities in Düren, Germany, and Levice, Slovakia, the company designs product solutions for various process industries. A major part of the business deals with forming fabrics for pulp as well as for paper machines producing graphical papers, packaging papers, specialty papers, and tissue.

WeCare PRIME QSB design - case study

The following case study uses the example of a Crescent Former machine design, as shown in **Figure 3**. Operating at 1,750 m/min, the machine has a design speed of up to 2,000 m/min. First results of the WeCare PRIME 4-shaft QSB design in comparison with conventional SSB fabric designs used by a customer in the tissue market: formation improved significantly with the new ANDRITZ WeCare PRIME tissue forming fabric design. There is no marking visible on the tissue product with the new QSB design. The excellent fabric dewatering capabilities resulted in improved tissue product characteristics. This enabled stable production conditions at high machine speeds (**Figure 4** and **Figure 5**).



◆ Figure 4: WeCare PRIME 4-shaft
design. Sample: 15.4 g/m² toilet tissue
(100% pulp). Speed: 1,750 m/min.



◀ Figure 5: WeCare PRIME 4-shaft design. Sample: 16.4 g/m² toilet tissue (100% pulp). Speed 1,900 m/min.

Summary

With the patented ANDRITZ Kufferath QSB forming fabric design, you can improve both the tissue product quality and the machine performance.

Proven features:

- High dewatering capabilities (air permeability and low fabric callipers);
- Improved tissue quality (FSI >165);
- Clean run and no water spray at high tissue machine speeds;
- Improved cross-dimensional fabric stability for consistent machine operating conditions during the entire running cycle (6 months). •

ANDRITZ Kufferath GmbH

email: kufferath@andritz.com - website: www.andritz.com contact person: Stefan Schreiner, Global Product Manager FormWeave and TecnoWeave Products



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Elettric80 and **BEMA**: successful case studies in the tissue sector



hanks to highly innovative hardware and software solutions, Elettric80 and BEMA revolutionized Factory 4.0 more than 20 years ago, becoming well-known all over the world as the market leader of integrated automation solutions. The two companies were established in the 1980s and 1990s respectively, in Viano, in the province of Reggio Emilia, Italy. Elettric80 and BEMA specialize in the implementation of flexible and modular, integrated and automated solutions, designed for high-volume consumer products manufacturers, mainly in the **food**, **beverage and tissue industries**, as well as in diversified sectors, like ceramics and plastics. Elettric80 and BEMA provide solutions for production planning and control, storage and shipping activities, with a significant increase in factory **efficiency** and ensuring the total traceability of handled products. The main systems, designed according to the customer's application needs, are: palletizing robots, a wide range of Laser Guided Vehicles (LGVs), SILKWORM high-speed robotic stretch wrappers, depalletizers and WOODPECKER pallet control system, robotic labellers, AS/RS warehouses (Stacker Crane Solutions) and SMART STORE Multilevel Solution and SMART BOX compact solution for end-of-line. The whole process is managed centrally by a single software platform, named SM.I.LE80 (Smart Integrated Logistics), which ensures a "direct link" between systems and production processes, and the optimal and effective





management of all internal and external plant operations: from incoming raw materials to complete warehousing and shipping management. Currently, Elettric80 and BEMA have installed more than 2,000 robotic systems and 4,500 Laser Guided Vehicles worldwide and have collaborated with Tetra Pak at a **global level since 2007.** Beyond their headquarters in Viano, Elettric80 and BEMA have set up branches in Australia, Brazil, Chile, the United Arab Emirates, France, Great Britain, Mexico, Poland, Russia, Sweden, USA and Thailand (Bangkok). In addition to their innovative solutions, Elettric80 and BEMA guarantee their worldwide business customers a 24/7 remote and on-site assistance and support service which ensures they remain highly efficient over time. In fact, Elettric80 and BEMA technicians work around the clock within the two companies' Customer Service and Support Centers. For larger, more complex systems, Elettric80 and BEMA can deploy **Embedded Engineers** with the aim of guaranteeing efficiency to the plants proposed over time. All technicians are engaged in continuous training programmes, assisting testers in the workshop; thus, they are all constantly updated on the technological innovations that will be implemented in the customer's plants.

Fully integrated tissue converting facility

Roto-cart S.p.A. is a top quality integrated tissue producer, manufacturing toilet rolls, kitchen rolls, napkins and AFH products. All **premium products** are distributed through the brands **Sensitive and Toffly** for consumer market and Formula for away from home. The Company produces parent reels in the Group's mill base in Borgo a Mozzano (Lucca) and converts them into finished goods at the completely new 48,000 m² manufacturing, storage and distribution facility in Castelminio (Treviso). In addition, the Company operates a second converting plant in Piombino Dese, in the province of Padua, and currently the Group's Headquarters. Nowadays the Group supplies some of the Italy's largest retailers and wholesalers (2.7% market share of Italian market). The Group currently has 11 converting lines in operation, which include 5 recently commissioned lines (including the most advanced 900 meters/min Perini Print Unit equipped with all carbon rollers) for the completely new plant in Castelminio (this plant represents the state of the art in terms of integration and flexibility in the tissue market). For its new cutting-edge converting facility, Roto-cart S.p.A. chose Elettric80 and BEMA as sole partner in the establishment of **one of the main greenfield production** facilities in Padua. This is another important example of a fully integrated factory, from raw material input, scheduling of production and related processes, palletizing, stretch wrapping and warehouse management, full interaction with the client's ERP system, to finished product preparation for truck loading. The group decided to entrust **Elettric80 and BEMA** with an investment of over 20 million Euros.





From smart factory to smart revolution

Sofidel boasts a net sales of more than 1.7 billion Euros (2017) and a worldwide presence. In an assertive and dynamic manner, Sofidel has internationalized its business efficiently, analyzing its manufacturing plants individually; it has reached this aim by relying on a technological and strategic approach for optimizing costs and the quality of solutions. Sofidel's latest project is a greenfield plant built in Ohio, for which the Italian investors were congratulated by former US President, Barack Obama in 2016. It is an outstanding 4.0 factory which is highly automated and integrated, from the raw materials to the truck loading: an overall investment of over 330 million Euros, 30 of which the Group decided to entrust to Elettric80 and BEMA. The greenfield converting plant, opened in Sweden in 2015, gives an idea of the magnitude of the project currently being implemented.

20 years betting on innovation

With an emphasis on high product quality and service, Papelera San Andres de Giles (PSAG) has consistently bet on technological and product innovation. Considered Argentina's most efficient and modern tissue manufacturer today, it's fair to say those bets have paid off. In 2016 PSAG was internationally recognized with the prestigious PPI Tissue Innovation Award, honoring its Leadership, Vision, Innovation and Strategic Accomplishments. Step by step, over the years, all production processes have been integrated and fully automated. Starting from the automated LGV-managed parent reel warehouse and flowing through to robotic palletizing, robotic stretch wrapping, LGV pallet transport, the 5-level high 10,000-pallet position LGV automated drive-in warehouse, automatic LGV pallet pre-staging, and the newly constructed self-supporting Smart Store high-density warehouse, 7-levels high housing 16,000-pallet positions. Papelera San Andres de Giles and the Gagliardi family selected and entrusted **Elettric80 & BEMA** every step of the way. •





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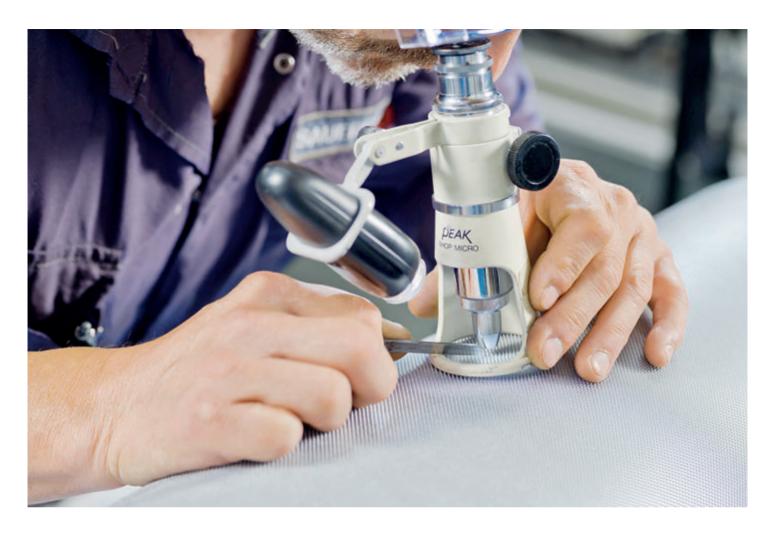
Lithium battery powered roll pushers





SAUERESSIG UNGRICHT one step further in engraving technology





In the beginning of June, Matthews International Corporation established its new brand SAUERESSIG UNGRICHT | surface solutions.

by: SAUERESSIG GmbH

herefore, the subsidiaries SAUERESSIG GmbH & Co. KG, UNGRICHT GmbH + Co. KG, Wetzel GmbH, DORNBUSCH Engraving GmbH and Saueressig Design Studio GmbH were merged to operate under one umbrella brand to deliver varied surface solutions. One of the main focuses lies on the field of tissue and hygiene industry. Already the acquisition in 2017 merged the two market-leading companies SAUERESSIG GmbH & Co. and UNGRICHT GmbH + Co. KG and therefore created an internationally unique network for roller production and engraving technologies.

SAUERESSIG UNGRICHT now bundles decades of expert knowledge and comprehensive competencies in internal innovation teams. Thereby a particular focus lies on optimising the engraving process for embossing rollers used in the match steel rollers (union) procedure for folded products such as napkins, handkerchiefs and facial tissue.



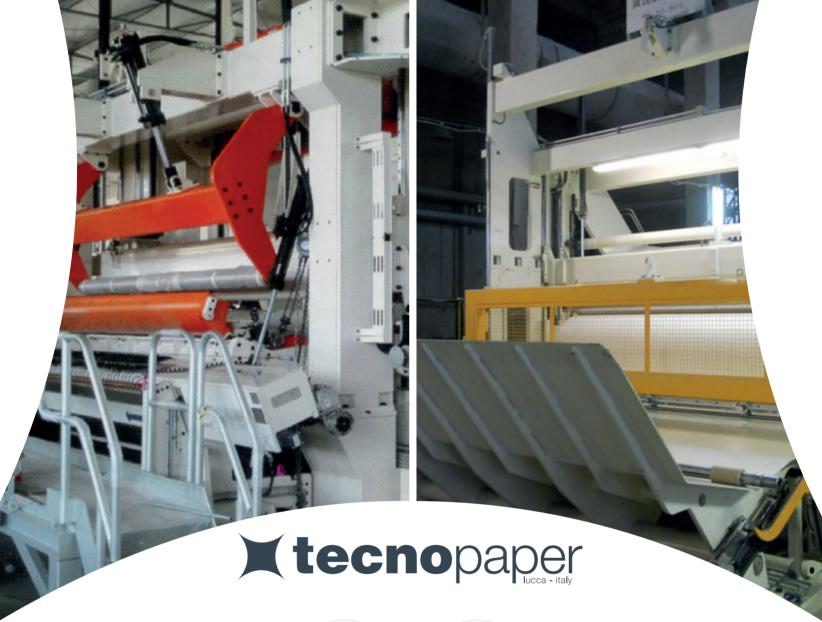


This engraving process is currently carried out using two different techniques: the mechanical process and the wet-chemical process. And although both have been established in the international production for decades, they have deficiencies the expert wants to avoid in the future. On the one hand mechanical engraving is followed by a hardening process which always involves the risk of hardening distortion. The most common wet chemical process, on the other hand, requires the use of acid, which always involves certain risks. SAUERESSIG UNGRICHT therefore aspires to evolve a process that avoids the risk of hardening distortion, makes the use of aggressive acids unnecessary and eliminates human error. In close cooperation with a manufacturer of laser engraving machines, the experts have now succeeded in developing a new laser unit. This allows the desired structure to be applied directly on the hardened roller surface of the embossing roller and therefore reduces possible losses of quality. With the further development of this innovative technology SAUERESSIG UNGRICHT wants to make a significant contribution to quality assurance and prospectively set new standards on the international market.

SAUERESSIG GmbH + Co. KG

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Solar Turbines, 90 years of history





Solar Turbines has been a global leader in energy solutions for over 90 years. Today, Solar Turbines is a key player in the 3.5 to 23 MWe segment of the global gas turbines market.

by: Solar Turbines Switzerland Sagl



ounded in 1927 as an airline company in Prudden - San Diego and later renamed to Solar Aircraft Company, the organisation evolved and developed during the second world war, producing exhaust manifolds for US aircraft and high temperature components, with a continued focus on pioneering techniques, until the development of the first gas turbines and jet engines. This was the beginning of a decades-long journey that eventually led Solar Turbines to become the world leader in the industrial gas turbines and turbomachinery packages sectors.

Tailored energy for different business needs

Today, Solar Turbines can count on more than 16,000 turbines operating in the Power Generation and Oil & Gas segments and is present in over 100 countries, with more than 2,000 Megawatts

installed. The Company's numbers are also significant in the Pulp & Paper industry: over 150 total machines, 20 units operating on Tissue plants in direct drying mode, for a total of 232 Megawatts, installations that help and support customers to obtain operational savings of over 30% in their production and utility costs. The **Solar Turbines Group** is able to offer and support its customers in every project phase, starting with a feasibility analysis and the selection of the turbine that best integrates with the specific production process, all the way to the project implementation phase, in collaboration with leading suppliers of Tissue technologies and machinery. The Company's integration towards the production process, with a focus on Solution Provider, was recognised by over 1,500 customers, which turned to the solutions provided by Solar Turbines for a wide range of industrial applications in order to obtain savings on operating costs and reduce their CO, emissions.



66 The most energy efficient solutions for the tissue production

Customer care & lifecycle support

The team of experts operating in more than 60 locations around the world is able to intervene directly on site - 24/7, 365 days a year - to resolve any electrical, process or control-related problems. Thanks to the significant number of turbines installed around the world, our Analytics System allows our technicians to capture and analyse vast amounts of statistical data in real time and then apply a predictive diagnosis on the installations, improving their performance and security and therefore extending their expected lifetime. This predictive system makes it possible to intervene quickly and above all at scheduled intervals according to the customers' production needs, minimising any related downtime.

Industry 4.0

In 2004 Solar Turbines introduced the Company's first direct drying applications based on gas turbines, directly using the exhaust gases produced by turbines for drying paper in Yankee hoods. The use of this technology has since spread internationally, thanks to the significant cost savings obtained in the tissue paper and pulp & paper industries. Subsequently, within an Industry 4.0 perspective, Solar Turbines has developed new energy solutions designed to optimise the entire cogeneration process, with the full integration of operating parameters external and internal to the production system itself, capable of generating significant benefits both in terms of costs and in relation to the management of the equipment. In practice, this is achieved through the integration and management of all data that can be collected from the plant,

in order to balance the production of heat and power with changes to production processes, tariffs, incentives and opportunities for load sharing, in order to maximise cost savings.

By relying on an integrated data-driven approach, Solar Turbines is able to generate a greater added value of production, leading to cost savings and increased competitiveness. Moreover, from 2001 to 2017, the optimised use of production processes has made it possible to obtain saving of over 6,000 million tons of CO, emissions.

The future is already here

Today, Solar Turbines introduces the renewed Taurus 70 and Titan 130 turbines, redesigned to be even more efficient in the cogeneration segment, allowing Customers to benefit from more competitive production processes. The continuous focus on research and on the renewal of its product range makes Solar Turbines an ideal partner to help you meet the challenges of tomorrow in terms of energy efficiency and sustainability. •

Solar Turbines Switzerland Sagl

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contact person: Thomas Schulze - Market Development Manager phone: +41 91 8511844 - email: thomas_schulze@solarturbines.com



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CPS 452, a secondary packaging

machine based on the Pull Technology.

n 1977 Mr. Paolo Cassoli - a pioneer in the production of packaging machines for tissue products who started working in the field in 1964 - created the first secondary packaging machine that functioned using a single polyethylene reel. This invention was what actually gave birth to the solutions implemented for the following 40 years by every producer in the field, the now widespread "Push Technology". After many years - and the production of many machines - the company led by Paolo and Stefano Cassoli is still a pioneer in the development of packaging technologies, offering solutions for primary, secondary and end-of line packaging for folded products, rolls, industrial rolls and personal care products, thanks to its 4.0-ready machines. Notably, those exploiting the **Revolving** Technology make up the third generation of machines for the primary packaging of tissue products. The technology on which they relay, on the market for years, has been improved by CPS and made fit for new and broader applications, ensuring excellent packages - of a quality impossible to obtain with conventional systems - high yield and reliability. The Italian company's machines work with every kind of packaging material on the market - thus avoiding waste and allowing the use of pre-existent stocks - and make the need for upkeep interventions less frequent, since the mechanical stress on moving parts is reduced. The Revolving Technology is what the CPS 800 line of machines - for the primary packaging of napkins and interfolded products - is based on. A range of 7 models of machines, able to pack products of different size, with an output going from the 40 packs per minutes of the CPS 808, the only machine able to pack napkins both in bulk (vertically) and flat (horizontally), to the 120 packs of napkins per minute of the CPS 803 - and of its counterpart CPS 803 FT, for the packaging of interfolded products. The Revolving Technology is also used in the **CPS 150** machine for the primary packaging of rolls, with an output of 150 packs per minute. True to its calling to innovation and creation of new and better packaging solution, CPS introduced a new, patented technology, a breakthrough in the market: it's the Pull Technology, the perfect solution for secondary packaging, which increases the quality of the packages while using from 20% to 40% less packing material than conventional methods. Machines using this technology work both with neutral and pre-printed film, providing





66 Our mission is to build cutting-edge automatic systems for disposable paper and tissue products 99

▼ The new top-loading case-packer CPS 660.

a positive unwinding of it and creating tighter bundles without the need to use shrinking tunnels, with a great saving of energy and packaging materials, thus contributing to the safeguard of the environment. The potential of this new technology is embodied in three machines: CPS 352, CPS 452 e CPS 864. All of them are perfect for the high-speed packaging of napkins, interfolded products and rolls, effectively working on products for personal care, family care and also on products for professional use. CPS offers machines for every step of the packaging process, including end-of-line and case-packing: is to this phase of the production cycle that the latest arrival of the Cassoli family - presented to international buyers during last July Open House - is dedicated: its' the CPS 660, a top-loading case-packer with an output of 20 packs per minute, which uses an advanced robotic system and whose main feats are versatility and compatibility with production lines for every kind of products. "What makes our machines unique is our constant drive to improvement, and the fact that they all come from a research that listens to the actual needs of the market." So says Stefano Cassoli, CEO and Managing Director of CPS, who adds: "Our mission is to constantly search for new and better ways to meet our clients' needs. Today, this means offering a line of machines suitable for every production line and which ensures the best possible efficiency. We've always been considered pioneers, and love to explore new ways and find new answers to every request of packaging producers, for tissue and no-woven



products. To do this" he concludes, "we exploit the invaluable synergies with the other firm of Cassoli Group: Ecocap's, a company holding patents for the heat-sealing of aluminium lids on cans using high-speed machines, a leader of innovation in the field. Thanks to the constant synergies and exchanges with Ecocap's, our ideas are in constant movement, stimulated by the insights coming from the beverage market, today a very lively reality".

CPS Company S.r.l.

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AFTER YEARS OF EVOLUTIONS, WE HAVE ESTABLISHED A NEW REALITY. WE HAVE INCORPORATED THE KNOW-HOW AND THE DISTINCTIVE ELEMENTS OF EVERY COMPANY OF THE GROUP, TO SAIL TOGETHER TOWARDS THE SAME DIRECTION. A NEW BRAND THAT PROTECTS ALL THE TRADEMARKS OF THE GROUP WITH AN INNOVATIVE CONCEPTION. A NEW VISION THAT REDEFINES THE GUIDELINES OF ALL THE VISUAL AND COMMUNICATIVE ELEMENTS OF THE GROUP.











W W W S A D A S G P O U P . I T







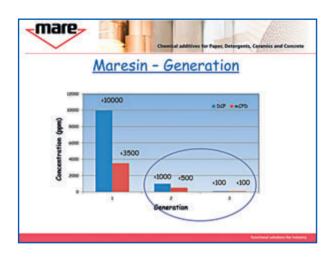


Polyamidoamine-epichlorohydrin resins (PAAE) for the production of wet-resistant papers coming in contact with food-stuff, reducing by-products content (DCP/MCPD) in order to obtain more and more environmental friendly products while maintaining wet-strength resin performance. by: MARE S.p.A.

> ince the early '90s PAAE resins for wet resistance have had a technical development mainly linked to the reduction of chlorinated organic substances from the processes of hydrolysis of epichlorohydrin, better known as DCP (1.3-dichloro-2-propanol), mCPD (3-monochloro-1.2-propanediol) and AOX (absorbable halogenated substances). We then moved from defined first generation resins, where the content of the chlorinated by-products had values higher than 1,000 ppm (typical values from 4,000 to 9,000 ppm), to second generation products (values of by-products <1,000 ppm) such as the Maresin MC and VHP series. To meet the need to reduce the environmental impact of our products, since the 2000s, Mare has proposed a series of products classifiable as generation 2.5 on the market. The treatments to which they are subjected have allowed a strong reduction of the AOX content without neglecting the performances. These include the Maresin series ST, PST as well as MZ +, the latest technology of our research and development laboratories. The application in the food industry for the production of special papers, such as teabags

66 MARE provides the Tissue and Towel producers with all the chemical requirements to ensure optimum product quality





■ Maresin
Generations.

mare

Maresin - Properties AOX, ppr DCP, ppm mCPD. ppm VHP <800 <500 <4000 <800 <600 <2500 MZ ST <200 <250 <1000 PST <300 <500 <1000 MZ+ <200 <300 <800 <50 < 10 0 <700

► Maresin Families.

66 MARE has the capabilities and experience to meet all your chemical needs 99



▲ R&D laboratory.

and coffee filters, has led to the development of the newest third generation PAAE resins, where the contribution of pollutants is less than 5 ppm. Maresin M1 and M1.0 belong to this category. Mare, more and more attentive to the environmental impact in the use of chemical products for the production of paper, has implemented the current production system with new technologies, obtaining new fourth generation PAAE resins where the content of halogenated

absorbable substances (AOX) is lower than that of third generation products. Maresin GNM is proper to this category. In parallel to the PAAE resin purification process, research has focused on improving its performance, optimizing the kinetic and thermodynamic aspects of the production activities. Plant investments, such as the automation of the manufacturing system, have allowed us to guarantee a high quality standard, also improving production capacity. Through the constant and continuous development of our PAAE resins, Maresin series, Mare was able to obtain a wide range of products in order to satisfy all the technical requirements that the paper market requires for paper production. In particular, for the production of Tissue papers coming in contact with food-stuff, MARE has developed an advanced portfolio of products able to meet the most advanced regulatory requirements such as BfR (Bundesinstitut für Risikoanalyse), FDA, D.M. 21/03/1973 and subsequent amendments and the China GB 9685-2008 Standards, without forgetting the RAL-Umweltzeichen, Nordic Swan and EU Ecolabel requirements. One of the objectives of MARE is to constantly develop and improve its products, to always be in line with the needs that the market and our partners propose, with particular attention to the environment. Our R&D and commercial staffs are ready to assist and deliver the best possible solutions.

MARE S.p.A.

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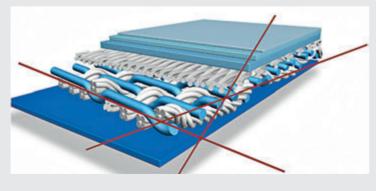
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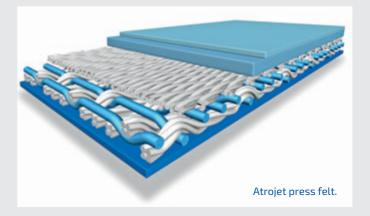
Atrojet from Heimbach. Tailor made press felt technology

Even at the beginning of its development, Heimbach product managers were sure: Atrojet has the potential to usher in a new era in press felt technology.

by: Heimbach GmbH



▲ Increased number of crossing point of all yarns is the leading feature of multiaxial felt technology.







■ Members of staff from Heimbach Switzerland and colleagues from Germany in front of the new production facility.

e promised paper manufacturers that we would develop a press felt that creates completely new opportunities", Jochen Pirig, strategic product manager at Heimbach, remembers.

This has been accomplished, as Atrojet is the first felt worldwide that unites the advantages of Heimbach's most significant press felt design groups: the non-woven design group Atrocross and the multi-axial design group Atromaxx who both belong to the

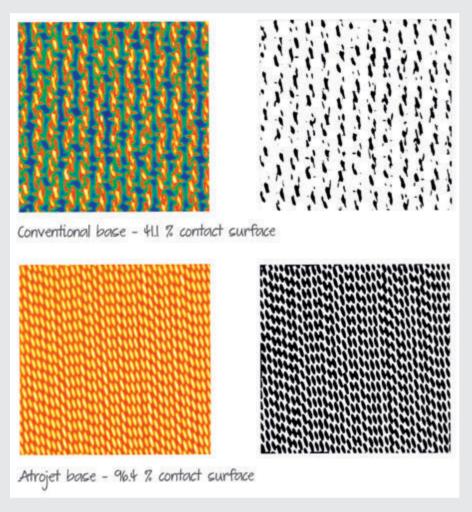
66 Atrojet represents the next evolutionary step in felts sector \P



▲ Especially designed for the production of tissue papers.

modern felt designs, so called advanced technology bases (ATB). Non-woven Atrocross and multi-axial Atromaxx press felts are offering comprehensive product ranges in their individual design group to meet the requirements of press felt application. Either design group have their prominent advantages such as short break in time and high nip dewatering capacity of Atrocross or the great flexibility of base weave combinations of Atromaxx to meet individual and particular requirements which is important for customized well-engineered press felt application. In addition to these two modern press felt design groups the classically woven, respectively laminated base weave felt designs, belong to the Heimbach assortment too. Even though the existing product spectrum of Heimbach is sophisticated, Heimbach keeps on improving its existing product lines and developing new products. **Atrojet** is the brand name of one of Heimbach's latest developments which is an innovating new press felt design combining the advantages of multi-axial and non-woven technology. With the multi-axial non-woven technology the Heimbach felt designers can meet the particular requirements of press felt positions even better. The specific quality of Atrojet is the structure of the base inside. With Atrojet the inside base facing the paper side consists of a unique non-woven layer. That layer of yarns is made of machine direction yarns only which results in great strength, evenness and smoothness of the base facing the paper side. The machine direction (MD) yarn structure is arranged in diagonal direction which is the characteristic multi-axial angle improving collapse resistance by increasing crossing points of all yarns. Broad flexibility is given by the fact that the non-woven





▲ With its uniform machine direction yarn structure Atrojet has far greater surface contact than conventional bases. This leads to more even pressure transmission at the press nip resulting in very steady dewatering and even CD profiles.

paper side layer can consist of different ply twist yarns as well as different yarn diameters and flexible yarn count.

The evenness and uniformity from inside the felt provides smooth felt surfaces through high contact area. The homogeneous and high contact area of Atrojet base is superior among press felt technologies. Homogeneous compact felts are important features for Tissue felt application regarding even pressure transmission

at the press nip which is key for even dewatering and even CD profiles of the paper. The roll side base of Atrojet felts is made of multi-axial arranged components and are selected as per individual request concerning void volume, mechanical strength etc. and

Heimbach GmbH & Co. KG

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in context of the individual requirements of the position e.g. one or two nip positions or shoe press position, uhle boxes & vacuum rolls involved. A typical **Tissue Machine** could present the performance of a press felt in the proper light. Mileage of >100,000 km while passing about 6 Million nip cycles and handling > 50,000 m³ of water are normal requirements for a Tissue felt. In addition, the level of performance is expected to be at steady high level all along the service life of a felt. Modern press felt designs from Heimbach are high-tech products which meet these requirements. In case that process parameters vary very little the felt design can be fine-tuned to its maximum performance under those standard conditions. More the process parameters vary more challenging can be the designing to get an adaptable felt design. Typical example of varying process parameters are paper grade changes which include machine speed and paper weight changes but also affect usage of different furnish compositions like virgin pulp or recycled fibres as well as usage of wet strength resin or dye and fixative. Production planning is always aiming for as smooth as possible transition of process parameters during machine clothing lifetime. But these days flexibility can be key too, just to think of just-in-time deliveries, so sudden process changes may do occur. These changing conditions the press felt has to tolerate. Here the Atrojet design flexibility can offer advantages to adapt

to those changing conditions well. Thanks to the homogeneous and strong inner structure, which also contributes to high fibre batt anchorage, Atrojet has proven its robustness towards harsh high pressure shower cleaning which can prevent felt clogging e.g. when changing from virgin pulp to DIP and/or producing non wet strength to wet strength grades. Atrojet has been proven itself in the field to be able to take up even long-term laminar

HP shower at pressure in range of >30 bar. The company has considerably invested in the facility in Switzerland: within the Group the Olten facility is considered a competence centre for multi-axial products in web technology. •

Technology and Italian style since 1929









fter almost 30 years from the first PLCs and 20 years from the use of PC in the supervisory systems, many articles have been written about this matter and about the correct procedure to list and monitor the plant component status. But despite the numerous articles on the subject, most of all in Small and Medium Enterprises the problem remains.

Personally, I like to underline another aspect, yes, the material becomes older and with difficulties of replacement but to me it is more important the loss of knowledge of the systems due to the turnover increasing and the retirement of the engineer that 20/30 years ago have built the control system.

Focus on that SADAS group, with more than three decade of experience in the customization of control systems, has specialized its engineer with continuous knowledge training policy. A control system integrator like SADAS is a great source of help and advice, because of the knowledge and because the continuous relation with the main component suppliers.

SADAS can combine solutions to avoid the total replacement of parts and combines the replacement of equipment with the renewing of what is in place, aiming to propose the best solution at the lowest cost. In the paper sector, a sector in which SADAS was born and has grown, the problem of the obsolescence of the equipment as described is very urgent to be addressed. On the one hand, however, if replacing the old PLC (like SIEMENS S5) with the new S7 systems or the Simatic 1500 is considered a fairly routine, with a lot of applications already done, it is not so for DRIVE control systems or for those DCS systems with a closed environment system supported with difficulties also from the main suppliers. It is especially here that the knowledge of SADAS on products and processes acts successfully, providing the customer with a valid and specialized economic alternative.



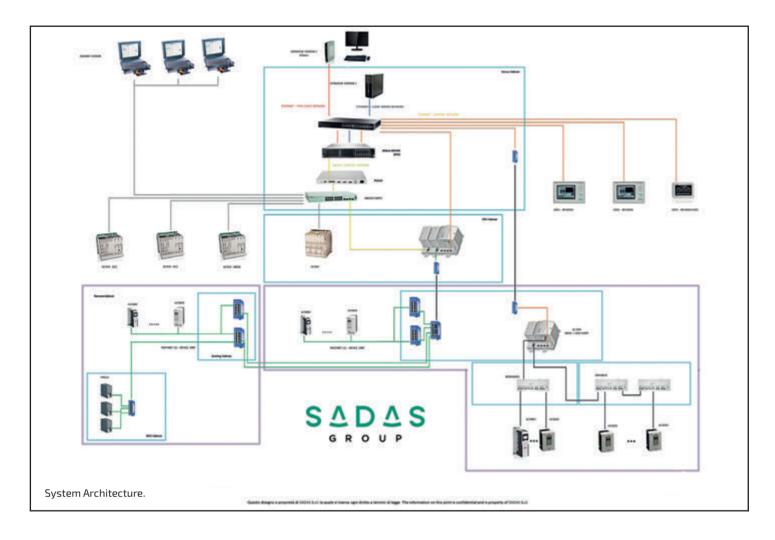
Some examples

In the European paper mill typically, you will find two main technical environments: SIEMENS or ABB with the same issue and possible solution. Specifically, in the ABB world, SADAS has recently optimized and started the replacement of the machine drive control keeping the power part as is giving to the customer a very competitive solution.

The problems

- An obsolete but still repairable drive made with many ACS600 and other ACS800;
- The needs to make changes after mechanical modification of the system with the addition of new drives (ACS880);
- The needs to modernize a plant with an obsolete APC control system and to implement a new diagnostic more appropriate to the times;
- And last but not least the need to have a single company who took all the part of the assembly, changes to the panels, sw and start-up. SADAS was able to guarantee the personnel for the necessary modifications and replacement of the networks already in the pre-stop phase. Then, technically:
- The old APC's control panels and the supervision made with an old AC450 have been eliminated;





- The new communication interfaces have been inserted, restoring the existing optical fibers to the existing ACS600 and ACS800 DRIVE;
- A new 800M CPU has been inserted with the related communication cards and the new control panels;
- Connected and interfaced with the new and old DCS paper mill system (in this case 800xA and AC450).

 The plant started up successfully with the new OPEN drive application software that SADAS has developed over the years.

 What does OPEN drive SW mean? It is very simple. SADAS' SW do not use property blocks, but just the standard library and then perfectly verifiable and maintainable in short and specially in long term. In addition, the new SW allows more up-to-date diagnostic techniques, first out alarm and other, allow an immediate fault

analysis from the panels and the HMI. It is important to underline that the choice to maintain an ABB solution has been linked to the presence of the ABB DCS in the paper mill. It would also have been possible to completely change the control system to switch to a SIEMENS control CPU in case of request and especially in case of greater competence of the maintenance technicians. Similarly, in another way, more and more old SIEMENS systems with old SIEMENS controls (such as SIPRO or similar) have been replaced with ABB 800M controls. This is to say that today a modern system is no longer bound to an existing type of brand or product. With the knowledge it is now easier to choose also mixed solutions with the goal to provide the best of each product facilitating the maintenance engineers in their daily jobs. And it is precisely the knowledge that SADAS makes available to the customer. •

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W+D FLOWTOS:

The industry's fastest 2-lane tissue-fold and packaging machine







MACOPAL: a history of passion

The approach of the Summer creates a natural connection with the Iberian Peninsula. The abundance of natural beauty, with beautiful mountain landscapes and sunny beaches, and cities rich in history and millenarian culture have made this country one of the main tourist destination in the world. This fabulous condition, without forgetting the almost 50 million of inhabitants, has made Spain and Portugal a very interesting market for the Tissue industry.

by: OMET SPIL

he local industry shows a multifaceted panorama: first of all, we meet some historical brands, which contributed to the spread of tissue use among Spanish families in the first phase of tissue introduction in the market, and there is as usual the presence of subsidiaries of multinational companies.

Next to them, an interesting number of small and medium-size companies, which found their place in this dynamic market. Macopal SL is a typical example of these companies. Founded more than 25 years ago, it is a family business company, the result of the work and passion of the Gutierrez family. As often happens in these cases, it all started

with very small structures and limited investments, but supported by will and enthusiasm. However, results arrived, thanks to the commitment of the whole second generation of the family. Today, the various functions (administration, commercial, technical and general management) are shared between the three brothers Andres, Carolina and Carlos. Nowadays Macopal continues in the tradition traced by the patriarch Andres, who decided to serve two different markets, the converting of aluminum and the converting of tissue. The historic Macopal factory in Llica de Vall hosts the administration headquarters and the whole aluminum converting department. Every day tons of aluminum are transformed in





products of domestic use (rolls, plates and trays, all for food use). In this factory, during the first years, part of the space was dedicated to the production of napkins. "When we decided to produce napkins, we bought a first machine made in Spain. We were obviously inexperienced and for some time we wondered if we had made the right choice", explains Carlos Gutierrez. "But the market gave interesting signs, so that we decided to continue in this direction." It was when the meeting with OMET took place. "I was at Graphispag exhibition in Barcelona in 1998. I saw OMET machine at the show and I was struck by the quality and the technical solutions. I have always been attracted by technology and I was sure it would do for us.

I was very young, but I talked to my father, and I convinced him in this direction. It was the beginning of a long story. Throughout the years, together with Alberto Redaelli (OMET sales manager) we discussed market trends every time, agreed the various configuration of new machines, and the new products that we could have added to our range", adds Gutierrez.

▲ External view of the Llica de Vall factory.

66 The expertise of OMET in the tissue converting sector is the result of years of leadership in the tissue market





▲ Some examples of placemats produced by Macopal.

▼ Some examples of the napkins produced by Macopal. Today Macopal has become a small, big company in the market, able to supply a very wide range of disposable products in paper, aluminum and plastic. In addition to serving market of Catalonia, it is present in many other regions of the Peninsula, serving up in Andalusia, Castilla and the islands. As far as tissue products are concerned, in addition to the classic 1-ply and 2-ply napkins for the "consumer" market, which are sold through local and national supermarket chains, Macopal



66 OMET tissue converting machines are renowned all around the world.

developed its own brand dedicated to the "AFH" market ("Hosteleria"), serving the catering sector directly linked to the tourism industry. Thinking about the last one, Macopal has recently introduced and developed a line of high-end placemats, with polychrome prints of high-resolution and quality subjects, representing the main tourist destinations of the country. This product is the direct result of the collaboration with OMET, which was able to provide a specific configuration for printing, cutting, counting and stacking of placemats.

The experience and precision of Macopal did the rest, manufacturing products of the highest quality and visual impact. One of the most popular products on the market, the point-to-point napkin, has obvioulsy not been forgotten. Born as a substitute for the most expensive airlaid products for the Away-from-Home sector, it also found a rapid diffusion in the domestic market. Also in this case Macopal added its experience, creating a line of products with high quality polychrome printing, to be added to the most conventional neutral products, however available in a wide range of colored tissue, both strong and pastel colors. The great machines park of Macopal, dedicated to tissue industry, has been positioned inside the second production site, located in Santa Eulalia de Roncana. The converting department is flanked by an impressive warehouse of finished products, which allows Macopal a rapid response and an efficient service to its customers, able to respond to the most varied requests. "Our family is very proud of what we have been able to build. With his teachings and in the memory of our father, who unfortunately has left us prematurely, we

OMET Srl

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devote all our efforts to what has always been his and

our passion" - Carlos Gutierrez.



TISSUE AND PAPER

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Thank you for visiting us at MIAC 2018!





Centrax creates a series of high-efficiency gas turbine-powered generator packages to suit a wide range of industries

Looking to repower your existing gas turbine installation? Need an energy partner who has a wealth of experience and who can repower not only their own equipment, but other manufacturers' too? Maybe it's time to talk to Centrax Gas Turbines.

by: Centrax Ltd

entrax Gas Turbines offers a range of power packages using up-to-date technology that can be used in Combined Heat and Power (CHP) which is ideally suited to paper production - making it better for the environment and better for profits. Centrax has designed and installed gas turbine packages for over 70 years and understands the importance of generating reliable and efficient power. Which is why it has invested in a comprehensive service system throughout Europe and Russia - to provide local support and maintenance, ensuring that units are in optimal condition and leaving customers free to

take care of their core business. All of Centrax's generator packages use reliable, high-performance Siemens core engines, and with power outputs ranging from 3 MW to 15 MW, packages can be scaled to match customers' specific needs. This power range is ideally suited to the demands of paper production with packages offering excellent operational flexibility.

In 2016, Mayr-Melnhof Karton, a board mill in Eerbeek, the Netherlands, approached Centrax for a solution to repower their plant. Centrax's CX300 8.5 MW generator set was selected because of its excellent fit for performance and thermal output, making it the most efficient in its class. Centrax was able to reuse





the installation's existing HRSG, foundation and turbine intake system and provide buy-back of the old turbine. Another CX300 8.5 MW is powering Ahlstrom Munksjö, Saint-Séverin, France, a world leader in the production of sulphurised paper for the food industry. The generator set powers the site and produces steam and electricity for the plant and its processes. One of Centrax's longest-standing customers is Smurfit Kappa Roermond Papier in the Netherlands, who have been running four CX501 packages at its paper mill for the last 36 years. These units have been serviced by Centrax throughout. In 2015 the units reached a one million hour milestone, and a

recent decision to upgrade the control panels to a state-of-the-art digital system was a vote of confidence for the longevity of the 501 engines. In 2016, Centrax Gas Turbines strengthened its relationship with Smurfit Kappa with an order for two 5.3 MW gas turbine generator sets to replace an existing CHP plant at a paper mill in the UK. The two CX501-KB7 DLE units are linked to waste heat recovery boilers to provide both electricity and steam for the paper manufacturing process.

In Italy, **Centrax Gas Turbines** has supplied Favini S.r.l. papermill with a CX501-KB5 high-efficiency cogeneration power plant. The indoor unit provides 3.8 MW of electricity plus 23 tonnes





66 Generating trust with clean, efficient power generation **99**

per hour of saturated steam used in the papermaking process. Favini benefits from Centrax's in-country customer support centre which services the unit as part of a Comprehensive Maintenance Contract. **Toby Boys**, Centrax's European Sales Manager, commented: "Centrax has a wealth of knowledge and experience working with the paper industry all over Europe. We're well positioned to support new customers wanting to improve their existing equipment and enable them to get the most out of their power plant". Unlike conventional power generation, CHP not only provides electricity but also makes use of the waste heat produced. This thermal energy can then be harnessed to create the steam, hot water and hot air needed in manufacturing processes. To arrange a site evaluation to maximise efficiency of your existing CHP plant, contact Centrax's Sales team. •

Centrax Gas Turbines specialises in the manufacture and service of gas turbine-powered generator sets ranging from 3 MW to 15 MW that use core engines from Siemens. The generator sets are used mainly for combined heat and power but also in base load, simple cycle and standby applications. It is a global company with a broad customer base throughout the world. Centrax has invested in a comprehensive service infrastructure that has earned it an excellent reputation in customer support leading to a 100% customer loyalty in maintenance contracts. This assured after-market care supports the lives of units and maximises revenues for its customer throughout the life of the generator sets.

Centrax Ltd

Shaldon Road - Newton Abbot - Devon TQ12 4SQ - UK **phone:** +44 (0)1626 358000 - **email:** info@centraxgt.com **website:** www.centraxgt.com



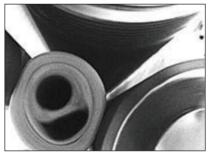
Total VISION Sees Your Tissue Production & Converting Problems

Papertech's TotalVision[™] has proven to significantly improve OEE on hundreds of tissue machines and converting lines with consistent performance and minimal maintenance. A TotalVision[™] system enables increases in machine efficiency and tissue quality by:

- Detecting and documenting all web defects
- Quickly finding the root cause of process interruptions and web defects
- Evaluating embossing and print quality



Dirt on the sheet captured by WebVision cameras could be the cause of a break further down the line.



Converting problems can be identified to avoid costly process interruptions.

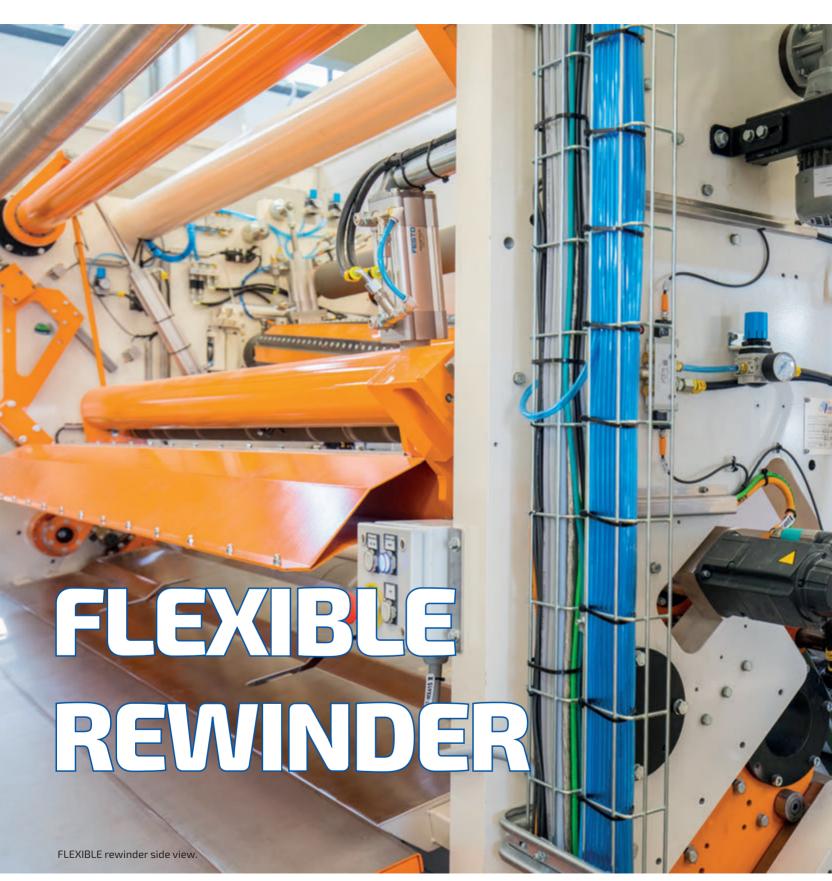


Holes detected at the winder can be traced back to locate the root cause of the defect.















▲ Enrico Ruglioni, European Sales Director Tissue at MTorres Tissue.

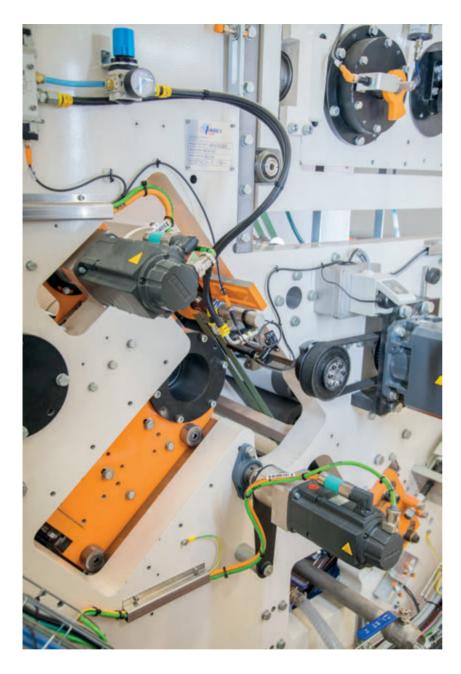
Flexibility is definitely a word really fashionable today and, depending on the context, it may sound positive or negative. As we talk about tissue converting,

Flexibility is definitely perceived as a real added value and, from being a "nice to have" feature, it is becoming more and more a real "must".

by: Enrico Ruglioni, European Sales Director Tissue - MTorres Tissue Srl

his is something that MTorres Tissue engineers definitely have had in mind since the very first machine, reflecting such philosophy in every single detail composing the full tissue converting line. Talking about the rewinding section, the parameters that may change from product to product are definitely a relevant number and, quite often, this means a long set up time that also requires skilled maintenance staff. This lack of flexibility is, in most cases, a real limitation for the product portfolio, and forces the Customer to reduce the product variations, standardizing as much as possible the product data. However, today's market is more and more demanding, and usually not open to accepting any kind of strict product limitations. One of the main variables that affects product changeover is, certainly, the core diameter. As more and more Away From Home (AFH) products and consumer products are cross-linked, the first need is to have a huge variation of the core size. The second topic is the difficulty in changing from one diameter to the other. This operation, on conventional rewinders, requires significant down time and, especially, some





mechanical changes that in most cases require the intervention of the maintenance staff. Another big challenge, still deeply related to this tendency of cross-linking between consumer and AFH rolls, is the diameter of the finished products. As we can see, looking in the market shelves, products with

a diameter of 200 mm are getting more and more popular, and the trend is definitely toward the larger diameter limit. This wide diameter change, if using conventional rewinders, would require separate ▲ Detail of lower rewinding zone.

MTorres Tissue Srl

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66 Research, development and production in the field of converting machines for the Tissue Industry 99

converting lines to effectively provide these different diameters. Perforation length is another parameter that is definitely part of the game, as most of the product innovation is based on this feature. The need to have variable perforation lengths, one significantly different than another, or, even in case of some specific applications, different perforations within the same product. The MTorres Tissue FLEXIBLE rewinder overcame all the above-mentioned issues due to state of the art flexibility. It allows an incredible range of core size (from 20 to 85 mm) and, even more importantly, core diameter changes are achieved through an HMI. This eliminates any mechanical intervention, and requires only a few minutes of down time. In terms of product diameter, within the same rewinder, Customers have the possibility of converting small diameter logs from 90 mm, up to the extreme case of jumbo rolls with an overall diameter up to 350 mm. Again, this diameter change is controlled from the HMI, requires no tools or maintenance personnel, and is achieved in minutes. The special construction and assembly of the perforation unit allows a wider range of perforation length and, thanks to the double perforation feature, the change from one perforation range to a completely different one becomes only a matter of different web path threading. Finally yet importantly, differently from any consumer rewinder today available on the market, FLEXIBLE rewinder is capable of producing multiple perforations and unperforated products as well with all the adjustments managed by HMI. All this flexibility has been implemented without sacrificing high-level performance of the FLEXIBLE rewinder that is capable of reaching a production speed up to 700 m/min, and an output rate of 40 logs/min. What is the next step?

Maybe producing coreless and cored rolls at the same time with an easy product changeover? Yes and we did it. However, this is another story for another day. Stay tuned and more to come...



we are innovation since 1966

TGV TecnoFerrari Guided Vehicles









Since the company's establishment in 1997, WVT Industries NV, with its headquarters in Aartselaar, Belgium and regional operations in France and Spain and Asian operation in Singapore, has grown rapidly into a leading manufacturer and supplier to the industrial cleaning market.

by: WVT Industries NV

heir customers include companies from various industry sectors situated worldwide, such as the chemical and pharmaceutical sectors, the automotive industry, aviation, metalworking, printing and packaging, marine, waste management, and transportation businesses. In addition, WVT is also supplier to many 'Private Label' customers in the Tissue Industry. WVT Industries provides customers with a broad range of safe and ecologically sound industrial cleaning products. Its product range is composed of over 650 items, varying from acids to strong alkaline cleaners. Additionally, the company is able to respond to customers' requests by developing specific cleaning chemicals to solve particular cleaning problems. WVT Industries attaches major importance to the environment and endeavours to ensure that its activities have the least possible impact in that respect. To achieve this aim, they ensure that all

their cleaning products are biologically degradable and bio-ergonomic. For the production of all its detergents, WVT applies the state-of-the-art technologies, using sophisticated software that controls the accurate mixture of ingredients and the production line, where they can monitor production step by step, assuring that each recipe receives exactly the correct amount. Automatic processing reduces human intervention to a minimum. The use of this technique enables them to adapt the detergent formulas to the customer's needs and allows WVT to take into account important factors such as: the nature of the pollution that has to be removed; the cleaning techniques and the ergonomic and environmental aspects. After having received contaminated raw materials sent to them by their customers, their Research & Development laboratory analyzes important parameters like the nature of the contamination, the method of cleaning that is currently used (circulation, high pressure, etc), possibilities

66 The company's customer base includes companies from various industry sectors situated all over Europe and beyond



◆ The Headquarters of WVT Industries in Belgium.



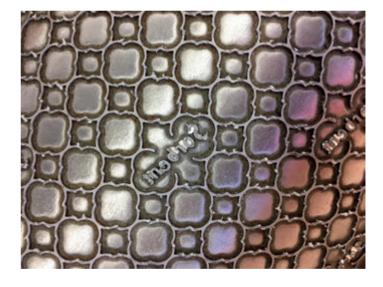


66 WVT Industries provides customers with a broad range of safe and ecologically sound industrial cleaning products

surrounding temperatures, the human parameters like whether protective gloves or other safety measures are permitted, the nature of the company (paper industry, printing, tissue converting, packaging, etc). With these parameters, WVT can quickly produce a tailored solution for its customer. For the **Tissue Industry**, in the past few years WVT developed a 100% water-based product, *Waterlube*°, specially designed for use during the production of tissue toilet rolls and kitchen towel products in the Tissue Converting Industry. It is designed to replace the use of mineral oil lubricants which have been traditionally used to avoid the build-up of glues on the steel rolls used in the lamination process with steel to steel rolls, pin to pin, nested, micro-deco, micro-macro, perf and fan. The formulation is non-corrosive and will not damage surrounding surfaces or equipment.

The product can be applied by spray, brush or felt applied in-line during the production process in an undiluted form guaranteeing a lower consumption with a saving of up to 30% compared with a comparable mineral lubricant.

Technically, *Waterlube** benefits the customer as it has a neutral pH and is completely water based; it has no flash point and it



eliminates the possibility of friction fires generated by the process. Furthermore, it has also a food-grade approved formulation, therefore following today's legal regulations. From ordinary everyday to the most complex cleaning solutions, WVT supplies the customer with a package of chemical cleaning options so that the converter can focus on its own core business. •

WVT Industries NV

Industrieweg 6 2630 Aartselaar - Belgium phone: +32 3 8707090 - email: info@wvt.be











Renova's Moviroll roll pushers are ideal to move tissue paper rolls with or without plastic film cover. Thanks to their compact and handy design, they can easily operate across the plant also where forklifts cannot.

by: Renova Srl





▶ Moviroll is designed to offer the highest performances

and to keep them unchanged over time.

oviroll roll pushers are designed, manufactured and assembled on site at Renova, Italy (Milan). This allows us to quickly work at competitive prices and to be able to support our customers with the highest quality standards also on personalized projects designed on customer specifications.

High performance over the time

Renova's Moviroll roll pushers are compact, handy and heavy-duty and allow the operator to easily and safely move tissue paper rolls of up to 20,000 kg (44,100 lbs) and of a maximum roll diameter of 4,500 mm (178"). Their maximum lift force of 5,000 kg (11,000 lbs) allows to easily place rolls on shuttle carts of up to 5 cm height. MRE battery powered models are equipped with a 24 V DC IP 44 motor powered by a high performance and plug&play 24 V lithium battery. The life span of the battery is very long, in fact it is equal to about 500 recharges of the battery. It ensures the operator to move 60-120 rolls with only one battery charge (3-5 shifts). The battery status LED will easily indicate when the battery needs to be recharged with the original battery charger provided by Renova (rapid battery recharge in maximum 4 hours). Moviroll MRE are provided with second battery optional. Plug&play batteries allow quick battery changes in less than 10 seconds without the use of tools and/or electrical disconnection, thus ensuring continuity of the operation. Moviroll MRE LPT model has been designed for tissue paper rolls as it is equipped with oversized roller ideal to handle soft material rolls. All battery models are maintenance free with a 2-year warranty applied also on battery.

We offer innovative solutions that increase the productivity and the safety level while reducing maintenance costs and procedures





Pneumatic models are also available. MR L models for tissue paper rolls use the power of a high quality pneumatic gear motor powered by pressurized and lubricated air at 6 bar. MR models are provided with air supply kit, which is inclusive of spiral pipe, lubricator filter and pipe fitting.



▲ Moviroll MRE battery driven roll pusher offers the advantage of free movement without the constraints of the pneumatic connections or electrical cables.

◀ High performance and plug&play 24 V lithium battery.

High safety level in plant

Moviroll roll pushers meet the safety standards laid inside the plant as they prevent injuries by helping the operator to easily and effortlessly move paper rolls across the plant with no more forklift track needed close to the machine. Besides, battery Moviroll models are pioneers of eco-friendly roll pushers as they are the first-in-industry roll handling systems equipped with lithium battery, which is completely free of any environment polluting acid also dangerous for the the operator. All models are managed by TUV - ISO 9001.

Renova's Sales and Technical departments are at disposal for any further information and needs. Demonstration videos on www.renova-srl.it

Renova Srl

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Atrojet.T

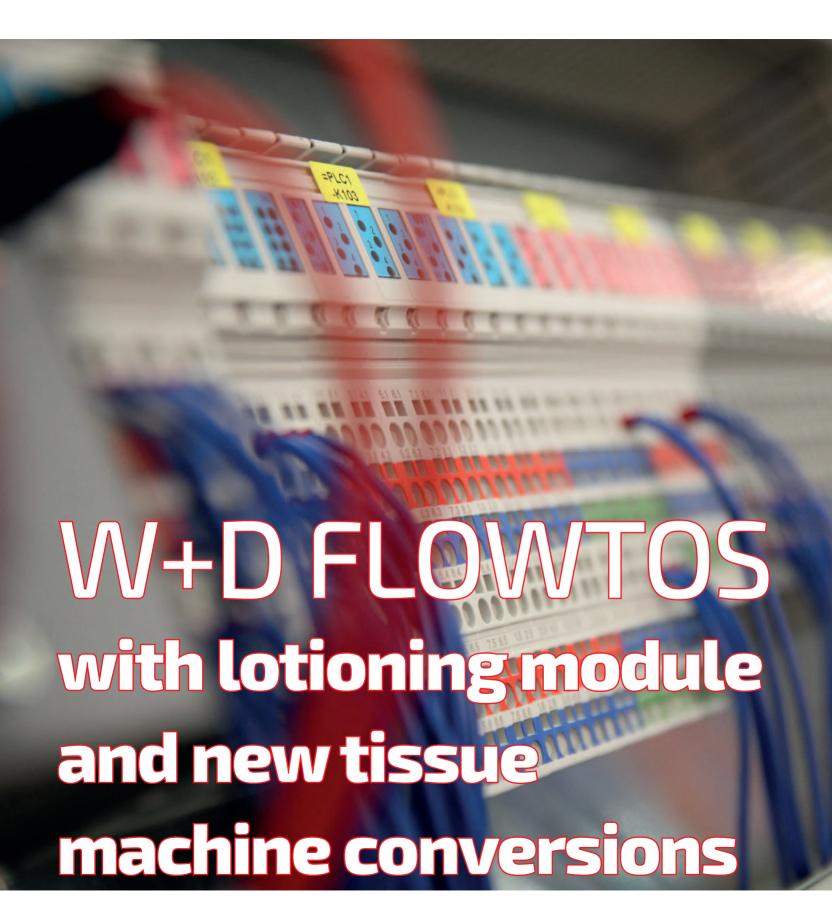
Tune your tissue - with perfect felt designs

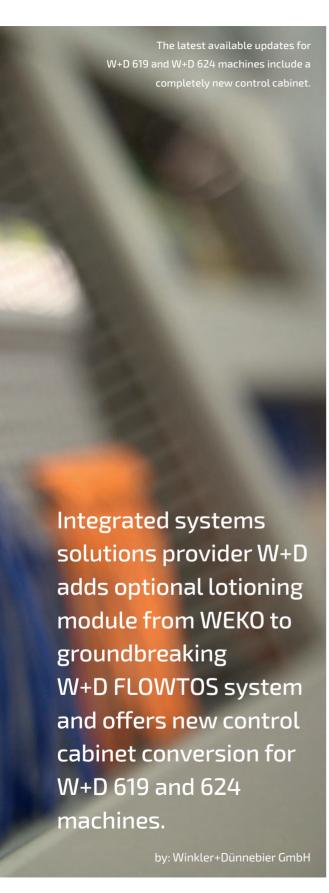
Atrojet.T is ideal for use in tissue production thanks to its tailored multiaxial non-woven module:

- Highly flexible and adaptable yarn structure
- Tailor-made felt designs **precise and even**
- Very **fine or coarser** open designs available
- **High dewatering** and even **CD profiles** due to high contact area
- Improved void volume retention and effective felt cleaning
- High tensile strength potential for economic life time











▲ W+D FLOWTOS is the fastest 2-lane handkerchief system.

he W+D FLOWTOS system has established itself as a technological mainstay in flow-wrap tissue folding and packaging production. The converter's high-performance capabilities and flexibility have benefitted customers across Europe, South America and Africa since its introduction in 2013. FLOWTOS offers the double advantage of optimizing tissue production efficiency while reducing wasted resources. Besides features such as the Autosplicer, Foilsplicer and Tape Applicator, FLOWTOS makes further tissue production optimization possible in the form of professional training. W+D offers courses in operating the FLOWTOS technology to qualify machine staff worldwide. The solution's potential advantages thus come to the fore, supporting optimal job preparation, machine maintenance, production quality and efficiency. Training courses are also available online.

New option of lotioning and perfuming

New to the FLOWTOS offering, the converter now comes with the option to integrate lotioning modules in all tissue machines from W+D. The system currently utilizes the WEKO lotioning module, with future diversification possible. The WEKO module helps to meet the growing demand for lotionized and perfumed tissues, which are becoming more and more popular to consumers. Tissue manufacturers are faced with the challenge of fully integrating lotion application systems into their production lines without disrupting their working environments. W+D successfully integrated lotioning systems to suit the company's customer and consumer demands. Without compromising its processes, equipped with a lotioning module, FLOWTOS is now able to apply softener, fragrances and other applications

66 Our core competences are focused on tissue fold and hygiene industry 99







66 We supply innovative machine technology for the batch production 99





▲ W+D FLOWTOS may be equipped with the WEKO rotor damping system to apply liquids.

Winkler+Dünnebier GmbH

Sohler Weg 65 56564 Neuwied - Germany **phone:** +49 2631 84505 - **fax:** +49 2631 8470505

website: w-d.de

contact person: Marc Schnell

to fit customer's needs. The application unit is fully integrated, resulting in a seamless production line with high ease of use. The lotion application system has virtually no impact on working environment, thanks in large part to the fact that the system emits much less aerosol into the air than similar available models. This in turn offers the additional advantage of placing less demand on machine operators to make adjustments. W+D's advanced solutions help its partners offer unique production systems for their customers.

The addition of the lotioning module allows the application of substrates on tissue webs that ensure specific, controlled processes critical for its industry. The system includes application heads, pumps, controls, and filters.

Control cabinet conversion for W+D 619 and W+D 624 machines

Another new solution from the integrated systems provider, W+D is now offering conversions to its W+D 619 and W+D 624 tissue production machines. The quickening pace of hardware and software is by now no secret to anyone, and though W+D's hygiene machines enjoy a long life, they are not spared from developments in demand.

W+D's suppliers are now able to replace older motors and controls with more modern units and software that meet today's needs. W+D has developed a modern solution with a range of features to take advantage of so as to ensure that the W+D 619 interfolding machine for facial tissue production and the W+D 624 tissue production machine continue producing as smoothly as possible. W+D's conversion includes a completely new control cabinet, replacing all servomotors and cabling. A practical large operating display equipped with touch functions is designed to optimize operation and ease of use, while modern software extends the machines' diagnostic capabilities such as W+D Remote Support for quick online help. •

Value built

We work together with tissue industry to address the needs and opportunities created by global megatrends such as urbanization, digitalization and growing middle class. Combining best-in-class application expertise, latest technologies for smart process management and a complete chemistry portfolio, we help customers improve their process efficiency, productivity and end-product quality.

Read more at www.kemira.com



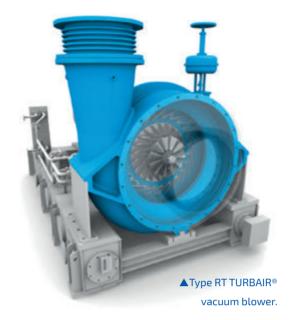
kemira



TURBAIR® vacuum systems save 40-50% production costs on paper dewatering

MAN Energy Solutions in Zurich continues to expand its market share in the tissue segment. Tissue manufacturers are increasingly equipping their production facilities with TURBAIR® vacuum blowers.

by: MAN Energy Solutions Schweiz AG



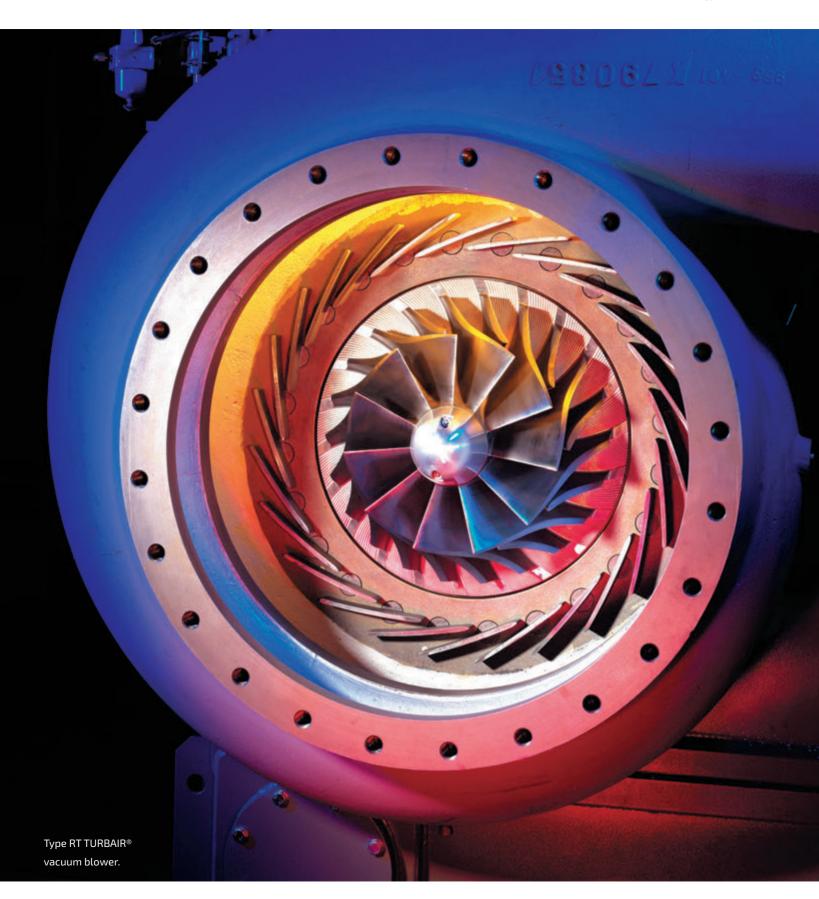
ising energy prices and growing environmental awareness have led to a sales boom for MAN's vacuum systems in the tissue segment over the last 10 years. Sanitary paper manufacturers appreciate the many benefits of blower technology compared with traditional vacuum generation using water ring pumps. Vacuum systems play a central role in the paper production process. They are deployed at the point in the production process at which the installation dewaters the paper using vacuum. MAN's one-stage RT is now very widely used for new tissue machine installations. There is also a fast-growing trend towards conversion, with the old vacuum systems previously installed in existing tissue machines being replaced with RT blowers. The RT 56 is most popular for the narrow 2.8 m tissue machines with production speeds of up to 2,200 m/min, while the larger RT 71 is the preferred model for 5.6 m tissue machines. MAN covers all the usual manufacturing processes: conventional crescent former, TAD (through-air drying), ATMOS (Advanced Tissue Molding System) and Advantage NTT technology for producing sanitary paper.

Resource-efficient and cost-saving dewatering

The sustained success of the single-stage TURBAIR® is based on a number of factors:

- Compared with traditional water ring pumps, a TURBAIR® blower from the RT series requires only about 45-55% of the absorbed power;
- The volume flow changes depending on the age







of the felt: the air volume requirement is controlled automatically by diffusor blades regulation. The aim is to achieve consistent dewatering over the felt;

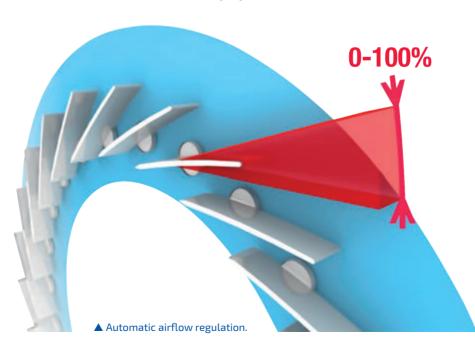
- The RT has a frequency-controlled drive: the vacuum may be adjusted to a wide range of tissue weights and types;
- TURBAIR® blowers do not require seal water, so no fresh water and no cooling tower is required;
- Vacuum blowers have no wearing parts, making them dependable and maintenance-friendly;
- The base frame for the RT series bolts straight to the floor, resulting in a very compact design;
- The efficiency of the water separation process has seen considerable improvement in recent years, making it possible to extend the cleaning intervals for the concrete or steel separator;
- The blower exhaust air can be sent to a heat exchanger (from single- to three-stage), which discharges the blower at a temperature of 120-130°C and thereby recovers up to 70% of the absorbed energy.

"In combination, these benefits result in a simple return-on-investment calculation for our customers: the amortization time of a TURBAIR® system of this kind, installed in an existing paper



66 Vacuum systems play a central role in the paper production process **99**

▲ Type RT 71-1 TURBAIR® vacuum blower.



production mill, is less than two years" says **Manfred Dobler**, Head of Paper Industry at MAN Energy Solutions.

A small selection of references for new tissue installations: WEPA in Germany, France and Poland; Twin Saver in South Africa; Carta Goias in Brazil; Kimberly Clark in Mexico; HAYAT in Russia and Egypt; Vajda Papir in Hungary; First Quality Tissue in the USA; Sofidel Spain and USA; HAYAT in Turkey and many more confidential projects. A few references where TURBAIR® blowers replaced the existing vacuum system: Kimberly-Clark in Spain and the USA; Sofidel in Belgium; LC Paper in Spain; Georgia-Pacific in Spain and many more confidential projects.

A large number of satisfied sanitary paper producers confirm the successful use of TURBAIR® blowers in tissue manufacture and show that huge cost savings can be made on paper dewatering. •

MAN Energy Solutions Schweiz AG

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phone: +41 44 2782211 website: www.man-es.com



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BATH TISSUE & KITCHEN TOWEL

AN INNOVATIVE MINERAL OIL REPLACEMENT CHEMICAL

FOR PROCESS EMBOSSING - LAMINATION IN THE TISSUE INDUSTRY

Suitable for lubrication of steel to steel, pin to pin, nested, micro-deco, micro-macro and perf and fan embossing processes







INDUSTRY!





Toilet tissue

The toilet paper market is changing. The traditional roll, first introduced in the United States in 1879, will soon become obsolete. Instead, these products will be replaced by individual sheets boxed in a packet. This means that the shape of the product will change: from a cylindrical roll to a traditional four-sided box. Why? To protect the environment, and make the production - as well as the transport - of this essential paper product more sustainable. by: Alessandro Giampaoli - AFD Srls





changes shape

hanges and progress have the ability to affect our lives in two different ways: they can either be sudden, often traumatic, and change our lives overnight or they can occur slowly, under our eyes, affecting our routine or habits gradually and on a daily basis. An example of progress which affected everyone's life significantly over the last two decades can be found in the invention and spread of the Internet. While comparing the tissue industry to the development of the World Wide Web could seem a long shot at first, it is important to acknowledge that toilet paper has brought - and is still bringing its own great revolutions in the industry. Looking at the past, the first system of industrial production of toilet paper for the general public was patented and introduced in 1857. The man behind this winning idea was a thirty-year-old New Yorker named Joseph C. Gayetty. Made from Manila hemp, it was sold in rectangular sheets packed in boxes. The amusing thing was that every sheet carried the name of the inventor. Twenty-two years later, in 1879, another great revolution occurred: the Scott Paper Company of Philadelphia introduced toilet paper in rolls. However, although firmly settled in the public's mind as paper rolls, there is no guarantee that toilet paper won't evolve to a new form in the years to come. Optimization processes, waste limitation and transport efficiency are only some of the factors influencing the industrial and manufacturing sectors nowadays and encouraging them to cut costs. Now, let's take a look at the paper roll. At its center there is a cardboard core which serves the purpose of sustaining the paper around it. However, its round space prevents an optimal use of space in the container lorry, increasing significantly transport costs. In addition, the current paper roll often requires a toilet roll holder: an item which many interior designers would love to get rid of. In terms of geometry, a possible alternative to the paper roll could be a rectangular-shaped container, a box. This

■ The new shape of toilet paper.

item could hold lots of individually cut, singular paper sheets. By abandoning the cardboard core, all the empty spaces could be filled optimizing loads and increasing transport efficiency. Furthermore, the same interleaving machines used nowadays could be used to produce paper sheets which are currently used of handkerchiefs, towels or napkin. By implementing this simple change, many benefits would be observable in the production chain. The toilet roll holder would become an element of the past and all you would need in your restrooms would be a shelf on which to place your box of toilet tissue: a box which could be decorated in many ways to fit the design of your home. Why then, considered all these advantages, is toilet paper still produced in rolls? The answer is very simple: interleaving machines - the one which would

66 Our new interfolding machine has reached incredible results in terms of energy consumption 99

produce toilet paper in single sheets - have low output and consume a lot of electricity. Up until now, the fastest interleaving machines could only produce a quarter of the output achieved by an equivalent paper roll machine. And the difference in the amount of electricity consumed was significant. Even the most advanced interleaving machines measuring a meter and half in width require 100 kW/h vacuum pumps, while those of three meters wide require pumps of 300 kW/h or stronger. Energy consumption using these systems is skyrocketing. Nevertheless, many manufacturers are moving forward towards greater sustainability standards: the acquisition of MTC by the Korber group says volumes about these market trends. However, innovation and new advances are not always implemented by the larger enterprises





▲ IM Converting interfolding line.

he province of Lucca has been considered as the main European area for the paper industry, and among the most important in the world. The "Paper dust" has entered into all economic sectors of our industrial fabric, as has the story of AFD. which was born out of this dust. We started working at companies that were building machines for processing, when electronics and automation was in its infancy. We saw the first PLC on-board machines, instead of the old relay logic, the programming of the first axis controls and of the first industrial networks. In 1989 we created the first electronic "Pressina", and participated in the Gemini project, the first converting machine with dedicated axis controls and first-generation brushless motors. In 1995 we started to manufacture interfolder machines that were recognised as the fastest and most productive on the market. In 2007, AFD was born, giving rise to machines such as the I-Jet500 for industrial roller and interfolding IMFOLD. Currently we are working with several transformers around the world. Finally, and the most important thing, we are not just a technology supplier but above all, we listen to and implement the ideas of entrepreneurs that are looking ahead.

on the market: new companies have often greater innovative skills and flexibility, and are able to set the basis for revolutions in the toilet tissue production. That is at least the business model of **AFD**, which has recently acquired shares of one of the new companies in the tissue industry, IM Converting. This new brand has been producing some very interesting products over the last two years, specifically in terms of interleaving machines. By embracing a different perspective and through great flexibility, IM Converting has produced an

interleaving machine which was capable of tackling what seemed to be unsolvable technical obstacles. In the first place, their new interfolding machine has reached incredible results in terms of energy consumption, using less than 37 kW/h for its vacuum system - which equals a third of the average energy consumptions of competitor interfolding production lines. When fully operational, the measured energy consumption of normal production rates never exceeded 25 kW/h. In addition, thanks to a special patented system, the machine is able to process any type of paper from facial tissues to paper towels without the need of changing the rollers, vacuum pumps or really anything else. Furthermore, with the line being produced this year, these machines aim at reaching today's market's most coveted target of 35 cycles per minute, bringing the output of these new machines much closer to the one of classic paper roll production lines. So the tipping point is really close and AFD aims to be at forefront, to ensure its customers are competitive and ready for the future challenges. •

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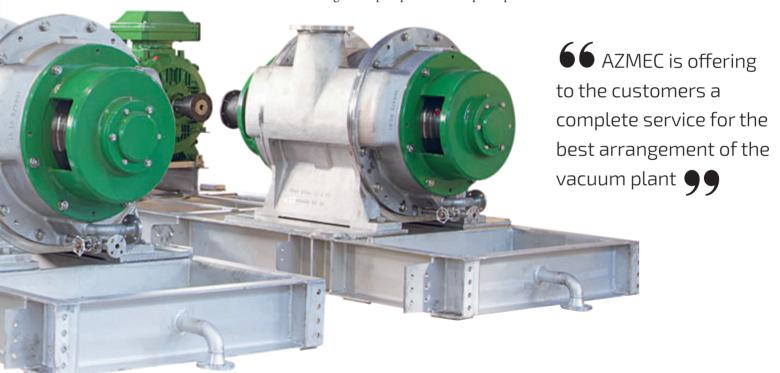
Vacuum plants solutions by





ZMEC is not only proposing its own solutions in new vacuum plants but also allows to the customers, through its overhauling service, to rebuild old pumps working since many years, to the original performances with an accurate revamping operation. **AZMEC** production includes six lines of vacuum pumps, machines available to grant capacities from 150 up to 50,000 mc/h; together with the vacuum pumps, AZMEC offers to the customers all the available accessories that's to say the driving systems (pulleys and V-belts, gear reducers when the installed power is more than 355 kw), the discharge separators, the silencers, the pre-separation groups, the safety valves, the self-priming extraction pumps and the dampers, just to mention the main parts.

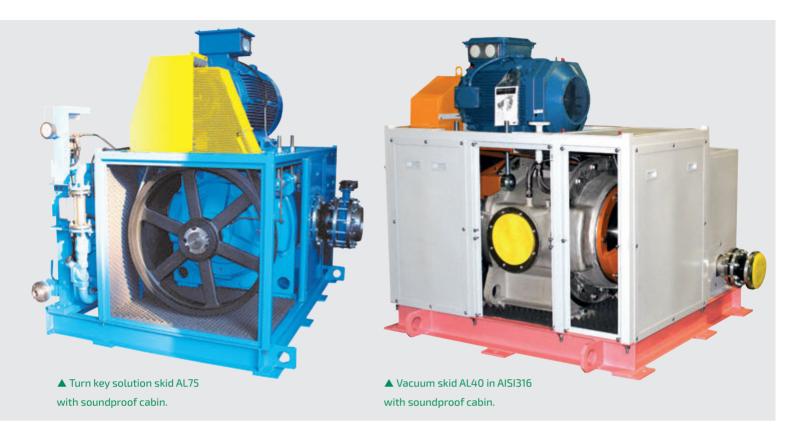
The vacuum pumps of the range AL/2000 cover a capacity interval from 150 to 12,500 m³/h; the range ALBV/2000 covers capacities from 2,000 to 7,500 m³/h and the characteristic of these pumps is to have practically two pumps in one due to the presence of a divider that creates two sections each one available to grant the 50% of the total capacity and different vacuum degrees; the same solution, but with horizontal suction nozzles, is granted from the pumps of the range ALZ/2000 that have the same range of capacities of the range AL/2000; with the size ALCZ, pumps available to work without and with the divider, the capacities reach the maximum of 50,000 m³/h; the range ALBC grants capacities from 450 up to 17,000 m³/h and the range ALB4 grants capacities from 4,500 up to 21,000 m³/h. A special care is offered from AZMEC to one of the problems that is present more and more frequently: the reduction of the noise level of the machines according to the laws concerned to the environment; to get the best solution, AZMEC offers to the customers the covering of the pumps with soundproof panels available to reduce the noise level to



The skill and the experience consolidated in 55 years of presence in the market (AZMEC was founded in 1960) say that AZMEC is a serious and available partner for all the companies of the paper mill industry that have to optimize the performances of their own vacuum plant, main part of the paper machine in the production of the paper.

by: AZMEC SPIL





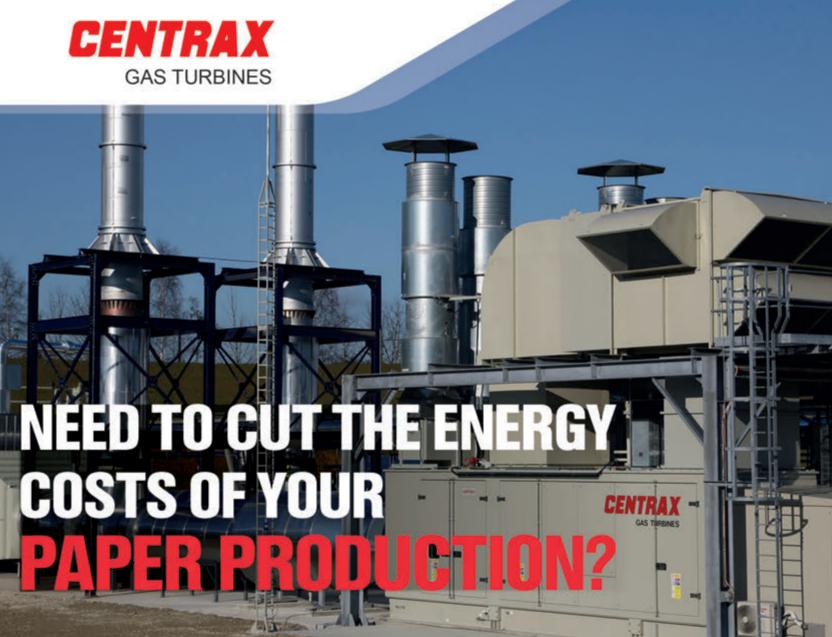
75 dB(A); clearly these solutions can be applied also on machines already installed. The AZMEC proposal is not concerned only to the supply of its own machines; AZMEC is offering to the customers a complete service for the best arrangement of the vacuum plant; usually AZMEC is preparing a lay-out of the vacuum plant arranged according to space necessity and to customer installation just to optimize everything both from a technical view and a logistic view just not to have problems in case of maintenance. Just to go inside the maintenances, AZMEC overhauls not only its own machines but also the pumps of competitors; all the pumps are sent back with the due guarantee and with the test data available to confirm the right operating; to check the eventual necessity to arrange a maintenance, AZMEC can be present with its technicians near the customer workshop to do the measures of capacity, vacuum degree and absorbed power of the vacuum pumps present in the plant. Usually, AZMEC supplies to the customers a spare pump so that the production has not to be stopped during the repairing of the pump.

It's important to mention the last and very important supplies made recently from AZMEC: new vacuum plant to the company KARTOTECH in Paraguay (n. 1 pump ALC506Z inox + n. 1 pump ALC500Z inox); two new vacuum plants for PM1 and PM2 to CHANDARYA KENIA (n. 4 pumps AL 22/2000 + n. 2 pumps ALBV 55/2000); ANDRITZ Austria with final destination Japan (n. 4 pumps ALC 530 + n. 2 ALBV 95/2000); SENECHAL France (n. 4 pumps AL 22/2000); ENEL (n. 2 complete skids AL 120/2000 + n. 3 complete skids AL 95/2000) for the Energy plant in Pietrafitta, Porto Corsini, Termini Imerese, Priolo Gargallo e Arezzo; COPASA Spain (n. 2 pumps ALC520Z + n. 1 pump AL 120/2000); ANDRITZ Austria with final destination Bangladesh (n. 2 ALC 520Z + n. 1 ALC400Z); A2A GENCOGAS (n.1 turn key solution skid AL75/2000 with soundproof cabin at Chivasso Plant); FLSMIDTH MILANO (n. 3 vacuum skid AL40/2000 in AISI316 with soundproof cabin); GAPCON TISSUE with final destination in Indonesia and Bolivia (n. 5 ALC420Z pumps + n. 1 ALC400Z).

The production is arranged in two workshops: Genova Voltri and Verderio (LC) - Italy. The vacuum pumps are manufactured through the use of CNC tool machines and tested in the new certified test room. AZMEC is working according to the rules ISO 9001 and its target is to offer a more and more complete service to the customers, depending on the consolidated quality of its own products and to the efficiency of its staff. •

AZMEC Srl

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Chatter Marks Monitoring with BONETTI's BONVIBES

Bonetti can boast a long experience in the supply of products for the creping application that dates back to the seventies: when it comes to its products Bonetti is right now one of the major suppliers to the tissue industry worldwide.

by: Bonetti S.p.A.



▲ Figure 1. BONVIBES, Bonetti's new Vibration Monitoring System.

ver the years we've helped numerous customers to improve their creping process taking comprehensive approach spanning from blades to doctoring equipment, them being both part of the current product portfolio. The main areas where Bonetti focused its efforts have been the sheet quality improvement, the increase of the overall efficiency of the tissue machine and the reduction of its operating costs. The approach is diversified and tailored made to the specific demands of the customer and Bonetti accomplished the task bringing to the industry new tools and new products. A good example is **BONVIBES**, the new Bonetti vibration monitoring system (**Figure 1**).



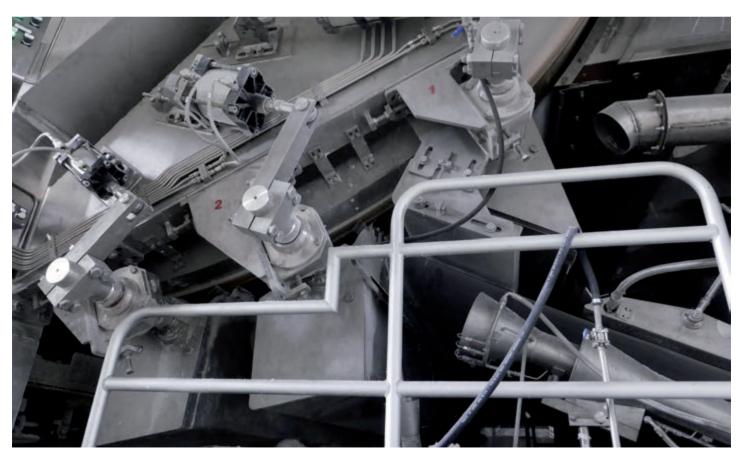




▲ Figure 2. BONVIBES, Bonetti's new Vibration Monitoring System.

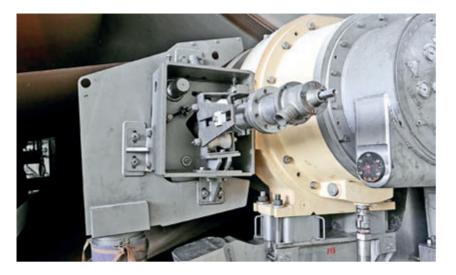
lacktriangle Figure 3. BONVIBES, Bonetti's new Vibration Monitoring System.





▲ Figure 4. Yankee dryer doctoring systems.





▲ Figure 5. BONTWIN for suction press roll.

This new device helps the tissue manufacturer to monitor the development of the creping doctor vibrations during the blade life, thus allowing the blades change to be correctly programmed. This in turn significantly reduces the risk of chattering on the YD surface and better control of the coating distribution. The system consists of an accelerometer mounted on the nose of the doctor back at drive side (Figure 2 - Figure 3) and then connected by cable to a control unit. Signal is then carried via an ethernet or a USB cable to a regular personal computer. Unlike other similar systems, BONVIBES uses only one sensor to detect the vibration data from the creping system. Field tests have shown that the differences in measurement with two or three sensors are negligible. Having only one sensor in the working area guarantees

▼ Figure 6. BONTWIN for suction press roll.



more freedom of maneuver to the operators of the machine. The display of the BONVIBES on the PC has two graphs and a numbering on the top left, all in continuous reading. The graph at the top (**Figure 1**) represents the amplitude of the vibration while the graph at the bottom shows the variation in time of the acceleration value that appears as a numerical value at the top left. The four windows at the top right of the display show the instantaneous measurement of the low, medium, maximum and overall frequency. In summary the system:

- Helps tissue manufacturers to monitor the development of vibrations to the creping system;
- Allows the correct management of the blade life;
- Provides valuable support to avoid chattering on the Yankee dryer.

Bonetti S.p.A. is also a worldwide recognized supplier for doctoring systems and blades. Our portfolio offers a complete range of creping, coating and cleaning blades, in various materials and sizes. Focusing on the creping process, **BONETTI** offers two different types of tip coated creping blades named MIZAR (Chrome Oxide) and SIRIUS (Chrome Carbide). Those two blades compared to traditional carbon steel blades guarantee an extended lifetime and greatly improve the softness of the tissue produced. MIZAR offers the longest possible lifetime, SIRIUS by sacrificing a small portion of lifetime, allows a smoother start-up. Both blades are delivering a higher bulk compared to traditional carbon steel blades and improve the softness of the tissue produced. When it comes to equipment, as one of the most established suppliers of doctors and creping equipment (Figure 4) Bonetti knows what are the needs of the market and is constantly working hard to find the right solution. One good example is the double doctoring system (Figure 5 - Figure 6) for the suction press roll of tissue machines. This system's primary target is the removal of as much water as possible from the roll surface and from the holes drilled on it, whether blind drilled or connected to a suction. Major advantages coming from the installation of this equipment are a higher dryness content after the press and a more uniform humidity profile entering the YD. This technology is best practice in some of the biggest tissue groups in the world. •

Bonetti S.p.A.

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New converting machine



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Effectively solving tissue production, converting and packaging problems

using event capturing camera systems



Increasing demands for operator safety, faster production speeds and enhanced product quality make it imperative to have visibility of all production processes.

by: Martin Rempel - Papertech Inc. - Hamburg, Germany

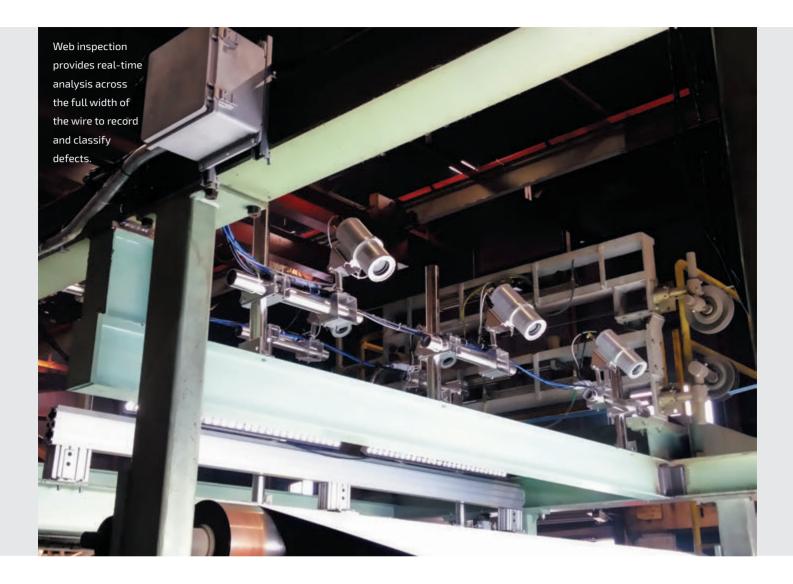
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igh resolution cameras and comprehensive event capturing and quality inspection software not only deliver full process visibility, they also provide the opportunity to address issues at their root source, allowing overall machine efficiency (OEE) to be maximized without jeopardizing operator safety.

Discussion

Full visibility into all production processes is fundamental to the overall success of any tissue operation and yet most operators are not able to answer a resounding "yes" to the following questions:

- Can tissue machine, converting line, packaging line and palletizer processes be safely observed?
- Is there a means on every machine to visually capture an unwanted process event and to find its root cause?
- Is there a means of viewing uninterrupted video footage from the past 24 hours (or more) of process?



• Is there a means of identifying and eliminating poor quality product at the end of each process stage?

These questions can be answered with a "yes" if a high speed and high resolution camera-based event capturing and quality inspection system has been fully integrated into the process of operating each machine or line.

Simple visibility can be provided by any surveillance system; however, full synchronized process visibility, with automatic event and quality analysis can only be achieved through advanced event capturing, web inspection and discreet item inspection systems, such as Papertech's set of TotalVision solutions.

The motivators that warrant an investment in such solutions are:

$\boldsymbol{\mathsf{A}}$ - The need for efficient high quality production

• Excessive process interruptions - Is the tissue machine operation interrupted by frequent web breaks? Would solving the root cause of the breaks improve the plants return on assets? Web break footage can be acquired by an event capturing system through strategically located cameras - each synchronized

to see the same web area to ensure rapid root cause analysis.

• **Product quality problems** - Are converting operations inefficient as a result of an unacceptable number of product defects in finished reels? An advanced event capturing system with web inspection capabilities can map and classify defects. Together with additional critically located cameras, the system can often show the defects' root causes.

B - Eliminating converting bottlenecks

- Operate with knowledge of incoming product quality Could knowledge of the quality of incoming product improve converting line setup and reduce process interruptions due to web defects? Could product quality be improved by running reels of lesser quality as middle plies on a multi-ply re-winder? OEE increases can be achieved via the automatic receipt of accurate reel quality maps (provided by a web inspection system on the tissue machine) at the converting line.
- Excessive process interruptions Could process engineers, who are presented with the increased challenges of complex

converting sequences, solve converting issues quicker with visual information? A typical re-winder may experience process interruptions due to faulty transfers, improper web tensioning, poor web quality, incorrect embosser setup, laminating problems, incomplete perforations, log formation issues, vibrations and log bounce and improper core insertion.

66 Papertech is the Vision technology vendor of choice for industry leaders in Paper Production in the World

commissioning a new machine. Also any machine that is production-limited can often benefit from an event capturing solution that provides the ability to resolve unwanted process interruptions.

3. Eliminating poor quality Product claims can be costly. The ability to measure and document the quality in each production

phase-production, converting and packaging can shorten extensive quality investigations. Also the ability to eliminate poor quality product at its production source can provide a very large payback to any organization with quality concerns.

4. Conforming to new safety and operator training regulations-machine guarding

Many operators are faced with decreased or often completely restricted visibility of their machines as a result of newly implemented safety guarding measures. An event capturing solution can not only restore operator-machine visibility, but can also enhance it to levels otherwise unattainable.

events for slow motion playback and root-cause analysis. Ensuring a high quality end product - Can assurance be

provided that end product meets the customer's minimum requirements? Without knowledge of incoming product quality and the ability to measure quality parameters, the end product is often packaged in the "good faith" that it meets customer quality requirements. However, top tier converters have started rejecting product based on base sheet flaws and monitoring other quality factors using camera based quality inspection systems.

An event capturing system is the only solution for capturing these

- C Eliminating packaging and palletizing problems
- Excessive process interruptions As on a converting line, could process engineers solve packaging issues quicker with visual information? Packaging lines and are enclosed, high-speed processes and an event capturing system provides the only alternative to capture and present issues that occur in the packaging sequence.
- Ensuring a high quality end product Can assurance be provided that the package and placement of the product inside of the package meet the customer's minimum requirements? Inline camera based quality inspection systems are able to see and alarm on package flaws as well as when product is incorrectly positioned inside of clear wrappers. These are just a few examples of how event capturing and quality inspection systems can meet the needs of tissue producers and converters.

Results

An event capturing and quality inspection solution investment will typically provide the quickest payback and provide the largest return on investment under the following scenarios:

1. Rapid and efficient start up of a new tissue machine, converting or packaging line

Visibility and proof of commissioning problems will ensure that a new machine or line is up and running as fast as possible. The return-on-investment is achieved by being able to rapidly find out where process interruptions are occurring and why, as well as finding the sources of quality issues that prevent new lines from achieving desired production output on schedule.

2. Improving the performance of an existing machine

Rebuilding or re-purposing an existing machine for a change in product output and quality poses similar challenges as

Conclusion

High speed camera technology for both event capturing and quality inspection has a clear return on investment for tissue machines and converting and packaging lines. Proof of this is the rapid growth in vision based system installations by first and second tier tissue producers who see it as paramount that their assets deliver the best possible OEE. •



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SAEL

automation and drives in Tissue plant



urther application of "Platform ONE" SAEL, the innovative and highly performing system with which manages automation and drive with significant cost savings, was applicated with success at MC5 which used old drives without available spare parts; the continuous disruptions connected to the TURBO GAS, a system that used automation of the old generation Nuova Pignone, has led the paper mill to assign us this work that has been dealt with using Siemens standard PLC instead of proprietary microprocessor cards-MOORE - those that have incommoded the paper mill in its management. Cartiera di Vignaletto, which has always dealt with investments in an ergonomic manner and only after careful selection of all possible solutions, in these years has searched to evolve their production

trying to influence the quality of its products following their technical growth thanks to the improvements offered by SAEL.

Works in the paper mill

Cartiera del Vignaletto was founded in 1966. The plant spreads in an area of around 30,000 m² at Tre Ponti, S. Maria di Zevio, in the province of Verona (Italy). The daily production is around 140 tons of Tissue of superior quality. The paper is produced in mother reels, up to 4 plies, grammature from 15 to 40 gsm, is destined to the production of paper towels, napkins white and printed, toilet tissue Standard and Soft, Kitchen towel and industrial, facial tissue, velvet for sanitary towels and many others, with a wide range of soft colors. The choice of the paper mill was SAEL, after a careful examination of the technology, reliability

▲ Electrical cabinet of sectional drive with inverter of the exclusive series "PLATFORM ONE" drives.





The renovation of cartiera di Vignaletto tissue plant (Italy) is completed, having already rebuilt the pm4 drive, pm4 winder and pm5 winder. During August 2018 we finished the rebuilding of drives and automation in the pm5 and the rebuilding of the turbogas automation system carried out by Sael service point - coelme. The whole plant is now coordinated and managed by our supervising dcs system and teleassistance IWSA for paper mills. 98% productive efficiency accomplished with no other modification. by: Paolo Andrighetti - SAEL S.r.l.



■ The inverters of series
"PLATFORM ONE DRIVES"
equipped with ONE card (the
only card for all types of drives
DC-AC-BRUSHLESS and REEBORN)
and film capacitors instead of
electrolytic, guarantee an infinite
life of the inverter.



and implementation times that led, during the offers phase, to choose some very special techniques that only a flexible system like "PLATFORM ONE of SAEL" allows to carry out. The flexibility and ductility of our drives and the automation through PLC Siemens and SW PLC completely open, applied in the rebuilding of any kind of electronic control, have immediately proved to be very competitive and reliable also in

The Customer is the main priority.Since 1987 a solid made in Italy company



▲ PM5: all the automation and drives of Cartiera Vignaletto are substituted with "PLATFORM ONE DRIVE".

terms of costs. The **TURN KEY** supply has dealt with all the work of engineering, wiring and replacing all obsolete internal panel boards replaced by Siemens PLC.

The sectional drive of the paper machine

The supply has essentially managed the 8 AC 690V motors of the paper machine and 6 other 690V AC $^{\circ}$

motors for the hood pumps and fans. The Machine automation has provided the classic functions of our sectional drive with the management through our exclusive "DCS in DRIVE" control system, with which we can say today, of being at the peak of any technical comparison in the sector. The DCS supervision system adopted was traced by our installed "SAEL paper machine supervisor" with on board trends, synoptics, alarms history, recipe management and remote assistance. Using this system, the machine maintenance team can check before intervening where the problems are focused; in case of night technical support, the electronic SAEL technician directly from home, can connect to the server and guide the internal factory staff at the restart of the machine.

The automation of TURBOGAS Nuovo Pignone and General Electric

The supply concerned the migration of the existing control system in which, even in this case, the availability of spare parts and the possibility of optimizing its operation had become almost impossible to handle. The various disturbances and the almost complete impossibility of understanding its motivations have pushed the paper mill towards our idea of replacing the MOORE control system currently in use and all its logic, with a new commercial PLC with OPEN SOURCE software. As requested the control system was developed on PLC Siemens S7-1500, I / O ET200MP Siemens, the CPU and I / O cards were installed in the existing framework, in the position of the Existing PLC. The omnipresent Mr. Mario Lovato, CEO of the paper mill, together with Mr. Andrea Vivaldi, responsible for electrical maintenance, with this construction and start-up have obtained, in addition to the training of their technicians, a form of insurance on the plant. Absolutely and unequivocally, they have the peace of mind that, in case of anomalies or work problems, their technicians can intervene autonomously and promptly reduce the stop times to zero. Moreover, Internet World Sael Assistance has allowed us to annihilate our distances from the Zevio plant (Verona).

SAFI Sri

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A considerable percentage of used converting equipment changing hands in the tissue industry is sold by second hand machinery dealers such as TISSUE TEC Sales & Service GmbH.

by: TISSUE TEC Sales & Service GmbH

here are many reasons in favor of taking advantage of a specialized dealer, however, one thing can be considered to be the most important factor for both the seller and the buyer of used equipment: the trust they have to give towards the dealer! There are many kinds of dealers in the market, however, few are specialized and focus on the comparatively small tissue industry only.

The majority of dealers cover a wide range of machines and applications which go beyond tissue converting machines. It appears that they might have access to a greater number of customers and potential buyers, but you have to bear in mind that these customers are also active in divergent markets. Moreover, they may also lack the knowledge about the rather specialized converting equipment that can be found in the tissue industry, and its players. Therefore, both the seller and the buyer have to trust the dealer with regard to knowledge, reliability, confidentiality,

market coverage and networking. One of the most trusted dealers in the tissue industry is TISSUE TEC Sales & Service GmbH.

Motives for Sellers and Buyers

At first glance it seems that the owner of surplus equipment is pursuing a different goal than the potential buyer of this equipment. Obviously, it will be his aim to achieve the highest price possible for his equipment, while the potential buyer's priority is to acquire it for the lowest amount possible. The seller's second motive is to dispose equipment that is no longer required for many reasons.

The motives of potential buyers to search the market for used equipment can be manifolded. The most obvious reason is the financial aspect, as a good number of converters simply cannot afford to acquire new equipment. The second reason is time, as usually used equipment is immediately available. The third reason, which applies quite often, is that with a used machine a converter



■ A complete PERINI bathroom/kitchen towel rewinder line sold in 2017.

■ A complete PERINI bathroom/kitchen towel line sold in 2018.





66 One of the most trusted dealers in the tissue industry is TISSUE TEC Sales & Service GmbH 99

can test the market acceptance of a new product without a significant investment in a new line. However, their common goal is to do business based on the equipment available on the second hand machinery market, so one of the primary tasks of TISSUE TEC Sales & Service GmbH is to preserve the interests of both parties and to handle their projects accordingly.

The Job of a Dealer

Acting to the benefits of both the seller and the buyer requires knowledge about the technical configuration of the equipment, the products that can be manufactured on it, but also the future availability of spare parts, the potential extensions/modernizations and, last but not least, about the marketing possibilities and the obtainable price. The seller needs to trust the dealer for a realistic appraisal of the equipment's value, its marketing prospects, and also that the dealer respects certain sales restriction that may apply. The potential buyer, on the other hand, needs to trust the dealer that he is sincere about the equipment, in particular with regard to the scope

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■ Take-out and delivery of a W+D/SENNING pocket handkerchief line (located in the 4th floor of a high-rise building) in 2017.

▼ A complete PERINI bathroom/kitchen towel rewinder line sold in 2018.



of supply, the products it produces, and its condition. Behind the scenes, for a dealer there is a lot more to consider, prepare and actually do than both the seller, and the buyer normally recognize. In addition to the above mentioned skills and knowledge, TISSUE TEC Sales & Service GmbH is also providing the full range of service such as machine relocation, refurbishments or intermediate storage.

In the past, TISSUE TEC Sales & Service GmbH has successfully realized the sales and relocation of numerous converting machines, sometimes under difficult circumstances, e.g. by taking out two complete pocket handkerchief lines out of the 4th floor of a high-rise building in Hong Kong. Due to more than 30 years of experience in the tissue industry, the key people of **TISSUE TEC Sales & Service GmbH** exactly know their customer's demands; they are capable to satisfy the needs and expectations of both sellers and buyers of used equipment. Their knowledge covers bathroom and kitchen roll rewinders, industrial

knowledge covers bathroom and kitchen roll rewinders, indust roll rewinders, napkin and pocket handkerchief machines, hand towel and facial tissue folder, coaster machines etc. For any request regarding used tissue converting equipment, TISSUE TEC Sales & Service GmbH is a reliable partner in the tissue industry. Second hand machines - a matter of trust which can be relied upon to achieve the best conclusion for both the seller and the buyer!

In order to provide the best service to our clients, we are partners with SERVIPAP/USA (www.servipap.com) who are taking care of our numerous customers in the Americas.



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