

INTERNATIONAL MAGAZINE AND WEBSITE ON TISSUE PAPER MACHINERY AND TECHNOLOGY

TissueMAG

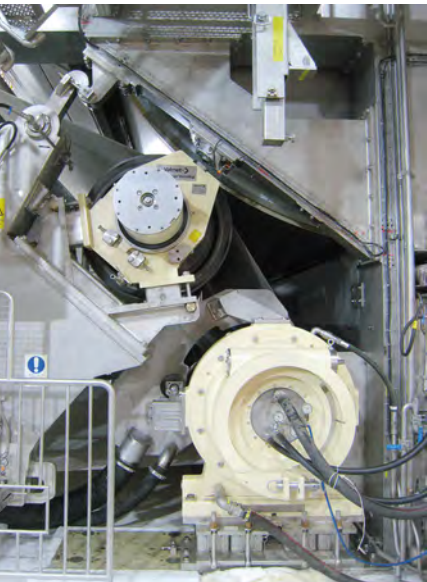
This issue is distributed to Tissue Paper Mills and Tissue Converters in America (North, Centre, South), Asia + bonus countries



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CIRCULATION

This issue of TissueMAG is distributed in 2,365 copies to 493 Tissue Paper Mills and Tissue Converters in:

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INTERNATIONAL MAGAZINE
AND WEBSITE ON TISSUE PAPER
MACHINERY AND TECHNOLOGY

TissueMAG

NOVEMBER 2023

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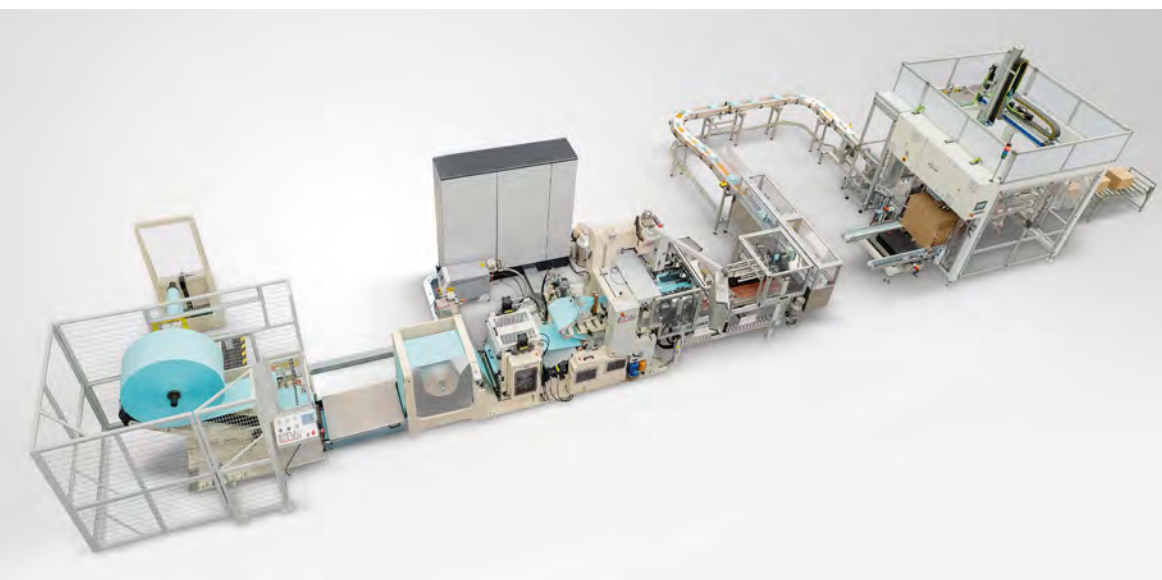
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MIAC 2024

On 9.10.11 October 2024
in Lucca, Italy - 30th edition

Every year, 250 international exhibitors from the paper sector participate in the international paper industry exhibition dedicated to technologies for the production of paper and cardboard and for the converting of tissue paper.

Every October in Lucca (Italy), 6,000 Visitors from across the globe meet at MIAC Exhibition, which has become an event not to be missed for all those working in the paper industry sector. At MIAC paper mill and tissue converter technicians can meet in just three days and in one place,

250 international companies for a full overview of the technology and equipment available to the paper industry and the tissue converting sectors. The **MIAC 2024** Exhibition allows technicians of Paper Mills and Tissue Converters to update

on a professional level. Rapidly evolving machinery and technological solutions require continuous updating: MIAC is the answer to all this. MIAC Exhibition also planned four international conferences. As every year, the participation to the conferences is free of charge and simultaneous translation is available for all of them. *Lucca Exhibition Centre* is in a

strategic position in the North-Centre of Italy: Pisa Airport is only 20 minutes' car distant from Lucca and Florence Airport is 45 minutes' car away from the MIAC Exhibition. **To stay up-to-date on MIAC 2024, visit the website www.miac.info/en** ●

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The benefits of A.CELLI solutions and the shoe press excellence

By: A.Celli Group

The world of paper manufacturers is composed of a limited number of large (often multinational) companies governed by principles of efficiency that coexist with a parallel world made up of countless small/medium-sized paper mills with a long family history. The latter are usually equipped with obsolete plants that, leading to waste and high consumption, are expensive and inefficient. Over time, however, technology has not been the only factor that has evolved; in fact, the market has also undergone changes. The paper industry is very different from a few years ago: demands have changed considerably, competition has increased, and there is a growing need to ensure that the production process uses raw materials in the most sustainable way, with minimal environmental impact, from resources to recycling. Thus, to be competitive and successful, but often just to be able to survive, paper mills should make their production more efficient and increase yield. Hence the need for many companies to modernize their plants: an intervention that **A.CELLI**, thanks to its experience, can guarantee through customized technical solutions to meet the specific efficiency and safety requirements of both large and smaller companies.

The impact of the shoe press on productivity

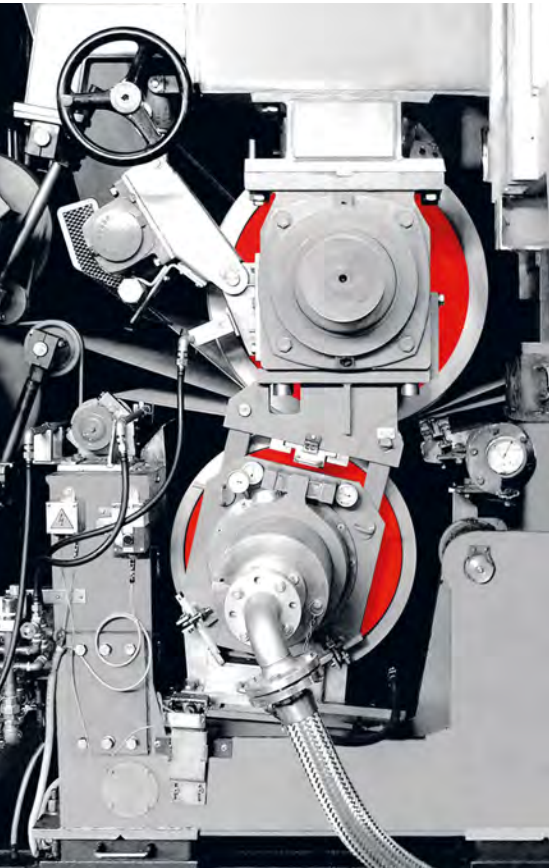
The wealth of papermaking expertise that characterizes A.Celli today stems from the know-how inherited from **PMT** in designing machinery for any type of paper, including graphic,

packaging and specialty ones. A.Celli's vision is to become a partner capable of suggesting technological solutions to companies, and not just supplying machinery. To this end, A.Celli has studied specific solutions for both large and small machines that are often forgotten by large manufacturers. One example of the great impact A.Celli can have on a paper mill's productivity comes from the application of the **shoe press**, a technology that uses a larger pressing surface using a stationary shoe. The concept was developed in the 1980s by Beloit for packaging papers, where it is a priority to achieve a high paper dryness after the press section. In the case of packaging papers, we also sought paper densification, which results, as a direct consequence, in increased mechanical strength characteristics.

It was soon understood how the shoe press concept was also of interest for graphic papers and the first applications in this field were made in 1994. PMT, which at the time was called Beloit Italia, was a pioneer in these applications. Unfortunately, in those years, the only shoe press available was the one developed for packaging papers, which proved in many cases to be oversized and too expensive for graphic papers, where specific volume and thickness are sought in order to obtain good sheet stiffness. Therefore, we required a high degree of paper dryness in order to increase production and reduce consumption, but we also need to avoid densification, which leads to a loss of stiffness (think for example of photocopy paper, which must be stiff enough to avoid curling after passing through the copier).



■ Press Section
Rebuilding - Frame.



▲ A.Celli SMARNIP.

▼ A.Celli SMARNIP – Detail.

“ In the global paper and nonwovens markets with top-range **technological solutions** for over 75 years ”

In 2003, PMT introduced a major innovation to the market: the SMARNIP® Mini Shoe Press, which is a shoe press specifically developed for graphic paper applications that, thanks to a shorter shoe with a variable load profile in both the machine direction and cross direction, is smaller and lighter. This innovation has enabled many paper mills equipped with small machines to access shoe press technology because of the lower investment required.

Increased efficiency and reduced consumptions

The idea for shoe press technology arose from the fact that in conventional roller presses the pressing process has major limitations both in terms of paper dryness that can be achieved and flexibility needed to achieve the necessary quality specifications required by

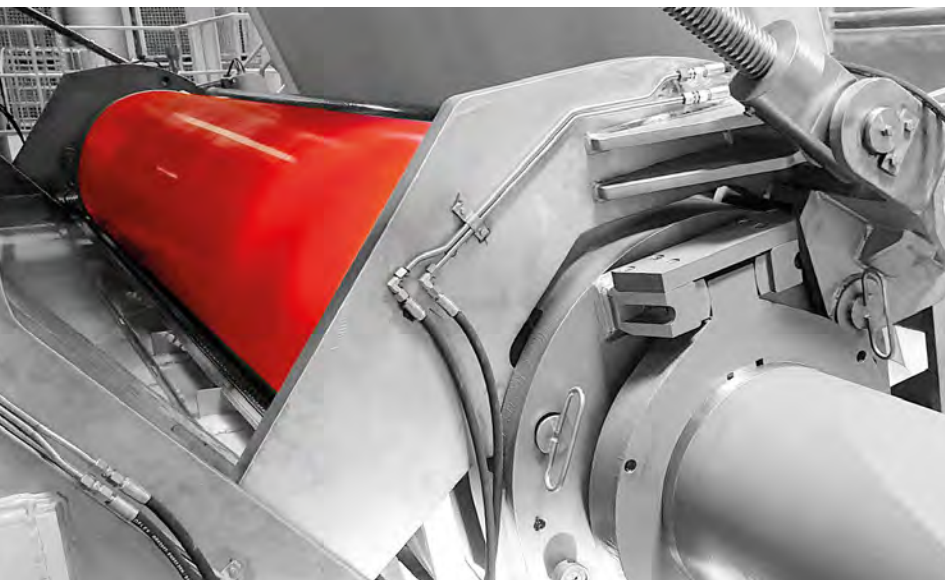
the paper. By achieving a higher paper dryness, we reduce energy consumption: an element of utmost importance for the survival of paper mills in a world where the cost of energy is continually rising. With a higher dryness, we also improve the plant efficiency, reducing paper breaks in the subsequent drying process. For packaging papers, where we sought densification, we obtain higher paper strength characteristics for the same raw material.

This is important, considering that the paper recycling process is a continuous cycle that, year after year, results in a deterioration in the characteristics of the raw material used. The increase in dryness is always related to an increase in densification: the distinguishing feature of the shoe press is that a higher paper dryness can be achieved compared to a conventional press for the same specific volume.

Technological solutions to improve every phase of the process

A.Celli is able to draw on the vast experience developed by PMT by integrating it into a wide range of products and solutions for each stage of the papermaking process, starting from the headbox to the dryer and reel winding.

To ensure the best possible solution based on individual needs, A.Celli can conduct a thorough analysis of the plant and machinery available at the paper mill. All this to verify if and how to take action to optimize them or, possibly, how to intervene to carry out a conversion to produce other types of paper that are more profitable for today's market. ●

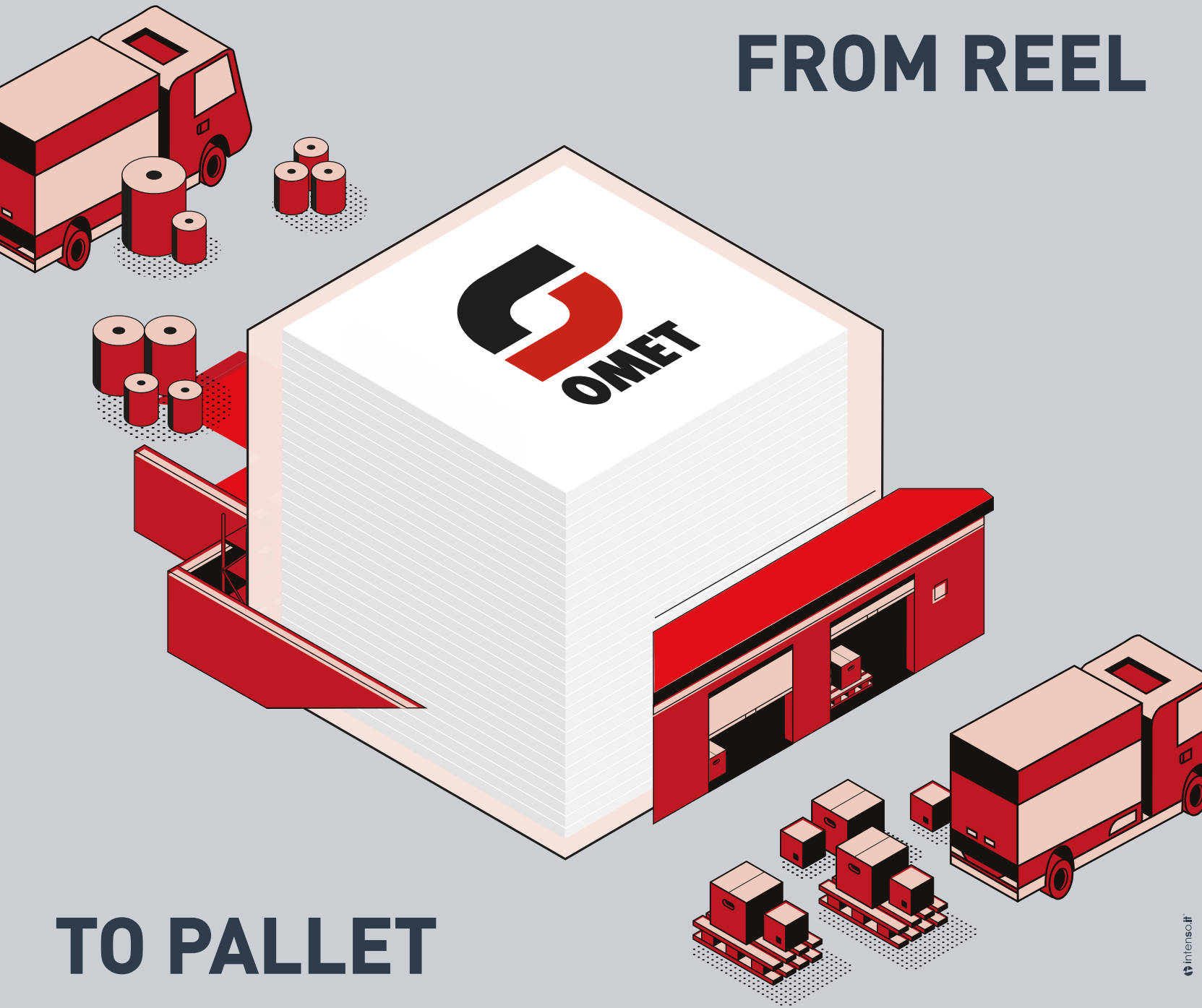


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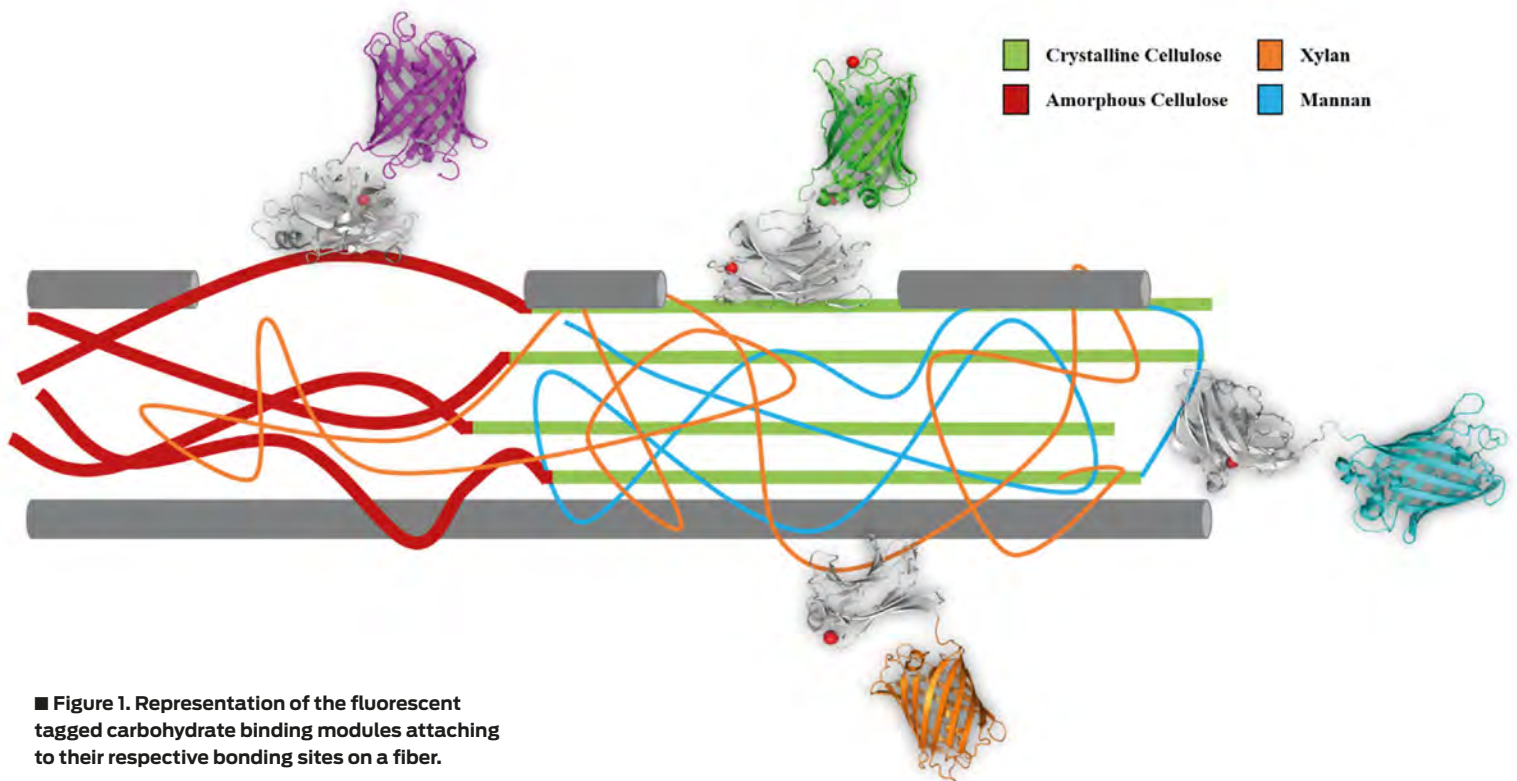


[TISSUE.OMET.COM](https://www.tissue.omet.com)

Third generation fiber modification technology: increased cost effectiveness and traceability

A new technical approach for fast pulp properties assessment.

by: Bernard Janse, Director, Global Product Development, R&D Buckman - Mark Christopher, Global Market Manager, Tissue Buckman - Daniel Glover, Principal R&D Scientist Buckman



The soft and strong competition

Strength and softness are the key basic product parameters for tissue and towel producers. They must balance these in the creation of their products. There are almost a countless number of ways these parameters can be impacted with varying implications for cost and final product attributes. To complicate things further, strength is almost always inversely proportional to perceived softness unless careful consideration is given to how that strength will be developed. Tissue makers and product development staff spend a lot of time determining the right counterbalance between how much strength a tissue product needs and how it is best developed to minimize the negative impact on some other attribute of the product. A few well-known examples of this are shown in Table 1.

improvements in tissue is now common, there was still potential to improve performance and efficiency over what the first and second generation enzyme products were capable of. Third generation products have built upon the advances of the second generation, with third generation products using synergism by combining cellulases of different classes. Also, some non-enzyme additives that increase the activity rate of the cellulase are used.

Driving cost effectiveness in third generation enzymes

Wood is a complex matrix of many intricately interwoven biopolymers and the fiber surface chemistry plays an integral role in determining the properties of the final paper products. Traditional methods of characterizing surface chemistry are

Table 1

Strength generating approach	Pro	Con
Refining	Simple, responsive, effective	Increases stiffness and dust, reduces bulk, reduces tear
Increase softwood portion	Simple change, increased tear as well as tensile	More expensive. Increased coarseness reduces softness
Increase creping moisture	Reduces drying cost and increases production rate	Reduced bulk to basis weight. Difficult to preserve softness. May require change of creping package
Dry strength resin	On demand strength	Costly. Increases stiffness. Competes with other wet end chemistries for bonding sites.

Because of the inherent tradeoffs in the prevailing strength improvement methods in tissue, fiber modification enzymes (FME) have become ubiquitous in their manufacture to either replace or reduce the need for the approaches listed above. There are many classes of cellulases in nature. The ones that are useful for tissue makers are those that only react with the surface of the fibers. These specific enzymes break the bonds necessary to create fibrils that remain attached to the fiber. Breaking these bonds allows for refining to be more effective at lower energy input.

This lowered energy input reduces cutting and flattening of the fibers while maintaining the desired bonding strength. Given that a refiner can be the single biggest consumer of electrical energy on the machine, a significant reduction in energy costs is a secondary benefit. Although the use of enzymes by tissue makers for strength and other quality

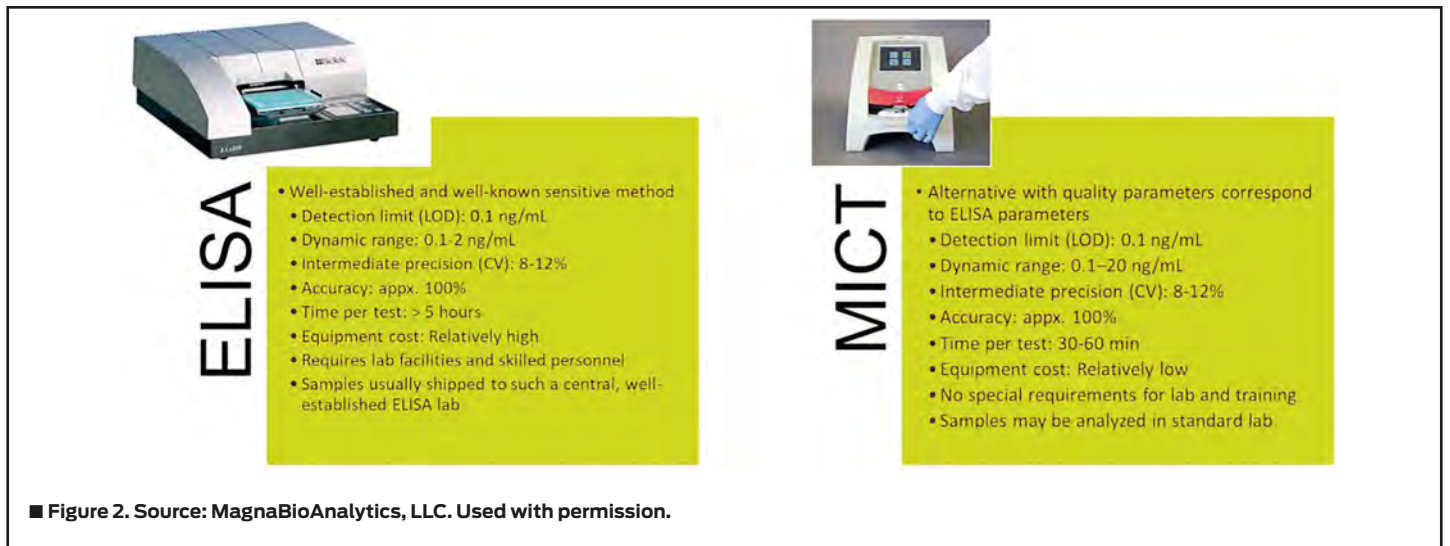
tedious and time consuming. Utilizing four fluorescent tags and combining them with four substrate-specific enzyme binding domains, we were able to rapidly determine the relative quantities of crystalline cellulose, amorphous cellulose, xylans and mannans, respectively (Figure 1).

The relative concentration of the moieties identified by the tagged enzyme binding domains directly predict paper properties and have successfully been used to support the development of the third generation enzymes to drive maximum cost effectiveness. This has allowed for the identification of the most efficient cellulases for various types of virgin and recycled furnish types.

Driving increased traceability in third generation enzymes For years, the immunochemical assay principle “ELISA” (Enzyme Linked Immuno Sorbent Assay) has been used to enable quantification of enzyme proteins, like those that

“ Improve both the **quality of tissue** and operation’s efficiency ”

“ Buckman: connected to in-depth **chemistry experience** ”



enzymes are comprised of, with a low limit of determination. The test is used by some manufacturers in many industries to test for residual enzyme activity in the final product to confirm that the enzyme is not present in its active form in the final product. Some industries use it to characterize air samples collected from the manufacturing floor where enzymes are in use to ensure workers were not being exposed in any way due misting or atomization of the normal process. Unfortunately, the ELISA method left much to be desired for testing in the fast-paced manufacturing space related to the turn around times for results, the need to send samples to a specialized lab and the high cost.

To that end, a new alternative technology known as Magnetic Immuno-Chromatographic Test (MICT), is now available that addresses many of the shortfalls related to the ELISA test.

In the end, the overall activity and speed of activity leads to lower end use costs. The third generation enzyme products address the concerns of the previous two. Stability, specificity, purity and cost of use have all been improved.

The following case history shows the value of using third generation enzymes for strength development.

Case history

A tissue customer in EMENA producing Bath and Towel tissue with varying furnish ratios of both virgin and recycled fiber was using a previous cellulase enzyme concentrate in order to drive energy savings with positive results. Unfortunately the customer was not able to use the existing enzyme product across all grades effectively to drive savings due to limited

performance with the recycled portion of the furnish. When local **BUCKMAN** technical experts audited the system, they determined that the newer generation enzymatic offering could both allow for greater refiner energy reduction and be applicable across more of the production grade structure. Maximyze® 3531 was proposed and trialed. After several weeks of application of the new fiber modification technology, analysis of the results showed the customer was able to achieve the goals of greater energy savings and use across more grades. ●

ROI stream	Euro per year
Refiner energy reduction	€ 482,536.55
Previous generation enzyme cost	€ 109,250.00
Cost of the new generation enzyme	€ (136,850.00)
Total	€ 454,936.55

*Refiner energy valued at €0.26/ kwh

BUCKMAN

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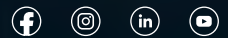
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A red circular logo containing the text "AZMEC" in large white letters and "LIQUID RING VACUUM PUMPS" in smaller white letters below it.

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ECOFLOW - A WINDOW TO THE PROCESS

An efficient and eco-friendly vacuum system is built on three principles. The removal of water needs to be carried out effectively and reliably. This requires speed-controllable turbo blowers to create the needed optimal vacuum level, robust dewatering equipment such as save-alls and doctoring and means to measure all this reliably to get the feedback for the energy-efficient control of the system. EcoFlow dewatering measurement provides a window to the process. by: Runtech Systems

▼ The EcoFlow Dewatering Measurement is designed to optimize dewatering and vacuum levels in the forming and press sections. EcoFlow also give you a unique window into the dewatering process.

The primary function of a wire and press section in a paper machine is to remove water from the paper sheet. Each vacuum element in the machine, such as a suction box or a suction roll, requires a certain amount of air flow to operate at an ideal vacuum level i.e. at the minimum to maximize the energy efficiency while maintaining the runnability and dewatering capacity.

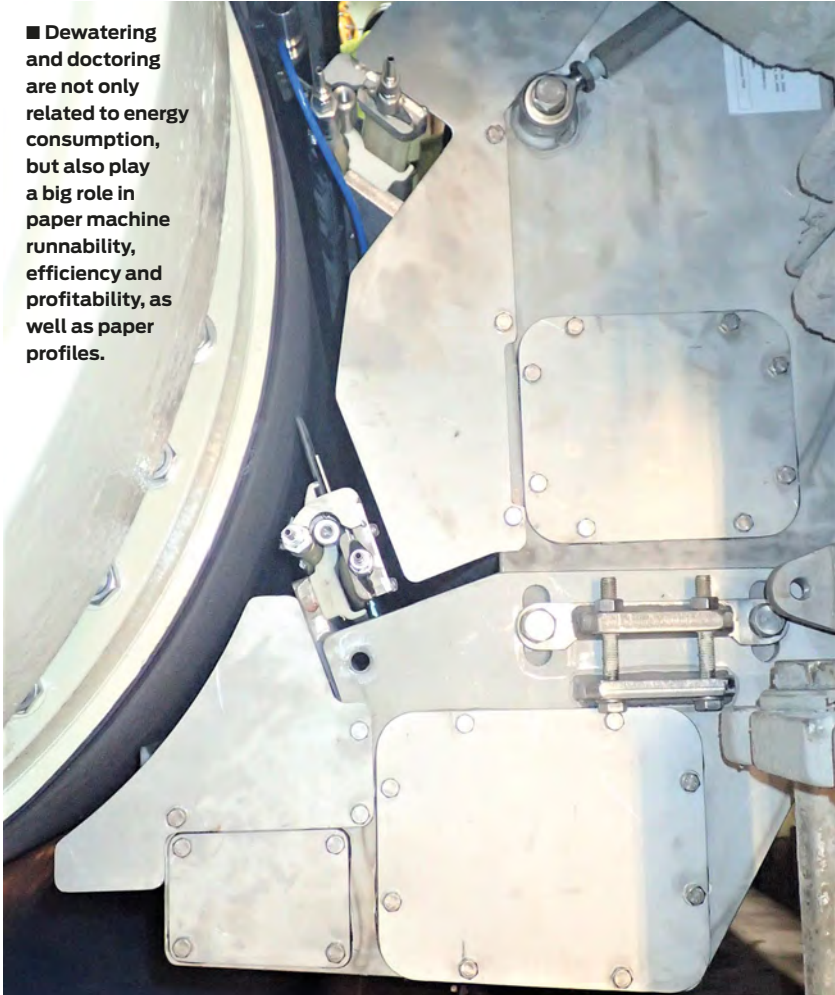
The needed capacity is dependent e.g. on felt life and type, paper grade, basis weight, machine speed, etc. In order to understand the effectiveness of individual elements (such as save-all pans and suction boxes) of a wire and press section, the dewatering rate must be measured. Without this, critical air flow (i.e. vacuum level) review and consequent optimization cannot be successfully carried

out. Water removed from the paper sheet contains air and is often subject to foaming. Traditional magnetic liquid flow meters demand a homogenous flow and will not be able to provide accurate data. Runtech's **Ecoflow** dewatering meters are designed to measure water flow across a mechanical restriction and are not sensitive to entrained air or foaming. These devices are used both under vacuum (in a separator drop leg) and in atmospheric conditions. EcoFlow dewatering measurement system optimizes dewatering and vacuum levels in the forming and press sections. EcoFlow provides maximized sheet dryness after the press section, improved machine runnability and maximum energy efficiency, while providing papermakers with accurate real-time feedback about the dewatering performance along the paper machine. EcoFlows are designed to work with doctoring to gain maximum energy efficiency. Dewatering and doctoring are not only related to energy consumption, but they also have big effect on whole machine runnability, efficiency and profitability, as well as the paper profiles. A well-designed and operated dewatering and doctoring system is one of the key issues to a well-performing and energy-efficient



“ Our main target is to bring notable **energy savings** and highly improved **process efficiency** ”

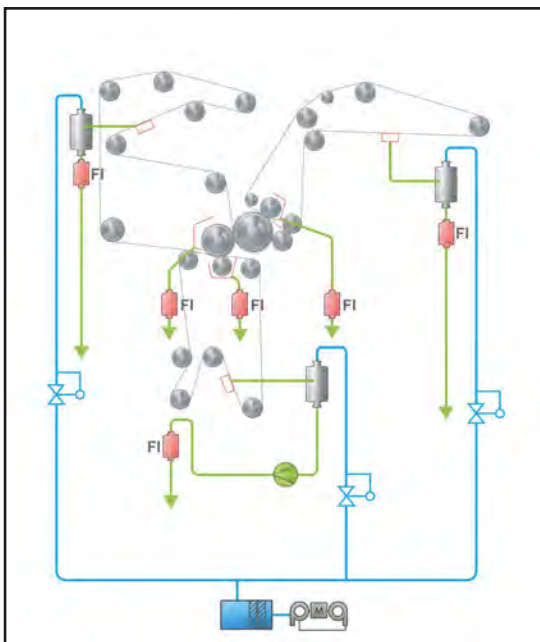
■ Dewatering and doctoring are not only related to energy consumption, but also play a big role in paper machine runnability, efficiency and profitability, as well as paper profiles.



“ **Engineered solutions** for pulp and paper industry worldwide ”

machine. A lot of paper machines have them but they are not effective and do not have the adjustability that is needed to optimize them effectively. In order to get the full benefits from increased dewatering, an online dewatering monitoring, efficient water discharge and rewet prevention are necessary. Runtech Ecoflow save-alls and double doctors can perfectly match these needs.

RUNTECH is one of the leading suppliers for the improved dewatering and doctoring solutions for all kinds of pulp, paper, board and tissue machines. In many cases, Runtech's solutions have led to a 1-3% increase in dryness after the press section, which saves considerable amount of energy in the dryer section (4-12% less steam). Over 600 paper machines are equipped with EcoFlow. At Smurfit Kappa Ania PM2 & PM3 (Italy), dewatering and doctoring optimization resulted in total energy savings of 9 GWh/year in the vacuum system. ●



Press section EcoFlows	Uhle bowes	Save-alls	Total
Pick-up	170 l/min	720 l/min	890 l/min
	19.1%	80.9%	47%
1 st press	564 l/min	122 l/min	686 l/min
	82.2%	17.8%	37%
3 th press	13 l/min	290 l/min	303 l/min
	4.3%	95.7%	16%
Press water removal rate			1879 l/min

▲ A typical EcoFlow system in a three-nip press section. Based on the data, it is very easy to compare different felts and adjust water removal.

RUNTECH SYSTEMS

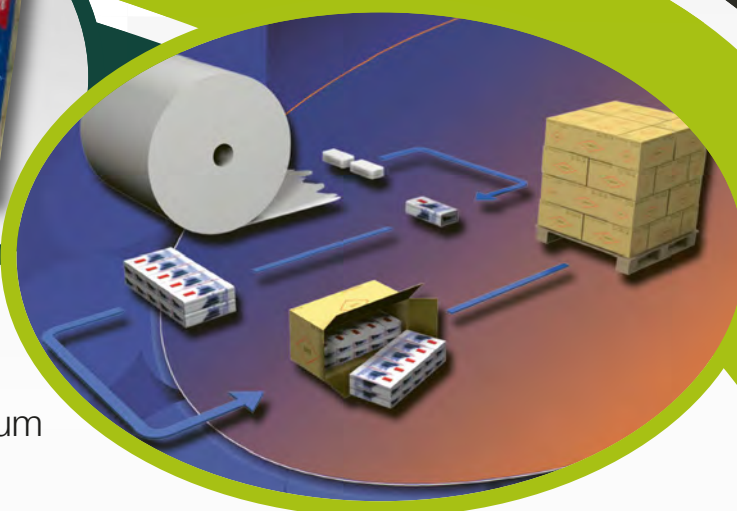
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NEWS COMPLETE HANDKERCHIEF LINES WITH EFFICIENCY AND PRODUCT QUALITY AT THE TOP OF THE CATEGORY



Tau Machines has always offered the maximum flexibility, performance and reliability, and still continues to develop its machines with passion to maintain the lead in innovation.



converting and packaging



Improve your

As ply bonding of multi-ply tissue is a hot topic, it can be seen that tissue manufacturers are struggling to achieve a strong bond with a soft hand. Thanks to the precise application of liquid, WEKO offers efficient solution concepts for your multi-layer fabric with layer binding and water binding! WEKO's water bonding process, which uses water during embossing, helps improve ply bonding in a roll converting machine.

by: Weitmann & Konrad GmbH & Co. KG

Uniform non-contact fluid application

weko

SIGMA

quality



▲ Encapsulated rotor carrier WEKO-ProTec for the application of critical fluids.

The innovative company from southern Germany with 70 years of experience and close cooperation with manufacturers of additives has developed a precision system based on proven technology: the non-contact liquid application system. This offers numerous advantages for the tissue industry. Your Benefits:

- Free in embossing design.
- No knurling necessary.
- Process reliability.
- Precision and reproducibility.
- Less strain on the tissue.
- High productivity and economy.
- Raise in print quality.

“ WEKO, **innovation** with tradition ”

The WEKO solution

Based on rotating spray discs, an even stream of the finest micro-droplets is generated at high speed in order to give the fabric its individual properties with pinpoint accuracy. The application quantity can be controlled quickly and precisely for reproducible results. The mechanical tissue strain does not come into play with the WEKO-Fluid-Application-System (WFA). There is no contact with the tissue and therefore it is handled extremely carefully. The rotation of the discs create a 360° spray circle from which a part is used that meets the tissue. The remaining part of the spray circle is kept in the chambers of the rotor carrier and is circulated to the supply unit where it is re-used. By continuous filtering the liquid, contamination of the application bath does not appear. As a special option for this industry **WEKO** thought about a solution to prevent the tissue

web from sticking and so breaking if the machine is being stopped.

WEKO-ProTec

Our encapsulated version WEKO-ProTec provides the rotor carrier with an enclosure which can be connected to an extraction system. Contamination of the working environment is avoided and thus safety generated.

How does it work?



PLY BONDING

Ply bonding with WEKO means bonding the single tissue layers applying a defined small amount of liquid glue. The combination of several plies during embossing forms the multi-layer tissue. For WEKO`s rotor spray application water-based glue is suitable. Its fine dispersed micro droplets are distributed even and work perfect on sensitive surfaces without any material strain.



WATER BONDING

Water bonding is a booster for the ply bonding process. With three or more plies an adhesion is possible without extra knurling. Therefore the embossing design is very flexible and cost saving since no extra knurling tool is required.

■ Stefan Käszmann,
Area Sales Manager
WEKO.



► Our application possibilities in tissue.



SOFT LOTION



FRAGRANCE



ANTIMICROBIAL



PLY BONDING



WATER BONDING



RAISE PRINT QUALITY



INCREASE EMBOSSING QUALITY



RAISE TISSUE VOLUME

By spraying a defined amount of water, the layer adhesion is massively improved, as the water increases the penetration of the before applied glue in every single layer. Also the swelling properties of the fibers allow improvements of the tissue in dimension, bulkiness and volume. Your process reliability is increasing since the system works very continuously.

Are you looking for a unique selling proposition for your product?

Whether handkerchiefs, toilet paper, serviettes or facial tissues, create your own touch and increase your product quality and offer added value for your range through the liquid application of additives.

Experience the "Innovation at work". Together with an international partner, we are currently working on a pilot line where you can test your ideas outside of the running production.

Contact us for more information about the improvement of your multi-layer tissue. ●



■ YouTube Video.

WEITMANN & KONRAD GMBH & CO. KG

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grades





■ Operator at work.

Körber Business Area Tissue celebrates an important milestone: 100 lines of the “My” family have been sold so far worldwide since the first MyLine was introduced in 2015. With this range of pre-configured solutions for converting roll and fold, **KÖRBER BUSINESS AREA TISSUE** offers its continuously evolving technology, for a reduced lead-time, bundling it with its technical support services for an optimized OEE over time. A successful outcome, guaranteed by high quality of the finished product and excellent value for money for clients in converting roll. In parallel, the company has innovated the roll segment with its Perini MyGo and has launched a new line for the fold segment with its MTC MyWiz.

The success of the “My” series: reliability, versatility, performance

Clients worldwide have expressed their satisfaction with the four lines of the “My” series. Indeed, the multiple benefits that the MySincro, MyLine, MyTime and MyFold present, translate in terms of efficiency, value for money and ease of integration with existing processes, for high performance, productivity and reduced Total Cost of Ownership (TCO). With Körber Business Area Tissue’s technology, customers have been able to meet a latent market demand, increasing sales by as much as 15 percent. Furthermore, thanks to the excellent transfer system for roll and the folding system for fold, cycle capacity has been boosted, resulting in a significant improvement in the quality of the finished product, attaining, in some cases, an OEE of

“ Shaping **your** success in tissue ”

KÖRBER BUSINESS AREA TISSUE

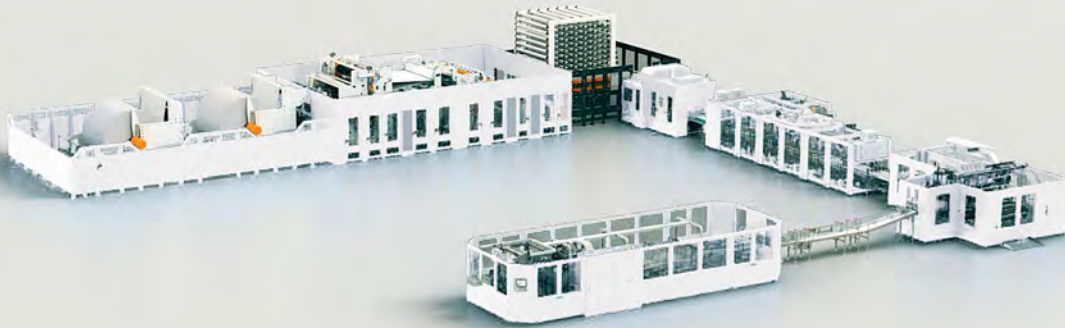
**celebrates
100 lines sold of
the “My” family**

By: Körber Tissue SpA



■ Operator governs the machine's start-up from the external HMI panel.

■ Perini MyLine.



“ Tomorrow’s **solutions** in today’s markets ”

82 percent. The combination of Körber Business Area Tissue’s know-how and 24/7 technical support is the differentiating factor, which enhances the benefits of choosing a My. “The MyPerini and MyMTC series make our advanced technology readily available, in line with safety and efficiency standards for any production volume required. The positive feedback received in the field by tissue converters has encouraged the continuous expansion of the My family to meet the needs of an ever-changing market, as well as the implementation of the latest technologies for self-adjusting solutions aimed at reducing operator dependencies” - says **Stefano Palazzesi**, Product Manager at Körber Business Area Tissue.

Product innovation and portfolio expansion

Given the success of its already existing products, Körber Business Area Tissue has introduced two new dedicated solutions for the roll and fold segments, in order to constantly meet the needs of customers in an ever-changing market. Specifically, **Perini MyGo** is an upgrade for the roll segment of the MyLine which, thanks to its new plug-and-play configuration, optimizes machine installation operations, in



■ Stefano Palazzesi, Product Manager - Converting at Körber Business Area Tissue.

favour of a significant reduction of start-up times. Furthermore, the lines of the My family are constantly updated according to the most cutting-edge technologies. Concretely, the converting lines for rolls can now be equipped with recent self-adjusting solutions, with

the aim of reducing dependence on the operator and increasing their safety. In this regard, worth mentioning are the **Sam perf active system**, for constant control of the perforation quality while the machine is running, and the **Auto Web Starter system**, for the automatic passage of the web from the unwinder to the rewinder, which eliminates the need for the operator to enter the line. On the converting fold side, Körber Business Area Tissue has recently launched the new **MTC MyWiz**, a line designed for medium production volumes in the Multifold category. Thanks to the established vacuum technology, the innovative solution will enable the creation of Away from Home multifold 3- or 4-panel (Z or W) value products. A brand-new solution deriving from the combination of Körber Business Area Tissue’s expertise, for the benefit of customers’ businesses. ●

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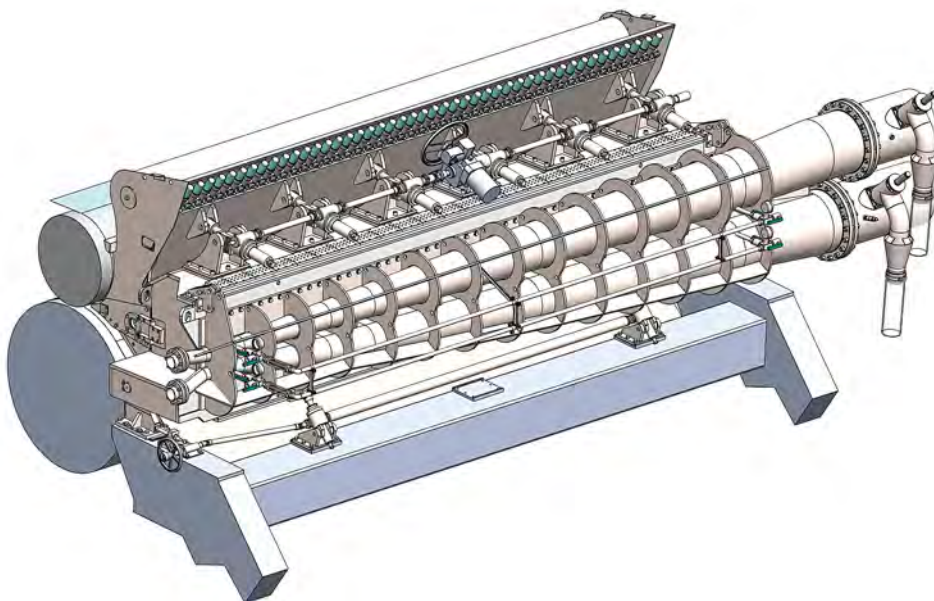
TOSCOTEC'S TT Headbox delivers superior performances in tissue

By: Luca Ghelli, R&D Director Toscotec

An old and popular advert promoting efficient, reliable and user-friendly household equipment ended with the vigorous claim "Facts, not just words." The underpinning message being the guarantee of "actual results, not only promises." While elaborating the list of Toscotec's TT Headboxes - 32 units since 2020, of which 23 in operations and 9 undergoing manufacturing - we were reminded of that

popular ad. Over the last 16 years, **TOSCOTEC** has sold over 130 TT Headboxes to be installed on tissue machines, of which 32 have been in the last three years. The majority of these units were part of complete tissue line orders (23 units), some were part of major rebuilds (4 units) and the rest (5 units) were sold as replacements of existing headboxes. The latter replaced headboxes manufactured by other machinery suppliers with the aim of improving paper

“ Technological excellence
for the paper industry ”



▲ Toscotec's TT Headbox.



quality and production performance. Since headboxes are normally sold with the complete tissue machine, the fact that paper producers are willing to replace only the headbox testifies to its importance, as it affects the machine's production both in terms of paper quality and energy performance.

- Toscotec's TT Headboxes sold since 2020 vary in size, characteristics and performance:
- 15 TT Headboxes have a pond width lower than 3,000 mm, while 17 units between 3,000 and 5,800 mm.
- The majority are designed for high speed machines (up to 2,200 m/min).
- 5 TT Headboxes are equipped with paper profile dilution control (connected to QCS), while 5 units are designed for its future installation.
- 21 units are single-layer TT Headboxes and 11 are multi-layer units.
- 26 TT Headboxes are installed on crescent former machines and 6 units on twin wire former machines.
- 3 TT Headboxes are installed on TAD machines and the rest on DCT machines.

Toscotec's headboxes produce high quality products - from facial and low basis weight toilet tissue (below 12 gsm) to towel tissue (up to 32-35 gsm) - processing different furnishes,

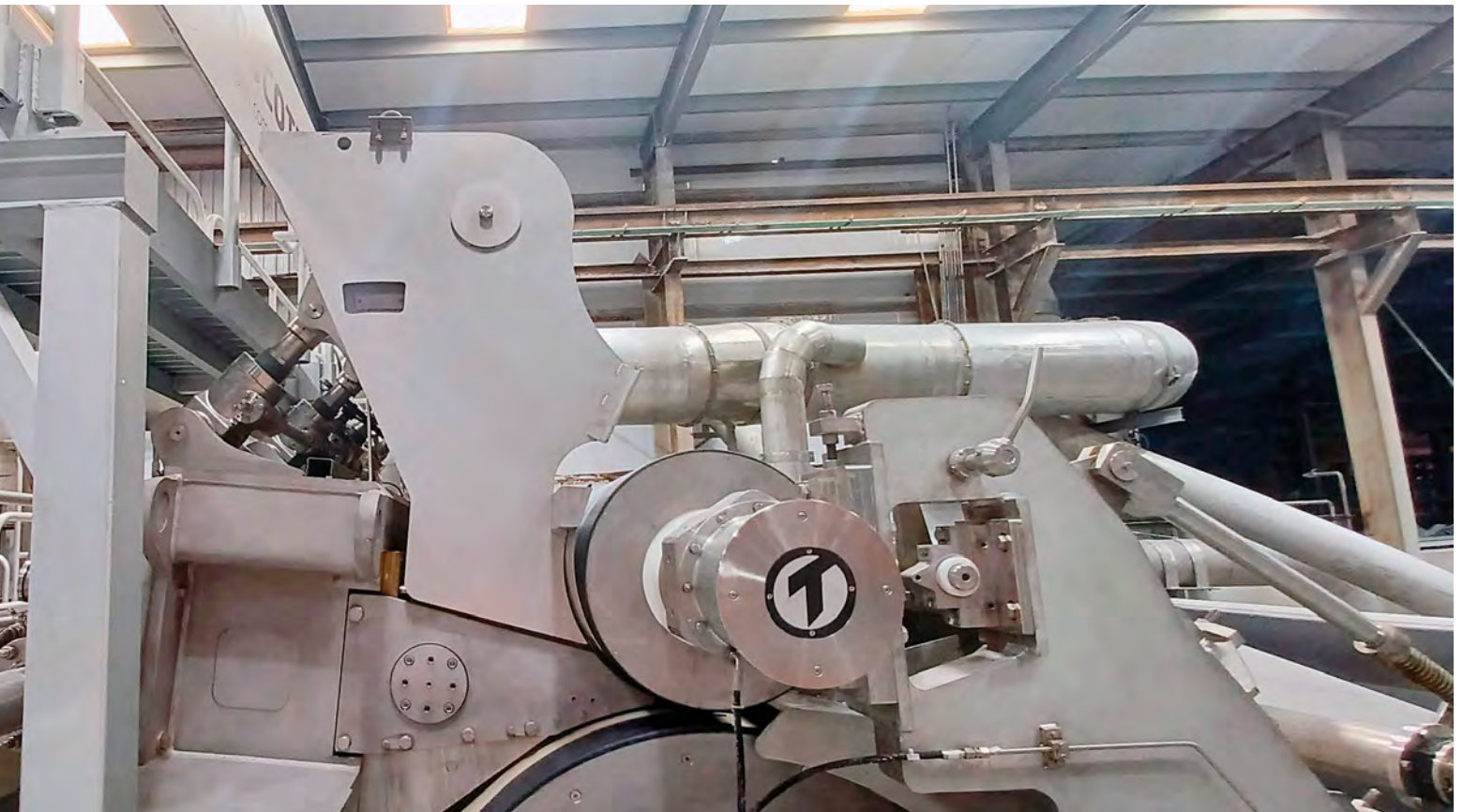
including virgin fibers, de-inked pulp and 100% wastepaper. All TT Headboxes feature high flexibility in terms of:

- Flow out of the headbox and into the forming section through precise slice opening control.
- Jet landing on the first dewatering part of the former.

In order to ensure a proper and uniform feed, they are equipped with best-in-class instrumentation for the control of process parameters such as pressure, temperature and consistency.

Actual results: superior performances

After a short period of optimization and fine-tuning following start-up, all **TT Headboxes** have met the guaranteed figures and customer requirements, as high quality formation was always reached on all applications and on all grades. In several cases, the headboxes have set a new benchmark for paper formation, which was subsequently adopted also in other mills of the same group and on various occasions also led to repeated orders. TT Headboxes - those without dilution control and only the basic configuration of the slice lip controlled with manually operated micro jacks or micrometric screws, have always met bone dry profile guarantees within 1.5% of mean bone dry value when averaged over the control window corresponding to the adjusting spindle spacing.



“ Your needs, our solutions ”

For TT Headboxes equipped with automatic Cross Direction (CD) dilution system, the main operating parameters are:

- Dilution flow accounting for 7 to 10% of the flow out of slice.
- Pressure ratio (pressure in dilution header divided by pressure in headbox header) normally in the range of 1.3-1.4.
- Standard control window of 82 mm.
- Bone dry profile 2 sigma values below 0.8-0.9% (ratio of bone dry 2 sigma CD gsm/average bone dry gsm 100) for all products.

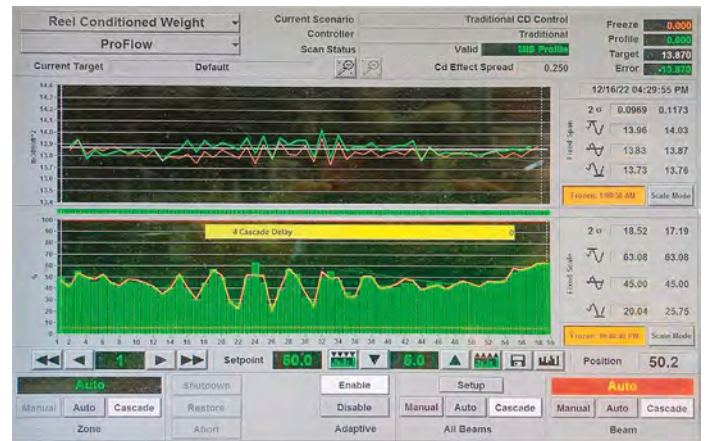
The accomplished 2 sigma figures are based on the control window of the profiling system. Even when all scanner readings are used to calculate the 2 sigma figures, the variability never exceeds 1.5% of the average bone dry value.

Why is bone dry profile uniformity so important? Because after paper formation is completed, it is a crucial property as it normally translates into:

- better control of the Yankee coating;
- avoid over-drying to compensate for lack of moisture profile uniformity with significant energy saving in the Yankee and hood area;
- better moisture profile at the pope reel;
- better runnability in the converting;
- less complaints from final customers.

TT Headbox: a successful technology

Optimal headbox performance and high quality paper production require an optimized control of stock injection and a proper selection/operation of the equipment in the approach system. A good control of the water recovery circuit



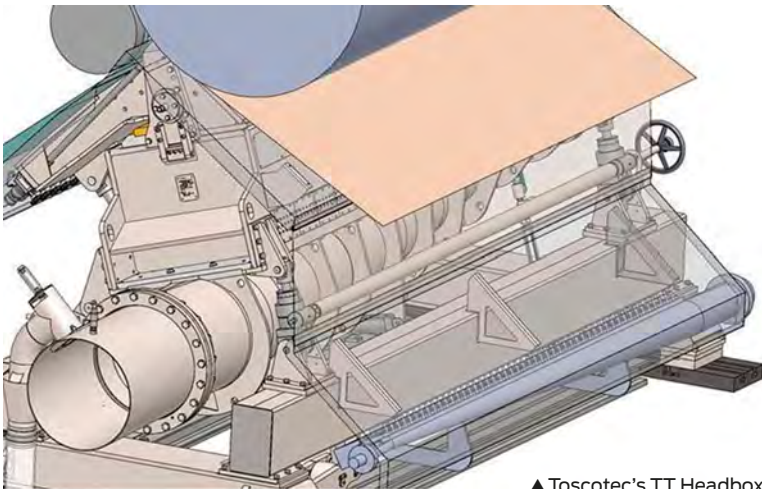
▲ Toscotec's TT Headbox: bone dry profile and dilution system.

is also key for smooth, clean, and efficient operation of the headbox, especially for furnishes such as wastepaper and de-inked pulp. Toscotec has developed a deep knowledge of the approach system design and best practices to avoid process disturbances, which could affect TT Headbox's operations, enhancing both Machine Direction (MD) and CD profile control. As a result, it offers all the necessary support for the control of the complete process both upstream and downstream of TT Headbox.

The success of TT Headboxes derives from:

- Extensive experience and deep product knowledge.
- Effective and precise manufacturing specifications.
- Optimal quality control of the final product.
- Stricter and more accurate quality control procedures of sub-suppliers.

Based on the increasing knowledge of the product, Toscotec has developed standard headbox specifications, which are then applied and customized for each customer based on the specific need in terms of flow, control capacity, and geometry of the application. Besides quality and profile control results, the TT Headbox is close to 100% free of internal build up issues or the need of special cleaning requirements. ●



▲ Toscotec's TT Headbox.

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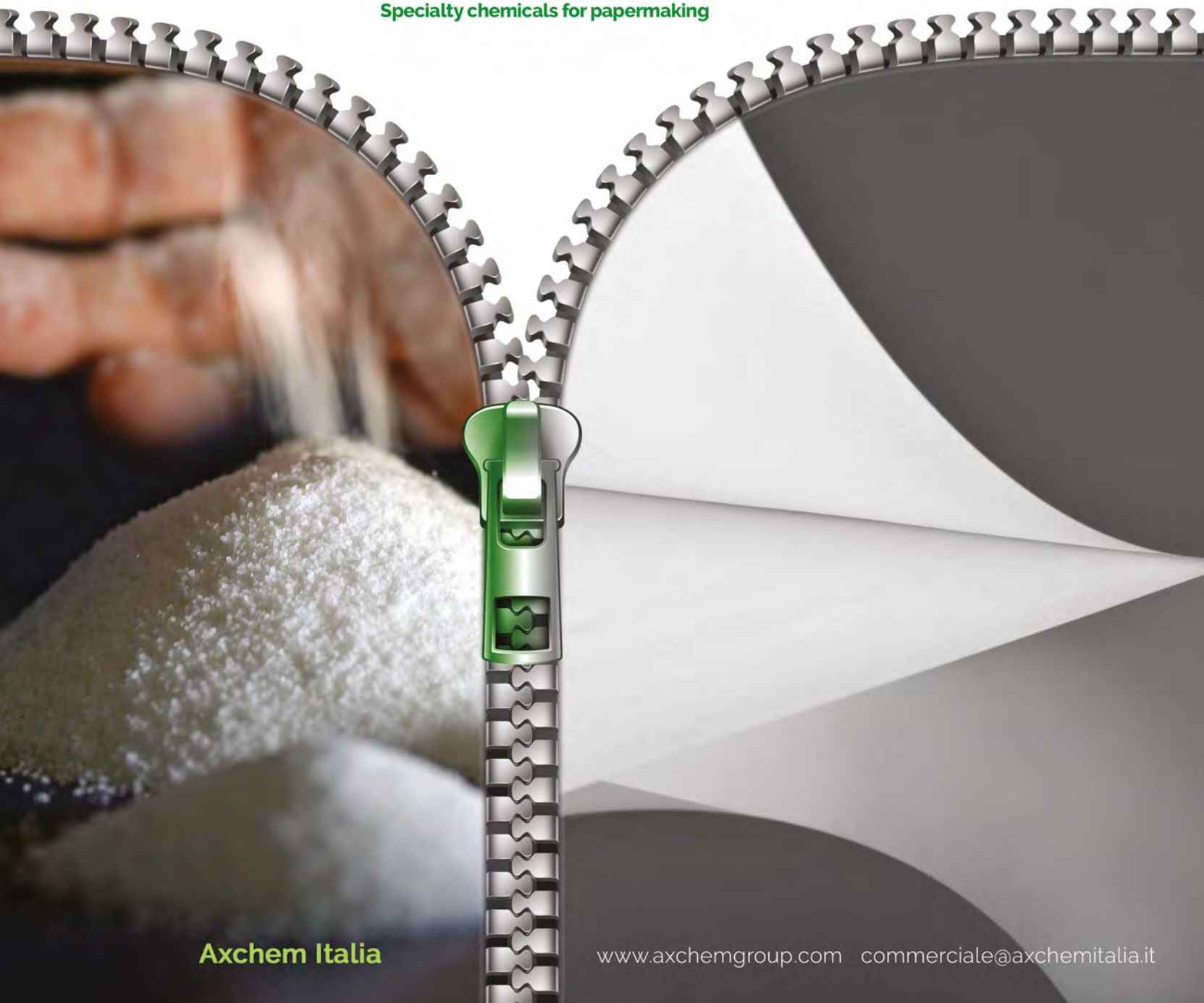
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“ From chemistry
to solution, in the middle
is Axchem Group... ”



PROMOTECH: SICK's analysis and metering solutions for enhancing the sustainability of paper mills

The paper industry plays a significant role in the global economy, boasting a turnover exceeding 700 billion dollars worldwide, with Italy alone contributing 13 billion dollars and employing over 100,000 people. However, paper production does entail a certain environmental impact, which raises concerns regarding the sector's sustainability. These concerns include gas and dust emissions into the atmosphere, water pollution and waste management.

by: Promotech Srl

Over the years, the paper industry has demonstrated a commitment to enhancing its environmental sustainability. This commitment is reflected in investments aimed at improving production processes and the adoption of various technical solutions. Notably, the industry has seen a continuous growth in recycling rates, which itself makes a significant contribution to sustainability. When addressing atmospheric emissions, common solutions include transitioning to cleaner fuels, such as natural gas, utilizing renewable energy sources, implementing more efficient filtering systems and closely monitoring their performance. Additionally, optimizing process water usage and focusing on energy efficiency have become crucial aspects. Paper mills are energy-intensive operations, relying heavily on electricity, steam and heat. Natural gas is a primary energy source, particularly for steam production.



Monitoring natural gas consumption presents a valuable opportunity for paper mills to enhance energy efficiency and reduce costs. This monitoring involves identifying areas of waste, tracking consumption trends over time and accounting for variations in operating conditions. This process allows for the identification of inefficient machinery or systems, heat losses and general energy misuse. It also enables the planning of targeted efficiency improvements. By improving energy efficiency, paper mills can simultaneously lower energy expenses and bolster competitiveness and profitability - all without compromising their commitment to reducing environmental impact.

PROMOTECH has consistently collaborated with SICK in the paper mill sector, working to analyze the problems and address the needs of its customers. The available technologies allow for precise and continuous monitoring of natural gas consumption, thanks to the adoption of SICK's intelligent gas meters,



quality, thanks to their significant diagnostic capabilities. Other SICK solutions can also help in this pursuit of efficiency, for example, by monitoring compressed air consumption with specific FTMG sensors or by monitoring the performance of baghouse filter systems with DUSTHUNTER SP30 dust meters, offering optical performance at a tributary cost. The monitoring of emission control systems is supported by the GM32 and GM700 online analyzers, which allow for optimal control of both the NOx reduction

“ Leader in the distribution of **electric and electronic equipment** for automation ”

FLAWSIC. These meters are reliable in both fiscal and process versions, easy to install and adapt to existing systems, and can collect data from various points in a production facility. They can detect anomalies and ensure constant control over measurement

system and the SOx scrubber. This enables a reduction in reagent and energy consumption while ensuring high pollutant removal performance in the emitted air effluents. In addition to solutions that enhance pollutant reduction systems, SICK, our company

Promotech in Italy and around the world

Promotech was established and developed in Lucca, a one-in-the-world centre of the paper industry. Since the 1990s, along with the distribution of technologies for industrial automation and sales, we have been developing a hardware and software consultancy support that offers a series of tailor-made services dedicated to the specific needs of each company and sector. Leading companies in the paper, packaging, pharmaceutical, food and other industrial sectors have chosen us as their partner thanks to a dynamic and specialized organizational structure. Our strengths: large warehouse availability of new, obsolete - used and refurbished - components, problem-solving skills, technical support and repair service.



can assist in the transition with customized QAL1-certified CEMS (Continuous Emissions Monitoring Systems) for continuous emissions monitoring. We also provide support services and performance monitoring through the analysis of vital parameters of meters and analysis systems.

The implementation of these and other measures can certainly have a significant impact on the progressive increase in sustainability, a requirement that is becoming increasingly clear and fundamental in the latest European directives. For years, Promotech has been collaborating with Sick in the

paper industry to develop tailored solutions for its clients. It also serves as a Sick distribution center with qualified staff constantly undergoing training. In addition, it has a large warehouse stocked with various brands and products specific to the paper industry and beyond. ●

“

Customized services, designed for the **specific needs**

”



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INNOVATION on show in the paper industry

Mingazzini has brought its almost century-old experience as a protagonist to the MIAC 2023 in Lucca, a sector event in which the Parma company has confirmed itself as an important point of reference.

by: Mingazzini Srl



“ Safety, quality, reliability
and service ”



▲ Steam boiler PB series,
with 20 ton/h steam
output.

◀ Mingazzini
headquarter.

Industrial exhibitions represent an extraordinary opportunity to discover new trends in the various business industries and among these the MIAC has a particular meaning for Mingazzini, a company from Parma which, due to the over 10,000 steam boilers installed during its almost century-long history, is a point of reference at an international level also in the paper industry. In Lucca, from 11 to 13 October 2013, Mingazzini was therefore among the protagonists of **MIAC**, the International Exhibition of Technologies and Equipment for the Production of Paper and Cardboard and

for the Transformation of Tissue Paper, bringing the innovative value of the latest technological updates and sharing case histories with visitors on the most recent application cases with high added value.

MINGAZZINI focuses on steam boilers for industrial purpose and on everything necessary for the construction and efficient management of boiler rooms of any size, including remote control and management and operation without continuous supervision for 24/72 hours, with customization of each plant. Joining MIAC Mingazzini has got a unique platform to present its products, establish business contacts and

gain an in-depth understanding of the needs and challenges of the industry, bringing its technological innovations to the exhibition. The company has always been at the forefront in investing in research and development to identify solutions capable of responding to the most varied needs, including energy saving and reducing environmental impact.

▼ Complete boiler room supplied ready for use.



“ The product: our point of strength ”

therefore, in the implementation of feasibility studies, preliminary and executive designs for the optimization of steam boilers for industrial purpose. The exhibition therefore has offered the opportunity to present these innovations to a vast audience of professionals in the specific sector, obtaining valuable feedback and potential collaborative partnerships, but also to present new systems, including customized ones, capable of giving an answer to specific customer needs.

The MIAC therefore represents a moment of meeting and discussion, to analyze and discuss common challenges, start new collaborations and find innovative solutions, also thanks to the exchange of knowledge and experiences. At MIAC 2023 Mingazzini was able to show its commitment to innovation and excellence in the paper industry. The company is determined to develop advanced solutions for its customers and contribute to the progress of the paper industry in general. Attending international trade fairs, Mingazzini constantly demonstrates its commitment to staying up to date with the latest trends and maintaining its leading position in the industry, backed by a history of success that extends for almost a century. ●

■ Steam boiler PB series equipped with economizer.



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FROM **ENGINEERING**
TO **TURN-KEY** PLANT



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www.indexacompany.com

HEIMBACH'S TISSUE MACHINE clothing is ready for the next challenge

Innovative tissue clothing

Machine technology, especially press technology has constantly changed in recent decades, with a higher focus on energy efficiency, sustainability and decarbonization. As the mechanical energy used in the press to extract water from the paper web is substantially less than the thermal energy needed to dry a sheet over the Yankee, any extra dryness from the press will translate into reduced cost of manufacture.

With our tissue clothing concepts, we offer papermakers the possibility to optimize and sustainably improve the performance of their machines by fittingly in line forming fabric, press felt and shoe press belt options.

Sustainable sales, product management and development support

New paper machine clothing's are primarily developed for better performance, for example reduced energy consumption or rather carbon footprint CO₂, better utilisation of furnish as well as to optimise machine efficiency or paper quality. The first step of a paper machine clothing expertise is to transfer what has been seen plus spoken into sustainable knowledge and to use digital technology to combine what has been learned into the product development for the current requirements of the tissue machine. Artificial intelligence (AI) supports us in mastering daily challenges. The advanced Home service & TASK parameters, as well



Keeping in mind the market for tissue, how can our proven clothing design make a difference? How can we sustainably support our customers to optimise challenges such as a reduction of energy consumption and carbon footprint while keeping the manufacturing cost as economical as possible? These and many other topics are regularly addressed by our expert group including our sales engineers, product managers and product development organisation.

by: Heimbach GmbH

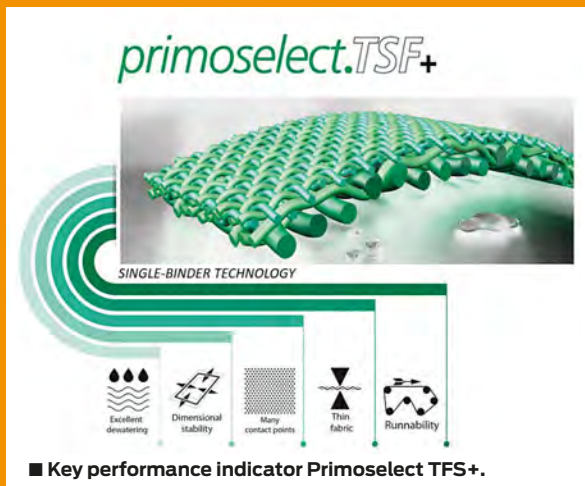


as in-house data, help us to realise design developments for the complex requirements of the tissue machines to be able to offer the best fit clothing concepts for the individual machine position. The optimisation of the felt design is customer-target-oriented. Pore size and pore distribution in the felt structure controls dewatering capacity and start-up curve. In addition to the optimal modification of the felt design, it must be checked that the shoe press belt design works hand in hand with the press felt designs to achieve best possible inlet dry contents at Yankee cylinder. The tissue forming fabric design applied is based on an intensive study of the paper requirements and difference in furnish and processing. Tissue forming fabrics are judged upon fines and drainage capacity. Very short drainage lengths and high speed require thin, fine and “open” fabrics. *“Get to know our tailor-made solutions engineered specifically for hygiene papers and see for yourself the cost and energy savings for your production needs”.*

“ A loyal partner to the paper industry, **regionally but also globally** ”

Primoselect.TSF+

- A forming fabric that combines the features of SSB and WSB.
- A binder concept that sets standards in the ratio of open paper side surface and active fibre support.
- Offset warp system in the machine direction allows sheet formation over a very short time.
- High FSI, low fabric caliper and low void volume (VV) guarantee excellent dewatering results and clean machine conditions.
- The patented fabric guarantees high dimensional stability. This results in increased wear resistance and optimum lifetime.



Forming fabric technology designed for tissue machines

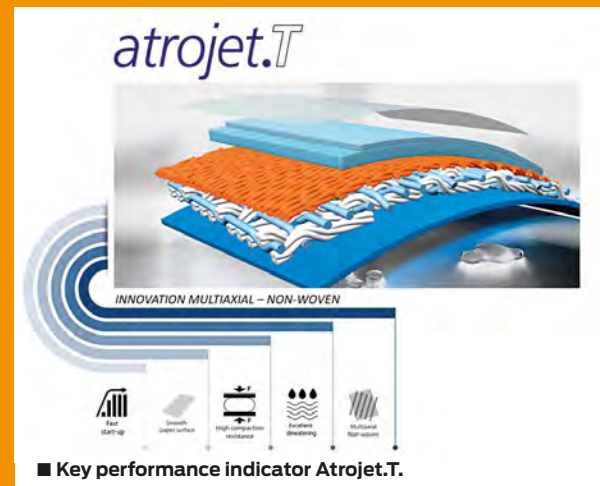
In recent years we have continuously optimised the Primoselect forming fabric concept. With our latest advanced Primoselect.TSF+ products we are able to offer a tailor-made forming fabric series for tissue machines. The patented Primoselect.TSF+ single-binder concept is engineered to fulfill a wide range of demands for the production of the highest tissue paper quality.

Advanced press felt technology designed for tissue press applications

The continuously developed Atrojet.T Series combines the benefits of most advanced bases technology, multi-axial and multi-axial non-woven. The multi-axial tissue press felt conception offers comprehensive product ranges

Atrojet.T

- Fine and homogenous base structure ensures first class drainage as well as speedy start up curve.
- Modular batt structure helps to provide a fine-pored structure. This prevents accumulation of dirt on the surface which helps achieve high paper quality.
- The felt allows perfect saturation which in turn leads to efficient hydraulic nip pressure.
- Higher contact area and good uniformity across the felt width result in ideal nip and pressure distribution to the Yankee cylinder.
- Open structure on the roll side means efficient felt cleaning and cleaner machine run.



to meet the requirements of sophisticated press applications. The exclusive base weave combinations of multi-axial tissue press felt conception Atrojet.T and Atromaxx.T meet the specific and individual requirements such as short break in time and high nip dewatering capacity for customized well-engineered tissue press felts application. ●

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Taurus consumes less 60% of energy



SIMPLICITY

Taurus is intuitive and easy to use



STRENGTH

Taurus has the same production strength as a standard line

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The line is designed to embrace the use of recycled paper as a valuable option. With its vacuum-free folding system, it enables the production of interfolded products using more ecological paper, which is notoriously challenging to fold. **Taurus** integrates recycled paper into a cost-effective system without compromising performance and ensuring superior fold quality.



by KAIROS

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KAIROS
converting technologies

VACUUM SYSTEM AUDIT:

when and how to intervene to optimize paper production process

By: Oradoc MTK

■ Vacuum system before rebuilding.

The paper industry imposes high standards in terms of productivity and plant availability. The vast potential for energy savings that lies behind proper drainage and maintenance is key to understanding how these two aspects are very often some of the main overlooked factors, thus entailing hidden costs. Lack of accurate vacuum measurements, analysis of partial drainage data and poor maintenance of drainage and vacuum systems - just to name a few - are some of the most common issues.

ORADOC MTK approach to address these problems relies on a thorough on-site technical audit, in order to assess the real effectiveness of the vacuum and drainage system, highlight problems and implement an action plan aimed at reducing hidden costs.

Why it's important

The audit activity on the vacuum system is important to optimize the process from an energy point of view, in order to use only the vacuum requirement strictly necessary



■ Low vacuum zone after rebuilding: new and larger separator and fans, automatic valves.

Maintenance activities aimed at restoring the optimal conditions of the components of the vacuum system include the sealing of the cracks, which have been created, for example, on the pump head due to cavitation, using a filler resistant to mechanical stress. Similarly, applying a layer of ceramic paint to the inside of the pump body and impeller can help reduce friction between the water and the metal structure, improving efficiency and preserving surfaces from wear and early deposits.

DCS vacuum control panel

Vacuum Box DCS (Distributed Control System) is the control system installed in the machine room and managed by line operators who digitally monitor the entire vacuum system of the wire section. Through the system it is possible to control not only the automatic valves and their settings according to the type of paper production, but also the fans and vacuum pumps. It is also possible to install the consistency sensors right on the canvas and process the data collected directly on the software in order to adjust the vacuum system in an optimized and integrated way, thus reducing energy consumption.



■ Example of complete vacuum system rebuilding in low vacuum zone.

for correct operation, managing the various areas of the machine in the best possible way. The punctual and optimal control of the vacuum degree also allows to obtain other benefits, in addition to energy savings: the adequate vacuum level guarantees the correct and gradual extraction of water from the paper pulp, up to the formation of the sheet, but it also ensures the necessary cleaning of the felt, which must guarantee excellent permeability conditions both to absorb water inside and to allow a better deposit to the paper fibers on its surface.

Last but not least, the revision of the vacuum system also allows to extend the useful working life of the various elements that constitute it, check the state of wear and remove any deposits.

Main activities

The main activities that are performed by our on-site technicians are:

- Analysis of the existing layout to look for improvement solutions, trying to reduce the length of the pipes and fittings,

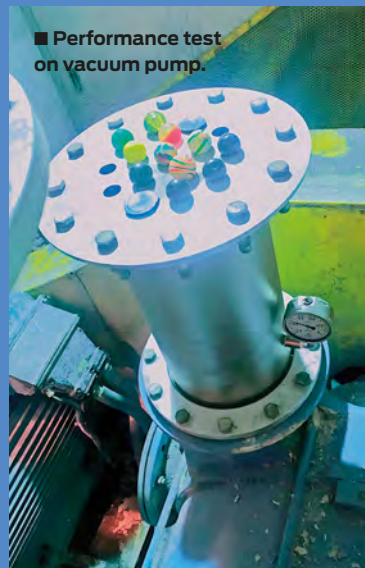
“ Oradoc - Boosting Performances ”

in order to limit as much as possible any leaks distributed along the system, in the area that goes from the suction boxes to the vacuum source (fans or pumps).

- Surveys of the main elements that make up the vacuum system (air/water separators, valves, pipes, water collection tanks, pumps, fans) to verify their correct sizing.

Performance test on vacuum pump

To then elaborate a real curve that displays values of depression and flow rate, we proceed to record the values with open holes and then progressively clog them, recording the variations. The comparison between the curve obtained and that originally provided by the manufacturer (with new pump, ideal conditions) allows to evaluate the possible loss of efficiency in operation over the given period; if the efficiency recorded is such as to affect consumption, the revision or replacement shall be carried out.



- Verification of the state of wear of the various elements that make up the system, including nozzles and impeller, pump heads and internal area.
- On-site acquisition of process data (working vacuum pressure of the various suction boxes - canvas area, felt/press area) and conditioning boxes (felt/press area), air speed inside the pipes (where possible), machine speed, paper widths, canvas width, felt, surveys for calculating the suction area of each vacuum element, plate data and operating curves of pumps and fans, type of paper, technical characteristics of the felt(s), water extraction pump plate data.
- Performance test on fans and pumps, necessary to analyse their operating status, comparing current performance with ideal ones (new conditions). To carry out this test, we proceed

to disconnect the pump from the suction pipe that connects it with the continuous machine, then place a perforated plate (test plate) on the suction mouth of the pump (one or two mouths, depending on whether it is single or double stage); then, once the pump is started, close one hole at a time, so to register different engine absorption and vacuum values taken on the intake mouth(s), in order to reconstruct the two real characteristic curves (flow/vacuum pressure & absorption/vacuum pressure) that will be compared with the ideal ones, provided by the manufacturer, to understand if the loss of pump efficiency that is created over time is acceptable or not. If it is not acceptable, it will be necessary to evaluate with the customer a subsequent step of reconditioning or replacement with a new one.

Results obtained

At the end of the audit activities, a final report describes in detail any problems identified in the plant and indicates improvement solutions in order both to improve the management and to optimize the process as much as possible. The efficiency intervention usually proposed, in the case of turbo-blowers, allows to derive the maximum benefit where low vacuums are required. For different operating conditions, it is proposed instead to proceed with an optimal adjustment of the liquid ring pumps, reducing the number of revolutions and ensuring a consumption weighted to the required degree of vacuum.

In the event that the vacuum system is rebuilt, the intervention often consist of replacing correctly sized separators, pumps and fans,

together with new automatic valves.

Alternatively - if the conditions are not such as to require replacement - it is possible to proceed with the revision of the individual components; in this case, fouling is removed. ●

ORADOC MTK

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Global coverage for Tissue sector



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INFINITY, world class machine manufacturer



Infinity name has become globally synonymous with quality, innovation, customer support and cost-effective, complete tissue packaging solutions.

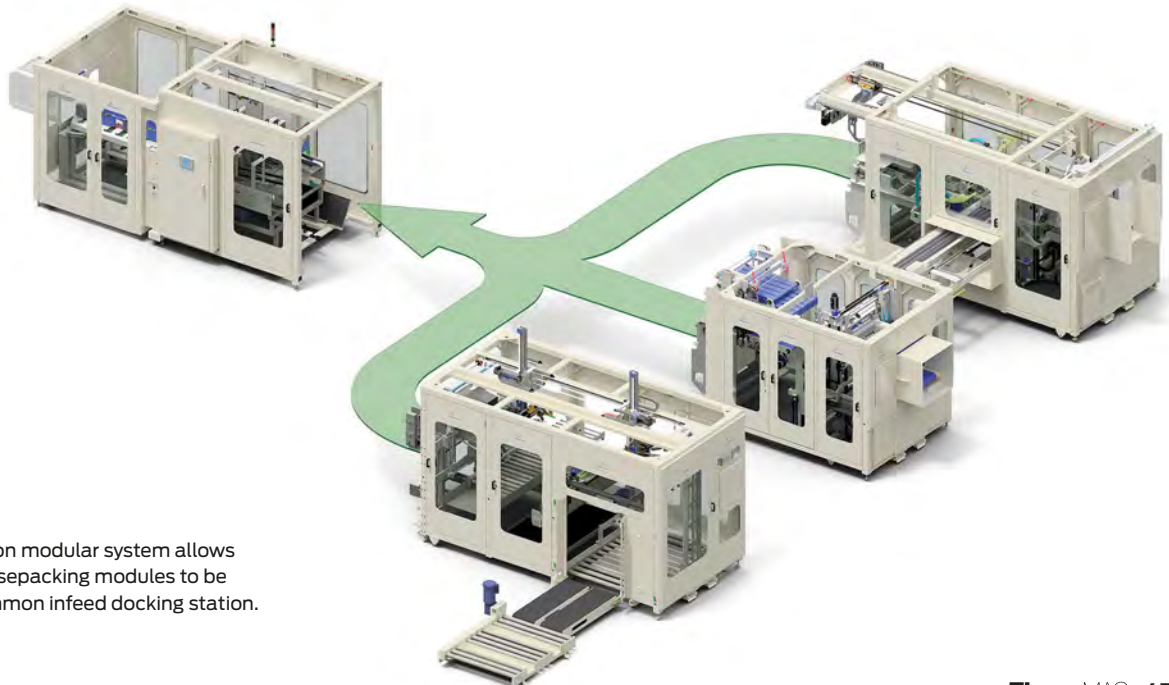
by: Infinity Italia Srl

In 2003 Scott Santaga, Jeffery Cogswell, Thomas Wegner and Doug Wegner founded Infinity Machine & Engineering Corp. with a simple guiding principle, to serve the customer. While a lot about Infinity has changed since 2003, the commitment to serve the customer never has. Since the beginning, Infinity has been defined by the entrepreneurial spirit of its founders. What began as a company that operated out of a 9X15 square meter facility has grown to be the premier name in automated tissue packaging. Originally, Infinity was founded as a company that would design and build poly bundlers, however plans changed when Infinity's first order was for a casepacker. Infinity's founders adapted to the needs of the customer and designed a casepacker that was flexible and operator friendly. The first Infinity casepacker is still in operation today, a testament to its design and build quality. Throughout its 20-year history, **INFINITY** has continuously pushed the boundaries of what tissue packaging machinery can be capable of. Debuting in 2005, Infinity's

signature Infusion modular system utilizes interchangeable packaging modules and a fixed, common infeed unit. This revolutionary design allows for casepacking, bundling and bagging to occur all in one place, providing unmatched flexibility for converting lines. The Infusion modular system has become a global success with systems installed across North America, Europe and Asia.

In 2010 Infinity added the talents of Italian technical specialist and sales staff with the creation of **Infinity Italia**. With the addition, American and Italian engineers combined their expertise to develop Infinity's first poly wrappers. Among these wrappers was the **Solo 250**, a single roll wrapper capable of running production speeds of 250 rolls a minute. Since expanding the product line, nearly 200 poly wrappers have been installed, making them an iconic part of Infinity's product mix. Infinity has not been limited to innovations in machinery; the company also responded to their customer's desire for more environmentally conscious packaging solutions. In 2020 Infinity partnered

■ Infinity's first casepacker was installed in 2004 at Green Bay Converting in Hobart, WI. It is still in operation today.



► Infinity's "patented" Infusion modular system allows for bagging, bundling and casepacking modules to be swapped in and out of a common infeed docking station.

with **Little Rapids Corp.** to develop and test Ecova, a 100% plastic-free paper overwrap made from recycled materials. Since the debut of Ecova, Infinity has continued to prioritize sustainability with continual investment in ecologically focused research and development. With machinery installed in over 20 countries, across every continent except Antarctica, infinity has established itself as the international industry leader in automated tissue packaging machinery. From France to South Korea, Infinity customers know that Infinity means quality machinery and unparalleled customer service. To accommodate the company's rapid growth, Infinity's headquarters has been expanded twice since it opened in 2008. The most recent expansion, which took place in 2020, increased the size of the facility to 16,000 square meters. Infinity has also increased its staff to over 200 employees between its Italian and American operations, nearly doubling in size from the total five years ago. However, the success of Infinity cannot solely be measured in facility expansions, or employee growth, it is also measured in the pride Infinity employees have in building the best tissue packaging machinery on the planet. Infinity has undergone a multitude of changes throughout its 20-year history. However, through multiple expansions to its roster of machinery, continuous increases in international sales and breakthroughs in ecological packaging, one thing has remained constant, Infinity's commitment to serve its customers. ●



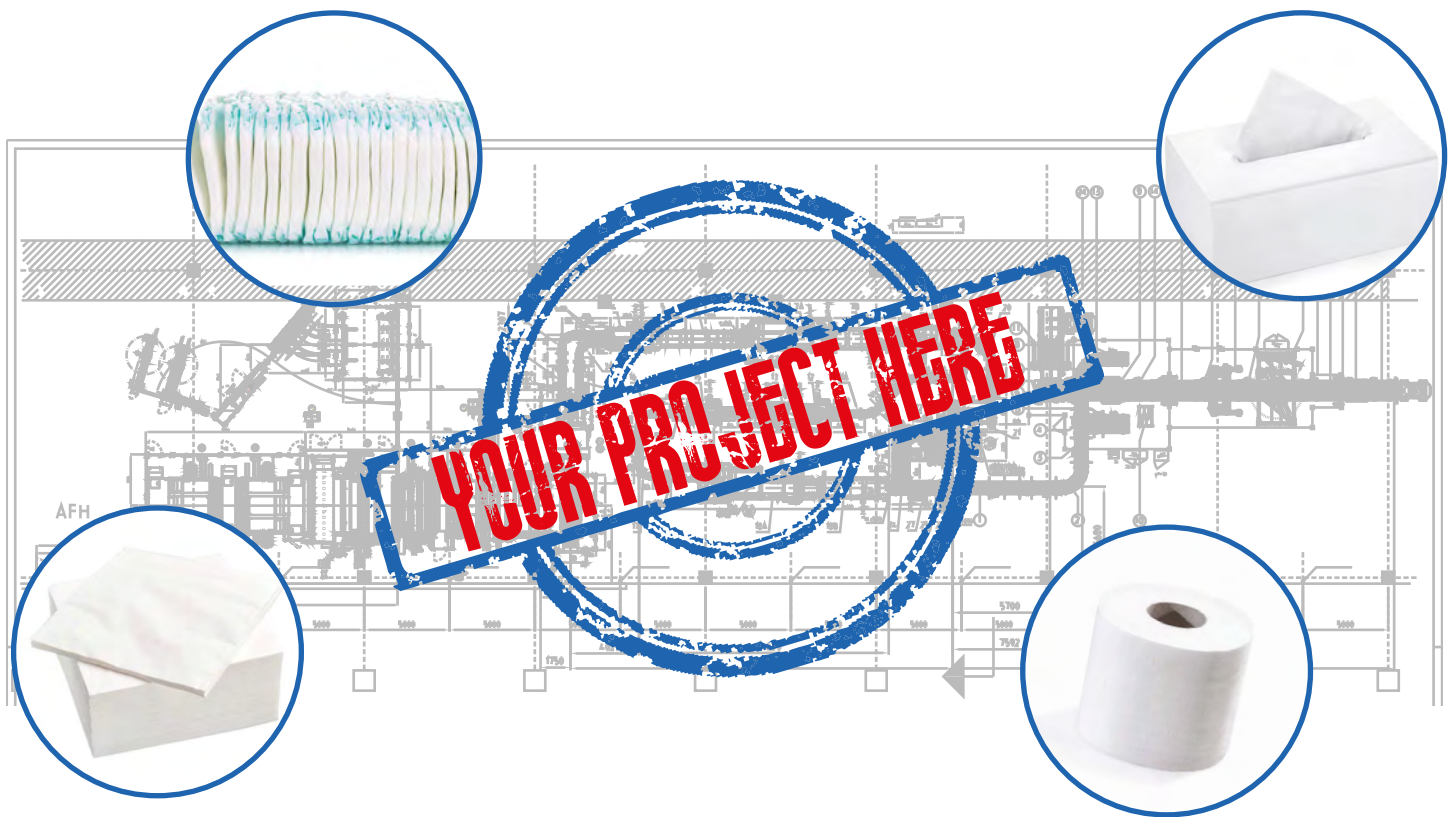
“ A **global vision**, focused on tissue and hygiene packaging solutions ”

INFINITY ITALIA SRL

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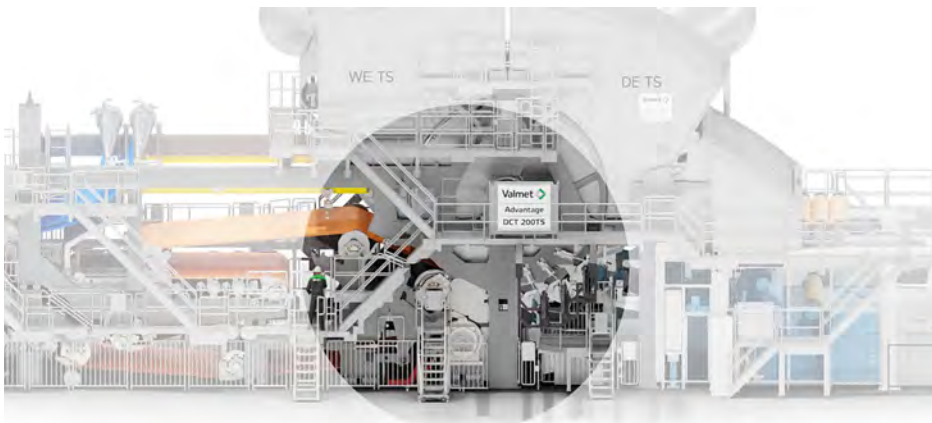
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Embark on a new path with Valmet's Advantage™ Visconip® press rebuild

100 sold - the results proven by customers around the world.

by: Valmet



together with cost reductions, lower energy consumption and savings through fiber conservation. The ViscoNip press operates over a wide range of linear loads which opens for extensive possibilities to develop products. Low linear load provides highest possible softness and bulk while high linear load improves energy and production efficiency. In addition, the linear load and load ratio is easily changed during operation without any disturbance on the quality or runnability of the machine. This allows for improved flexibility.

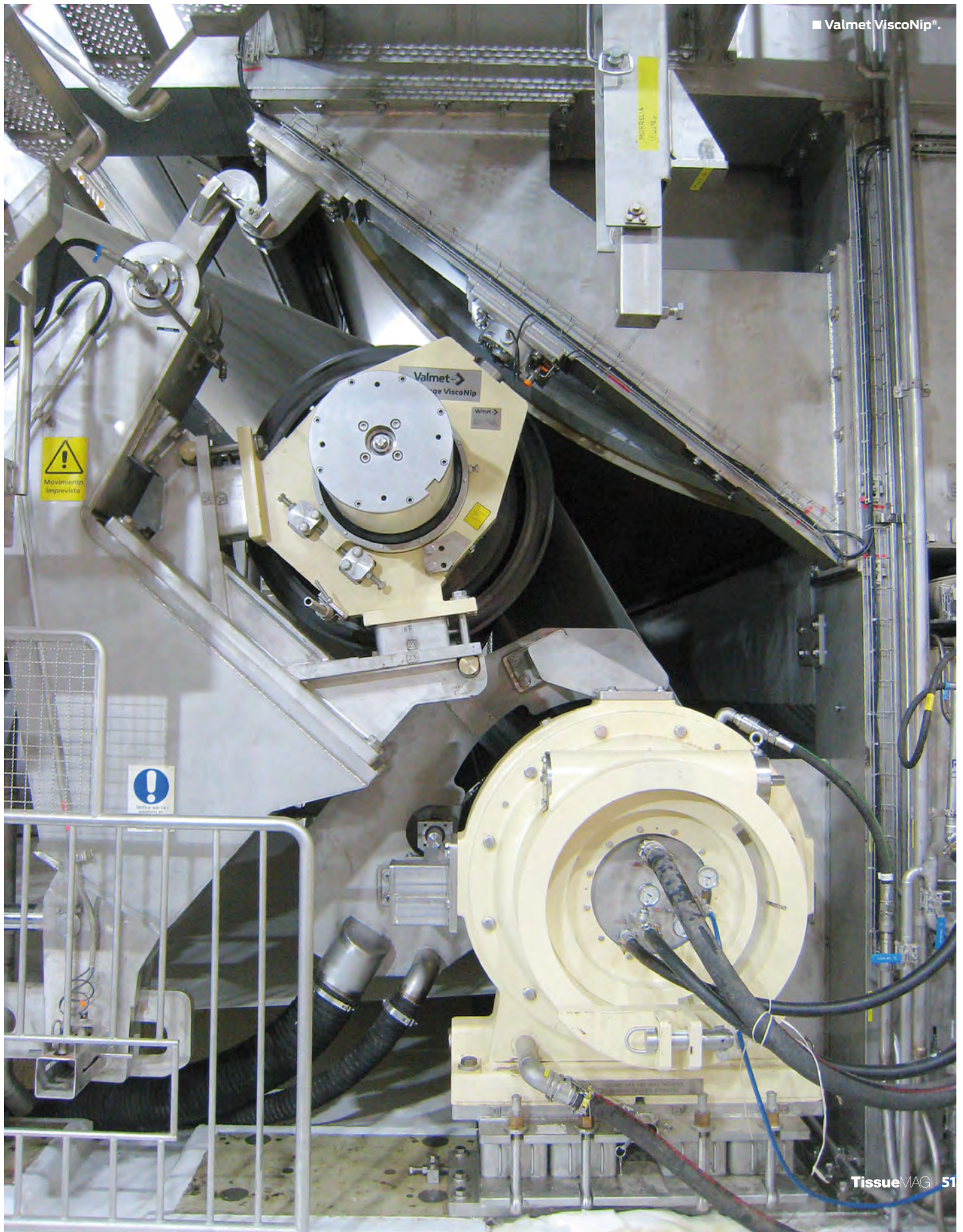
Results contribute to continued collaboration

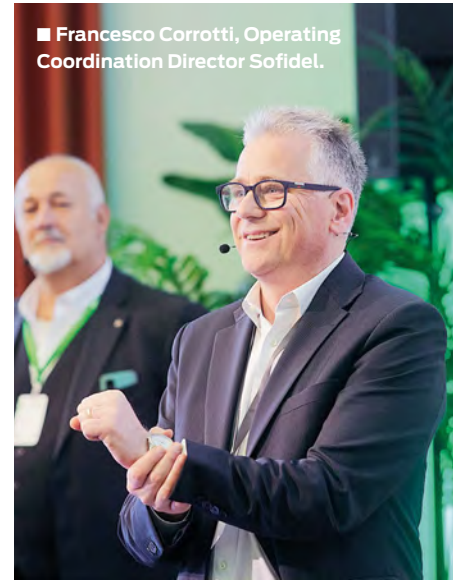
Papel San Francisco's collaboration with Valmet started about 20 years ago and recently they invested in their

The road to achieve low carbon emissions with high productivity in tissue production is not always a straight path forward. It requires balancing profitability, end-product quality, fierce competition, regulations, high energy prices and other inevitable factors. However, one concrete action that all tissue producers can start with is to review where in the machine a potential change could be made. Because with different rebuild opportunities there

are ways to improve. And the **VALMET** Advantage™ ViscoNip® press is a trusted example with 100 pieces sold. Tissue makers around the world are reporting enhanced product quality, increased flexibility and runnability

“ Valmet's flexible **tissue making technology** provides sustainable production of all types of grades ”





seventh tissue machine from Valmet which also includes the hundredth Advantage ViscoNip press to be manufactured by Valmet. When asked how the ViscoNip press has improved their production **Dario Palma y Meza Espinoza**, Director of Operations at Papel San Francisco answers: “we have seen increase in quality of the paper but also less down time for maintenance. It has very good reliability. In addition, our operators states that it is easy to operate and easy maintenance”.

Running smooth at high speed

The results from replacing a Symbelt press with a ViscoNip press at Fine Hygienic in Al Bardi, Egypt are astonishing. Operation Manager, Eng. **Khalid Banat** states that speed has increased 150-200 m/min overnight without any disturbances and is running very smooth at 2000 m/min. Even though they are now using lower nip loads of 90-100 KN compared to 115 KN with the Symbelt press, the energy consumption has decreased. Further, the flexibility in the ViscoNip press, with its polyurethan press body being soft against the Yankee, gives better uniformity and thereby better results in terms of quality.

Improved energy efficiency

A larger scope rebuild case at **Metsä Tissue** in Finland resulted in increased production capacity by 15% and as importantly, demonstrated improved product quality and energy efficiency. Here the ViscoNip press contributes significantly to the results.

Multiple benefits after the re-build

After the installation of the ViscoNip® press, together with the Advantage ReDry, at Sofidel's mill in Baglan (UK), the dryness was increased by 3.5-4% compared to the single suction press roll previously installed in the machine. **Sofidel** also experienced less web breaks; the paper that comes off the blade is more uniform. Benefits are also visible in the next step of the process: the converting line. After the re-build they now have more stability in the sheet.

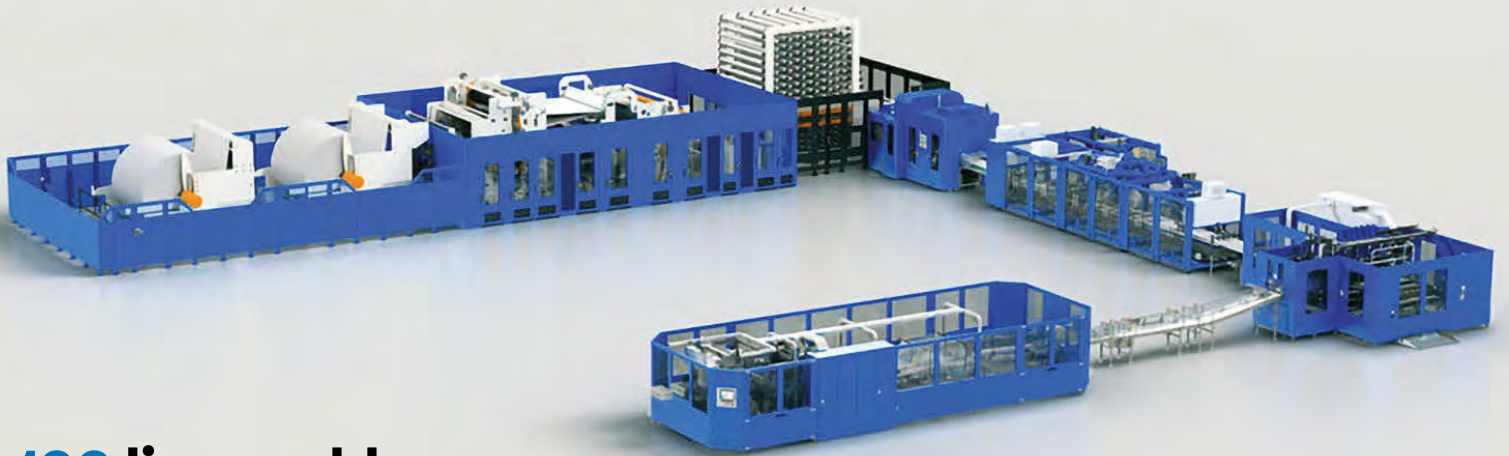
Another improvement is the felt and mostly belt lifetime. **Francesco Corrotti**, Operating Coordination Director at Sofidel reflects on the findings from their rebuild in Kisa, Sweden: “our perception is that the ViscoNip press seems to be gentler towards the belt as 7 months after the startup the machine was still running with the same start-up belt without any sign of wearing. This is of course very positive in terms of reduced maintenance cost”. The Advantage™ ViscoNip® press is standard in all Valmet's new Advantage™ DCT tissue machine installations and is very well suited for tissue machine re-builds independent of original make. Reaching your sustainability targets can be challenging when moving from words to actions. By considering Valmet's rebuild opportunities we can support you on the journey so you can embark on a better path forward. ●

VALMET

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Our offering of complete converting solutions enables you to get your roll and fold products to the market more efficiently in terms of flexibility, performance and ROI.

Shaping your success in tissue

TKM. The Knife Manufacturers



■ TKM Group Headquarters.



There is more to us than being “The Knife Manufacturers”.

by: TKM Group

As the world market leader, it is our ambition to develop highly efficient tools and solutions with innovative ideas and advanced technology, all while setting sustainable trends. The satisfaction of our customers, from the craftsman’s workshop to the global industrial company, has always been and still is the focus of our activities. We guarantee optimal customer proximity and competent support through our worldwide network of our own sales, service and production companies as well as through the high qualification and continuous training of our employees. Our motivation is, always, to find the best solution for our customers.

We take knowledge and experience from many industries and apply it to our products and services for the tissue paper industry.

That’s why we added three additional service tools to be closer to our customers:

- The TKM Group App, available for Apple and Android, includes a trouble shooting of the most common problems with the log saw blade application. All our customers can use the app for free. Try it out.
- To start, we build up a simple but efficient TKM performance centre. TKM performance centre is an easy access channel for our customers to industrial internet applications and remote services. Our experts have a deep understanding of the cutting applications of your tissue converting lines. With remote connections and tools, we provide the needed support and guidance without delay - and more broadly than before.

- The relaunch of our website www.tkmgroup.com. The structure of the website has been completely adapted and designed to be more user-friendly, but not only that, it now offers our visitors an absolute added value. In addition to our range of services, we offer you a detailed desktop solution manual. Discover more and visit our new Solution Finder now. While we are producing the Log Saw Blades and CBN grinding wheels in Remscheid (Germany) and the bimetal anvil and perforation knives in Boehlerwerk (Austria), we produce and provide other products for

“ We do not only sell a product, **we sell a solution** ”

the tissue paper industry at TKM Meyer in Bargteheide (Germany).

TKM Meyer is the development, manufacturing and service center for doctor blades as well as for knives and consumable parts for the printing and packaging industry as well as the tissue paper industry.

TKM Meyer is specialized on producing different types of doctor blades and provides a ph-neutral and biodegradable cleaning liquid for anilox rollers. We produce as well circular toothed knives (i.e core cutting knives) and straight toothed knives (i.e. bag packing machines). In the following we like to briefly introduce the different types of products.

“TKM is a **leading global manufacturer** of industrial knives, saws and doctor blades”



A) Doctor blades

TKM Meyer is one of the global leading manufacturers for doctor blades. Within the tissue paper industry there are two different doctor blade applications:

- Ply Glue Process
- Printing Process

The glue as well as the printing system is water-based. We provide two different material grades for the application:

- **Stainless steel (NiroPrint).** The corrosion-resistant doctor blade is the optimal solution for all aggressive or water-based glue and printing systems. TKM NiroPrint prevents any corrosion on the doctor blade, even in the critical contact zone. TKM Meyer owes its leading market position in water-based flexographic printing partially to the corrosion-resistant steel grade used
- **Synthetic Material (PolyPrint).** TKM PolyPrint prevents cutting injuries and scoring lines, since no metallic particles accumulate in the inking system. Given the wide variety of application requirements, we also offer TKM PolyPrint in other materials in addition to polyester.

Those who are interested in the best possible quality and lifetime of the

doctor blade use the TKM **DuroBlade**. For further explanations, please feel free to contact us or visit us on the Internet.

B) TKM Enpurex (Anilox Cylinder Cleaning Liquids)

For the thorough cleaning of your ceramic anilox roller and gravure cylinder we recommend the use of our ph-neutral and biodegradable Enpurex cleaning agent. To activate the cleaning process Enpurex is applied with the help of a micropore sponge. During the reaction time of 1-3 minutes all contaminations will be fragmented through highly dynamic pulsations and lifted upwards, instead of being

chemically aggressive dissolved. A drying-out must be avoided while doing so. To deactivate the cleaning process and to remove the contaminations a water-wetted nonwoven cloth is being used. Please note to wipe in one direction for a residue-free cleaning process. Subsequently the roller can be wiped dry with a clean cloth. Depending on the degree of contamination the cleaning process might be repeated. Check out now our brand-new application video:



C) Circular and straight toothed knives

- Core Cutting knives with and without TiN coating.
- All well-known OEM provide as well core producing machines. Most of the modern machines work with toothed circular knives to cut the core to the correct length.
- Toothed Straight Knives with and without TiN coating
- On bag packing machines you need a straight toothed knife to cut a piece of the plastic bag after the packing process.

The cutting process of the carton board core and the plastic film causes, due to continuously developed materials, always new challenges.

The **TKM Group** supports its customers in mastering the challenges with adapted geometries and material grades. ●



▲ TKM App.

TKM GMBH

- website: www.tkmgroup.com
- contact person: Thomas Friede, Business Unit Manager Tissue
- phone: +49 (0) 2191 9690 - email: TFriede@tkmgroup.com

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Svecom-P.E. has been building customized solutions for the winding and unwinding of reel material since 1954. Thanks to the know-how acquired in metalworking, in September 2015 Svecom-P.E. acquires **Garioni Naval** brand, a historic brand that creates industrial and naval heating systems. Consequently, the manufacturing area, part of the commercial network and customer service are transferred to the Svecom-P.E. headquarters in Montecchio Maggiore (Vicenza).

Genesis of the project and preliminary study

Today, Svecom-P.E. makes the know-how acquired over the

years in the paper and tissue sector available also for the production of Garioni Naval heating systems. The paper industry is constantly evolving, driven by the search for more efficient and sustainable solutions. It is in this context that the project emerges for an important company in the paper sector based in Lucca (Italy): a recovery steam generator with water tubes, in compact, modular design with finned tubes. The project came to life in December 2022, when the first study was launched to develop a system capable of recovering and exploiting the heat coming from exhaust fumes. This ambitious goal was translated, after a careful analysis, into a solid and innovative commercial proposal.



Innovation and sustainability: Garioni Naval, heat recovery boilers in the paper industry

By: Svecom-P.E. and Garioni Naval

Sustainability and environmental impact

A fundamental aspect of the project is its contribution to the sustainable ecosystem:

- By using this type of solution, CO₂ emissions are drastically reduced: the heat recovery boiler is in fact designed to recover waste heat without the use of non-renewable fossil fuels.
- A large part of the water is collected from the condensed steam and is pumped at high temperature to conserve as much heat as possible, minimizing losses to the atmosphere.
- The project is in line with the goals of reducing environmental impact. Considering that the plant is active 24 hours a day, we are talking about approximately 12,000 tonnes of CO₂ saved every year. A fossil fuel boiler of

the same power would emit around 1500 kg of CO₂ into the atmosphere per every hour of operation and would consume around 6 million Nm³/h of gas per year.

Technological innovation

Steam generators are traditional products historically available in many different forms: an uncommon peculiarity of this creation is its modularity, which facilitates transport on site and any future expansions. The product is highly customizable, reflecting the increasing demand for tailor-made solutions in the paper industry. In recent years, between the end of 2022 and the first half of 2023, 4-5 similar projects have been advanced, each characterized by unique

“ Innovative heating systems, careful about **consumption**, **energy saving** and respect for the **environment** ”



design specifications. One of the most notable aspects of the project is the completion time: just four months, including ASME certification. This speed of execution represents a successfully overcome challenge, considering that similar projects generally require more time. The extraordinary performance was achieved thanks to an efficient organization and the adoption of advanced methodologies.

Operation and technology

Customization responds to specific needs:

- Maximize energy recovery without consuming fossil fuel.
- Produce more than 9.5 tons/h of steam at 16bar for a power of over 6800 kW.
- Optimize the spaces and integrate the system with the other machinery of the plant from a mechanical, electrical and electronic point of view.

For these reasons, the heat recovery boiler operates with cutting-edge technology:

- The water tube type steam generator is characterized by a compact and modular design, with the use of finned tubes and can work with a pressure of 20 barg at a temperature of 205 °C.
- On the one hand, maximum energy recovery from exhaust fumes is guaranteed, maximizing the efficiency of the process; on the other hand transport, installation and possible future expansions are facilitated.
- The control system is electronic and can be managed

remotely: it is connected to a network with the other components of the system, allowing the user to remotely supervise the operating parameters, modify their values and, possibly, make changes to the software.

Conclusions

The project represents Garioni Naval's entry into the paper industry, combining technological innovation, energy efficiency and environmental sustainability. The company offers numerous other solutions such as, for example, combined water tube steam generators with steam recovery function (coming from turbo gas or cogeneration) and with burner or fire tube steam generators with burner, which can be ASME, PED, IACS, TSSA and EAC certified. The experience and expertise of **SVECOM-P.E.** in the sector have played a fundamental role in the success of this project: the mission, vision and corporate values that have always distinguished the company have made it possible to expand the Svecom-P.E. product range in the paper industry sector. ●

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Creativity in automation

THE MAFLEX WAY

By: MAFLEX - Tissue Converting Machinery

History of Maflex automation of start stops lines

Maflex has a long history in providing solutions for automating machinery. Since its early days, Maflex has been responding to customer requests to modify or create machinery to either simplify the production process, reduce labor costs or increase efficiency. In fact, the first **MAFLEX** project for many new customers was automating older Start-Stop machines which relied heavily on operator intervention to make finished product. The introduction of our “MINI-ROBOT” resulted in automatic mandrel handling for running coreless products. Once the benefits of the automations were realized, customers often followed up with a purchase of an additional brand new Maflex converting line without adding human resources.

Automatic roll change on HERACLE

Most Maflex customers have a diverse product offering which can require multiple product changes throughout the production shift. This often includes changing embossing patterns. With varying skill sets available on non-daytime shifts, the need to make the roll change an “operator function” was a must. The Robotic Actuator on the HERACLE Embosser Laminator allows the operator to perform a Tool Free Automatic Embosser Roll change from the HMI without the need to break the web (an absolute novelty introduced by Maflex in the tissue industry in 2019).

Once the operator requests the change, the RUNNING to RUNNING time required for the machine to automatically execute the change is under 3 minutes.

▼ Reformer Capper.



SCARA robots used to manipulate products

When **Maflex America** was in discussion with a U.S. based customer about an Industrial Log Saw project, the customer advised that before they could move forward with the Maflex LADON Log Saw, they needed to resolve an on-going Core Crushing problem with a saw supplied by a Maflex competitor. They also needed to address the inefficient process of manually inserting proprietary dispenser caps in the ends of towel rolls. Maflex took on the challenge of creating a solution to address both these issues.

There was a limited amount of space available in the production line, so a new approach was needed to correct the crushed cores and insert the caps. Maflex came up with a solution utilizing SCARA robots to take care of both issues. Together with a vision system and conveyor tracking, the first robot reforms the core on each roll. Two additional robots pick caps from a sorter and place them into the end of the core. This small footprint, high speed and efficient system allows the customer to reallocate the resources previously used for capping and the overall quality of the product has increased. This innovative approach to roll manipulation resulted in additional projects for Maflex. The commitment to pursue

“ Shaping **technology** on your goals ”

■ MINI-ROBOT for automatic mandrel handling.





■ Martin Kyles,
President and
CEO of Maflex
America Inc.

▲ HERACLE EMBOSSEER during automatic roll change.

this technology resulted in a multi machine order from a leading multi-national tissue manufacturer. There are many other applications where these types of systems can be adapted to enhance product efficiency and free up resources to do more meaningful tasks.

Other Robotic Solutions

In addition to utilizing SCARA robots, Maflex has solutions involving 6 Axis Robots to perform pick-and-place tasks. These include sorting, stacking, and palletizing. These affordable options offer small footprints, high flexibility and ease of operation. They can be configured as simple single stage units or fully integrated with automatic pallet dispensers and stretch wrappers.

Built in-house results in great quality control

Just like the Maflex machinery built in our manufacturing facility in Lucca (Italy), these machines are designed, assembled, programmed and tested completely in-house at our Production Facility in Green Bay, Wisconsin, USA. We have partnered with our local machine shops and suppliers to provide cost effective solutions which allow us to maintain our high-quality standards and short production schedules. This new product line is enhancing our strength to serve our ever-growing customer base. We look forward to helping you and providing a solution for your needs. ●

“ Where the others stop,
we find solutions ”



■ Maflex Corporate in Lucca, Italy.

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Maximize the efficiency of your tissue-making process



Runtech's RunEco paper machine vacuum system provides a reliable, completely water-free vacuum solution. EP Turbo Blowers always feature variable speed and capacity. An integrated high-speed motor makes the system very compact and easy to install. In most cases, an existing system can be replaced with minimum piping and civil work costs. Most of the installation work can be carried out while the machine is running. In typical rebuild cases, energy savings amount to 40–60% compared to the old system.

We are the only company globally who can offer both liquid ring and dry turbo blower technology – or a combination of both. With our portfolio we can always find a perfect fit for customer's demands, needs and budget. Contact us to learn what we can do for your mill.

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Single-width tissue machine

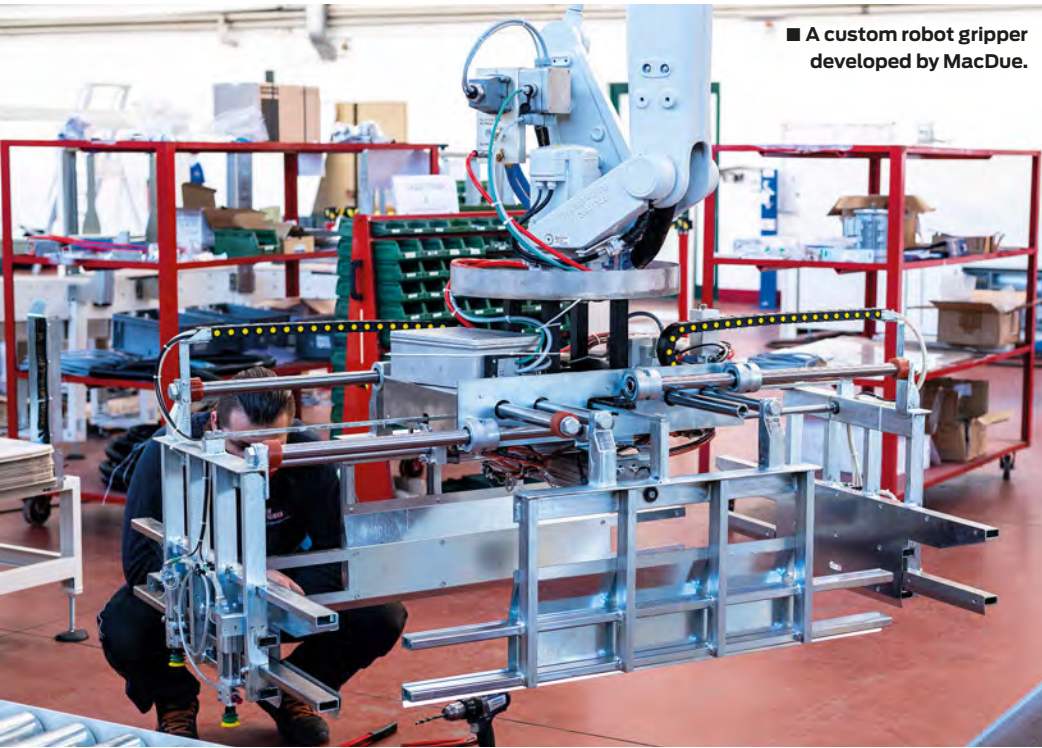
Old system	kW	New system (Runtech Turbo)	kW
LRP x 2	680	EP400	220

896,000 € /a
Cost of energy saved

Double-width tissue machine

Old system	kW	New system (Runtech Turbo)	kW
LRP x 5	1300	EP600 x 2	400

1,754,000 € /a
Cost of energy saved



■ A custom robot gripper developed by MacDue.



Consolidate relationships with custom palletization projects

By: MacDue Srl



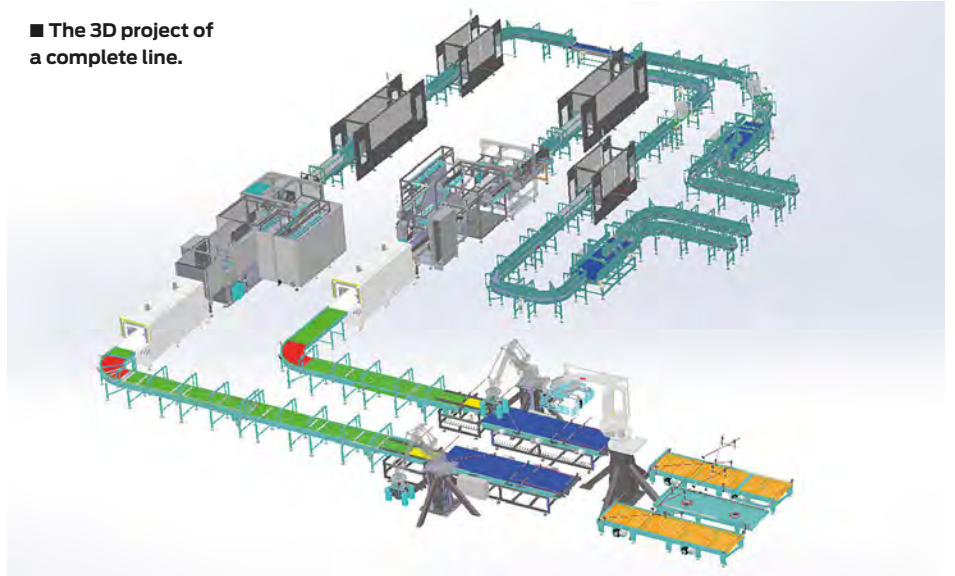
Completing the development of complex projects and receiving customer appreciation for the results obtained is always a great satisfaction.

When requests represent a real challenge, it's necessary to find an efficient relationship between the quality of the proposed solutions, the optimization of space and a price in line with customers' demand. These are the elements that guided us in the development of a project requested by a key customer to make two production lines that dealt with palletizing manually more efficient. Working for more than 50 years in the AFH sector, this customer is specialized in tissue products. The opening of its first tissue mill, and an ongoing project for a new integrated site, have stimulated the company to invest in more efficient and automated lines, to follow the dynamic of the group. The customer's need on this project was to complete the automation of two converting lines that dealt with different products and whose end-of-line was managed manually. One in particular dealt with heavy products and, for both, the spaces available were limited. At the beginning of its history, **MACDUE** produced only standalone machines. During the last ten years, we established ourselves as leaders in the industrial field for complete lines too. We built a strong reputation on this offer but decided to increase our effort to cover every aspect of product handling, even just end-of-line. Having a single point of contact for the entire system has significant advantages for the customer but poses new challenges to the supplier company: potential concerns and extra variables that need an adequate structure and reliable after-sales service. The challenge we set ourselves years ago was to offer our customers "turnkey" lines, up to the stretch wrapper. The addition of end-of-line to our offer is why we were ready to answer our

“ Experience,
qualified resources
and continuous
research ”

customer's request. We provided the customer with two palletizing islands: one consisting of a robot for boxes and bundle, and the other of two robots, all grippers are developed by MacDue, which can handle display-type bulk packs and bundles. The island includes an automatic pallet picker, the management of the half pallet and the application of the layers. We designed these islands to interface with the customer's centralized wrapper where LGV vehicles carry the finished pallets. The supply of custom grippers for industrial and consumer products, depending on the island, was the focus of the project. Very often the end-of-line treats the products too

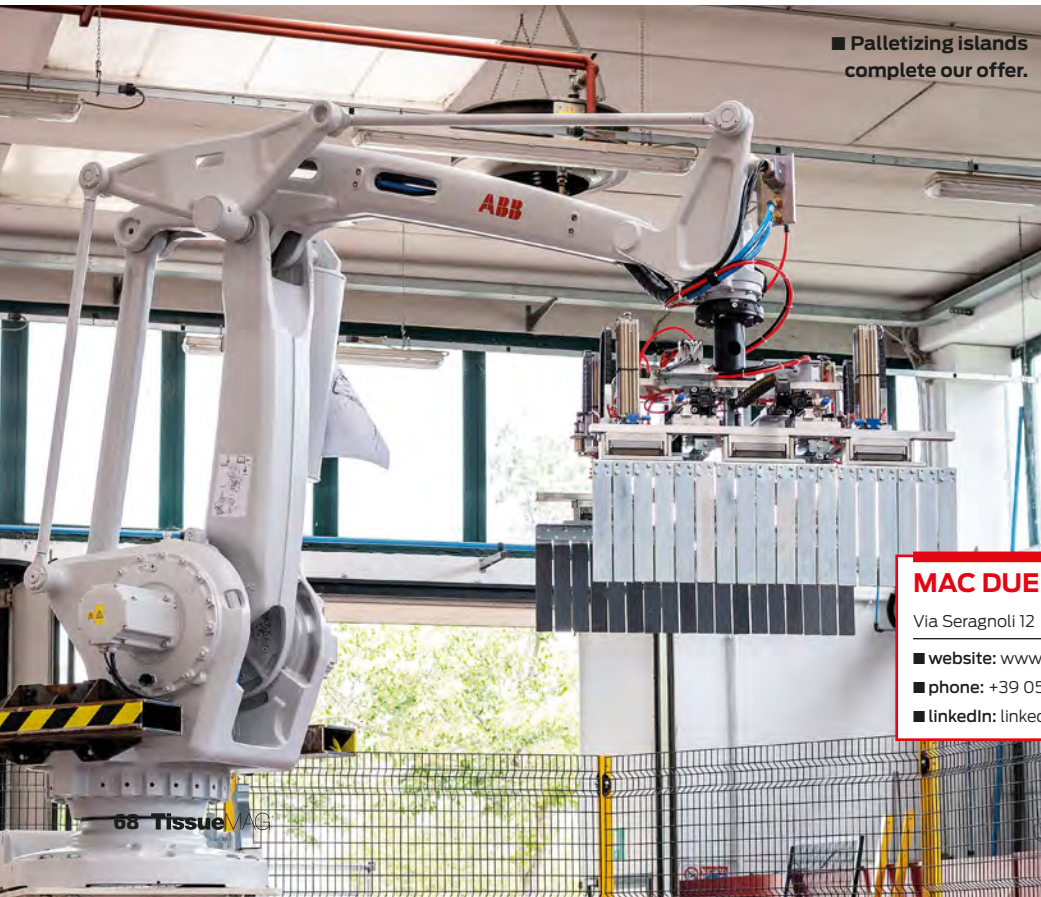
■ The 3D project of a complete line.



little delicately, causing damage and unacceptable stress for the industrial and consumer sector, especially during the compression and pick & place phase. The challenge is to manage palletization by reducing the impact of handling on products, without decreasing the efficiency and speed of the line. The solutions that we

have developed in MacDue to meet these needs are a custom gripper and software for intuitive management of the island that allows quick changes of the pallet configuration. Thanks to this project, our client has managed to increase the efficiency of the two lines, which have become fully automatic, despite the space limitations. An extra request from the customer was not to stop production: through the checkout in our factory and the customer training in MacDue, we made the startup of the lines much easier; furthermore, we reduced the shutdown time to a minimum because we coordinated with the production department to carry out the project with the lines almost always in operation. We began working with this key customer with the supply of a single machine. During the years, we grew our business together and this exciting project marks a further step towards an even closer and lasting collaboration. ●

■ Palletizing islands complete our offer.



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IDEAL® TURN-KEY TISSUE PLANTS

- proven technologies
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- high efficiency
- flexibility
- new generation software
- long-lasting maximum performances
- best paper quality
- energy saving
- customized and optimized design
- integrated end-of-line solutions

*excellence
in tissue*

ACelli

A.Celli has long-standing, proven expertise in the construction of complete tissue plants. Basic and detail engineering, electrification and automation are performed by internal engineer teams to optimise the overall plant performances. All activities are oriented to offer proven and granted solutions through extensive research and development activities that, since the foundation, have been of strategic importance for the company.



NCR BIOCHEMICAL “GLOBAL APPROACH” IN TISSUE INDUSTRY



■ NCR technicians
on the field.

NCR Biochemical is an international supplier of papermaking chemicals and water treatments for the pulp and paper industry. Since 2009, thanks to the acquisition of Houghton European Paper Division (the “inventor” of the modern Yankee coating technology), we focused on the tissue industry, in particular the Yankee cylinder coating applications.

by: NCR BIOCHEMICAL

Thanks to continuous research and development of new products, customer-driven culture, know-how of chemistry and experience on the field, we developed “state of the art” technologies and applied it on hundreds of tissue machines and almost in all continents. We work closely with tissue makers to improve efficiency and performance of the Yankee, guarantee the required paper characteristics, tackle the problems, reduce costs and reach the final goal of higher profit for them. Expansion and trust from tissue makers was built thanks to our approach called “Global Approach”. We see it in three different ways:

1. Scientific approach on the application.
2. Development and protection of know-how.
3. Worldwide coverage.

Scientific approach on the application

In **NCR BIOCHEMICAL**, being scientists means to study the production process in all of its parts, all of the operating parameters, the whole process, the pulp and water cycle. Those parameters, together with an accurate image of the heat exchange on the whole cylinder surface, complete all the necessary information to find the appropriate coating package and the adequate machine settings to meet the customer expectations. This scientific approach also helps to find out problems and allow our technicians to show to the customer the appropriate solution, which is made of a chemicals, creping settings and Yankee dryer operations, including:

- Choice of the creping angles.
- Creping blades selection.
- Best pressure to be applied.
- Choice of the ratio Yankee/hoods pression/temperatures.

Tissue makers can rely on a partner who has passion and commitment to study tissue production, is able to take care of the cylinder and the whole process, can modulate products and dosages according to the specific needs of the paper machine. It means that tissue makers can produce paper with constant quality and required characteristics. Moreover, the production is carried out without stops or problems and the mechanical interventions on the cylinder (rectifications, grinding, metallizing operations) are delayed over time, which means more cost savings and greater profits for our customers. The final goal is always to return the investment for our customers. This is what they need in order to stand out in the competitive paper market.

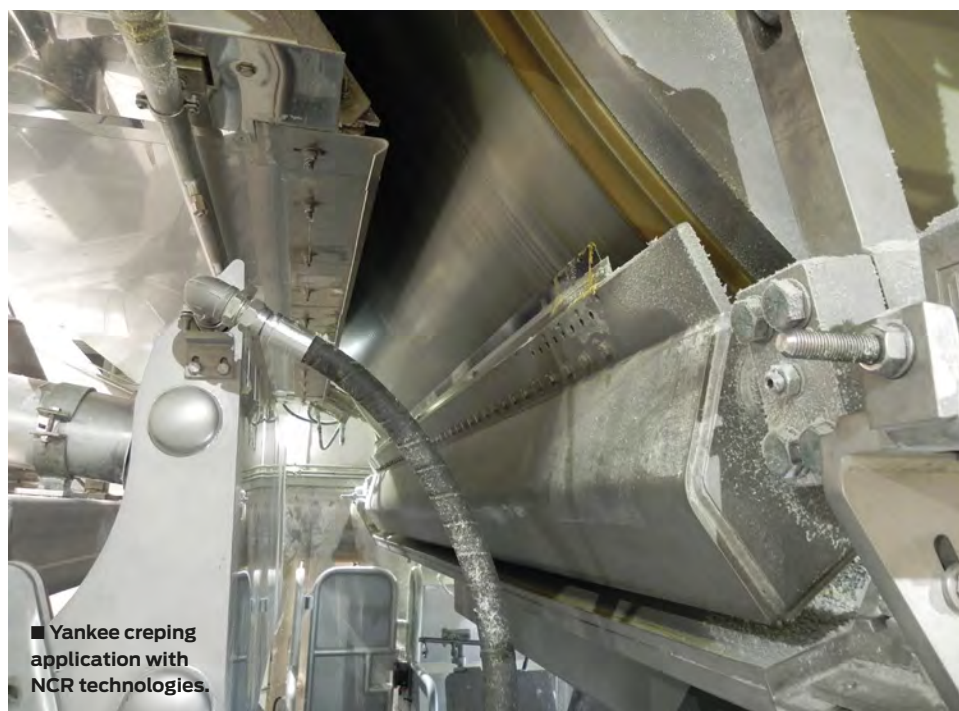
Development and protection of know-how

Wherever our customers are, whatever they do, our latest technologies are available for them. We have worldwide

registration for many technologies and brand names, in particular the new series CYTREAT® and CYLUBE®. The new CYTREAT® and CYLUBE® brands represents the most modern formulations in terms of quality, efficiency and compliance with the laws and with an eye on green chemistry and sustainability.

These product lines have been created to perform over the standards where Yankee cylinders and tissue makers ask the maximal performances from the process. In terms of performances the targets we focus on are mainly related to paper quality, production efficiency, energy and cost savings:

- Excellent protection of the cylinder surface.



- Best reaction of the coating package to production variations.
- Paper sheet quality parameters at the highest targets.
- Best crepe to stretch ratio.
- Increased bulk, where required.
- Higher stability to sheet moisture profile.
- Very uniform sheet adhesion to the cylinder to minimize the drying energy.

These are the targets the customer is looking for and, in order to get best out of it, we collaborate closely with them to become partners rather than suppliers. The collaboration is the key to success for both, our customers and us.

The creping process is the real section where the tissue sheet characteristics are determined and “created”.

Our activity become extremely important to produce tissue

▼ Alessio Canfailla,
Vice President of NCR
Biochemical.



“ The specialists in **papermaking chemicals** ”

paper within the quality parameters required:

- Uniform sheet formation.
- Uniform drying on all the paper width.
- Uniform moisture profile.
- Uniform grammage profile.
- High frequency creped sheet to get softness without debonding the fibres.
- Bulky toilet paper.
- MD and CD Mechanical sheet characteristics at the highest value.

Those are the main parameters target of our activity in collaboration with tissue makers. In order to get the results, we work with a wide range of products which can be applied on every machine/cycle. This wide range of chemical, with different characteristics, are necessary because each production process is different from another, due to a lot of variables driving and influencing the production.

Worldwide coverage

The demand and the production of tissue is worldwide. In order to be wherever our customers are, we had to build a worldwide coverage. We started from Italy, the heart of tissue production in Europe, in 2009. Then we expanded in Europe and the Mediterranean area, such as North Africa and Middle East. Then we reached Russia and China. Now, thanks to a network of subsidiaries and distributors, we cover also South America and South-East Asia. But the latest news is North America, on the most developed tissue markets. We joined forces with **Paradigm Chemical and Consulting** to form a strategic collaboration and bring NCR's world class tissue and towel additives to the North American paper industry. This industry changing partnership is unmatched in its product offerings, application expertise, and proven, cost-effective solutions for tissue and towel manufacturing across the globe. The agreement has been signed at the end of 2022 and

already some key tissue producers in USA have trusted NCR - Paradigm team for the supply of Coating chemicals and are benefiting from the outstanding performance of NCR products and the unmatched expertise of NCR and Paradigm tissue specialist. ●

■ NCR Biochemical Headquarter.



N.C.R. BIOCHEMICAL SPA

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■ contact person: Mr. Giampiero La Pietra - Tissue Division Manager

We saw the results
grow piece by piece,
and committed ourselves
to working in new ways, **every day.**



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INDEXA
C O M P A N Y

SUSTAINABLE INNOVATION: a key factor for development

By: INDEXA COMPANY



FROM ENGINEERING TO TURN-KEY PLANT



The guiding principle in INDEXA's business decisions is based on sustainability and the key objective is to offer its customers efficient installations, both technologically and energetically, that lead to a lower consumption of resources and therefore to a more sustainable planet. A sustainable economy, in fact, bases its development on using resources responsibly, aiming to make the most of the present while respecting the future and combining economic, social and environmental aspects with technological development.

The paper market has "sustainability" as the central pillar of its development and, in this context, the actors invest in sustainable solutions in order to offer better products and services. Machine manufacturers are offering equipment with low consumption and CO2 emissions, with an increasingly high production capacity and paper manufacturers are moving towards production with a low environmental impact, by progressively reducing the grammage of their products and generating less use of raw materials, or by making a radical change in their production, applying a strategy geared towards a "world without waste" In this context, **INDEXA**, as a leading company for the installation and maintenance of production plants and industrial machinery, stands by its customers in the complete transformation of the production process underway. In the last two years, Indexa has received numerous requests for tenders for major modifications to paper production machinery as well as plant conversions. Alongside classic routine maintenance, there have been extraordinary revamping operations or even the dismantling and reassembly of complete plants and machinery, making modernisations or even total replacements for product or process changes. With a view to a sustainable market, the paper industry supply chain has seen increasingly close connections between parties to arrive at shared innovative solutions.

The heavy use of natural raw materials (such as water), new European regulations on the one hand and the downward estimate of consumer purchases on the other, have driven the market to proactively confront all the parties in the supply chain in order to identify growth opportunities that can combine environmental and social sustainability, design and new technologies and their impact on society, workers and suppliers. Everyone is called upon to continuously

“ The ideal partner for **development and maintenance** of plants in the pulp and paper sector ”

“ 30 years’ experience to **fulfill every need**
- strength, ability, organization ”



its customers, identifying critical issues to be resolved and prevented where possible. In 2023, in fact, INDEXA invested in software for the logistical management of vehicles and equipment, which allows for a reduction in travel and related CO2 emissions. Through this software, the management of the inventory of assets in the central warehouse and in the different sites distributed throughout the territory is integrated and the movement of equipment and related consumables is guided by cost and time efficiency criteria, favoring the movement between neighboring sites, before arriving at the central warehouse. Continuous monitoring makes it possible to plan maintenance histories, schedule occasional and recurring services, manage and customize alerts, with positive implications in terms of worker health and safety. The adoption of such an information system constantly monitors the company’s productivity, bringing considerable benefits in terms of sustainability at 360°: from an economic point of view, through constant control of costs and times;

invest in sustainable solutions, each for their part. Indexa’s commitment to sustainability is present in all operations from supplier selection, purchasing and logistics flows, to installation and service. This goal is also pursued in our warehouses, offices and employees, who are constantly made aware of this issue. According to Indexa’s **Managing Director**, “One of the key factors in supporting companies towards complete sustainability is the use of ad hoc information systems that guide the decision-maker in making the best choice in the field of sustainability”.

As a supporter of the above, Indexa is moving in this direction and has introduced into the company organisation information systems capable of fully managing and scheduling production resources, equipment and facilities, in order to optimise their operational efficiency and the level of service provided to

from a social point of view, by improving the health and safety of workers and indirectly increasing the productivity of the processes on the customers themselves; from an environmental point of view, by reducing CO2 consumption; from a technological point of view, by implementing innovative solutions. Indexa is convinced that sustainable innovation is a key factor in the development of the paper industry and an increasingly important objective for investors and stakeholders in the sector, in which each actor is called upon to play its part by implementing concrete actions.

The choices we make every day make a difference for us, for future generations and for our planet, and Indexa wants to actively contribute so that these are conscious and ESG oriented. ●

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When it comes to performance

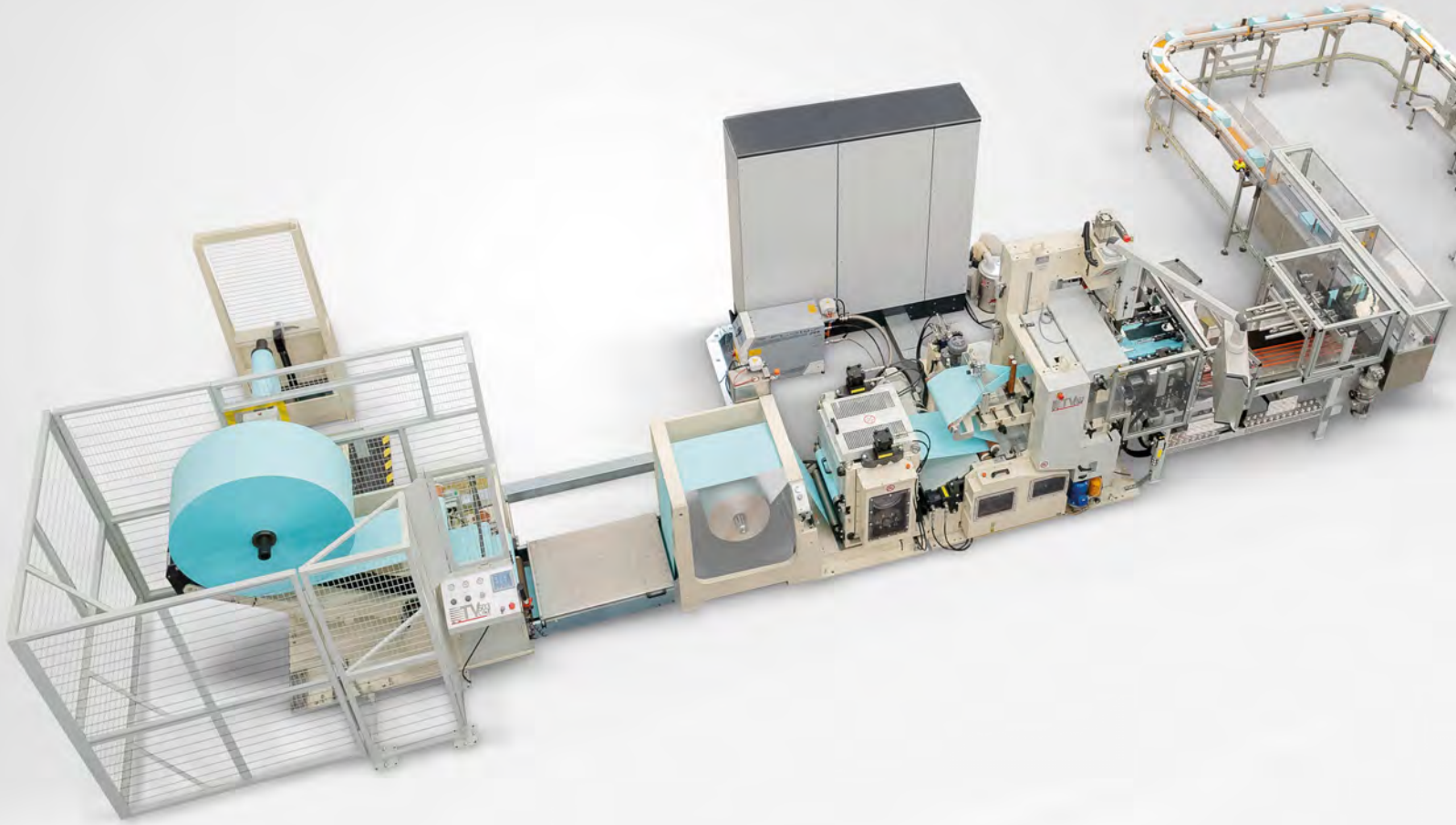


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“ Full Service Provider ”



Omet:

innovation, change and sustainability



OMET, renowned for its high technological efficiency and continuous pursuit of innovative solutions, has taken significant steps to enhance customer benefits through a global optimization approach in its production process.

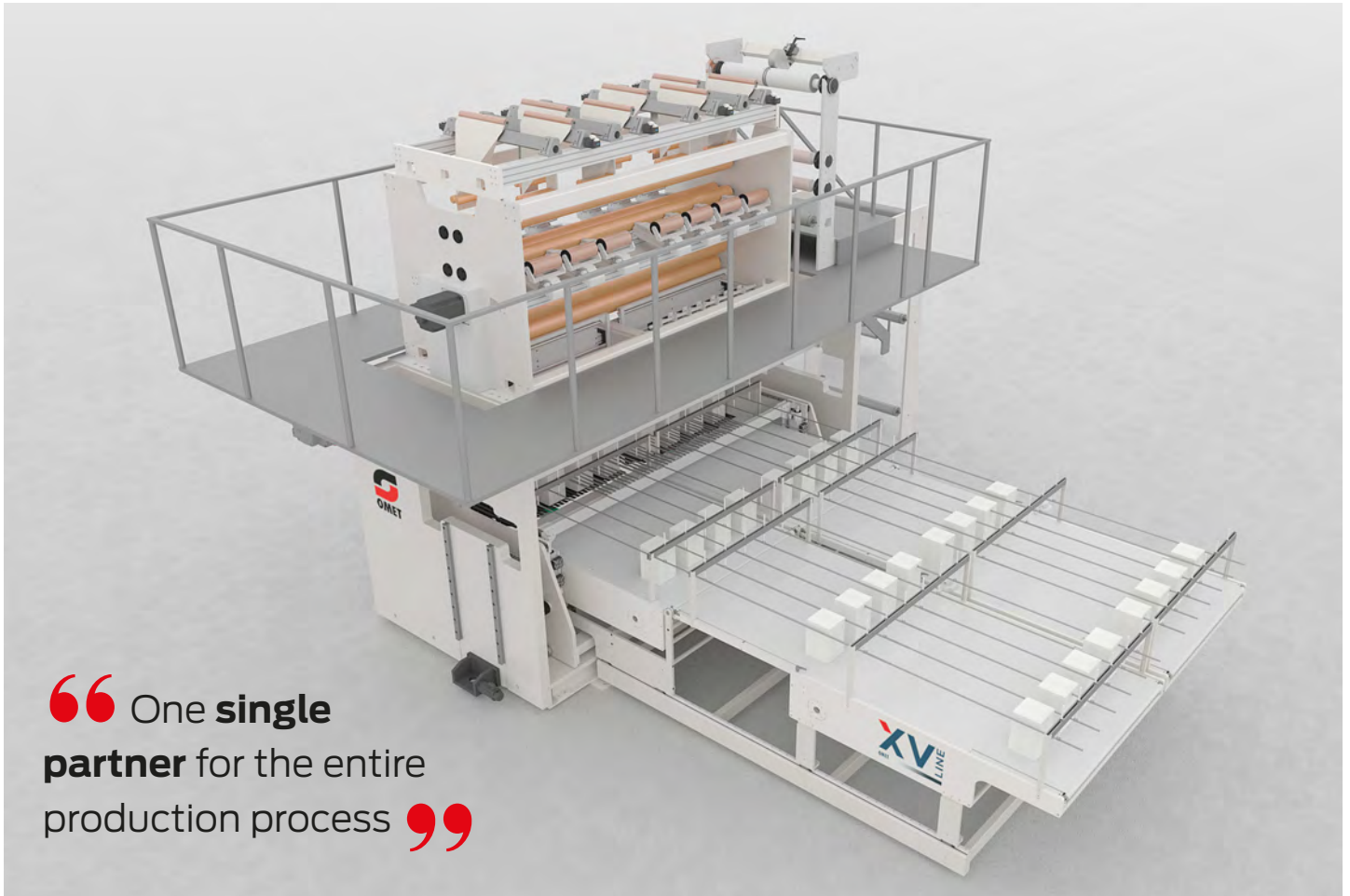
by: OMET Srl



At the core of all OMET production lines lies an exceptionally high technological level, achieved through constant research and development of innovative solutions. This cutting-edge approach has enabled the company to stay ahead of competitors and meet the demands of the most discerning customers. Envisioning an efficient production process from the outset has become a usual perspective. **OMET** understands that to ensure long-term sustainability and a lasting competitive advantage, it is crucial not only to optimize individual solutions but also to view the entire production process as an integrated system. A pillar of OMET's strategy is modularity. Key components and modules of its production lines are designed for reusability across multiple processes, reducing resource wastage and providing customers with tailored solutions that optimize efficiency and productivity. The successful implementation of the "Lean" philosophy in its production processes has also been pivotal. This philosophy aims to eliminate waste, minimize space, and utilize resources to maximize overall efficiency. With the "Lean" approach, the company has achieved highly efficient processes, enhancing performance and reducing overall costs. OMET has also embraced various advanced digital technologies, including the "Digital Twin," a virtual replica of a physical system used to test machine functionalities and components before actual construction. This approach has led to zero waste associated with these activities, reducing environmental impact and further enhancing the production process.



The orientation towards producing wide-web lines has been another choice made by OMET to minimize the need for cutting, rewinding, and storage operations, allowing customers to have shorter and more sustainable transformation processes and thereby reducing energy consumption, space and transportation costs. Thanks to a recent partnership between OMET and **PRB INNOVATION**, an Italian company specializing in end-of-line machines and based in Imola (Emilia Romagna), OMET is working to optimize resources and reduce waste through the integration of all machines forming the production line, from the reel to the pallet. This integration aims to simplify supply chain management, facilitate information exchange between different processes and improve overall



“ One **single partner** for the entire production process ”

social efficiency. Finally, digitalization has played a fundamental role in optimizing production processes. In this context, OMET has developed **SFERA**, an Industrial AIoT (Artificial Intelligence Internet of Things) platform for managing and monitoring its machines and production lines. SFERA integrates various functionalities, including efficiency analysis, bottleneck identification, process telematics and black box, energy consumption and preventive and predictive maintenance. This platform enables the company to gain a comprehensive and detailed view of its machines' performance and make informed decisions to further enhance efficiency and sustainability in its production processes. In conclusion, OMET has demonstrated a steadfast commitment to efficiency, both in optimizing the production process of its machines and in the creation of its products. Through the adoption of innovative solutions, the “Lean” philosophy and the integration of advanced digital technologies, the company has made significant strides towards the creation of more efficient, sustainable, and advantageous processes, with the aim of empowering its customers to thrive in a competitive market. ●

▲ XV Line: the ideal solution for high productivity converting.

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As a young and ambitious company, founded by four shareholders with decades of experience in the sector, Kairos immediately proved itself to be determined and open to innovation in the tissue industry. In just a few years, Kairos has achieved the set goals (it set itself), proving its professionalism and competence, along with the desire to put itself to the test and overcome its own limits. It has been present at the most important international trade fairs and provided top-rate service to its customers right from the start. After these initial successes, **KAIROS** decided to address new challenges by investing important resources to improve service further and to develop a new folding machine, which is already at an advanced stage of development. The company then realised it was necessary to expand the internal team at this important time for company growth. To go up a level and improve the quality of its services and products even further, new energy was needed that could elevate the great work done by the founding partners even more. The person taking on this important role is the successful entrepreneur Andrea Tonini. The arrival of a new partner with a resume of proven experience such as Andrea Tonini will ensure a rapid rise towards the ambitious goals that the company already

KAIROS INTRODUCE ANDREA TONINI AS ITS NEW PARTNER

Kairos is expanding its team with the significant entry of a new partner.

by: Kairos Srl

has in its sights. His entrepreneurial qualities and his unrivalled preparation in the world of tissue will bring a wealth of knowledge to the team that will most definitely add huge value. Andrea is ambitious and capable and cannot wait to begin his adventure at Kairos in his natural role as Sales Manager. "I'm keen to start being a part of the Kairos team - **Andrea Tonini** declared. I have always admired the commitment and abilities of Kairos' founding partners. Kairos' ambitions and the company's future vision are truly stimulating. I cannot wait to work with them and use my experience to improve our offers even more and grow our market share". A team that is now even more rounded, ready to face new challenges and reveal new projects. Andrea Tonini's support and considerable experience will be vital not only for the continuation of the company's excellent service and assistance, but also for addressing new challenges that will arrive in the near future.

His contribution will be essential for taking business to a new level and enjoying even more success. "We are so happy to welcome Andrea as an integral part of our company and team - the company CEO **Daniele Bernacchi** says, speaking for the partners and the entire board of directors.



■ Andrea Tonini, new Sales Manager at Kairos.



► The complete Kairos team.



“ A lean, agile, **accurate and fast service** focused on customers' needs ”

We are sure that his experience and skills will bring huge value to our team and to our valued customers”.
One of Kairos' ever-present goals is customer satisfaction. From the outset, Kairos has focused on its assistance and support services. In recent years, the company's growing commitment has been concentrated on further improving what customers are offered. The pinnacle of this commitment is clearly the addition of new energy to the team, with the aim of taking the entire Kairos system to a higher level. The arrival of Andrea Tonini at Kairos is therefore fundamental for being able to pursue and achieve the customer satisfaction goals and much more besides. New challenges are on the horizon and everyone at Kairos is excited about Andrea's arrival. His experience brings with it the expectation of a bright future together. ●

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- **contact person:** Maurizio Giannoni

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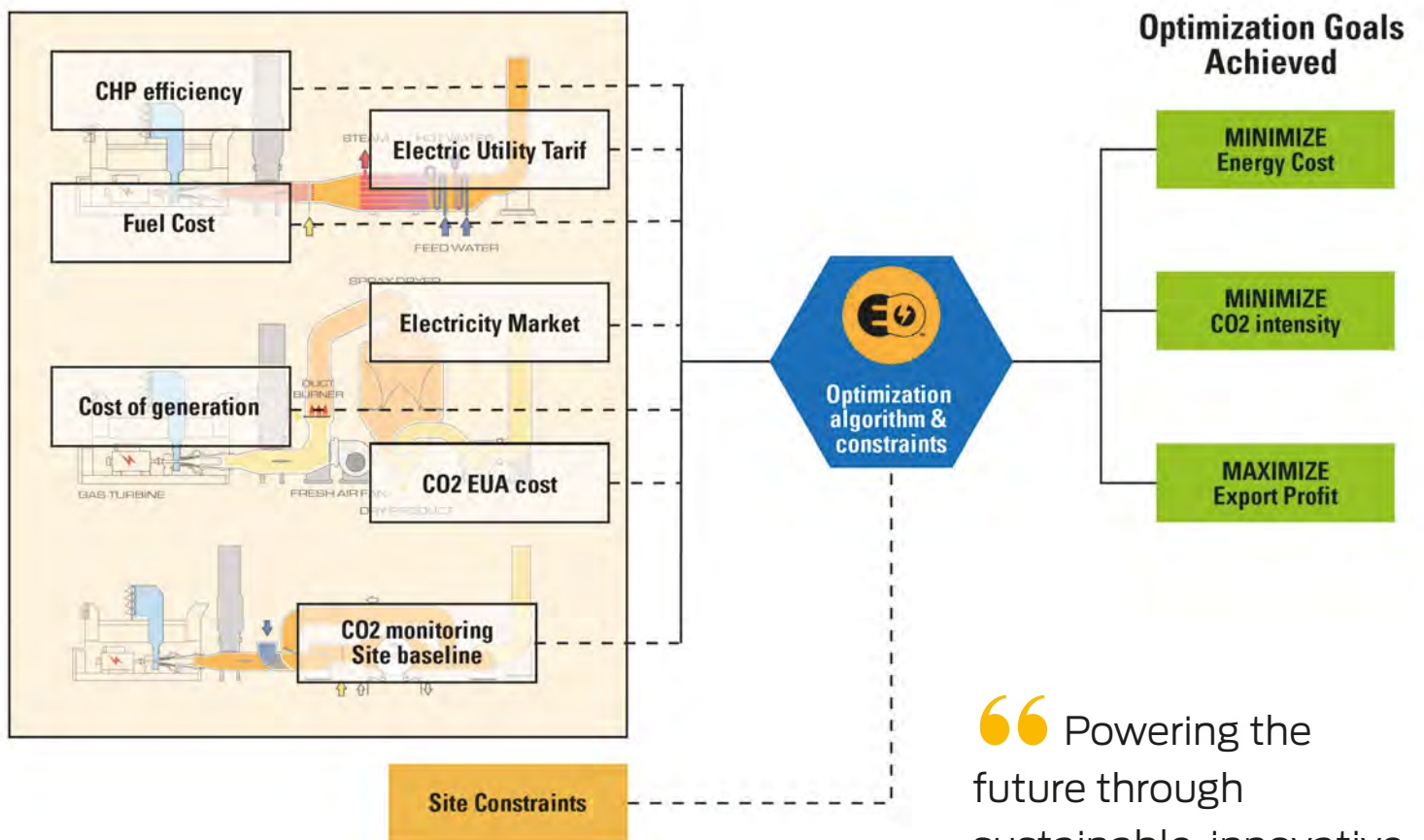
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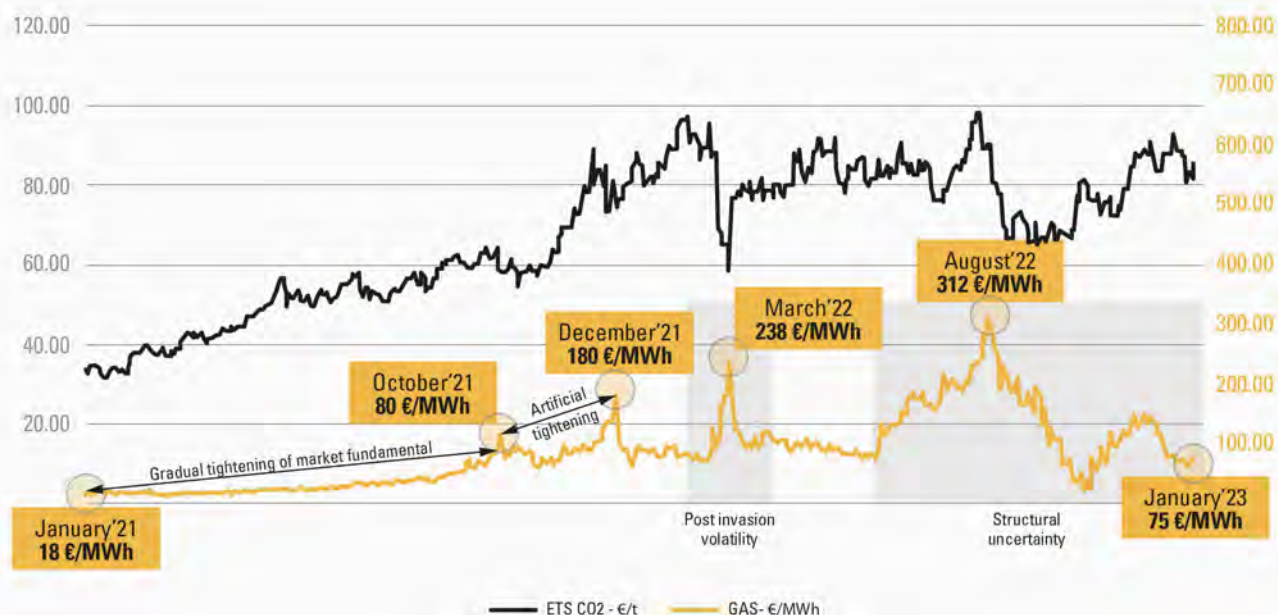
by: Solar Turbines Switzerland Sagl



“ Powering the future through sustainable, innovative energy solutions ”

Natural Gas, CO2 and Electricity prices - EU

January 2021 - January 10th 2023



Over the past year, Europe has experienced unprecedented energy cost volatility caused primarily by the unfolding geopolitical crisis and fueled by the consumption recovery after two years of the pandemic. The dramatic surge in energy costs is apparent when comparing the Q3 figures for 2021 and 2022. The countries that have suffered the most are those whose energy mix is skewed toward natural gas as a primary energy source.

This is all part of a challenging European decarbonization plan involving industry, mobility and housing with ambitious targets for 2030-35. **SOLAR TURBINES** looks at the energy system as a highly integrated and interconnected whole – a network increasingly benefiting from the contribution of renewable energy, but also affected by the need to ensure its availability and stability. For this reason, Solar is the primary partner for energy solutions based on latest generation turbogas integrated with SMART digital architectures operating in the big data sphere.

Digital SMART systems and energy optimization

This refers to an energy optimization system that can interface with the different energy markets (i.e. Spot, Day Ahead, Ancillary Services) that allows us to increase the efficiency of cogeneration while reducing fuel consumption and CO2

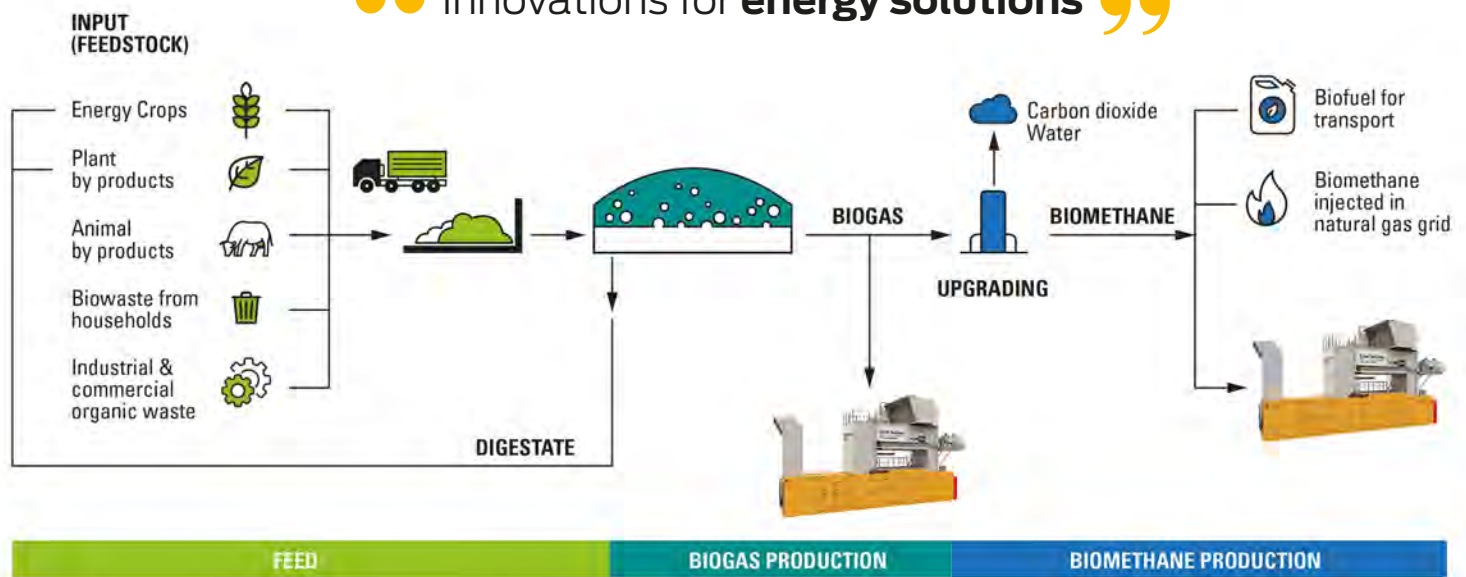
emissions. Through digitization, we can also control, along with the CHP plant, all production parameters (steam demand, electricity demand, load changes, and paper machine set-up). These parameters are then integrated with each other and the various factors exogenous to the production system, such as the cost of CO2 and hourly carbon intensity, the cost of gas and electricity, the grid frequency, and the nodal electrical load of the area to which it belongs. The SMART concept expressly consists of this integrated approach to the internal and external world. The energy optimization system developed by Solar Turbines can continuously monitor these parameters. If the customer decides to maximize the yield or minimize CO2 emissions, the system will suggest operational set points to achieve the target.

The optimum with Solar Turbines' Turbogas

Solar Turbines' energy optimization system fits within the framework of decision support systems models based on the integrated management of energy supply and use from disparate sources available in the local grid and their availability or variation. As mentioned above, it can instantly suggest the best way to operate.

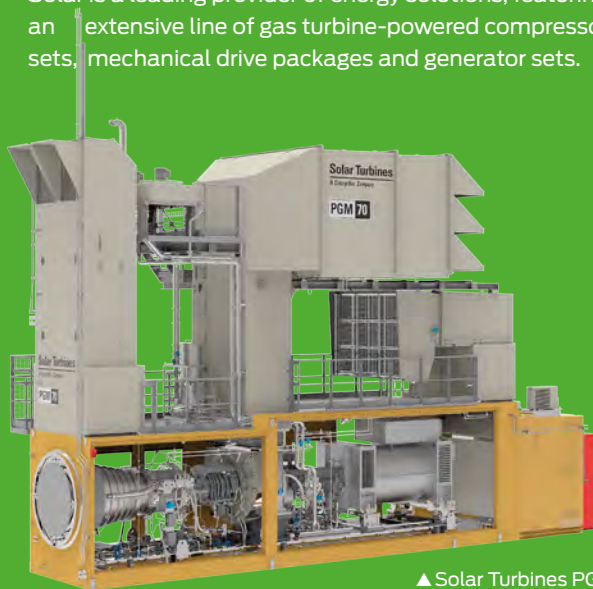
For example, it will choose whether to favor the make option in electric control over thermal control or the buy option by

“ Innovations for energy solutions ”



Solar Turbines (Caterpillar Group)

Solar Turbines Incorporated, headquartered in San Diego, California, is a wholly-owned subsidiary of Caterpillar Inc. Solar manufactures the world's most widely used family of mid-sized industrial gas turbines, ranging from 1 to 23 megawatts. More than 16,000 Solar units are operating in more than 100 countries with more than 3 billion operating hours. Solar is a leading provider of energy solutions, featuring an extensive line of gas turbine-powered compressor sets, mechanical drive packages and generator sets.



▲ Solar Turbines PGM70.

taking supplies directly from other sources. Of the possible solutions, it will opt for the one able to provide the company with the most significant benefit, the smallest loss or minimization of carbon intensity.

Hydrogen and bio-fuels: decades of boots on the ground experience

The SMART system's Industry 4.0 approach is then complemented by Solar's established turbogas technology, thanks to the operational flexibility of its turbines and the millions of hours of accumulated experience using hydrogen, bio-gas, bio-methane and the main bio-fuels to date on the market with dozens of turbogas units operating in a wide variety of industrial and service sectors.

Immediately competitive and sustainable

This is the key to improving the performance of pulp and paper companies and increasing their competitiveness. Solar Turbines' solutions are available now on new, state-of-the-art machines up to 40 MWe, while our experts can also support you in retrofitting existing installations. ●

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Whether you work in board and paper, tissue, pulp or energy industry, Valmet's comprehensive service offering helps to lower your environmental footprint significantly – at the same time improving your operational results. The key is a close collaboration and the right combination of services for every stage of the lifecycle. As most of the environmental impact comes from the operational phase, by working consistently in close cooperation with your team, we can offer many concrete solutions.

From energy, water and raw material savings to circularity and lower emissions, together we'll keep the process reliable, optimized and sustainable to the fullest extent – benefiting both your business and the environment.

Are you ready to succeed with us? Explore how on www.valmet.com/waytoserve





Is the quality of tissue you produce killing OEE on your converting lines?

by: Martin Rempel, Papertech

Industry 4.0 is all the rage amongst larger tissue producers and purports, amongst other things, to enable large-scale machine-to-machine communication such that individual manufacturing processes are no longer conducted in functional silos. Instead, holistic knowledge of all processes is to enable a continuous improvement cycle that drives different manufacturing performance measures, such as overall equipment effectiveness (OEE) to new levels, ultimately improving the enterprise's earnings. Unfortunately, production "silos" without cross process thinking still exist even in the most advanced facilities. It is, for example, not uncommon that the quality metric on most tissue machines is to get paper with correct weight, moisture and perhaps caliper onto the reel without a web break. Anything that gets reeled can be placed in the warehouse and/or passed to converting. Little to no concern is given to how the actual tissue surface quality might affect downstream converting operations. The calculated OEE, a multiple of the tissue machine's availability, performance and quality of the product produced, will reflect an inflated value as the quality measure will be positively skewed. Production looks great while potential problems are transferred downstream. It is no wonder then that most converting plant managers see tissue production as their primary enemy in meeting operational targets. Tissue web defects such as holes, edge cracks and creasing can cause web breaks in the converting line, glue contamination, embosser wrap ups and other process problems. Converting line performance will suffer the most, but also line availability and quality. OEE can often seem stuck at levels below 50% - the room for improvement is almost always huge. But, are line operators or converting plant managers to blame? The answer is typically a

“ Our systems provides **fast and effective tools** for solving a wide range of production line issues **”**

resounding No! Fortunately implementing better tissue machine quality control, tissue machine-to-converting line communication and converting line quality control is not difficult today. Papertech's TotalVision web inspection and web monitoring solution makes true quality readily apparent and will assist production to:

- Detect and classify defects and mark their locations on a reel defect map.
- Provide the ability to trace defects to their root cause with visual information.
- Provide the ability to detect repeating defects and to match these with machine components that exhibit the same or similar rotational frequencies.





- Provide the ability to determine the root cause of web breaks or other visible process problems.
- Provide the ability to differentiate between dust and the actual web so that only true defects are recorded.
- Provide the ability to pass parent reel quality records to downstream processes.

Most importantly, TotalVision will prompt action to improve quality as the corrected machine OEE will beg for upward adjustment.

Tissue machine-to-converting line communication is made possible via Papertech's Slow-on-Defect solution, which allows for automated control of the converting line speed based on the classification of reel defects that are to pass through the converting process. Slow-on-Defect will have a big impact on

converting line performance, but also on quality (e.g. by allocating parent reels of better quality to outer plies on a multi-ply product) and on line availability (e.g. by avoiding line setup events). Converting line OEE can be further optimized via Papertech's QualityVision solution for online quality inspection that:

1. Inspects the base tissue web, embossing and print and provides immediate quality feedback.
2. Provides a final product quality record.
3. Assists in rapid embosser and printer setup.
4. Eliminates setup waste and reject waste.

Papertech's cross process solutions make some of Industry 4.0's promises reality today. The "wall" between tissue production and converting is being broken down with very positive results. Significant OEE increases on tissue machines and converting lines are not uncommon and investments in Papertech's tissue solution set are often paid back in less than 6 months. **PAPERTECH** welcomes collaboration with all those endeavoring to improve the future of tissue making. Please contact us for more information. ●

PAPERTECH INC.

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■ **email:** info@papertech.ca

■ **contact person:** Christine Chi, Marketing Coordinator, christine.chi@papertech.ca

“
 We are the global vision technology vendor of choice for industry leaders in **tissue production**
”



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OVERMADE: **THE NEW OVER** **WINDER 3500 AND 3500T** **FOR PAPER AND TISSUE**

By: OVERMADE Srl



“We work day by day to achieve our goals with passion for this industry through ECO and LOGIC solutions for the paper industry that put the special needs of our customers at the centre”. With this clear *mission*, the **OVERMADE** team launched two new products for the end-of-line of paper machines: the OVER WINDER 3500 and the OVER WINDER 3500T. The two types of rewinders, born out of a dogged search for ECO and LOGIC solutions in which innovation is firmly based on experience, have already been successfully and satisfactorily launched at OVERMADE customers. Developed from the already well-known OVER WINDER 2500 and OVER WINDER 2500T series, the new rewinders serve the flat and crepe paper markets respectively.

The new **OVER WINDER 3500** is aimed at drastically reducing cycle times and at the same time eliminating operator intervention in the machine. The supply to the customer included the insertion of a semi-automatic mother reel transfer system from the pope to the oscillating unwinding unit and it is equipped with both the regenerative brake and a dual braking system capable of drastically reducing the metres of paper lost in the event of a paper break. At the same time, an automatic floor-mounted opening system connected to a sheet pulper allows the immediate removal of the paper break, freeing up the area for the immediate passage of paper. This also drastically reduces possible line cleaning times. The solidity of the OVER rewriter structure has been coupled with the latest generation of low-friction movements to allow total fluidity of movements; a new system of core chucks and rider roll loading further increases the fine control of reel density, shortening acceleration and deceleration. The cutting unit includes the possible implementation of an automatic positioning system. The rewriter is also equipped with the ‘fully automated’ package consisting of: automatic paper threading system, automatic



core gluing system, automatic core insertion system, automatic end-flap gluing system, - cross cutting system and start of new cycle in automatic, automatic separated reel unloading system designed to make the rewriter immediately available once a winding cycle has been completed. In addition to a drastic reduction in cycle times, the new installation has significantly increased the level of safety by limiting human intervention inside the machine to a minimum during all phases. The new **OVER WINDER 3500T** for tissue paper has also already been delivered and started up at OVERMADE customers. These installations all feature a three unwind system with multiple belt reel handling systems to minimise specific pressure on the parent reel. One of the three unwinds has the option of being

■ OVER WINDER 3500T.

“ ECO and LOGIC solutions for paper and tissue ”

“ OVERMADE is passion behind paper ”



equipped with the “swing unwind” system used for the production of high smooth MG paper. The paper stabilisers in the unwind area has been integrated with the “on machine de-dusting” system connected to the wet dust removal system supplied in the package. All newly delivered installations of the OVER 3500T also include the new calender generation, which uses a variable cylinder roller capable of operating at very low specific load values thanks to an innovative hydraulic control system. The system, already installed in previous generations of tissue calenders, has been completely revised to cover the most sophisticated softness-bulk-smoothness requirements of tissue paper. The structure of the OVER rewinder has been completely revised to accommodate the latest generation of movements. In addition, a new system of core chucks for expandable rods and an optimised layout of the rider roll movement further increases the fine control of the low

densities required. The new OVER 3500 T also features: automatic core extraction and insertion system, transversal cutting system and automatic start of new cycle, reel unloading system designed to make the rewinder immediately available once a winding cycle has been completed. To complete the line an integrated dust removal system has been provided. ●

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AXCHEM provides
a global presence to
support the worldwide
tissue industry

The current tissue paper market continues to be focused in two areas, on high quality soft tissue paper and the away from home.

by: Axchem Group

Tissue papermakers are constantly searching to improve parameters, such as:

- Better Yankee protection.
- Better reel profile.
- Better softness.
- Higher bulk for lower fibre utilisation with weight reduction.
- Increase stretch, so that wire weight can be maximised, improve bulk and maximise productivity by increasing reel speed/reducing crepe ratio and achieve specs.
- Optimum yield, minimum raw material and production costs at target specifications.

There are several contributors to achieving this.

1. Having a very protective (bulky and robust) coating, which can increase the protection of the surface, life of the blade and consequently the quality of the paper.

2. Having a coating layer which can assist the softness of the paper albeit softness is more fibre related – short, less coarse fibre and refiner manipulation. However, a coating layer soft and bulky with some softener in it can help.

In addition to the fibre an optimised blade is the key.

Using latest technology **AXCHEM** can offer a range of high quality, innovative solutions. Axchem base coating products portfolio includes alkaline products made of 100% polymer which are very reactive and non-corrosive to the on the Yankee surface.

This is very important in case of steel or a metalized Yankee surface - the important thing here is avoiding metal to metal contact, so a thick robust coating layer is important.

Our products are designed to optimize mainly the following parameters:

- A soft protective film to give the best paper quality performance. A nice bulky and robust coating to manipulate very soft grades (or bulky grades, pending blade choice), helps the tissue maker manipulate the coating and blade pocket angle to achieve optimum

specifications with good Yankee protection facilitating organic and natural coating layer working well together.

- High protection of the Yankee cylinder surface - should be first point.
- Very homogeneous drying and producing the highest production speed. Some coatings (natural coating) can harm thermal conductivity, but major impact on speed is often “over-achieving” stretch so the reel speed can be increased.
- High paper softness.
- Optimum coating set up and more forgiving of CD moisture profile should lead to an absence of dark stripes on the Yankee and consequent translucent stripes on the roll.
- Fast reaction and rapid control of all the production process variations.
- A bulky soft but robust coating for blade to ride in and develop optimum parameters and cylinder protection, rather than bounce along the hard mix of hard organic and fines related coating, which wears the blade prematurely and can lead to chatter.
- Coating treatment could be made of two products instead of three. Although if it's a metallised cylinder in particular, MAP will almost certainly have to be used.

“
Axchem
Group:
chemicals
for the
paper
industry
”

► Thanks to the better Yankee surface coverage, it is also possible to get a better reel profile.



Based on our historical cases, we can summarise that, using Axchem coating products it's possible to achieve following benefits:

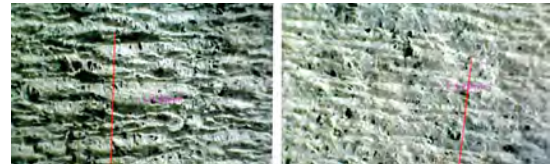
1. Better yankee coverage and consequently better reel profile.

As shown on the above pictures, we have got a better yankee surface coverage and consequently a better reel profile (picture 2). This is probably due to the chemical composition of our base coating which is made of 100% polymer with no PAE inside. Our coating products can react even if the temperature of the Yankee is low or not optimal. In this condition, it's also easier to rebuild the layer of the coating after the blade changing. However, this depends on how much natural coating vs organic coating there is and blade angle, etc.

2. Better paper softness. Using our coating is possible to have a better paper creping and consequently a softer paper.

Checking the paper with a microscope, we can see that analysing the paper produced with our coating and with the competitor coating, the number of the "crepe" (or "wave") is higher using the combination of Axchem products compared with competitor treatment. Using our coating we

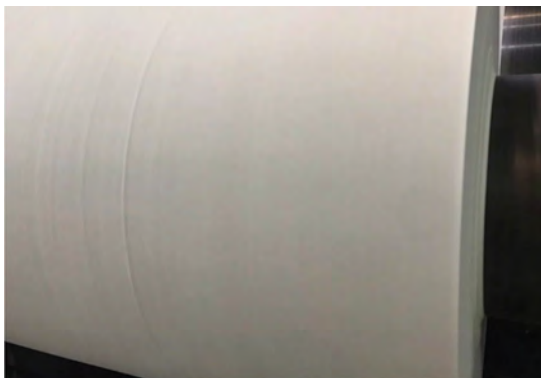
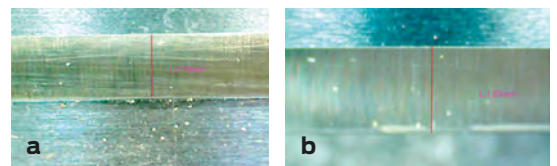
▶ Checking the paper with a microscope, we can see that analysing the paper produced with our coating and with the competitor coating, the number of the "crepe" (or "wave") is higher using the combination of Axchem products.



have 10 crepes in 1,25 mm. Using the competitor 10 crepes in 1,49 mm.

3. Blade consumption. Using a steel blade in combination with the high protection level of our product, it's possible to reduce the blade wear. Blade wear after 10 hours using competitor coating: 1,03 mm (picture 4b). Blade wear after 10 hours using Axchem coating: 0,76 mm. (picture 4a). ●

▶ Picture 4a/4b: After ten hours, the blade wear is lower using our products: Blade wear after 10 hours using competitor coating: 1,03 mm. Blade wear after 10 hours using Axchem coating: 0,76 m.



◀ Picture 2. Thanks to the better Yankee surface coverage, it is also possible to get a better reel profile.



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OUR SERVICE

A

xchem provides a global presence (Americas, Europe and Asia) to support the worldwide tissue industry. Axchem has an extensive product range and customized products Axchem can deliver unique chemistry in polymer for retention and drainage systems, strength improvement solutions. During the trial, Axchem would provide all the necessary technical assistance. All the steps are followed from Axchem technicians. During the trial period, periodic service visits of our technical department would be scheduled to support your team and to optimize the dose for the best results. After a successful outcome, Axchem provide technical support by our web of technicians.

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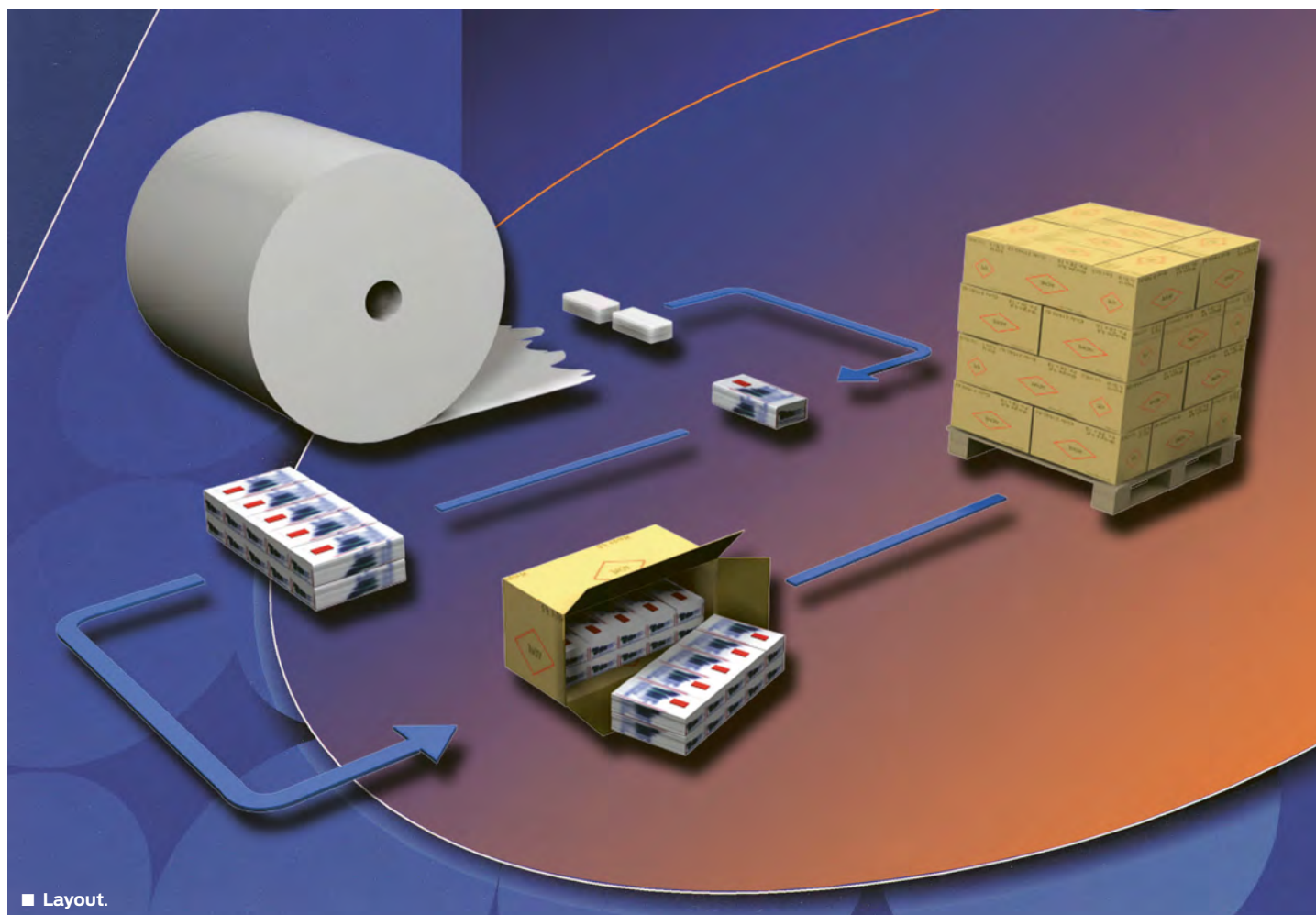


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■ Layout.

“New complete handkerchief lines”

with efficiency and product quality at the top of the category. Now available with further important developments

By: Tau Machines Srl

Following the introduction of the new handkerchief production lines in 2021, Tau Machines has continued to develop its machines to offer the best solutions to the tissue converting market.

The new upgrades of the 2040 lines deliver increased production performance, lower energy costs and faster and easier production and format changes. All this takes place via the machine's control system or remotely. In addition to the new lines **TAU MACHINES** can offer new units for reclosable adhesive labels, delivering up to 500 packets per minute and



▲ Complete handkerchief line Model 2040.

“ Machines designed for the needs of the customer, with an eye to the future ”

ensuring better product quality and considerable savings in raw materials and production costs. A further important development has been the introduction of the new *CS120* packaging machine with actual speeds of up to 120 packets per minute, which incorporates all the developments made to the earlier *CS80* model and is suitable for the production of bundles of handkerchiefs, packets of napkins and interfold products. Tau Machines has been serving tissue producers in the international market for over 25 years, supplying complete lines with innovative technical features that have paved the way for flexibility and ease of use in the tissue sector since the beginning of the millennium. Their main technical features were:

- modular machine construction so customers can compose the machine to their requirements; this is achieved through a plug-in system, which can be upgraded even after purchase, for example:
- one embossing unit; two embossing units; a softening unit; fully automatic paper unwinder and splicer; non-stop automatic film splicer and reel unwinder; system to vary the number of single sheets per packet from 7 to 15, on-the-fly through a computerised

system; fast changeover system between “pocket” and “compact” packet formats. Our tradition of leadership in this technology along with our motto “there is no limit to doing better” has continued over the years and has led to the medium-sized machines supplied to our customers becoming the benchmark for ease of use, flexibility, reliability and performance. At the beginning of the 2020s, despite a difficult worldwide market situation due to Covid-related events, we introduced further important developments that have reinstated Tau Machines at the highest technological level in handkerchief production, with a special focus on sustainability. Our technology is oriented towards the highest possible energy consumption efficiency, which on average is up to 20–30% lower than that of our direct competitors. Our packaging can also use 100%

▼ Multiple packs bundle machine CS120.



recyclable paper and film, which has led to significant cost savings and a high degree of environmental friendliness.

For new machines, Tau Machines has designed all the components across the entire line from scratch, including all the mechanical parts and all the electronic systems for motion control and production management. Some of their technical features are:

- Full control over working parameters through HMI panels on the machine.
- Production management from on the machine or in remote mode.
- Scheduled maintenance management from the control panel on the machine.
- Option of connecting to company ERP systems for production management.
- Machine construction complies with EC regulations and Industry 4.0 rules.
- Guaranteed production rate of 140,000 to 160,000 packets per shift.
- 2/3/4 ply and 100% recyclable papers can be used.

▼ Unwinding splice for paper reels.

- Standard or 100% biodegradable packaging films can be used.
- Extremely easy to use and maintain.
- Use of packaging film with standard sizes and print layouts compatible with all machines currently on the market.

New **CS120** bundle machine with actual speeds of up to 120 packets per minute is the top of its category in terms of performance and product quality. Its various options can be used for packaged bundles of handkerchiefs, napkins and interfold products.

Like the renowned CS80, it incorporates an automatic system for changing formats and types of production. This means that previous work orders can be replicated automatically via a product labelling system that can be operated on the machine panel or remotely via the company ERP. ●

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Carer Forklift: the new era of material handling in paper mills is electric and compact

In recent years, the electric forklifts produced by Carer have gained a prominent position in the global material handling industry, achieving leadership in highly diversified markets, from aerospace and food to energy, logistics, automotive and the military sector. However, Carer has also been successfully operating in the paper and corrugated industry for years, developing a profound understanding of the sector's challenges.

by: Carer Srl

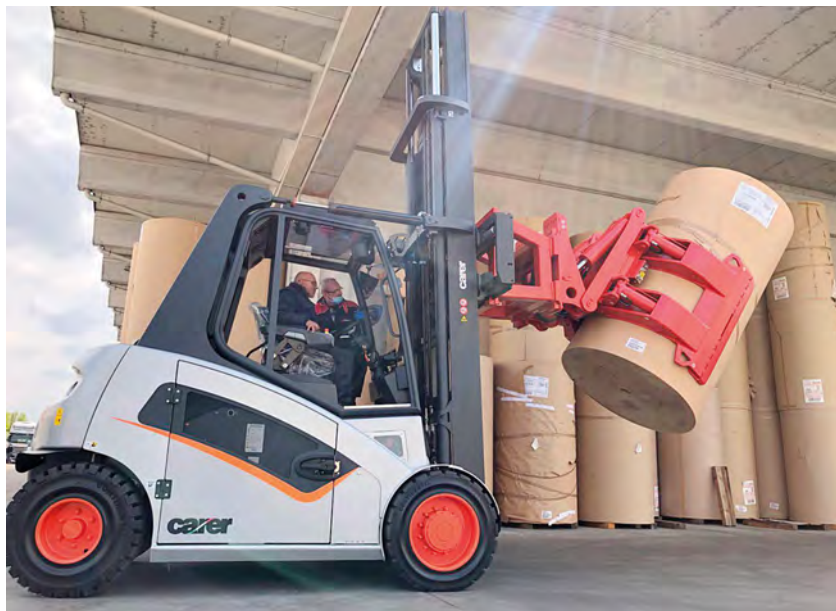
In the paper industry, effective material handling is crucial to ensure process efficiency and productivity. Handling presents unique challenges that require special attention when developing tailored solutions. Firstly, paper is a fragile and moisture-sensitive material, which means that its handling requires precision and care to prevent any type of damage. Furthermore, production facilities are often characterized by tight spaces and narrow corridors, making it essential to use vehicles that can move smoothly even in limited maneuvering areas. The challenge is further exacerbated by the storage of paper material in rolls. These rolls, typically weighing around 4 tons on average, measure approximately 1600 mm in diameter and 2500 mm in height. Additionally, a forklift capable of successfully handling them must be engineered with consideration for the clamps used to grip the rolls, potentially causing the

■ The compactness of A 80 X compared to a horizontally arranged paper reel.



▲ Carer's A 80 X.

▼ A Carer's vehicle lifting a heavy paper reel.



“ Optimal solutions both for standard applications and special handling needs ”

overall dimensions to exceed the available maneuvering space. Autonomy and compactness are thus the first elements of the ideal profile for material handling in the paper industry, but we cannot overlook a third factor: emissions. A forklift operating in confined spaces and emitting large quantities of exhaust gases significantly affects the air quality in storage facilities, with the additional disadvantage of creating significant noise pollution. A fully electric-powered solution completely eliminates these hindrances, also earning favor among operators. Carer's extensive range of vehicles is capable of meeting the diverse needs of the paper industry with various solutions. The primary commercial highlight for paper industry solutions undoubtedly lies in the A series: versatile forklifts with a wide range of load capacities and dimensions, and tire options designed to handle any type of terrain, be it indoor, outdoor or uneven surfaces. All of this is achieved without compromising load stability and user experience. A special mention goes to the A 80 X, which over the years has established itself as a true top performer in the paper industry. This model prioritizes extreme maneuverability, with a machine length at the fork front of 3,515 mm, making it shorter than competitors by at least half a meter while delivering performance equivalent to a traditional diesel machine. With a nominal load capacity of 8 tons and a mast that allows for lifting up to 7.5 meters, the **A 80 X** excels in height operations, aligning with the growing trend of verticalization in paper logistics and beyond. The option to operate with a single front wheel instead of dual wheels is perfect for handling operations in cargo holds and tight spaces. The super-elastic front tire, resistant to punctures, also provides exceptionally high safety during movements inside warehouses, complying with the strictest workplace safety regulations. **CARER** goes beyond a mere commercial proposal:

to showcase the efficiency of the A 80 X, the company is willing to offer customers a preliminary trial directly at their facilities. This quality assurance has already been chosen by dozens of operators in the paper industry, demonstrating the efficiency and functionality of this 100% electric forklift. The Italian company, a leader in the electric forklift sector, is always available and ready to receive inquiries and provide further information. Interested parties can contact Carer by sending an email or calling. ●

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■ Compact vacuum pump
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A photograph showing a long row of compact vacuum pumps in a factory setting. The pumps are white with yellow accents and are mounted on a wooden pallet. Each pump has a large, circular, grey motor housing with a fan-like pattern. The pumps are arranged in a line, receding into the background. The background shows a factory environment with windows and other equipment.

PAPER is our element

Founded in Genoa in 1960 and initially specialising in contract machining, AZMEC joined the galaxy of the Pompe Vergani Group in 1988. Since 1964, the Liguria-based company has mainly focused on manufacturing vacuum pumps and liquid ring compressors. Over the years, it has continued to develop its business model and at the same time, it has expanded its commercial horizons. After initially operating to a greater extent on the Italian market, AZMEC has been able to gain a solid reputation and significant customer base on world markets.

by: AZMEC Srl

The paper industry: an essential interlocutor

Both in our country and internationally, the paper industry has been one of AZMEC's main interlocutors, given the typical needs of the industry in the field of treating and managing water resources. "Since our beginnings - says company Managing Director, **Claudio Vergani** - the paper division has been a major point of reference for AZMEC, although over the years, we have been able to establish and develop solid relationships with customers from a range of different sectors. Among these, on this occasion, we should also mention the oil and gas filtration, cement and chemical industries.

Currently, as things stand, paper production and transformation continue to be outlets of primary importance in Italy and internationally. We also have good reason to believe that they will most certainly continue to play an essential role in the future, too".

To succeed, now and in the future, to address the problems of paper mills, supporting their drives for evolution, AZMEC has developed an intervention strategy, as set out in detail. "To meet the needs of our customers - Vergani continues - we always try to take into account the main variables that characterise the correct operation of a vacuum system - first and foremost the need to save energy, contain noise levels and last but not least, the need to limit water consumption as far as possible. This is why we never limit ourselves to exclusively offering AZMEC customers a simple supply of machinery, but rather we also offer the study and creation of a full plant layout. Our aim - notes Vergani - is to be able to optimise the operation of the plant itself and specifically our work consists of assessing the most beneficial technical solution for achieving the best relationship between power needs in terms of kilowatts and cubic metres for vacuum pumps. We also offer a vast range of solutions developed to be able to guarantee noise levels that can be reduced to 65 dBA. As far as concerns the specific case of recovering water resources, the key application is of course based on the full recirculation of the water itself. In this specific case, we need to ascertain the best construction materials for vacuum pumps. On the specific point of being increasingly ready to meet the needs of our customers - he continues - in May 2022 AZMEC completed its acquisition of Riva Tecnoimpianti, a company specialising in the manufacture of light and heavy metal carpentry components and one of AZMEC's suppliers for years. In this way we have been able to further increase our range of services, as well as to strengthen our competitiveness".

An all-round approach

The approach of the supplier, who is active in Italy out of plants in Arenzano, near Genoa, and Verderio in the province of Lecco, can only be said to be extremely exhaustive and it includes an all-round approach. "In other words - Vergani points out - we feel that the end users of our products need to be guaranteed a service that goes beyond the simple supply

of machinery. Based on our experience from decades in the industry, we always seek to guide our customers towards choosing the most suitable technical solutions for them. This means the choice that can guarantee maximum efficiency for the vacuum system overall and providing, if requested, the complete turnkey design project and the stages after the plant is put into service. As further confirmation of the excellent quality achieved by AZMEC products and services, we have the repeated nature of contacts from the most important manufacturers of paper machines and also cardboard and paper manufacturers themselves, both in Italy and internationally, as can be seen from the constantly updated



■ Compact vacuum pump skid range ALZ.

list of references published on our website. And this is the reason why every day, for over sixty years, AZMEC has been striving for the continued improvement of its range of products and the quality of its services, in order to ensure they continue to meet the needs of its customers".

Company identikit

AZMEC was established in Genoa in 1960 as a company specialising in contract machining. In 1964 the company manufacturing vacuum pumps and liquid ring compressors for the paper-making industry, working almost exclusively at national level, but standing out for the quality of its machines. In 1988, company stock was almost entirely acquired by

a group already operating in the pump industry (Pompe Vergani) while continuing to gradually expand its targets in both the strictly technical and commercial directions. In 2018 the move was completed from Voltri, Genoa to Arenzano, and a larger, recently completed factory building. **AZMEC** currently works out of the Arenzano factory, in the province of Genoa, as well as in Verderio, in the province of Lecco. This latter factory was opened in 1993 and then expanded in 1998, designing and manufacturing liquid ring vacuum pumps using



competitive, able to guarantee customers the best possible service, in 2022 AZMEC completed its acquisition of **Riva Tecnoimpianti**, a company working on the market since 1998 and specialising in the manufacturing of light and heavy metal carpentry components as well as of hydraulic control units, which have a full range of different uses in a range of sectors on the international marketplace.

Internationalisation according to AZMEC

AZMEC is continuing on its path to boost its presence on different markets and in different industrial sectors, both in Italy and internationally, while continuing to increase its core business, the paper industry. The most important vacuum systems designed and built for export markets include: two supplied to Overmade for two paper machines installed in the United Arab Emirates (6xALC420Z supplied together with all accessories, including cooling tower); a new system to Recard for a paper machine installed in the Ivory Coast (2xALC500Z complete with accessories); a new system for Andritz AG, consisting of 2 ALC520Z vacuum skids, the supply of two new vacuum systems (1xALN120/2000 and 1xALC420Z) for the Gharb Papier plant in Morocco; the supply of a new ALB160 pump to complete the other two already installed on a system at Ahlstrom La Gère in France; an ALN80/2000 plant for the customer, Emirates, installed in a paper mill in the United Arab Emirates; four new ALC500Z electric machines at Replus Tissue and complete with accessories and destined for two new paper machines, both in Mexico; two complete vacuum pumps supplied to Toscotec, the first to be sent to Bangladesh (2xALC500Z) and the second to Qatar (1xALC500Z and 1xALC355Z). For the Italian market, recent projects of note include the study for the refurb, in collaboration with De Iulii,

“ From small mechanical workshop to **world-leading company** ”

the most cutting-edge technologies. Pieces are machined on CNC machine tools and inspections are performed in the new internal test room, which is equipped with the most cutting-edge instrumentation for testing machines with power input of up to 250 kW. Between 1960 and 1990, the unit in Liguria has been focused on manufacturing liquid ring vacuum pumps and contract transformation work. In 1993, the pump manufacturing division was permanently moved to Verderio, while the Arenzano hub was destined to subcontract works and maintenance of different types in the mechanical sector. The two plants continue to work in synergy, especially during periods of intensive work demands. Both plants have had ISO 9001 certification since 1998 and since 2010, AZMEC has held EAC certification to export into the Russian market and it is also commencing production on pumps in compliance with Atex standards for use in explosion-risk areas. With a view to expanding the business and making it increasingly

of the vacuum system at Cartiere di Trevi (1xALBV55/2000); renovation of the vacuum system at Cartiera Giacosa with the installation of a new ALZ100/2000 pump; expansion of the vacuum system at Ahlstrom-Munksjo Italia for the plant in Sassoferato (2xALN50/2000 complete with accessories) and Cartiera della Basilica, which received three ALCZ pumps from the new compact and “space-saving” line, thanks to the new design project for installing the motor over the pump. ●

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