EDITION N.2

PRESS BOOK

WHAT WE DO

Efficient technologies
in tissue making

TOSCOTEC

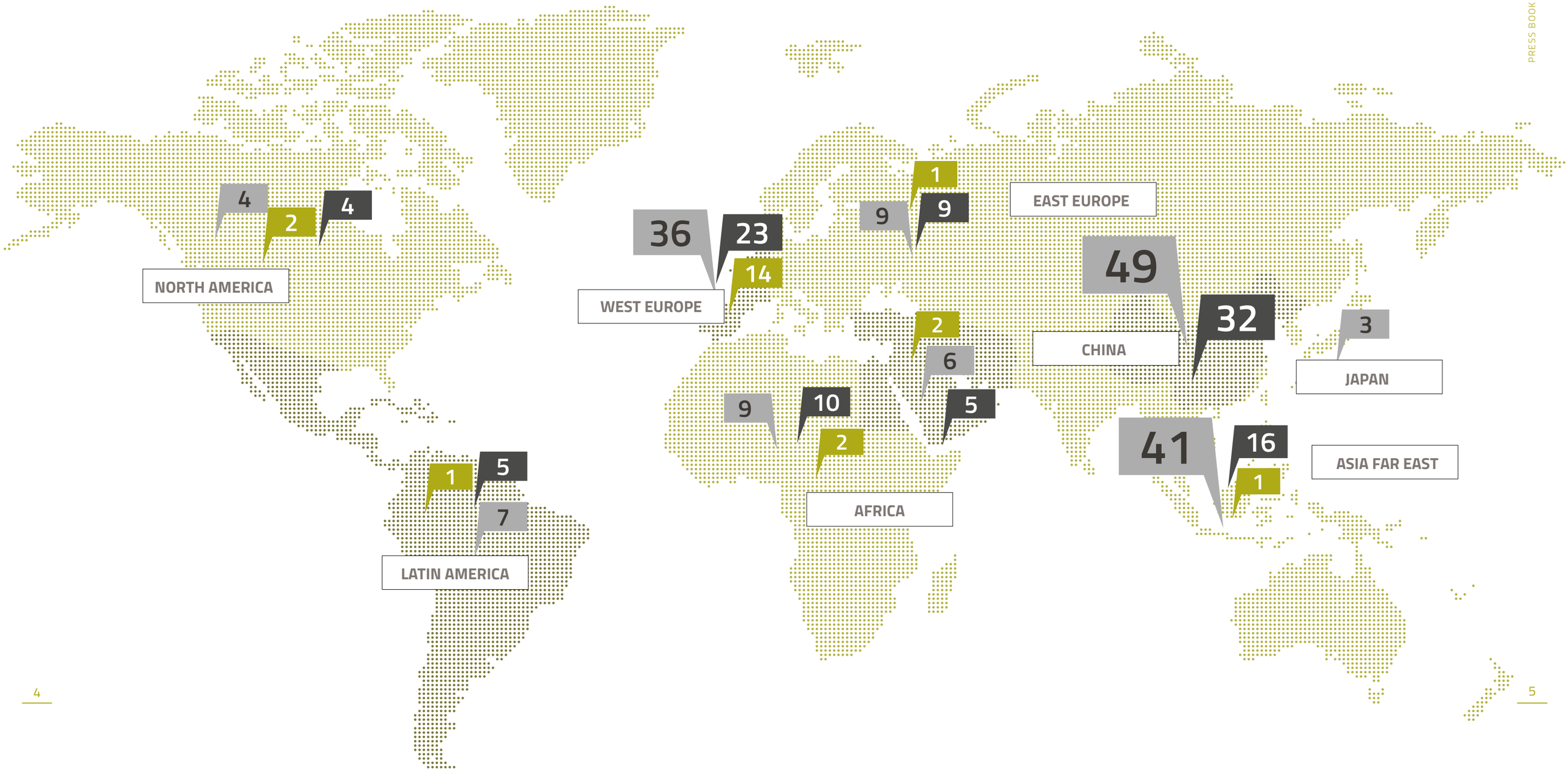
"Here we are with the second edition of this booklet, which brings together news, articles and press releases about Toscotec projects issued during the last year.
After the first appreciated edition come out in 2014, we have seen important developments in our business activities so that we think necessary to continue keeping constantly informed our Customers, Friends & Partners.
During this profitable time our vision related to the energy, emissions and sustainability contents applied to our products and extended services developments continues to be a common denominator in all our projects bringing our Company to be, nowadays, the market leader in tissue machines sales.

This is a very remarkable goal that we have achieved thanks to Toscotec R&D as well as in the investments we have implemented in all our production cycle activities.
Our main headquarter workshop in Lucca have been upgraded in order to lodge more in-house manufacturing capacity and pre-erection space.
The adoption of green technology, like the production of energy thru solar panels, has been adopted in line to our philosophy to provide sustainable machinery starting also from the manufacturing phase. In China we have enlarged our service activities and local workshop and Toscotec North America is fully operating in Green Bay to better serve the Customers in the region. We have absorbed tissue machine hood and ventilation specialist Milltech into our own tissue technology operations since we believe that Milltech's solutions, purchased in 2012, are best offered as a brand within Toscotec's portfolio.

Along with all those activities another important step has been reached by the Company this year: the establishment of a new fully integrated facility in Massa, not so far from Lucca but located close to the seaside, entirely dedicated to the assembling and finishing of the Steel Yankee Dryers of large dimensions. Being Toscotec the inventor and the indisputable worldwide market leader of this equipment we have now reached the exigence to have a dedicated workshop where it is easy to run all the operation for the construction and shipment of TT SYD up to 22 feet diameter. Some of these big size TT SYDs are on going and the manufacturing cycle has been proven and tested in terms of quality and efficiency in the new location.
Finally speaking about products and projects developments, 2014 and 2015 were really successful bringing us repeated orders on a turn-key basis in the most developed Western Markets, allowing us to realize important technological rebuild as well as launching a new machine concept introduced into the market during last IT's Tissue edition in June: PRODERGY, the most green cutting-edge technology available on the tissue market nowadays.

We remain that you will enjoy reading the following pages having a full picture and understanding of our results and continuous efforts to be closer to the Market and to the Customers."

Toscotec S.p.A.



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CONTENT

WEPA GROUP IS INVESTING IN TWO NEW TOSCOTEC PAPER MACHINES FOR SUSTAINABLE SECURING OF THE COMPANYS' FUTURE

Arnsberg, 16th August 2014 - The WEPA Group, based in the Westphalian city of Arnsberg, will be investing in two tissue paper machines with a combined total capacity of 64,000 tons annually. The machines will be installed at the locations in Lille/France and Marsberg/Germany.

By expanding the production output of tissue products, the family-owned company will optimize the existing procurement and logistics structures in Europe, thus enhancing the competitiveness of the entire group.

The supply agreements have been concluded with the Italian provider Toscotec for both paper machines.

The total investment for both projects amounts to more than EUR 50 million.

The technology of the paper machines is up-to-date and they meet the high quality requirements of the market.

"As a family-owned company, we position ourselves sustainably forwardlooking with the investment of two state-of-the-art machines. By expanding our manufacturing capacity, we are continuously securing our demand for jumbo reels and pass this security of supply on to our customers in the consumer and professional business market", stated **Martin Krengel**, **CEO of WEPA Group.**

Walter Hirner, **Member of the Management Board** (CTO), emphasizes the advantages of the new paper machines in the area of energy efficiency: *"The paper industry is one of the largest energy consumers and can make a significant contribution to reduce CO_2 emissions by using efficient manufacturing processes and economical use of electricity and natural gasoline for the production of semi-finished goods.*

This will save resources and optimize cost structures."

Furthermore, due to the reduction of acquisition of jumbo reels from 3rd party suppliers, the WEPA group can optimize the logistics flows within the European locations and compensate for increasing shipping costs.

Subject to regulatory permits, the commissioning for the new paper machines is scheduled for the 3rd and 4th quarter in 2015.

RECENT ACHIEVEMENTS IN STEEL YANKEE DRYERS APPLICATIONS

By Paolo Raffaelli, Technical Director, Toscotec S.p.A.

Historical background

When Steel Yankee Dryers became at first commercially available, the industry only considered them for a few applications on tissue machines, mainly limited in production capacity and speed, with sizes reduced in diameter and width. At the time, Toscotec actually introduced a major change in the market, traditionally dominated by cast iron foundries.

The Yankee Dryer represents a primary component for tissue quality and a key system in the drying process. The combination of Yankee conduction and Hood convection determines the drying capacity of the tissue machine and has a substantial influence on plant capacity.

Thermal drying is an energy intensive process, which makes

the Yankee an area for potentially significant energy savings. Nowadays the Steel technology is strongly established and heading to further steps of engineering progress.

In times of rising energy costs and pressure on margins, the benefits of improved drying can make a tangible difference.

Considerable field data are available today from years of experience with Steel Yankee Dryer applications, which have led to technological and manufacturing process guiding principles.

The use of steel instead of cast iron allows a well-known reduction in shell thickness that decreases thermal resistance and thus increases heat transfer.

The result is higher drying capacity achieved by increased steam condensation inside the dryer. Data obtained from Steel Yankee Dryer installations have confirmed that the heat exchange coefficient and the drying capacity of Steel Yankees typically exceed those of cast iron by more than 30% given the same dimensions and operating pressures.

The latest achievements in technology have permitted the increase of Yankee sizes, through the introduction of last generation of high efficiency Steel Yankee Dryers with diameter up to 22FT - 6.7m, which combines the described heat exchange capability with the overall increased surface flux capacity, introducing new opportunities in terms of machine configurations and energy usage.

General process principles

Hood drying requires 25-35% more energy per kg of water to be evaporated than Yankee drying. So as a general rule, it is in general beneficial to maximize the drying potential of the Yankee, possibly by considering a larger diameter unit, and to design the hood according to production needs and local conditions particularly in terms of available energy sources. The Yankee Dryer size, in combination with the hood, is actually a factor to look for, when targeting the most energy efficient systems. In principle, most tissue producers have the option either to increase output for the same or less specific energy input, or to maintain the same level of output but sensibly cut energy consumption. However, most revealing is the technological approach that achieves these aims.

Last innovation

The awareness of the great advantages that a larger diameter cylinder could bring in terms of newer design opportunities, has led Toscotec to the progressive increase of the Yankee size. After the introduction of the second generation of Steel Yankee Dryers, Toscotec has designed and introduced a larger size of ribbed Yankees, TT SYD-20FT and TT SYD-22FT.

The first installation of a 22FT cylinder is scheduled for the 1st quarter of 2016. The following are the main data relevant to the project:

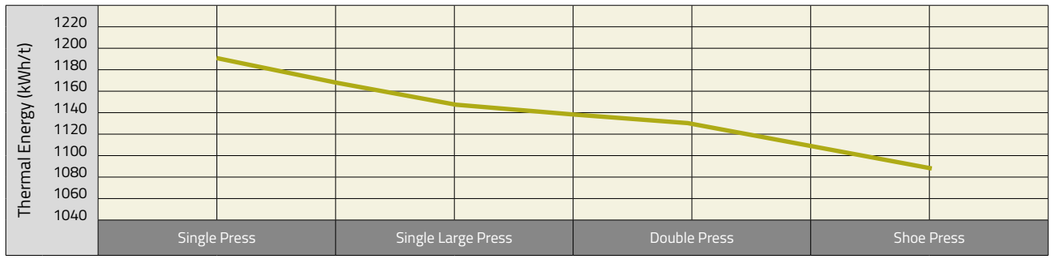
- **Yankee diameter: 6.7m (22FT)**
- **Yankee shell length: 6.3m**
- **Maximum operating pressure: 10 bar (g)**
- **Nip load capacity: 120 kN/m**
- **Head Insulation applied**
- **Steam Heated Hood**
- **Maximum machine speed: 2,000 m/min**

Process data

Gas is the most effective fuel for drying, although in some cases, steam is the only available source of heat.
Gas hoods are now far less challenging than in the past, and the benefits in terms of flexibility of capacity and overall efficiency make them an attractive proposition.
Moreover, with gas it is easier to keep the hood system clear of fibre build up than with steam, but specific design solutions can be adopted to allow reliable and cleanable applications with steam hood operating at 180-190 °C.
Other solutions are Suction Hoods, which provide only humid air extraction and internal ventilation, and Hybrid Hoods that make available steam or gas heating on half hood halve.
The outcome of the combination of these systems with the Yankee and Press systems, are different performances in terms of energy efficiency.

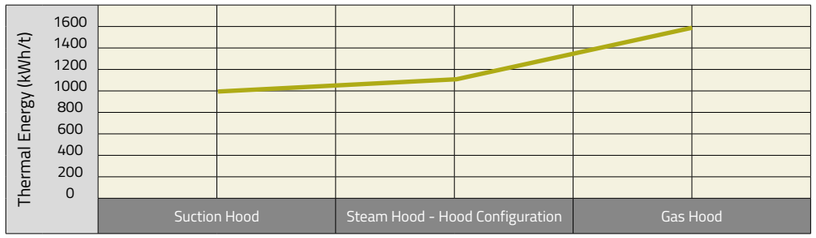
The following tables give a general overview of the results in terms of practical energy figures.

Case 1 . Drying Energy vs. Press Configuration



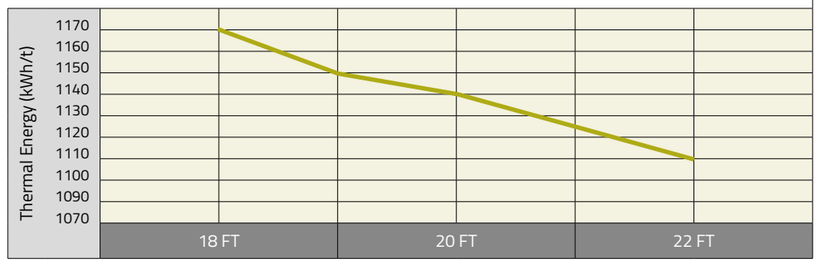
The diagram above is based on a standard Steam Hood configuration and a 5.5m (18FT) Steel Yankee. The post press dryness has a direct impact on the overall energy required in thermal drying. The use of a large diameter press can lead to reduced water content in paper entering the Yankee. 1% dryness increase can result in overall energy reduction of 4% to 7%.

Case 2 . Energy vs. Hood System



The diagram above is based on a 5.5m (18FT) Steel Yankee and a Single Press configuration.
The selected Hood System solution determines the results in terms of total energy costs. Suction Hood has the lower energy requirements, being the complete thermal drying produced by the Yankee, but production capacity is limited if compared to other systems. The steam hood has better performances of gas in consideration of total kWh/t required, and higher production capacity in comparison with suction hood. Gas is the most effective fuel for drying, although in some cases, steam is the only available source of heat.
Gas Hood provides the maximum drying capacity, but it does not represent the best option in terms of thermal energy involved.

Case 3 . Drying Energy vs. Yankee Diameter



The diagram above is based on a standard Steam Hood and a Single Press configuration.
The increased diameter of Yankee determines a longer shell length in contact with the paper. With evaporation rates that exceed 110 kg/m²h for 22FT Steel Yankee Dryers, the drying capacity is still high with suction and steam heated hoods, and top speeds of 2,000 m/min and above, can be reached without gas. If combined with state of the art head insulation, the solution of a large diameter Yankee appears to be of actual interest.

Conclusion

The increase of Steel Yankee Dryer dimensions, apart from well-known advantages of steel, such as the high evaporation rate, the elimination of problems due to surface porosity, the uniformity of drying, the optimal crown due to constant material properties, can obviously lead to improve the present standards of paper machine performances.

YFY BOOSTS ITS CAPACITY IN TAIWAN WITH A NEW TOSCOTEC TISSUE LINE

Lucca, Italy, August, 2014 - The Italian leading paper machinery manufacturer Toscotec will supply a complete tissue production line to the Taiwanese based Company Yuen Foong Yu (YFY). The tissue line will be installed in Ching-Shui mill located in Qingshui District, a coastal suburban district in western Taichung City, Taiwan, Republic of China. The line will start up in the last quarter of 2015.

In April last year the Taiwan's largest paper and board producer announced to be poised to invest NT$8 billion ($268 million) in building several tissue paper machines at its mills in China and Taiwan over the next three years. This new investment is part of this big expansion plan into the tissue segment.

Founded in 1924, the company mainly dealt at the beginning in fertilizers, sugar, and grain. Yuen Foong Yu Paper Mfg. Co., Ltd. was officially established on February 21, 1950.

Yuen Foong Yu Paper produces reading and writing, industrial, and home use paper. It is characterized by a fully integrated production chain covering upstream (forestry, pulp), midstream (paper manufacturing) and downstream (printing, packaging, and design) operations, which yield beneficial synergy effects.

Yuen Foong Yu Paper currently operates in the tissue business in China, with three mills (Yangzhou-Jangsu, Kunshan-Suzhou Jangsu, Beijing-Mafang) with a total annual capacity of approx. 150,000 tpy, and in Taiwan with two mills (ChingShui and Yangmei) with a total annual capacity of approx. 74,000 tpy.

In Taiwan the company has around 25% of the domestic market and it is looking at expanding its market share to 35% in three years' time.

The delivery, based on an intensive energy-saving concept, includes the stock preparation plant with the approach flow featuring ultimate Toscotec technology TT SAF®, water system, an AHEAD-1.5M tissue machine with double-layer headbox, jumbo suction press TT SuctionPressRoll-SPR1425 and Toscotec Steel Yankee Dryer TT SYD-18FT.

The supply will also comprise the electrification and controls package, tissue machine auxiliaries like the steam heated hood, steam & condensate system, dust removal system provided by Toscotec's associate Milltech (now absorbed by Toscotec S.p.A.).

With a width of 3.60 m and a design speed of 1,700 mpm, the new production line will produce 120 tons per day of high-quality facial, toilet and towel grade from 13.5 g/m^2 to 23 g/m^2 basis weight.

With this latest order Toscotec continues on its further expansion in the Asian market where operates also thru its affiliate Toscotec Shanghai (PRC).

The optimal features of the machine design with a large diameter SYD and a big SPR combined with a steam heated hood, experienced already by several installations and repeated orders supported with high level regional service by Toscotec, are the unique characteristics of this new project that made the difference in the decisional process of the Taiwanese Company in choosing the final Supplier.

TOSCOTEC STEEL YANKEE OUTPERFORMS GUARANTEES AT SCA NY

South Glens Falls, NY, USA - 20th August, 2014. SCA started their new Toscotec Steel Yankee Dryer on PM11 in South Glens Falls. The replacement Steel Yankee was producing sellable paper several hours prior to the scheduled start up.

SCA purchased the 12' FT Model TT SYD to replace a damaged plane bore cast iron yankee. With the upgrade to Toscotec's Steel Yankee Dryer Technology, SCA is expected to increase their steam condensate flow by more than 40%.

On the 1st day of production, SCA surpassed the condensate flow guarantee and further reduced the temperature in the hoods allowing for the reduction in natural gas consumption.

Drying on the Steel Yankee is more efficient than drying with an hood, maximizing the condensate flow is the goal reached by Toscotec Engineering.

With the added drying capacity from the Toscotec Steel Yankee Dryer, SCA is also expected to increase production capacity on PM11.

"We are impressed with Toscotec's technology and quality of design. Toscotec demonstrated their years of start-up experience with Steel Yankee installations as the project was installed on schedule and surpassed our expectations with their startup process", said **Mark Phiscator, Director of Engineering for SCA North America.**

Based in Lucca (Italy) Toscotec is a global supplier for machinery and services for the tissue industry.

It operates in NA & Canada thru its affiliate Toscotec North America, located in Green Bay, that provides services in the territory.

The success of this technology is a fact:
all tissue producers that installed their first TT SYDs never went back to conventional cast iron units!

The Pioneer. The Technology Leader.
The Proven Market Leader.
Based on the number of deliveries and current orders, **Toscotec continues to be the recognized market leader including a 70% market share in replacement Yankees**.

TURKEY'S PARTEKS STARTS UP NEW TOSCOTEC TISSUE LINE

September 2014 - The Turkish Company Parteks has successfully started up the new Toscotec's tissue line installed in Kayseri capital of the same district in the Central Anatolian region. The machine came easily on stream after the commissioning period and is now producing high quality tissue products according to the guaranteed technological parameters.

Founded in 1996, Parteks Paper Co. is a fully integrated large manufacturer of tissue paper for household and community, corrugated cardboard and fluting paper. The existing plant, that houses the TM1 tissue machine (started up in 2007), the PM1 fluting machine and corrugating line, covers an area of 100,000 square meters. Converting facility for tissue is close by the plant. The company employs around 300 people. Thanks to the huge investment process in the last two years, Parteks focuses on adding value to its brand name and products. The tissue paper is produced with recycled paper and virgin pulp. Panda and Senta are well-known tissue paper brands produced by Parteks.

The delivery, based on an intensive energy-saving concept, included the approach flow featuring ultimate Toscotec technology TT SAF®, broke line, a MODULO-PLUS tissue machine with single-layer headbox, single press configuration and Toscotec Steel Yankee Dryer TT SYD-12FT.

The supply also comprises an electrification and controls package, tissue machine auxiliaries like a natural gas heated hood, steam & condensate system, provided by Toscotec associate Milltech. A two unwind stands Toscotec rewinder TT WIND-P completes the package. With a width of 2.85m and a design speed of 1,600 mpm, the new production line produces 75 tons a day of high-quality facial, toilet and towel grades, despite the mill is located at 1,050 m above the sea level.

"It was really an exciting and profitable experience to work with Toscotec"- said **Mr. Fatih Capar, Parteks shareholder and General Manager**. *"They performed very well and the project was matching all the expectative! We came on stream in due time and the quality of the supply is recognized by all our team. We recognize the value of the Supplier and we are proud to have run this choice".*

The new Toscotec project has been focused on reduced energy consumptions, usage of selected raw materials in the manufacturing process, recovery and re-usage of the process water, low emissions (noise and pollutants) as well as on green energy adoption with the application of a steel yankee dryer technology.

L.C. PAPER STARTED UP PM2 REBUILD BY TOSCOTEC IN BESALU, SPAIN

Besalu, Catalunya (Spain) - At the beginning of October 2014 the Spanish Company L.C. Paper 1881 has started up PM2 in Besalu, after a major dry-end rebuild with Toscotec and Milltech.

The rebuild project target was mainly to reduce PM2 energy costs and improve paper machine efficiency as well as increase the production at higher tissue grades thanks to the application of TT DOES (Drying Optimization for Energy Saving) package.
L.C. Paper was formed in 1881 on the back of the Industrial Revolution and is now well regarded for its production of niche tissue products contained with two tissue machines (PM2 and PM3) annually producing 65,000 tonnes of tissue for the AFH market. The main focus of the mill is toward energy saving aspects and for this reason since many years the Company has been focused on cogeneration applications.
Already in 1993, L.C. Paper introduced in the mill a cogeneration plant. It was the first plant with a diesel engine of 6.5 MW in Spain that was expanded in 1999 with a second 6 MW engine.
In 2009 L.C. Paper launched PM3 with a patented process that takes gas from the cogeneration plant to dry the paper by the means of an innovative hood provided already by Milltech.
In 2011 the first diesel engine was sold and in 2012 L.C. paper installed a new gas engine.
6 MW of this energy have been used for feeding the new Milltech hood on PM2 with a further decrease of energy consumption. The combined scope of supply Toscotec/Milltech featured a new double presses configuration with a rebuild of the felt run, a new TT SYD-15FT with doctoring system and a Duo-System Yankee Hood, Milltech SMART e^{MT}.
The wet end hood is burner feeding type while the dry end hood could be fed either by cogeneration gases or by conventional burner.
So the exhaust gases coming from a gas engine are used to generate two stages of steam (high and low pressure) through steam generators in addition to the heat recovery to pre-heat the make-up and combustion air for the hood.
Maximum drying production with a machine trim width at reel of 3,050 mm will be 130 tpd.
With this new intervention the PM2 thermal consumption will be lowered to 1,350 kWh/t.
The rebuild project has been successful thanks to the close collaboration between the L.C. Paper staff and Toscotec team which was able once more to introduce innovative solutions to the tissue production process in accordance with L.C. Paper business philosophy.

L.C. PAPER CASE STUDY
AN INNOVATIVE TECHNOLOGICAL REBUILD BY TOSCOTEC

By Davide Mainardi, Sales & Customer Care Director, Toscotec S.p.A.

The motivations behind the rebuild

In 2013 L.C. Paper, an innovative company with a long history headquartered in Besalu, a Spanish municipality located in the autonomous community of Catalonia, owned two machines for the production of paper: PM2, a Fourdrinier machine for the production of MG paper, and PM3 in Crescent Former configuration for the production of tissue. PM2 produced packaging paper and paper tablecloths using 100% recycled fibre as raw material.

The reference market for this type of production was quickly losing shares due to the quality of the paper produced (strength not appropriate for the demand) as well as to the product marketing strategy that, with the changes taking place in the market, was becoming obsolete.

For these reasons, the company decided to embark on a technological rebuild project for the machine with the precise aim of changing production, adapting it to market demands by producing different types of paper.

Based on a positive past experience relative to the supply by Milltech, now entirely absorbed by Toscotec S.p.A., of the innovative system on the PM3 hood, L.C. Paper decided to entrust the Lucca company with the new rebuild project for PM2.

The goals of the rebuild

The motivations behind and goals of the rebuild were to increase the nip load of the press section on the Yankee Dryer in order to improve final product strength, together with the possibility to produce special tissue papers, as required by the market. Optimisation and reduction of energy consumption during production was another natural aspect, an intrinsic feature in the Spanish company's DNA that has always had the concept of sustainability as its top priority.

The targets were not easily attainable from a technical point of view, above all due to the fact that some products manufactured on PM2 used raw materials having a high mineral charge content (up to almost 43%) and also because different basis weights up to 80 g/m^2 were being produced. This situation entailed an important limitation: reducing the machine's speed down to 300 m/min.

The philosophy and opportunities behind the rebuild

Given the conditions stated above, following an attentive study performed by the two partners, it was decided to opt for a rebuild that would include installing a 4,572 mm new generation TT SYD-15FT Yankee Dryer by Toscotec, and to modify the press section with a solution that entailed a suction press with a maximum linear load of 90 kN/m and a polyurethane-coated blind-drill press with a linear load of 120 kN/m.

The supply was completed by a Milltech MULTIGENe^{MT} hood that, as for the supply on PM3, allowed working in complete co-generation mode using gas from a 6MW gas engine, with subsequent heat recovery feeding two boilers: a high pressure one at 17 bar(g) and a low pressure boiler at 1 bar(g).

The main goal, together with an improvement in the product's quality standards, was to have a total energy consumption of 1,350 KWh/ton producing tissue paper in a basis weight greater than 30 g/m^2.

A concept that Toscotec has successfully been applying for a long time was chosen: the TT DOES (Drying Optimization for Energy Saving). Another issue to solve was to redefine web format that prior to the rebuild was of 3,300 mm on the YD. But only a small percentage of production attained this size since very often 300 mm were lost.

Additionally, manufacturing with 3,300 mm meant encountering a serious problem on the tissue market where standard format is approximately 2,700 mm.

For this reason, the decision was made to reduce the latter to 3,000 mm. The rebuild did not involve other elements of the machine's wet end, keeping the Fourdrinier design, the existing flow box, the felt circuit with its main element: the suction pick-up roll.

The possibilities available and experiences tested through two different machine designs, the felt run typical of the Crescent Former (PM3) and the one with pick-up (PM2), spurred L.C. Paper to maintain the pick-up circuit concept, which is much simpler and easier to manage and to clean. Furthermore, it would have been impossible to adopt a Crescent Former because of the products made using raw materials having a high content of mineral charges.

This counter-trend choice hence implied several challenges! If, on one hand, the degree of dryness at press infeed was very high (given the wet end configuration), on the other this meant that natural adhesion of the paper on YD surface could be very low. The basic questions and doubts were: how would the surface of the YD behave and how could the loss of coating adhesion be compensated for?

In addition, the need for an extremely variable production that imposed, among others, also an MG product in a basis weight of up to 80 g/m^2 with low porosity and with production volumes of 5 t/h, led to the need to revolutionise the use of coating for these types of papers.

The rebuild

With all this background, doubts and questions of a technological nature, the project got enthusiastically under way. The engineering phase was followed with particular attention by the two companies, who defined in detail the interfaces to be created with the cogeneration plant installed. The activities relative to the rebuild, which were estimated to last 30 days, were entirely supervised by Toscotec staff in collaboration with the customer who supplied the necessary manpower.

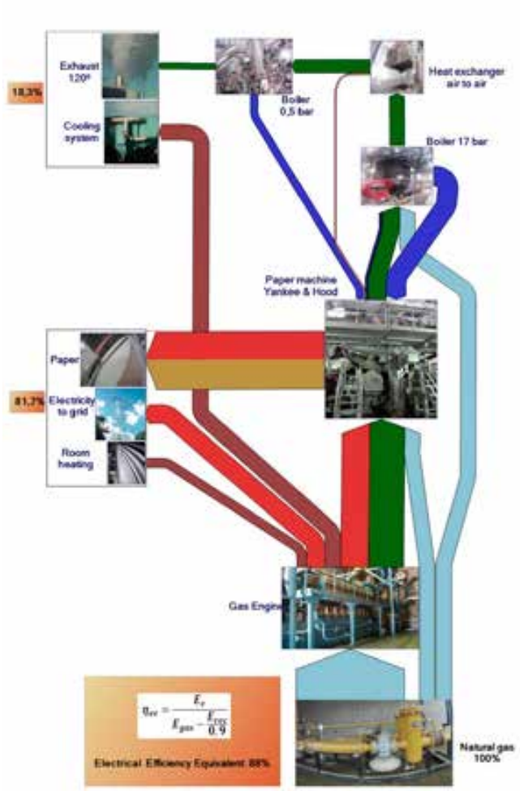
During assemblies, special attention was given to all those critical activities such as the installation of the YD - designed with the aid of hydraulic jacks - and of the hoods, interfaced with the existing cogeneration plant. The start-up phase took place within established schedules and led to the optimal attainment of the goals set.

The results of the rebuild

Once the complex installation phase was concluded within the schedule and modalities agreed upon and defined in the pre-design phase, the system was successfully started up in October 2014.

Foundational technical elements were promptly supplied, leading to interesting considerations on the ways to manufacture products having different basis weights on one highly flexible, high performance machine. The choice to maintain the design with felt run equipped with pick-up proved to be an excellent one, extremely flexible for attaining the goals, above all for what concerns runnability aspects. Machine start-up is through open pick-up producing variable basis-weight paper on the Fourdrinier that in this phase falls and is collected by the couch-pit. When the desired basis weight is attained, the pick-up is closed, the web passes on the YD, falls and is simultaneously collected in the pulper located under the machine. The sequence entails the subsequent closure of the second press and of the hood, waiting for the paper to attain the requested degree of dryness. In a short time, the paper passes to the pope reeler.

The entire controlled sequence requires just a few minutes compared with the 45 minutes required for the same process on a Crescent Former and has the advantage of being able to precisely manage the production's quality protocol. Indeed, the pick-up allows not having to manage the entire format set by the flow box (3,500 mm) and to be able to channel the couch-pit trims, thus preventing waste of energy during the drying phase (a savings of about 15%) as well as using less chemical product on the YD.



The result is the extreme adaptability of the format to market demands for that product. The initial question regarding the behaviour of the YD found its optimal answer in the extreme adaptability of its surface that, equipped with appropriate metallization and thanks to its low porosity and consistent temperature distribution, if compared with a cast iron YD, allows perfect distribution of the chemical product, thus ensuring optimal adhesion for the attainment of production standards.

Also, the energy consumption values obtained have supported the theoretical data estimated during the design phase, attaining 1,690 kWh/t for basis weights of 23 gsm and of 1,350 kWh/t for 35 gsm basis weights.

The production change implied a rebuild of the pope reeler through a tension control that allows managing creped tissue products. The DCS was implemented using the same philosophy applied on PM3 and a new drive unit powered by a new 690 V transformer was installed.

The future of L.C. Paper

Joan Vila, CEO of the company, smiles when he retraces the event.

The results and the daring, non-conformist choices have proven him right thanks also to the collaboration with the partner company who has professionally turned his requests and ideas into reality, supplying a precious contribution to the realization of the project through its innovative products and strong flexibility.

The L.C. Paper challenge has been won hands-down and the new market behaviour of the product has justified the investment choices.

When Joan thinks about the future of PM2, he continues to think of it not in terms of Crescent Former but rather in terms of a rebuild with a twin wire former wet end design in order to be able to maintain the high dryness value at press infeed and the flexibility afforded by the adoption of the pick-up, also in terms of paper format handling and hence of the consequent energy savings.

Once again, the experience described in this report proves how flexible companies and companies with an innovative approach can successfully overcome any crisis!

Joan Vila, CEO of L.C. PAPER

CHINESE VINDA LTD BOOSTS ITS CAPACITY WITH SEVERAL REPEATED ORDERS TO TOSCOTEC S.P.A.

In the last two years, the close partnership between the Hong Kong based giant tissue producer Vinda International Holdings Ltd's and the Italian leader tissue machinery Supplier Toscotec S.p.A., has delivered exceptional results: over 20 new TMs have been started up with a variety of models and drying configurations.
This allowed the Vinda Group to double its production capacity reaching over 900,000 tpy tissue production.

Established in 1985, Vinda Group has grown from a small private company into a leading manufacturer and branded provider of quality household paper products in the PRC and Hong Kong. Vinda is today, with major shares from Swedish based group SCA, the third largest hygiene paper manufacturer in the PRC, with excellent performance in customer loyalty and satisfaction.

With 9 manufacturing plants strategically located in different parts of the country, it serves the entire PRC, Hong Kong and Macau and exports to Australia, Singapore, Vietnam, Cambodia, Africa. The first orders placed by the Chinese producer in year 2012 featured Toscotec's MODULO-PLUS ES, with TT SYD-12FT, a compact, modular and cost-effective machine concept with superior energy saving features.

The most recent orders were for Toscotec's advanced, high-performance tissue machines, the AHEAD-2.0 ES, with TT SYD-18FT.

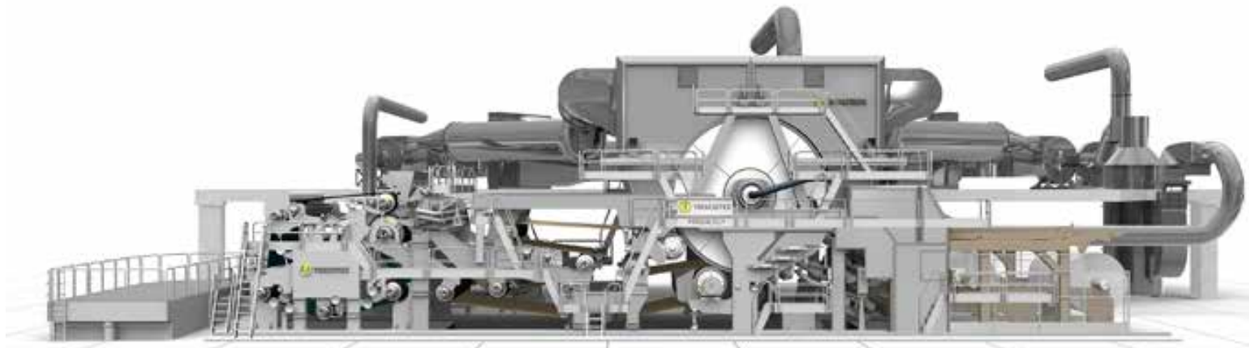
The key to this continuous success is represented by the great advantages in energy savings granted by Toscotec's state of the art technology and its TT DOES solution, the Drying Optimization for Energy Saving. TT DOES relies here, like in most of the orders secured to the Italian Supplier in China, exclusively on steam, the cost-effective energy source in the region, and delivers the lowest possible energy consumption. Through the wide application and fine tuning of this solution over the years, Toscotec has now achieved the lowest consumption figures of the tissue industry, matched with the highest machine performance and runnability.

The increase in drying capacity translates directly into an increase in production output in the mill with an important side effect to reduce carbon footprint emissions.

In China since 2003, in a few years Toscotec has established itself as a leading tissue machine supplier catering to top Chinese producers. This is also the result of the recent investment effort and major steps taken by the Lucca manufacturer in establishing a new organization in China, Toscotec Paper Machine (Shanghai) Co., Ltd. Started up in 2012, the Shanghai-based affiliate operates as Toscotec's Sales & Customer Care Center for the entire Asian market.

DIFFERENT DESIGN APPROACHES
TO MANUFACTURING TISSUE PRODUCTION PLANTS IN GLOBAL MARKETS

By Matteo Giorgio Marrano, Sales & Application Engineer, Toscotec S.p.A.



In the course of recent years, the global tissue market has been characterized by extreme variability in technical solutions based on customers' different production demands according to the country of reference.
This marked variability has caused repercussions on the technical choices adopted for new projects that have been substantially influenced by the approach and local demands of the final users.
The causes can be attributed to several factors such as the availability of raw materials and above all of energy sources, the supply & demand ratio, political-economic situations, intrinsic market conditions and product distribution sources.
In this brief overview that sums up what was presented during the meeting at the 2014 edition of the MIAC show in Lucca (Italy), we will try to analyse the peculiarities of each individual market that Toscotec is involved in, and to highlight the company's efforts to meet the demands of final customers in terms of design approach.

The North American market

In recent years, this market still prevalently dominated by brands and less subject to demands for private labels compared to the European one, has seen a rise in demand for structured tissue and TAD. And something must also be said for the Away-From-Home segment that registered an increment in demand compared to the past.

There has also been an increase for wet-crepe tissue, while tissue manufactured through conventional dry-crepe technology is limited to just a few new projects.

Toscotec has recently succeeded in penetrating such a highly diversified but at the same time conservative market from a technological point of view, since it was already present with the successful installation of the first TADVision in 2004 at today's Clearwater Group, by introducing the first TT SYD Steel Yankee Dryer and repeating the supply to two of the major local tissue producers.

Additionally, the company was the protagonist of a complex and very successful installation that saw the conversion of an existing plant for the production of fine paper into one designated for wet crepe tissue.

And it is in this very field that opportunities for the design of new projects will presumably continue to arise.

The European market

The Western European market is extremely diversified and mature. In the course of the years, turnkey projects and/or

technological rebuilds with the scope of enhancing performance, limiting emission levels, reducing energy consumption and improving the quality of the finished product have been assigned.

Demand for TAD/structured tissue products is negligible, while demand within the AFH segment is increasing consistently.

In this market, Toscotec has acquired projects in both the above mentioned areas, spanning from 2,000 m/min turnkey plants to rebuilds of press sections, Yankee Dryers and hoods. To better serve its customers and be competitive in terms of product, Toscotec, has recently launched a new product range: TT DOES (Drying Optimisation for Energy Saving), a combination of several different solutions that allows modernizing the dry end of the machine by introducing a second generation TT SYD Steel Yankee Dryer in place of the outdated cast iron dryer, together with innovative designs for presses and hoods.

Looking at the East European/Russian market, we must say that, in the past year, the latter has been characterised by increasingly frequent issues of a political-economic nature that have limited new projects. Not with standing these factors, Toscotec has acquired some important orders in Russia, Lithuania and Romania for conventional machines, also characterised by slush pulp.

The African market

Africa is an emerging market. In recent years, some countries such as Angola, Ghana and Nigeria have increased tissue consumption, entailing the need to satisfy the market with new plants. A large portion of new projects include pulp preparation plants that run on recycled paper, given the greater availability and supply of this type of raw material on the local market. A typical example is the Bel Papyrus mill, where Toscotec supplied a 75 tpd turnkey plant, the third installed at the site, suitable for processing both virgin and recycled fibres.

The Asian and Far East market

In recent years, the Asian and Far East market has witnessed exponential growth due to several factors tied to the economic boom, above all in the region of China.

Populations have shifted from the countryside to the cities; the quality of life and hence the demand and consumption for tissue have increased. One of the peculiarities of the Asian market consists in the presence of non-conventional raw materials (bamboo, bagasse) or in the absence in some regions of natural gas as a source of energy, and there is also a strong interest by paper mills to reduce energy consumption and emissions into the atmosphere as much as possible (often the cause of serious environmental problems).

This has had repercussions on the technological choices introduced by Toscotec in order to compensate for such shortcomings, for example by finding new energy sources or improving process technology. Indeed, Toscotec was a pioneer in this sense, elaborating technological solutions capable of meeting the particular needs of the market, such as the large diameter Steel Yankee Dryer (up to 22 feet - 6,700 mm!) that, together with steam hoods, will allow upcoming acquired projects to guarantee performances in-line with the highest standards (2,000 m/min design speed) using only the energy deriving from an "extremely clean" source: steam.

As synthetically highlighted in this report, different market demands have resulted in an adaptation and a shift for Toscotec from the supply of conventional and standardised machines to the supply of tailored plants specifically designed for each reference context. Customisation has hence become the key word.

This is the direction that the Lucca Company has been moving in, successfully meeting the strong and variable challenges of global economic tissue industry scenarios, rising in recent years to an important role and one of total innovation in the manufacture of plants and equipment for paper production.

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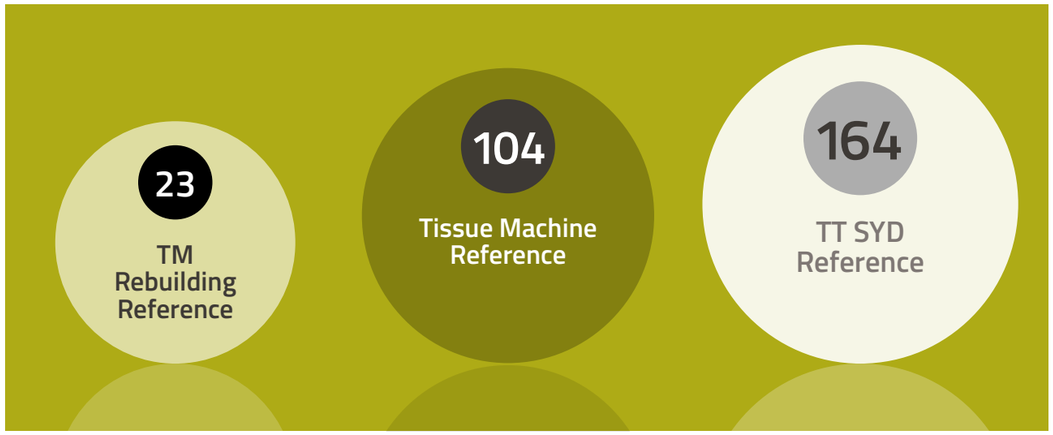


CELUPAPER S.A. TO INVEST IN THE THIRD TISSUE MACHINE AT NICARAGUA MILL IN ARGENTINA

Celupaper S.A., part of Grupo Vual, South American leading regional player producing pulp and tissue, has signed a contract with Toscotec for a new PM3 tissue machine and a rebuilding of the existing PM2 at Papelera Nicaragua in Argentina.

Vual is an Argentinian group, owned by the Speranza's family, specialized in the manufacturing and trading of tissue paper products, including napkins, towels and toilet paper, as well as the production of virgin pulp.

Today the group has three manufacturing plants (Jose Juan Yapur, Celupaper and Papelera Nicaragua), one pulp manufacturing plant (Celulosa Alto Vale) and distribution centers located in Santa Fe, Córdoba, Bahia Blanca and Buenos Aires employing more than 700 people.

With these new projects Grupo Vual will reach an annual total tissue production of 75,000 tons. Based on an intensive energy-saving concept, PM3's delivery includes the approach flow system featuring ultimate Toscotec technology TT SAF®, a MODULO tissue machine with single-layer headbox, single press configuration and Toscotec Steel Yankee dryer TT SYD-2500MM.

The supply will also comprise an electrification and controls package, Milltech gas heated hood and steam & condensate system.

Erection supervision, start-up assistance and training services complete Toscotec's scope of supply. The new line will enable the optimization of the production cycle, both in terms of flexibility and energy costs, and a production of 50 tons a day of different grades of high-quality tissue. Start-up is foreseen for the 2nd half of 2015.

The PM2 rebuild has been designed to reconfigure the existing Fourdrinier machine.

The new TT SuctionPressRoll-SPR820 and the Steel Yankee Dryer TT SYD-2500MM, will be installed within the 1st Q 2015. The installation will allow to increase the production speed as well as to guarantee a considerable energy savings and improve paper quality.

TOSCOTEC TO SUPPLY A NEW AHEAD TISSUE LINE TO JSC SYASSKY PULP & PAPER MILL IN RUSSIA

December 2014 - Syassky Pulp and Paper Mill, based in St. Petersburg, Russia has signed a contract with the Italian manufacturer Toscotec for the supply of a new tissue line at its mill in Syasstroy, in the Leningrad region of Russia.
The new Toscotec AHEAD tissue machine, designed for production of high quality tissue products, will replace the existing PM3 after its dismantling and will come on stream in first half of 2016.

In line with a huge investment process put in progress in the last years and to better expand its growing market in terms of quantity and quality, Syassky Pulp and Paper Mill has decided to invest in the new PM3 line adopting Toscotec's state of the art latest technology with the aim of improving products offer and reduce the mill's energy costs. The scope of supply of the new PM3 includes AHEAD-1.5M crescent former tissue machine with a single layer headbox, single press configuration with suction pressure roll TT SPR1045, a 12 FT diameter Steel Yankee Dryer TT SYD-12FT and a reel section TT Reel-P. The delivery will also include the approach flow system, stock preparation plant, Milltech gas heated hood and steam & condensate system, as well as electrification & control system.

Engineering and services (erection supervision, commissioning & start up assistance, training) complete the package. Machine speed will be up to 1,400 mpm with a trim width of 4,200 mm, for a daily production of 125 tons both from dry and slush pulps. This new order from the Russian Company to Toscotec confirms the successful cooperation between the two companies begun in 2009.

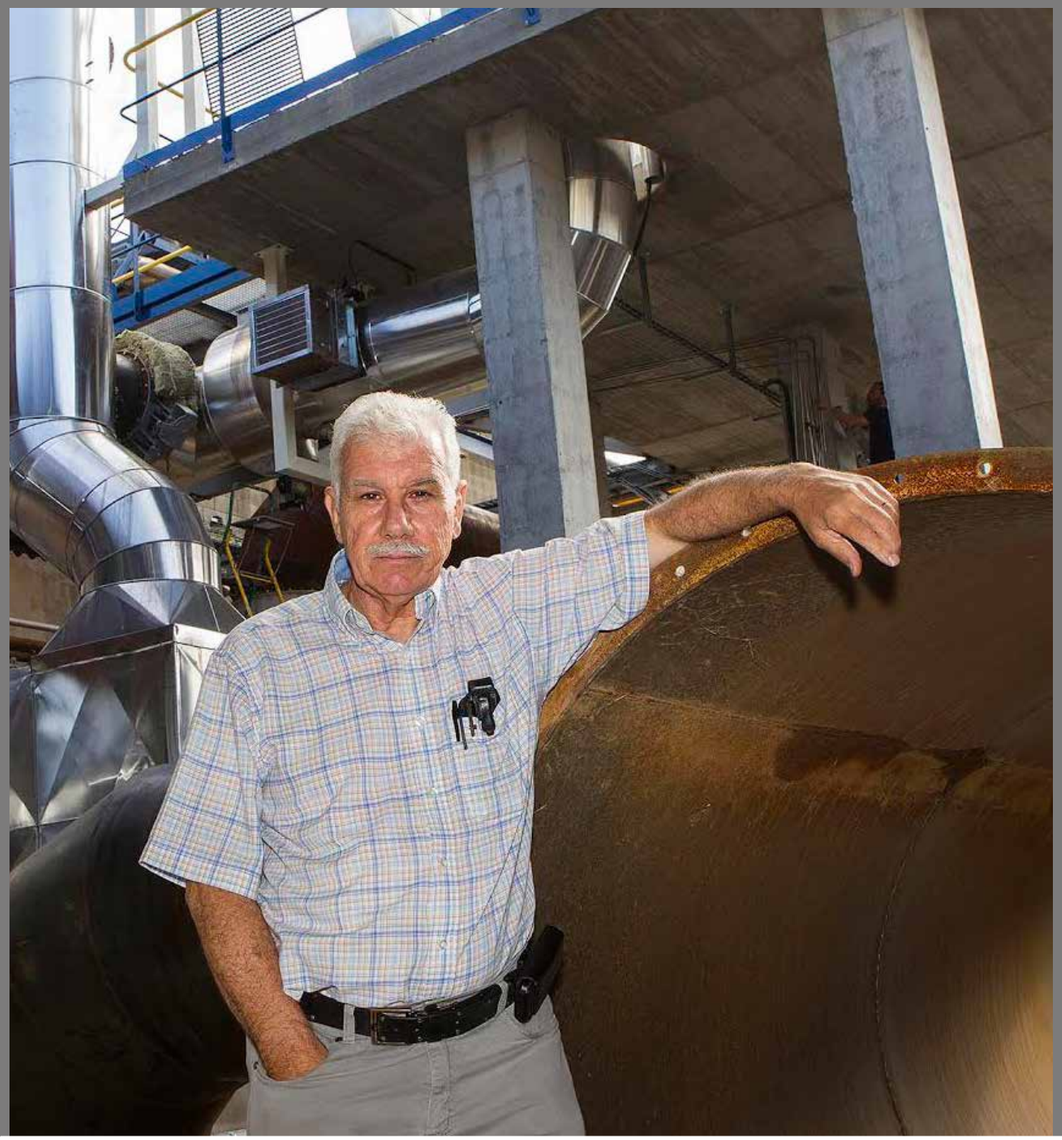
The Syasstroy's site already houses a AHEAD-1.5M tissue machine supplied by the Italian manufacturer in 2012 to replace the existing PM2 as well as two rewinders TT WIND-H (for PM2 and PM3 lines) that came on stream in 2010 and 2012 respectively. Syassky Pulp and Paper Mill is actually one of the most modern enterprises of the north west Russian region and the only integrated tissue producer in this area having in line pulp mill, tissue production (PM2, PM3 and PM5) and converting & packaging facilities.

Founded in 1928 with the unique aim to cover the needs of the domestic market, the Company has been reorganized as joint stock company with the result to be able to satisfy the growing demand for domestic but also for AFH export markets.

PROCESS TECHNOLOGIES IN TISSUE MAKING:

ENZYMES AND RETENTION AGENTS

Joan Vila, CEO L.C. Paper S.A. is an Industrial Engineer for the Universitat Politècnica de Catalunya, Engineer in paper technology for the Éscole de Papeterie de Grenoble and MBA for the Collegi d'enginyers de Catalunya. From 1979 to 1981 he worked in the French company Neyrpic BMBon a PM project. Since 1981 he is CEO of LC Paper and since 2008 is a professor of paper technology and of energy at Universitat de Girona. He is President of Pimec's energy commission. For ten years he wrote a weekly article in Diari de Girona.



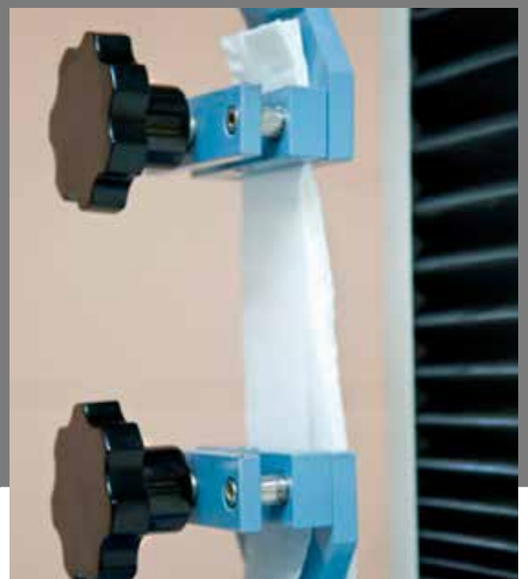
Technology in tissue manufacturing has progressed since its invention. Since 1970 the speed and width of the paper machines have increased and, as a result, technological requirements have also risen. The increase in speed required more filtration surface and pressing, and control issues also appeared on the PM wires where the surface stability of pulp began to be an issue. Thus, dewatering rolls were replaced by foils, vacufoils appeared... but with speeds greater than 1,000 m/min control surface of pulp on the wire was impossible, so it was necessary to introduce two dewatering fabrics inbetween. The double wire solved issues of dewatering capacity and filtrate asymmetry, so dewatering on both sides was a discovery that improved paper characteristics and properties, particularly with copy paper. Regarding the press, packaging papers developed large diameter presses with higher nips and higher pressures to achieve greater physical characteristics. From there a fantastic idea was born: the shoe press with a much greater nip width than could have been designed with a large diameter press. The idea was great because it was born from a press that was not round - a technologically ground-breaking novelty. History has shown that both technologies have been used for almost all paper products, high basis weight as well as in very low basis weight papers.

Technology has also made progress in other fields, such as measurement and control, infrared drying, steam boxes, high performance drying hoods at elevated temperature, and soft or multi-roll calenders. In the chemical domain the development of some agents has also enabled an increase in production, a reduction in energy consumption and, above all, lower water consumption.

Born in 1970s, some polymers helped to greatly increase dewatering during filtration and pressing, providing better retention and therefore a better clarification of the water, something that in turn enabled a reduction in water consumption. A decade later a basic idea was brought to papermaking: the concept of micro-particle based on two patents, one with

colloidal silica and other with bentonite. Its operation is based on a synergistic work with a previous flocculant, typically a polyacrylamide. The micro-particle significantly compresses significantly the previously formed floc through the retention agent, making it much smaller and intense, so it increases retention of fibres, fines, chemicals and products, and dewatering also significantly increases through filtration. The result is a better retention of fines generated by refining, also increasing paper strength.

In the late 1970s the industry also began to investigate the use of enzymes in papermaking. At the moment only amylase was used to control the starch viscosity during the application in the size-press or in coating. The new application of the enzyme was intended to replace the refining by new strains of cellulase and hemicellulase. But its introduction was not easy



because they had to solve a classic loop: its manufacture was too expensive for small-scale use so its high price made it prohibitive. So only time had to solve the loop until a balance was reached between price and production scale.

The Tissue paper manufacturing has also undergone significant changes as technology has grown.

Thus, the sloped wire that was limited to speeds of 900 m/min led to the double wire, which in turn gave way to the Crescent Former, reaching speeds of up to 2,200 m/min and basis weights as low as 11 g/m^2.

The press also underwent changes, from a simple press with blind holes, to a double press with vacuum and blind hole presses, then moving to a single press of larger diameter and finally to a shoe press, in an effort to produce papers having higher thicknesses. The Yankee also brought a radical change with the development of welded Steel Yankees replacing cast iron Yankees, allowing better heat transfer and lighter weight at the same thickness.

This has been the real innovation in the last decades in the tissue machinery field and Toscotec was the real pioneer in this segment. The TT SYD solved the difficult problem of finding the right crown in the cast iron Yankee due to the influence of the high mass of the heads. In the creping operation there have also been improvements with ceramic blades, creping doctors at variable angle, and new chemical compounds for coating. But there have also been developments in tissue paper converting, with the birth of laminated products, a technology that achieved the required thickness in the final product and reached high softness levels through compressibility of the final product.

This is the reason why tissue products manufacturing has given more importance to converting than to papermaking per se. In addition to these conventional developments, in the United States a new Premium technology which replaced the Crescent Former tissue machine and lamination embossing was developed. The TAD (Through Air Drying) consists of a tissue machine in which the pressing operation is avoided and a wire applies the paper to the Yankee, providing the 3D surface of fabric to the paper produced. The result is a very thick paper, with high softness, good absorption but with a higher energy cost and a more complex process, so its penetration in the European market has not had the same success as in America.

As developments in the tissue field are sometimes made in converting, some proprietary technologies in the paper sector have been difficult to transfer to tissue manufacturing, especially the use of some chemicals.

The use of enzymes is becoming more common in tissue manufacturing because they provide certain benefits.

Refining with enzymes allows energy savings but also provides different refining quality and fewer fines generation, resulting in a product with higher porosity and volume, while maintaining a less contaminated layer of coating, so the coating becomes much softer. Refining enzymes must be developed for each type of fibre, using mixtures of strains of different enzymes for each factory. Its application is simple and can be performed during the operation of the pulper, although their reaction must be controlled to avoid fibre damage in case of a production stop. The enzyme's mission is to open cracks in the walls of the fibre for water to react with the cellulose chains, in addition to peeling the fibre surface with the same objective. The replacement of the refining process is a big step because this operation is very inefficient from both fibre morphology and energy points of view. Indeed, the refining has a portion which acts as a negligible pump, over 25%, and its action significantly cuts the fibres, especially when they are recycled. It is common to avoid refining recycled fibres or fragile pulp, making it impossible to develop certain properties in the finished product.

Enzyme refining allows higher values with precise control, thus refining with less fines, longer lengths of fibre and porosities which allow refining of recovered paper and reducing fines that pollute the Yankee coating layer. All this allows a savings of around 150 kWh/t of energy consumption, a significant figure.

The use of a retention strategy is not generalized to the manufacturing of tissue paper for two reasons:tThe first is the cost of retention agents that may be about 6 €/t, the second is because its use affects the coating layer, providing more fines to the layer coating, making it harder. In reality this is not true because a good retention operation increases the internal cohesion of the paper and increases links between the fines and the paper at the point of contact with the coating. But when a retention agent is applied in the process for the first time there are a lot of fines in the circuit, and they inevitably bring many more to the paper during the transition by doping the coating layer, hardening and decreasing its adhesion.

A good retention operation should be double or triple.

If cationic starch is used, it acts as a coagulant and is often sufficient to achieve a correct retention. If not used, a retention agent of polyacrylamide of controlled chain length should be used, along with a micro-particle to help compress the floc and improve sheet formation. Retention control stabilizes the PM's water circuits, assuring a constant quality of the layer coating on the Yankee and achieving of really interesting clarification values for machine operation. It is easy to get a retention of around 90% - a fact that allows to reach a water consumption of up to 2.5 m^3/t, a figure to take into account in those geographical areas with water shortages.

The retention operation provides increased internal cohesion of the paper, but to a lesser extent than refining.

Therefore, besides maintaining a stable coating layer over time, the increased internal cohesion decreases the generation of dust during creping at the same degree of refining.

Retention in a Crescent Former or twin wire machine is conditioned by the air entering the circuit in the former. The bubbles act to prevent the flocculating agent's action, interfering between the fibres and the polymer. The result is that the air content proportionally affects retention, and a good system must begin with air extraction from the short circuit of the tissue machine.

Only then can you reach higher values. A side effect of retention is the improvement in water clarification. Good retention greatly influences the operation of the floating separation, easily obtaining values between 10 and 12 ppm, and the cleaning operation of the felt is significantly improved.

The benefits of retention operation combined with refining enzymes are considerable, both from the point of view of fibrous composition and of tissue machine productivity.

TOSCOTEC TO REBUILD PM4 TISSUE MACHINE AT VAN HOUTUM, THE NETHERLANDS

Junuary 2015 - Toscotec has been awarded a contract to deliver a dry end rebuilding of the Van Houtum B.V. PM4 tissue machine in Swalmen, the Netherlands. The start-up of the rebuilt machine is scheduled for the third quarter of 2015.

VanHoutum

Van Houtum is an independent producer of hygienic paper products and innovative washroom solutions for 80 years and is a leader in the area of Corporate Social Responsibility (CSR).
This family-owned company operates one mill in Swalmen, located in the south of the Netherlands, where it can produce approximately 45,000 tonnes/yr of tissue from recovered paper on two machines. A separate location nearby houses nine converting lines: three rewinders produce toilet and industrial products and six lines produce interfold and multifold products.
The firm has some 200 employees and generates annual sales of around € 65 m.
Under the brand name of "Satino Black", environmental labelled as FSC recycled and European Ecolabel as well as Cradle to Cradle-certified, the Company offers a wide range of products that includes toilet paper and paper hand towels.
In line with this green and dared philosophy, the Company has decided to choose Toscotec for its dry end rebuild on the PM4. The purpose of the rebuilding is to implement machine efficiency, reliability and safety in operations.
Toscotec's delivery includes a new reel TT Reel-P that will replace completely the existing old one.
The supply is completed also by new tail threading system, sheet stabilizers and shaft puller with expandable shafts.

The project will be handled on a turnkey basis, including dismantling of the existing equipment, installation of the new machinery, start-up assistance and training services.
The new machine parts will be designed for an operative speed up to 1,800 mpm with a paper width of 2,600 mm.
Toscotec is a major paper and tissue machinery supplier that operates worldwide, focused on process solutions that cover the whole plant area from stock preparation up to winders.
This new project consolidates the well know Company capabilities to provide, not only a wide range of new machinery but also complex rebuild projects based on turn key concept.

WEPA CASSINO CASE STUDY

MODERNIZATION OF AN INDUSTRIAL TISSUE COMPLEX WITH THE MAIN GOAL OF REDUCING CONSUMPTION AND INCREASING PRODUCTION

By Giorgio Matteo Marrano, Sales & Applications Engineer and Luca Linari, Energy & Environment Sales Manager.

The Cassino mill, today owned by WEPA Italia, was born in 1989, property of the Scala Group, through an ambitious industrial requalification project of the entire surrounding area.
The paper machine originally installed was a De Pretto Escher Wyss twin-wire in Tisco Former S-wrap configuration, an 18-FT cast iron Yankee cylinder in a maximum working speed of 1,800 m/min (attained only in 2010).
The machine was additionally equipped with a double layer headbox for high quality tissue, optimizing the use of long and short fibres, pursuant to a technological trend typical of that period. At the time of installation, it was one of the most cutting edge machines in all of Europe for the production of tissue paper. Due to normal production events, with the passing of time the machine and the entire production line-up underwent a natural technological aging process with respect to the reference target.
At the end of 2008, with the entry of the Wepa Group, the plant's Management wanted to align the plant to new standards both as far as technology and energy were concerned. In this context, Toscotec had an active part in the modifications, bringing the machine and the mill itself to its current production conditions.
The modifications designed and produced in the course of the years have concerned:

- **2010: rebuild of the machine into a Crescent Former**
- **2014: rebuild of the Hood and Air System sections**
- **2015: rebuild of the Stock Preparation system**

This article will try to analyze the three above-mentioned modifications in detail, highlighting the goals and results obtained in each case, supplying specific data for the attainment of the targets.

Rebuilding the paper machine into a Crescent Former

The machine was converted into a Crescent Former with the following goals in mind:

- Improving runnability
- Increasing working speed
- Facilitating machine maintenance operations
- Enhancing final product quality
- Reducing energy consumption

The rebuild was feasible through minimal structural changes, illustrated in the above diagram, hence minimizing investment costs while at the same time maximizing results.

Figura 1. Tisco former configuration

Figura 2. Crescent former configuration

In detail, the wire configuration was simplified, going from the original two wires to just one (the external one), maintaining the position of the headbox and the felt section practically unaltered.

Thanks to these modifications made in the course of a brief period of machine downtime during the Christmas Holiday break, the machine became substantially easier to manage (in terms of runnability and maintenance).

Additionally, the works yielded benefits in terms of quality of the paper produced, aligning the production process with the most recent Crescent Former technology, with consequent improvements as far as sheet formation, format management and basis weight are concerned.

Geometries were studied in such a way as to allow a suitable and optimal detachment between wire and felt, optimizing the sheet formation process.

The modification made it possible to finally attain the working speed of 1,800 m/min with an average production increase of 8%. Total specific energy consumption (electrical + thermal) was reduced by 9%.

Hood rebuild

In August 2013, Milltech (now Toscotec S.p.A.) rebuilt the hoods/air system sections of the PM with the aim of reducing energy consumption, improving runnability of the system and enhancing drying performance.

The hood, originally from 1989, had structural, maintenance and safety issues to be resolved and did not afford an effective reduction of consumption, since it was fruit of a 25-year old project at this stage.

Milltech supplied a SMART-e^{MT} new generation duo-system

hood developed pursuant to the most recent technologies available and with the aid of Computational Fluid Dynamics (CFD) in order to attain the targets requested by the customer.

The added rebuild of the electrical actuators from DC to AC, further incremented reliability and efficiency. In this case, too, the intervention took place in very short times during summer closure. The rebuild led to a visible increment in the system's performance, essentially tied to better management of the drying process, a reduction in consumption and an added increase in the machine's productivity.

Furthermore, by moving the main air system equipment outside the building instead of in the machine room where it was previously located, carrying out the necessary maintenance works greatly improved and the risk of accidental fires was reduced.

Rebuild of the stock preparation circuit

In August 2015 Toscotec rebuilt the PM's stock preparation circuit, with the goals of:

- Optimizing the process and simplifying the stock preparation lines
- Reducing energy consumption
- Simplifying the machine head circuit by installing the TT Mix® system.

Stock preparation was initially comprised of two 120 tpd long and short fibre lines, basically twins, and one broke/converting broke line dating back to the year the machine was built, with some equipment bypassed or replaced in recent years.

A review of the entire circuit was thus necessary in order to optimize runnability based on the current production process, since the percentages of use of the fibres and the quality of the final products requested had changed in the course of the years. The rebuild yielded a simplified and optimized stock preparation circuit by eliminating all those sections that, given their redundancy, excessively complicated the entire process.

In detail, the operation of the refiner on long fibres was re-established by installing a new deflaker on short fibres and two new high-density purifiers on both lines. At the same time, the two refiners at the head section of the machine were bypassed and the trim processing section further optimized. Some storage chests, comprehensive of pumps, piping and agitators, were eliminated, with consequent benefits in ter-

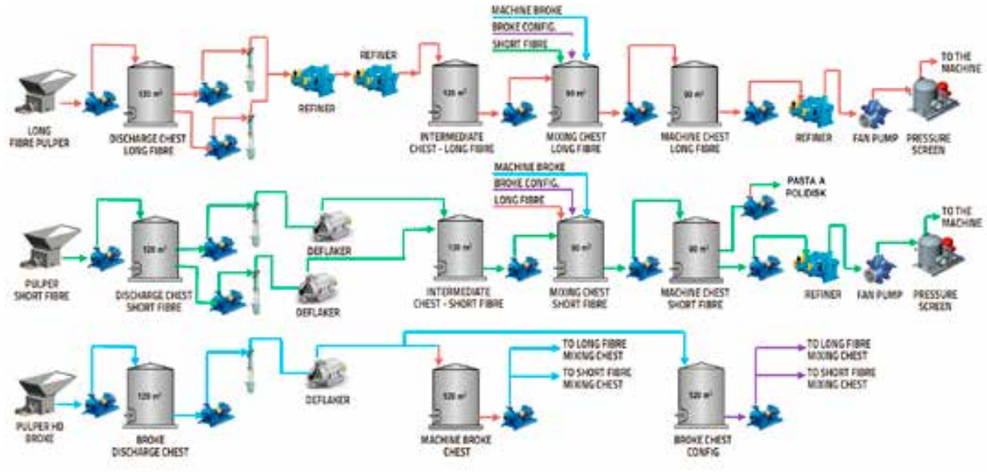
ms of reduction of the quantity of water and stock involved. Installing the TT Mix® system (a Toscotec patent) additionally allowed eliminating the mix chest and relative ancillary equipment, with consequent savings in terms of electrical absorption and improved management of the different flows of incoming stock. The optimization of the stock preparation circuit yielded a 30% reduction in electrical energy consumption, with clear benefits in terms of system operation.
Furthermore, the elimination of the superfluous chests substantially reduced the volumes of water/stock by about 35%, strongly improving process management aspects.

Conclusions

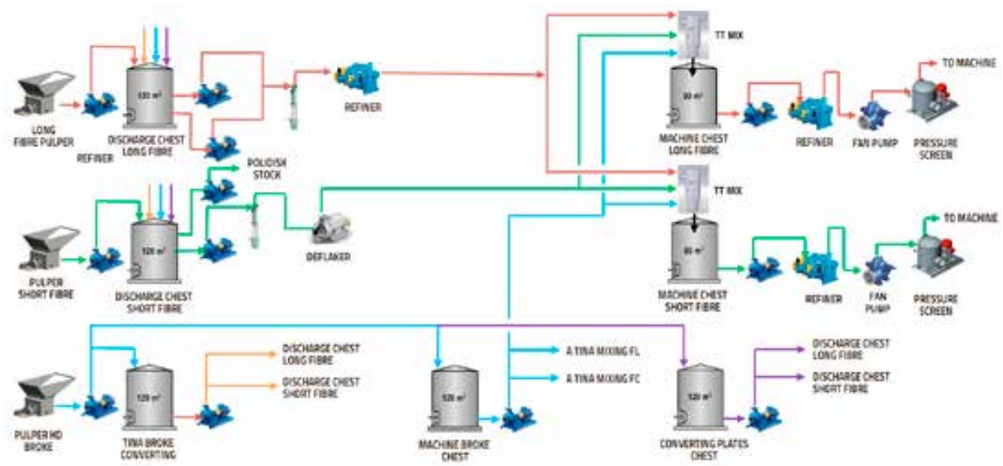
Since its inception, WEPA Italia - Cassino facility has succeeded in attaining and consolidating high plant performance levels and energy efficiency levels, despite the fact that several factors in tissue paper manufacturing have changed in the course of time.

The benefits compared to the starting "0" condition that resulted after the three rebuilds previously analyzed can be summarized as follows:

- Total consumption reduction
- Crescent Former: -9%
- Total consumption reduction - hoods: -10%
- Consumption reduction - hood gas: -25%
- Consumption reduction - Yankee steam: -4%
- Consumption reduction - electricity for stock preparation: -30%
- Reduction of water/stock volumes for stock preparation: -35%
- Production increase: +14%
- Quality of paper produced: substantial increment in sheet formation quality and hence of its degree of softness, due to the change to Crescent Former
- Simplification of the stock preparation system
- Improvement in machine runnability
- Facilitated machine maintenance operations



WEPA Stock Preparation Plant - Previous Configuration



WEPA Stock Preparation Plant - Current Configuration

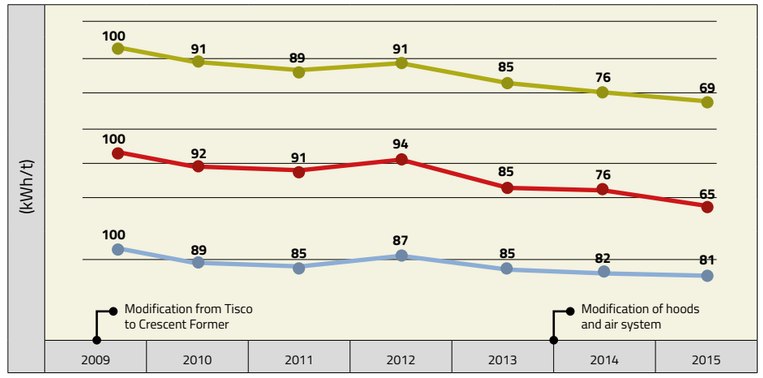
SPECIFIC ENERGY CONSUMPTION PER TON PRODUCED WAS REDUCED BY A TOTAL OF 31%

-31%

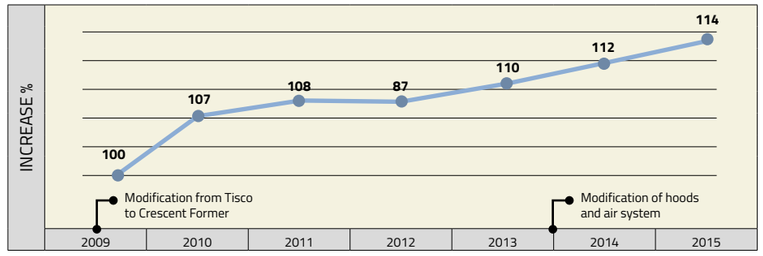
AVERAGE INCREASED PRODUCTIVITY BY

+14%

TM Specific consumption trends 2009-20015



TM Production trends 2009-2015



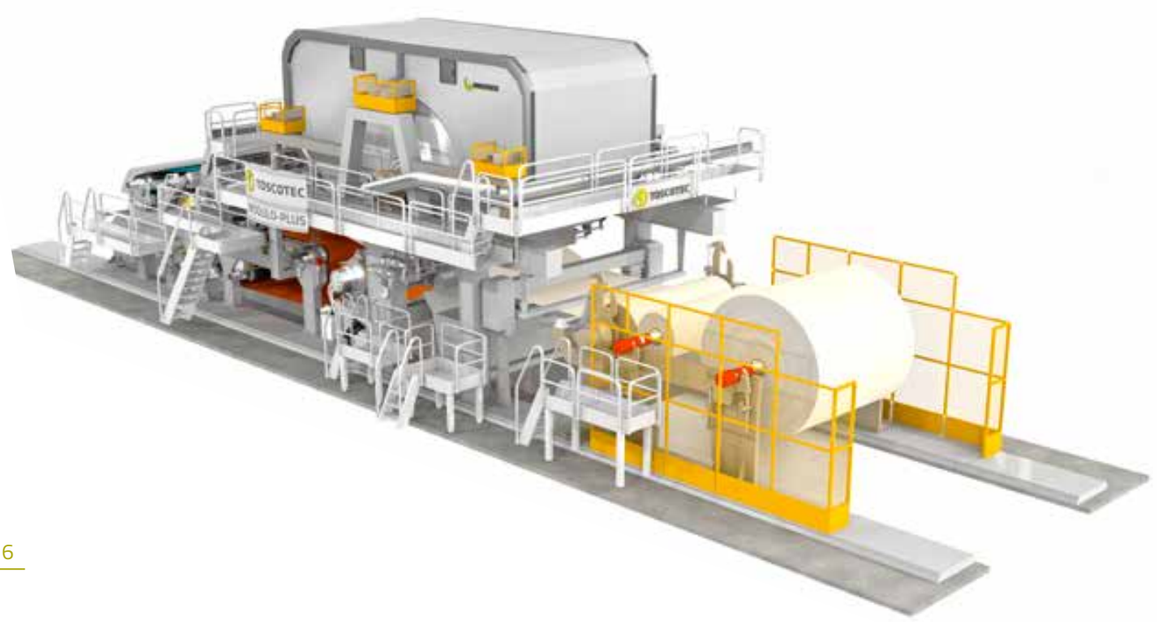
The attainment of such results once again confirms Toscotec's strong know-how in paper machine rebuilds as well as in the supply of turnkey projects.

We would like to thank
WEPA Italia Cassino
facility, through its
Director Maurizio Lattanzi,
for the time dedicated to the compilation of the data reported herein,
and for the kind assistance supplied during the entire engineering and implementation phases of the different projects.

TOSCOTEC TO SUPPLY TWO NEW TISSUE MACHINES TO CHINESE PRODUCER LIUZHOU LIANGMIANZHEN PAPER PRODUCT CO., LTD

Liuzhou Liangmianzhen Paper Product Co., Ltd. has placed an order with Toscotec for two MODULO-PLUS ES tissue lines, which will be installed at its production site in Liuzhou, Guangxi.

Originally established in 1941 as a group of private soap enterprises, the LMZ Group was listed on the Shanghai Stock Exchange in 2004. It currently operates in 5 different areas: cosmetics, paper, fine chemicals, medicine and real estate.
The two TMs are based on Toscotec ES concept. Especially interesting for Asian market, the Energy Saving solution is capable to guarantee, according to the configuration, a substantial reduction in energy consumption during the tissue drying process.
The two MODULO-PLUS are designed for a design speed of 1,500 m/min and will produce 65 tons/day of high quality toilet and facial tissue from pre dried virgin pulp and slush pulp produced by LMZ.
The order includes the two crescent former machines, each equipped with a TT SYD-15FT (4,572mm) and a double press configuration, a Milltech Steam Heated Hood, Toscotec stock preparation high efficiency equipment and the electrical and control systems. A TT WIND-M tissue slitter rewinder, spare parts for the entire plant and a full service package complete the scope of supply. Start-up is scheduled for the second half of 2015.



THE *ES LINE.**
When gas and steam supplies are limited in the mill Toscotec proposes the **MODULO-PLUS *ES*.**
Featuring an exhaust hood the ES model has a gross production of 50 tpd with an operating speed of 1,050 mpm.
A state of the art Steel Yankee Dryer TT SYD is succesfully applied to MODULO-PLUS to increase production and decrease energy usage, too.

*Every Toscotec system delivers maximum energy efficiency with minimum environmental impact.

TOSCOTEC THE INVENTOR OF STEEL YANKEE DRYER

By China National Household Paper Industry Association.

The history of the development of Toscotec's TT SYD

1960: Toscotec develops the first steel drying cylinder worldwide.
2000: Toscotec manufactures the first SYD to be installed on a tissue machine.
2002: Toscotec's TT SYD officially comes onstream and begins commercial production, it becomes Toscotec's standard for TM.
2013: Toscotec launches the second generation TT SYD, and it manufactures the first 22 FT diameter SYD.
2015: the TM installing the FT SYD-22FT is about to be delivered: web width 5,600 mm, design speed 2,200 m/min, operating speed 2,000 m/min, this is the TM with the SYD of the largest diameter ever manufactured, and it also sets a record for the highest speed ever achieved with steam only.

The outstanding sales performance of TT SYD worldwide

Toscotec is the inventor of the SYD technology and in this field it holds a position of leadership, as it can manufacture the SYD with largest diameter and trim width, therefore enabling end users to increase production.
According to Toscotec's Asia & Pacific Sales Manager, Mr. Marco Dalle Piagge, the diameter of TT SYD ranges from 12 to 22 FT. Until now, Toscotec has sold 164 steel Yankees all over the world, out of which 130 are already in operations, including the 10 SYDs that came onstream in the first five months of this year. In the second half of 2015, Toscotec will start up other 16 TT SYD and 18 cylinders are scheduled to go onstream in 2016. In particular, Toscotec has already delivered 45 TT SYD to the European market, where it holds a 100% market share.
Today, in Asia, Toscotec's references for TT SYD include: 49 in China, 41 in Indonesia, 3 in Japan. Out of these Yankees, 48 have been sold along with Toscotec's tissue machines and the remaining 45 were sold separately. Mr. Marco Dalle Piagge points out, Toscotec has formally entered the Chinese market in 2010, and after analysing in depth the needs and characteristics of the market, such as its lack of gas resources, we promoted high speed tissue machines with steam-heated hoods, and decided to adapt to the chinese tissue makers' need for more flexible technical solutions. In five years, since the first machine delivered to C&S Group, Toscotec has already delivered 32 tissue machines to chinese customers, achieving unprecedented results and acquiring crucial experience on the market.

TT DOES: the synergy of TT SYD, Yankee hoods and press area

As Mr. Marco Dalle Piagge explained, TT DOES is a solution of drying optimization for energy saving that Toscotec has recently launched, which can adapt to the different needs of the customer and offer a wide range of design configurations for Yankee hoods, coupled with the most suitable Yankee diameter and press configuration. The result is the increase of the drying efficiency and production of the tissue machine, as well as a reduction of the energy consumption.
Since it launched the second generation of Steel Yankee Dryers in 2013, Toscotec has started up 85 TT SYD. The second generation of TT SYD adopts a design where the grooves are increased in length and width, therefore expanding the heat transfer surface. Also, the shell thickness is reduced and at the same time the yankee can bear a higher linear pressure. Toscotec's patent technology of heads insulation guarantees a 6% reduction of steam energy loss. This represents a significant improvement in drying efficiency, which can allow an increase in operation speed of 100 m/min. Besides, the welded design of the Yankee heads avoids the issues of edge over-drying and of fiber build-up on the edges. At the same time, the fact that Toscotec doesn't adopt the method of hole drilling guarantees the structural integrity of the pressure vessel and its safety. The flexibility of the TT DOES solution also lies in the hoods configuration, which can be chosen among a number of different solutions (exhaust, hybrid, steam-heated, gas-heated and cogeneration hoods), according to the type of available energy and operation cost requirements. The post-press dryness is another factor to be taken into account, as it affects drying consumption. An increase of one percentage point of post-press dryness corresponds to an increase of 4% in drying consumption. TT DOES offers three different types of press configurations: large diameter SPR (1,430 mm), double press and shoe press. If compared with a traditional SPR, post-press dryness can consequently increase by 10%, 11%,16%, therefore it can significantly reduce drying consumption based on the customer's products requirement.
Finally Mr. Dalle Piagge pointed out that Toscotec's subsidiary in Shanghai is responsible for the sales, pre-assembly and after-sale service of the whole of Asia. Attentively listening to the customer's needs, offering customized and flexible design solutions, are the basis for Toscotec's rapid success on the chinese market.

COMPANY NAME	PRODUCTION 10 K TONS/YEAR	YD DIMENSIONS DIAMETER - WIDTH	MODEL	QUANTITY	WIDTH MM	SPEED M/MIN	START UP DATE
C&S	2.5	TT SYD-16FT	AHEAD-1.5M	1	3,450	1,400	2010/11
C&S	2.5	TT SYD-16FT	AHEAD-1.5M	1	3,450	1,400	2010/11
BAUHINIA	2.5	TT SYD-15FT	AHEAD-1.5M	1	3,500	1,500	2011
VINDA	4	TT SYD-12FT	MODULO - PLUS ES	2	2,700	1,300	2012/04
C&S	2.8	TT SYD-16FT	AHEAD-1.5M	2	3,500	1,600	2012/05
C&S	2.8	TT SYD-16FT	AHEAD-1.5M	2	3,500	1,600	2012
C&S	2.5	TT SYD-16FT	AHEAD-1.5M	1	3,450	1,400	2012
VINDA	4	TT SYD-12FT	MODULO - PLUS ES	2	2,700	1,300	2013/01
VINDA	5	TT SYD-16FT	AHEAD-1.5S	2	2,700	1,500	2013
VINDA	4	TT SYD-12FT	MODULO - PLUS ES	2	2,700	1,300	2013/01
VINDA	4	TT SYD-12FT	MODULO - PLUS ES	2	2,700	1,300	2013
VINDA	5	TT SYD-16FT	AHEAD-1.5S	2	2,700	1,500	2013/08
C&S	3	TT SYD-16FT	AHEAD-1.5M	1	3,500	1,600	2013/2
C&S	3.2	TT SYD-16FT	AHEAD-1.5M	1	3,500	1,650	2014/06
VINDA	7	TT SYD-18FT	AHEAD-2.0M	2	3,400	1,600	2014/08
VINDA	5	TT SYD-16FT	AHEAD-1.5M	2	3,400	1,500	2014/10
VINDA	3	TT SYD-16FT	AHEAD-1.5M	1	3,400	1,500	2015/03
VINDA	3	TT SYD-16FT	AHEAD-1.5M	1	3,400	1,500	2015/04
C&S	2.5	TT SYD-12FT	AHEAD-1.5S	1	2,850	1,700	2015/02
LMZ	4.6	TT SYD-15FT	MODULO - PLUS ES	2	2,850	1,500	2015

EUROVAST STARTS UP THE NEW TISSUE MACHINE SUPPLIED BY TOSCOTEC AT CARTIERA DELLA BASILICA, LUCCA

Lucca, February 2015 - The italian producer Eurovast successfully started up a new Toscotec tissue machine at Cartiera della Basilica, Bagni di Lucca (LU).

The new machine is a MODULO-PLUS crescent former with double press configuration and Steel Yankee Dryer TT SYD-3200MM with a maximum speed of more than 1,500 mpm; this is the ideal solution to meet the demand for high quality products and the need for energy savings and emission reductions.
The desire to care for the environment and to install an eco-sustainable and innovative system were determining factors for Eurovast to choose manufacturing excellence in a rapidly expanding sector.
Engineering services, assembly supervision, commissioning and start-up were all part of Toscotec's scope.

Thanks to the close cooperation between the two teams, the date of start-up was in line with the project's time schedule and the operating and quality target were quickly achieved. With this new line in operation, Eurovast becomes a leading producer in the international tissue market, focusing on the improvement of the end result both in its product range and in the development of new solutions based on the specific needs of its customers.
There is a widespread presence of the two main brands, Fiori di Carta® e Rotolotto®, in mass market retailers , discount retailers and italian and european distribution channels.

GRIGISKES AB STARTS UP THE NEW TOSCOTEC TISSUE LINE AT VILINIUS MILL

March 27, 2015 - Lithuania's GRIGISKES has successfully started up the new Toscotec supplied 110 tons/day tissue PM6 at Vilnius mill.

The site already houses the 17,000 tpy tissue PM5 modernized with the installation of a Toscotec Steel Yankee Dryer TT SYD-4200MM in early 2011. The new Toscotec's line includes AHEAD-1.5S crescent former tissue machine with singlelayer headbox, single press configuration and a Steel Yankee Dryer (TT SYD-15FT), machine auxiliaries (gas heated hood with three stages heat recovery system, machine dust and mist removal system, hall ventilation system were Milltech's), stock preparation plant for virgin pulp and electrification & control system.
A two unwind stands tissue slitter rewinder TT WIND-M and an automatic roll handling system completed the supply. The machine design speed is 1,900 mpm with a net web width of 2,750 mm. The project has been managed by Toscotec on an EPC (Engneering, Procurement & Construction) basis.
"As announced earlier, erection of new production line was terminated in the beginning of March. All components of new machine were tested during first half of month and this week we produced the first batch of paper. We are very happy to announce that production start was smooth, and quality of first paper batch supports our optimistic belief in rightness of the investment. Having started production with new paper machine, we expect fast growth of our turnover and profit."
Gintautas Pangonis, President of GRIGISKES AB says.
New paper production line will match the needs of Company's processing lines of paper products and will allow further development of paper production and sales. *([..]RISI source).*

TOSCOTEC DELIVERS A SECOND TISSUE LINE TO AMS BR STAR PAPER S.A., PORTUGAL

Italian leading paper machinery manufacturer Toscotec will supply a second tissue line to the Portuguese producer AMS BR Star Paper in its plant in Vila Velha de Ródão, in the east of the country. At the present, the mill already houses an AHEAD-2.0S line from Toscotec, with an overall capacity of 110 tpd, started up in 2009. The new machine will come on stream on third quarter of 2015. Toscotec's "turn-key" project for TM2 includes stock preparation plant for virgin pulp, AHEAD-2.0S tissue machine with Steel Yankee Dryer TT SYD-15FT, machine auxiliaries including hood and air systems by Milltech, electrification & control system, additional plants and complete engineering and erection activities.

Machine speed will be 2,000 mpm with a net trim width of 2,820 mm and a daily production of 110 tons for the Customer Consumer and Away From Home markets.

The successful cooperation between the two companies, demonstrated in the TM1 project, as well as the Toscotec technology and its excellence and experience in complex "turn-key" projects worldwide, has been the decisional factor for AMS to choose once again the Italian company for this challenging project.

AHEAD-2.0 line of tissue machines, the company's best-of-breed range, represents the state-of-the-art for Toscotec technology and it's designed to satisfy all production needs in terms of both the type of raw materials used and the quality of the end product.
The best available technology and a flexible design with tailor made solutions, has been awarding Toscotec for more than 40 orders for AHEAD lines in the last four years, becoming so far the reference tissue machinery supplier in this segment. The ultimate concept affecting the AHEAD line, that the Company is expected to launch in the next IT's Tissue edition, is **PRODERGY.**

The new **PRODERGY** is the first tissue machine that unites top performance in terms of production and end product quality with maximum energy efficiency, as a result of the special configuration of the drying section.
With a net trim width of 5,600 mm and an operating speed of 2,000 mpm and is fitted with steam heated hood by Milltech and the biggest steel Yankee ever built for tissue paper production.
So far PRODERGY extends the AHEAD-2.0 line to the new horizon of production of tissue in a sustainable way.

TOSCOTEC-SUPPLIED AHEAD-2.0 TISSUE MACHINE STARTED UP AT FORTISSUE S.A., PORTUGAL

April, 2015 - The Toscotec-supplied AHEAD-2.0 tissue machine at Fortissue S.A., the new productive division of Suavecel S.A based in Viana do Castelo, in the coastal and delta region of Rio Lima about 75 km north of Porto, was successfully started up in early April 2015. The machine came easily on stream after the commissioning period and is now producing high quality tissue products according to the guaranteed technological parameters. Due to the excellent cooperation between Fortissue and Toscotec the line started up smoothly on schedule, 18 months after the order signature of the turn key contract.

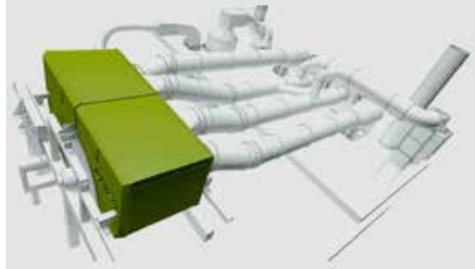
The new Toscotec's line, based on the best available technology, includes an AHEAD-2.0 crescent former tissue machine with TT Headbox-MLT double-layer, a Steel Yankee Dryer (TT SYD-16FT), Milltech hood, steam & condensate and dust removal system. The supply also comprises stock preparation plant for virgin pulp, vacuum plant, boiler plant, air compressors and electrification & control system.
A three unwind stands tissue slitter rewinder TT WIND-H and an automatic roll handling system complete the delivery. The project has been fully managed by Toscotec on an EPC (Engineering Procurement and Construction) basis.
With a net web width of 2,820 mm and a maximum drying capacity of 120 tpd, the new tissue line has a capacity of 35,000 tpy making Suavecel active on the entire tissue production process. The combination of technical expertise with the right equipment and tools required to a superior productive performance, is the key to success of the company's project, and it largely accounts for the increasing growth that Suavecel is experiencing since 1996, year of its foundation.
Before the start-up of the new machine, the portuguese Company was engaged in the transformation of paper, namely producing toilet paper, paper towel, pocket tissues and paper napkins, but also offering some products for the AFH sector.

"Throughout the years - **Nuno Ribeiro, CEO of Fortissue and Suavecel,** said - *our company has successfully met the challenges, based on its ability for a sustainable growth along with suitable development policies, as the notion of growth does not necessarily mean improvement. The company has made a considerable investment effort in capital and human resources in order to achievethe winning combination of these two concepts".*

TOSCOTEC TO REBUILD PM1 AT ISMA 2000 S.L. IN LA TORRE DE CLARAMUNT, SPAIN

Toscotec have been awarded a contract to deliver a major dry-end rebuild of the ISMA 2000 S.L. PM1 in La Torre de Claramunt, Barcelona- Spain. The start-up of the rebuilt machine is scheduled for the beginning of 2016.

ISMA 2000 S.L., is a familiar Company, with operating centers in Catalonia and the Balearic Islands. The main business in Barcelona, is the production and processing of tissue products, while in Mallorca the activity is focused on the collection and recovery of waste paper. The main recognized company products are from 100% recycled paper and include: AFH towel, kitchen rolls, sheets stretcher rolls, napkins, toilet paper. Toscotec's delivery includes a major rebuild of the PM1 dry end section, which will be replaced with a TT DOES (Drying Optimization for Energy Saving) package. This will features a new TT SYD-3600MM provided with Toscotec patented solution for head insulation, a new Yankee steam & condensate system and a Milltech Duo-system Yankee hood, SMART type.
Engineering, training start up and commissioning services are also included in the package.
The aim of the rebuild is to increase the production and the performances of the crescent former machine up to 90 tpd.
This is the decision that has driven ISMA 2000 to apply for the TT DOES package from Toscotec.



"Our broad conclusion after a deep technical evaluation - says **Fernando Luz, Company General Manager,** *- is that we are forced either to increase output for the same or less specific energy consumption input. Toscotec large experience and reliable approach with its proven TT DOES package, already applied in several mills working conditions worldwide, has matched our requirement in this direction. This rebuild completes the one already initiated in the phase of pulp treatment allowing us to use complex raw material with high quality fibers and increasing efficiency and reducing energy consumption"*

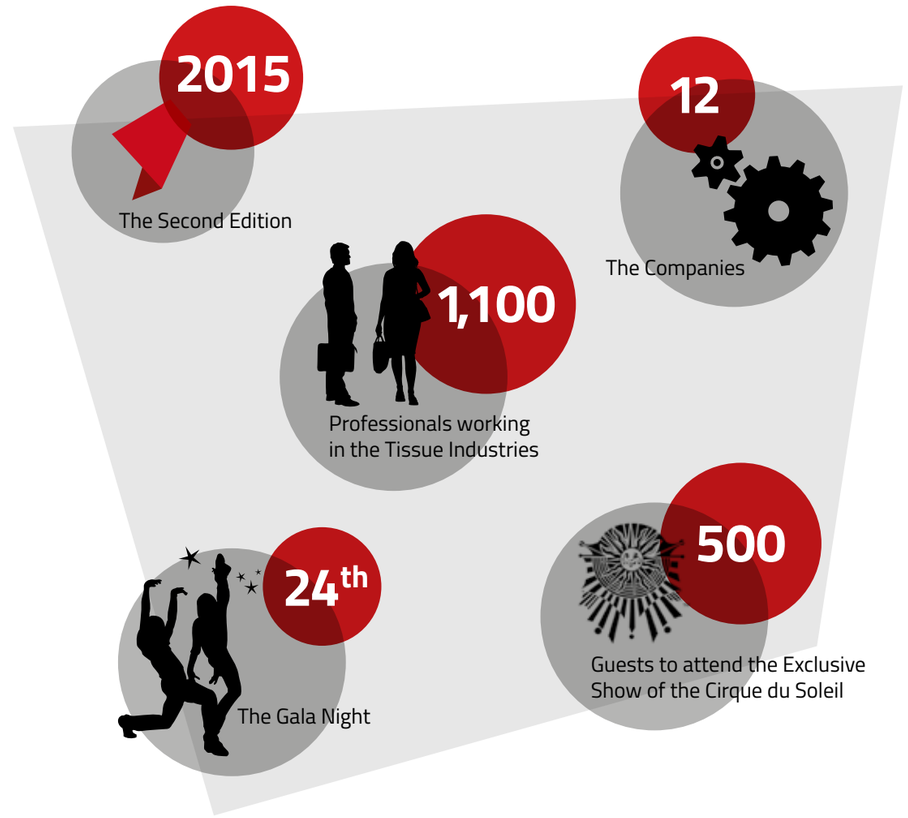
VISY PAPER STARTED UP VP5 IN MELBOURNE, AUSTRALIA, AFTER TOSCOTEC'S PRESS SECTION UPGRADE

Visy Paper PM5 has successfully started up in end of March 2015 at Coolaroo, Melbourne - Australia, after a press section upgrade carried out by the Italian company Toscotec.

VP5 paper machine produces coating base sheet and test liner for export, from recycled paper. Visy is one of the world's largest privately owned paper, packaging and recycling companies; it was established in Melbourne, Australia, in 1948 as a manufacturer of corrugated cardboard boxes, and today's operational footprint extends in over 120 sites across Australia, New Zealand, Thailand and Vietnam and trading offices across Asia, Europe and the USA.
The project aim was to increase test liner paper quality and the overall efficiency of the press section, thus increasing the energy savings. The goal was achieved by the installation of a new framing for the press section and the introduction of a state of the art shoe press - TT XPress as third nip, working with a maximum nip load of 1,300kN/m at an operating speed of 1,000 m/min.
The addition of a new TT SteelDryer-SD1500 at the beginning of the dryer section, completed the upgrade.
The short shut down period and the success of the installation was a result of the strong and constant partnership and cooperation between Toscotec, Build Run Repair, Visy's dedicated Project Management Group, and the mill that led to the quick achievement of the expected performances.

iT's tissue! 2015

THE ITALIAN TECHNOLOGY EXPERIENCE



The Tissue Home

The prestigious "Caffè delle Mura", a historic venue in the city of Lucca, an "home" for the entire week.

A place in the city centre, easy to reach and open every day of the week from 9 a.m. to midnight, where customers found information about the event, book services and transfers and consult programmes, maps and useful numbers.

THE NEW **PRODERGY** is the first tissue machine that combines **top performance in terms of production and end product quality with maximum energy efficiency**, as a result of the special design of the drying section. We know quite well that competitiveness means business results and for us every machine is like an athlete's body: a complex system that has to achieve the best possible performance in order to deliver a real competitive edge in the marketplace.

PRODERGY has a table width of 5,600 mm and an operating speed of 2,000 mpm. **It is fitted with a steam hood and the biggest Steel Yankee Dryer ever built for tissue paper production.**
Toscotec, the inventor of Steel Yankee Dryer technology and a global leader in its application, today produces the units with the largest diameter and table width, significantly improving the production capacity of the entire plant.

PRODERGY extends the AHEAD-2.0 line of tissue machines, the company's best-of-breed range which represents the state-of-the-art for Toscotec technology, **designed to satisfy all production needs** in terms of both the type of raw materials used and the quality of the end product.

The PRODERGY consists of a five roll cantilevered Crescent Former with a ø 1,540 mm forming roll, a multilayered headbox (TT Headbox-MLT), an hydraulically loaded cantilevered double presses section, a Steel Yankee Dryer TT SYD-22FT (6,705 mm) working at max 10 bar(g), hydraulic pope reel type TT Reel-H⁺ featuring linear secondary arms with reel diameter of 3,000 mm and a Milltech Steam Heated Hood.
An alternative upgraded solution of PRODERGY can include the new Toscotec shoe press (TT-XPress), a version of pope Reel-H⁺ featuring spool drive assist and enhanced automatic reel spools magazine.

A flexible design with tailor made solutions, plus over 65 years' experience delivering turnkey projects and refurbishing existing lines, make Toscotec the leading supplier of tissue machines on the world market.

For more information: www.toscotec.com

TOSCOTEC

ONCE AGAIN... IT'S TISSUE!!!

IT's Tissue - the 2nd Edition of the Italian Technology Experience has wrapped up with attendance of more than 1,100 tissue professionals from around the world. The event was a weeklong journey of demonstrations inside the open doors of 12 of the leading equipment manufacturers from the tissue industry.

At Toscotec, the staff welcomed worldwide attendees with enthusiasm and passion. It is the same passion found throughout the organization whether you look in areas of project development based on the newest technologies or innovative energy saving solutions. Enthusiasm and passion are key components that have led to Toscotec's recent successes. Our most recent success, **PRODERGY**, was on display at the event. **PRODERGY** is the 1st tissue machine that unites top production performance, product quality, and energy efficiency, all made possible the by configuration of the drying section.
On display at Toscotec was an AHEAD-2.0L Crescent Former with a width of 5.63 m (222") featuring a 22' Steel Yankee, the largest Steel Yankee Dryer ever built for tissue production. The line was also equipped with a 22' Milltech Steam Heated Hood which significantly improves the production capacity of the entire plant.

In addition, we also featured a 2.7 m (106") wide Crescent Former tissue machine, the AHEAD-2.0, completely assembled in an adjacent assembly hall. The AHEAD-2.0 showcases Toscotec's leading technologies and is designed to high production needs with any type of raw material while maintaining the highest quality end product.
Attendees finished their tour with a walk through of Milltech's fabrication facilities. Several Hoods were under various levels of construction ranging from 12' Suction Hoods to 15' Gas Fired Hoods to 22' Steam Heated Hoods. Milltech's workshop was full of equipment ready to be sent to destinations around the world.

The unique experience of being able to inspect the inside construction of the Hoods showcased the advance design and high quality of construction and materials that repeat customers have come to expect from Milltech.

Toscotec's ability to provide flexible design solutions on new or existing equipment coupled with over 65 years of experience in delivering Turnkey Projects has made Toscotec the leading supplier of tissue machines in the world.

The IT's Tissue event provided a unique opportunity to inspect firsthand the Toscotec passion, enthusiasm and quality evident in the employees and the equipment. We would like to thank all those who attended IT's Tissue as this type of event allows us to build the personal and professional relationships to help make everyone successful!

**IT'S TISSUE - 3RD EDITION WILL BE HELD IN 2018.
HOPE TO SEE YOU THERE!!**

ENTERING A MAJOR INTERNATIONAL EVENT OF STATE OF THE ART TECHNOLOGY

By CNHPIA, correspondent at IT's Tissue

IT's Tissue was held in Italy, in "The Tissue Valley" of Lucca from June 21st to 28th.
This is a full-fledged grand assembly of Italian manufacturing excellence, organized by a network of 12 companies:

Tissue Italy:
member companies in alphabetical order

A. Celli Paper S.p.A.	Lucca
Elettric 80 S.p.A.	Reggio Emilia
Fabio Perini S.p.A.	Lucca
Futura S.p.A.	Lucca
Gambini S.p.A.	Lucca
MTC S.r.l.	Lucca
Omet S.r.l.	Lecco
PCMC S.p.A.	Lucca
Pulsar S.r.l.	Bologna
Recard S.p.A.	Lucca
TMC S.p.A.	Bologna
Toscotec S.p.A.	Lucca

During the event these companies opened their gates and displayed their innovative technologies and advanced equipment for tissue paper manufacturing, converting and packaging.

THIS EDITION OF IT'S TISSUE HAS ATTRACTED ABOUT A THOUSAND PROFESSIONALS COMING FROM OVER 70 DIFFERENT COUNTRIES ALL OVER THE WORLD.

CNHPIA Deputy Secretary Ms. Cao and Ms. Zhou Senior Engineer have accepted the invitation and taken part in the event.
Focus and attentive listening: Toscotec launches on a large scale the new tissue machine model PRODERGY Toscotec displayed in the workshop of its HQ their new TM model Prodergy.
This machine, which is still in pre-assembly, will soon be delivered to APP Indonesia. Web width 5,600 mm, design speed 2,200 m/min, operating speed 2,000 m/min. The main feature is the fact that it installs a TTSYD-22FT the Steel Yankee of the largest diameter ever installed on a TM, and it sets a new world record for the highest speed ever reached with steam-heated hoods.

DURING THE EVENT, CNHPIA HAS INTERVIEWED MR. ALESSANDRO MENNUCCI, CEO OF TOSCOTEC S.P.A.

CNHPIA:
What are the main technologies promoted by Toscotec all over the world and on the Chinese market?

ALESSANDRO MENNUCCI, CEO:
The main characteristic of Toscotec's tissue machines is that they are customized according to the specific needs of the end user, and deliver energy savings results and high quality final products, thanks to the effective synergy of the main components, a SYD of a certain diameter, a certain type of Yankee hoods and press. In the last two years we have launched the following new products across the globe: PRODERGY, TT DOES, TT SAF®. We can provide a whole range of different hood configurations (exhaust, hybrid, steam-heated, gas-heated, cogeneration), and according to the different conditions in the mill, we can combine it with the suitable dimension and type of TT SYD and presses. Toscotec is the inventor of the Steel Yankee Dryer and it is leader of this product worldwide. We can manufacture the TT SYD with the largest diameter and face width, so as to enable our customers to increase production. Since 2013, Toscotec has started promoting the second generation of TT SYD, which provide for an improved heat transfer and guarantee a speed increase of 100 m/min on the same machine. The promotion of the two TM families of MODULO and AHEAD on the Chinese market has offered tremendous opportunities for us.
Over a decade ago, we had made an attempt to enter the Chinese tissue market, but the product we promoted at the time

was the TAD machine. This did not meet the consumption requirements of the chinese market and we didn't get any results. In 2010 we made a comeback, we thoroughly analyzed the needs of the market in China, its lack of gas resources and we tailor-made a more flexible technical solution, ad hoc for the local market, i.e. tissue machines with steam-heated Yankee hoods. Since the first machine delivered to C&S Paper Group, in the span of five years, we have sold 33 Tissue Machines, achieving an extraordinary result and building a valuable experience on this market.
At present, among the top tissue makers in China, 4 companies are Toscotec's customers, including Vinda Paper and C&S, who placed orders for complete TMs, and APP China that placed orders for TT SYD and plans for orders of complete TMs by APP China and YFY.
Moreover, our sales results in other markets across Asia include two tissue machines in South Korea and 12 tissue machines in Indonesia.

CNHPIA:
What optimization/upgrades have been done on the previous TM technology to achieve the PRODERGY solution?

ALESSANDRO MENNUCCI, CEO:
The new model PRODERGY is particularly suited for a market lacking in gas resources such as the Chinese market. Its unique feature is the special configuration of the drying section: it guarantees high production, high quality product and low energy consumption thanks to the close synergy of a large diameter TT SYD and Milltech's steam-heated hoods.
At the beginning of 2012 Toscotec acquired Milltech, a manufacturer of Yankee hoods. This operation played a crucially important role in the design of PRODERGY's drying section. PRODERGY is the upgraded evolution of the tissue machine series AHEAD-2.0 and it set a new world record for a tissue machine running at the highest speed with steam-heated Yankee hoods.
From the point of view of Energy Savings, a part from the unique design of its drying section, PRODERGY machines are also equipped with Toscotec's patent technology TT SAF®, which provides for an even shorter approach flow system, and while saving space, it saves energy. It has been successfully installed on over 20 tissue machines, including YFY's Taiwan mills.
Its value has been recognized by tissue producers. Besides, other components, such as TT Headbox-MLT, which allows for a more uniform fiber distribution, an improved control of the press area and rewinding TT Reel-H. Finally the reel section featuring an implemented stabilizers system and a TT Reel-H with secondary linear arms can guarantee better preservation of the tissue bulk and thickness in the winding operation contribute to improve bulk and softness of the final products.

CNHPIA:
What are the unique features and advantages of Toscotec's solutions and technology as opposed to the other European TM suppliers?

ALESSANDRO MENNUCCI, CEO:
From its establishment in 1948 up until today, Toscotec has always focused on R&D and product manufacturing, can boast a great professional experience, as it can provide tissue machines with the largest web width 5,600 mm and TAD machines of the largest face width 6,000 mm, as well as TT SYD of the largest diameter 22 FT and face width of 8,200 mm.

Thanks to the acquisition of Milltech and Stori, specialized in roll maintenance and repair, Toscotec has increased its professional ability of manufacturing complete tissue plants. Nowadays, Toscotec can provide turnkey plants, complete tissue plants from stock preparation, tissue production, rewinding, dust removal system, heat recovery systems. Toscotec strives to continuously listening attentively to the customers' needs and providing a fully tailor-made technical solution to each customer.

Up until today, Toscotec has sold 164 TT SYD all over the world, in the past 3 years, it has sold 45 tissue machines, these achievements represent the best results of an equipment supplier in the tissue industry.
A part from its HQ in Italy, Toscotec also has a subsidiary in China and one in the US (Toscotec North America), which are in charge of local sales, assembly and after-sale services.

CNHPIA:
The European and North American tissue markets are already rather mature, tissue consumption growth is slow, from the point of view of a supplier in what ways do you enable paper mills to upgrade their TM technology and improve the competitive advantage of their final products?

ALESSANDRO MENNUCCI CEO:
Even though Europe and North America are mature markets, they nevertheless have new products coming up and consumption upgrades, especially the AFH market is showing an noticeable growth. Therefore overthe last few years, we have realized the probability that the paper tycoons of these areas and some converting companies aiming to enter the tissue manufacturing business, may also purchase tissue machines. Another important business area for Toscotec is represented both by maintenance services and rebuild projects, where we perform upgrades and technical improvement of existing machines, for instance an old formation configuration can be upgraded to CF, a cast iron Yankee can be substituted by a TT SYD and so on, with aim to increase productivity and cut energy costs in the mill. Currently, Toscotec carries out 90% of all the rebuild projects awarded in Europe. From the point of view of the Chinese market, although China is still investing in new projects, the need for rebuilds has already emerged. We have already started rebuild projects for 3 customers in China, all concerning the substitution of a cast iron Yankee with a TT SYD. We expect the demand for rebuild projects to grow on this market in the coming years.

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