

TWM

TISSUE WORLD MAGAZINE

The independent news
provider for the global
tissue business

Tissue World Miami **SHOW ISSUE**

ITALY: THE 2022 BOUNCE

COUNTRY REPORT:
MATURE MARKET'S
UNPRECEDENTED
RETAIL VOLUMES



Plus ...

MarketIssues

Costs reached record highs ...
how to mitigate the worst effects

Project Survey 2022

Companies across the globe reveal
record investments

Technical Theme: Paper Machine

Digitalisation evolving day-by-day
towards more autonomous mills

Special Report: China

How tissue performed in 2021 -
and development targets for 2022

ConsumerSpeak

"Covid didn't change my buying habits ...
but just wait till baby arrives"

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Bernhard Gross, Managing Director WEPA Italia, talks new strategies progressing product diversity for TWM's Italy Country Report.

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Cover: An Italian scene showing the gradual opening up of society at the beginning of Spring 2022. Image by Contrast Creative, Manchester, UK.



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FrontIssues

MIAMI IS A BIG STRIDE ... AS THE GLOBAL INDUSTRY BEGINS TO STEP OUT OF THE SHADOW OF THE PANDEMIC

Helen Morris

Senior Editor, Tissue World Magazine

Just how fit-for-purpose the \$92bn* global issue industry is in the early months of 2022 is made abundantly clear in the pages ahead ... TWM coming to you online, in hard copy and, for the first time in a long time, delivered in person at the Miami Beach Convention Center.

Tissue's role in hygiene awareness is now an imperative, cogeneration a priority, and localised energy sourcing increasing. Digitalisation is allowing remote start-ups while innovation is in full swing. To choose one quote to illustrate the historic but continuing progress, Valmet's Jenny Lahti-Samuelsson says in TWM's *Technical Theme* report: "There is a huge difference in energy and water usage when comparing a tissue machine designed in the 90s to today ... a modern machine consumes half the energy ... and water consumption has dropped by as much as 80%. Developments have come a long way in a short time."

So Tissue World is returning to the trading floor in Miami on 16 – 18 March, a historic date in the industry's recent past. Not Zoom, not a virtual conference ... this time, it's the real in-person event, with all that that means for doing business. Many in the industry will be meeting friends and business partners again for the first time in many months. And as we begin with a greater degree of confidence to look forward to a decline in the virus, there are more reasons to be optimistic. Also on schedule is Tissue World Düsseldorf, 28-30 March 2023.

Making sure safety is uppermost

Tissue World Miami 2022 will be organised in accordance with Informa's AllSecure health and safety standard. Informa has developed a detailed set of enhanced measures to provide the highest levels of hygiene and safety at its events, providing everyone with reassurance and confidence they are participating in a safe and controlled environment.

On a wider global perspective, despite widely varying reports of reductions or increases in cases, there are encouraging underlying medical advances. Fundamental improvements in detection, treatment and prevention are in motion. Hygiene awareness appears now to be a permanent trend.

TWM's reports attest to the positive outlook. In our *Country Report: Italy*, the European tissue hub has seen unprecedented growth figures for a developed market. Core trends will be planning for post-pandemic development, hygiene awareness joining sustainability and digitalisation.

Projects Survey, compiled in a year-long research programme contacting companies across the global industry, reveals a record number of 157 investments in various stages of planning and activation during 2021 to 2023. The range is covered: from the 80 projects in a surging China, to the four in Africa, and the single machine in Afghanistan. TWM's *PM: Technical Theme* discusses how Covid-19 has accelerated the intellectualisation of tissue machinery across the world. Leading companies report on entire plants started-up remotely, digitalisation evolving towards more autonomous mills ... and, a leap forward in renewable energy storage imminent.

Meeting the challenges of rising costs

Q3 2021 modelled manufacturing costs in North America and Europe that topped historical levels. Fibre and energy costs rose simultaneously, again, a double whammy rarely seen before. The impact from increased costs on margins lasted most of the year, but as AFRI report in *Marketissues*, signs of improvement appeared towards year end. The extensive analysis examines mitigating the most pressing effects.

*Expected 2022 combined retail tissue sales and AfH sales, msp, source: Euromonitor International. Projected to reach \$102.57bn by 2026.

COSTS HAVE REACHED UNPRECEDENTED HIGHS: HOW TO MITIGATE THEIR WORST EFFECTS

Tissue producers faced multiple challenges in 2021 as demand cooled down and input costs increased significantly. During the third quarter of 2021, modelled manufacturing costs in Europe and North America exceeded previous historical levels on both sides of the Atlantic. For good reasons, companies are increasing their attention towards additional fibre sources and energy efficiencies to take on cost fluctuations. Here, AFRY Management Consulting's Pirkko Petäjä, Principal, Hampus Mörner, Manager, and Santtu Koskinen, Analyst, assess the situation.



Pirkko Petäjä
Principal, AFRY Management Consulting



Hampus Mörner
Manager, AFRY Management Consulting



Santtu Koskinen
Analyst, AFRY Management Consulting

In the wake of the pandemic, the tissue industry has been experiencing two very different but also somewhat extreme years. In short, 2020 was characterised by strong global sales (At-Home) combined with low and mostly stable input costs, while 2021 was the opposite in the form of declining or modest sales growth combined with soaring input costs. Last year, the tissue industry was exposed to surging fibre and energy costs simultaneously. A rare situation hardly observed historically. This overall rise in commodity and energy costs had of course a negative impact for all raw material and energy intense industries, including tissue.

Reading from available financial results, the negative impact from increasing manufacturing costs on profitability seems to have lasted throughout the most part of 2021. Signs of improvement started to become visible only towards the end of the year in the form of costs being passed on

to the clients in prices and early easing of fibre costs (at the time of writing, financial results from the fourth quarter are still to be released).

Fibre and energy took a major toll on manufacturing costs

Based on AFRY's unit price databases and cost modelling tool, manufacturing costs for selected European and North American tissue machines were modelled. The analysis covers most of the production footprint in North America and Europe and is divided into four different cases depending on fibre base and region.

Full usage of the main fibre is assumed, no virgin/RCF mixture furnishes are considered in the analysis. For fair comparison, every tissue machine in each respective case is assumed to be producing comparable products with similar grammage (gsm) and fibre furnish.

READING FROM AVAILABLE FINANCIAL RESULTS, THE NEGATIVE IMPACT FROM INCREASING MANUFACTURING COSTS ON PROFITABILITY SEEMS TO HAVE LASTED THROUGHOUT THE MOST PART OF 2021. SIGNS OF IMPROVEMENT STARTED TO BECOME VISIBLE ONLY TOWARDS THE END OF THE YEAR IN THE FORM OF COSTS BEING PASSED ON TO THE CLIENTS IN PRICES AND EARLY EASING OF FIBRE COSTS (AT THE TIME OF WRITING, FINANCIAL RESULTS FROM THE FOURTH QUARTER ARE STILL TO BE RELEASED).

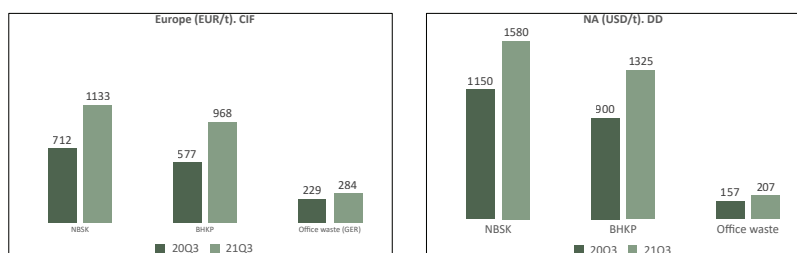


Figure 1: Fibre prices 21Q3 vs. 20Q3.

PUT THE FUTURE OF PACKAGING IN YOUR LINE OF SIGHT

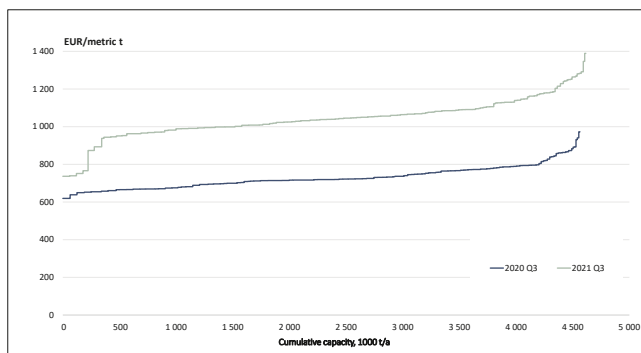
INTRODUCING THE NEW **VISION G3** WRAPPER

Our new wrapper features a reciprocating design with fast, small-pack production and change-overs.

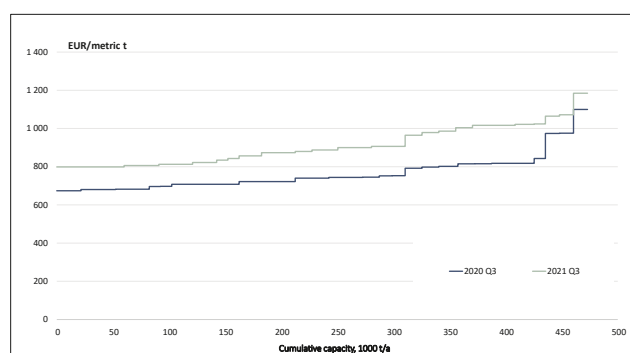
Innovatively designed with shorter mechanical movements and a telescoping unwind, the new Vision G3 wrapper is revolutionizing the industry with faster speeds on small formats, while also being able to produce large packs. Our Infinity engineers re-imagined the G3 from the ground up, setting the global stage with a new standard in tissue packing production. Every detail has been meticulously designed for increased production, accessibility, maintainability, and fast set-up. Take a virtual tour at visionG3.com.



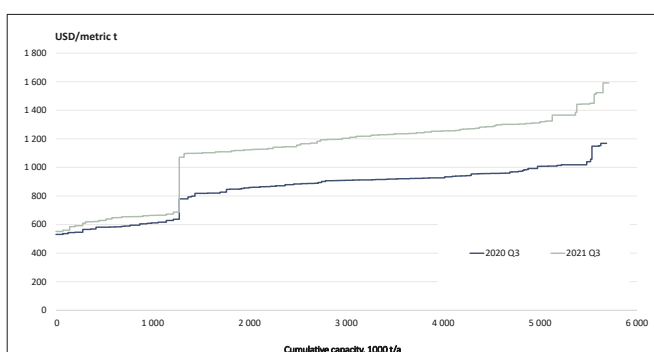
Case 1: Europe 100% virgin fibre based, 16.5 gsm Jumbo reels, Modelled costs



Case 2: Europe 100% RCF fibre based, 16.5 gsm Jumbo reels, Modelled costs



Case 3: NA 100% virgin fibre based, 15 gsm Jumbo reels, Modelled costs



Case 4: NA 100% RCF fibre based, 15 gsm Jumbo reels, Modelled costs

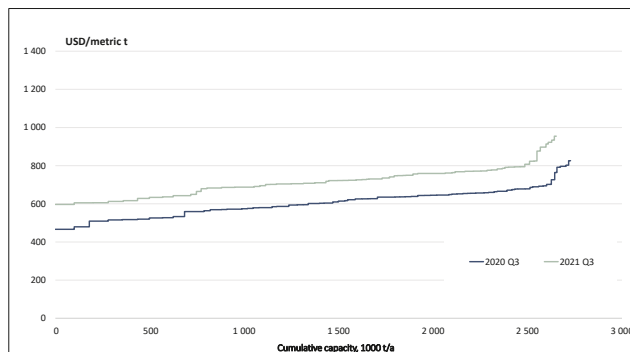


Figure 2: Modelled manufacturing cost curves for tissue jumbo reels.

Unit prices refer to the third quarter of 2020 and 2021. Fibre prices and the movement over one year are stated in Figure 1, where pulp prices are before any adjustments for discounts.

Each of the modelled tissue machines are plotted on the cost curves above (Figure 2), where those with the lowest total manufacturing costs are found to the left and those with higher costs further to the right. The two main components determining the total costs are fibre and energy. The manufacturing costs among tissue producers, depending on case, increased on average according to the below (21Q3 vs. 20Q3)

Case 1: 320 EUR/t (+43%)

Case 2: 148 EUR/t (+19%)

Case 3: 260 USD/t (+30%)

Case 4: 110 USD/t (+17%)

For cases 1 & 3 (virgin fibre), fibre made up for about 85% of the cost increase while in cases 2 & 4 (RCF based) this share was about 55-75% where North America was in the higher end of the range. Although fibre was the main component of the

increase, energy also made up a significant share of the cost inflation. Energy prices increased some 40% in Europe and 20% in the US (gas also impacting the price of electricity and being the main driver behind cost increases in both regions). This major increase in energy prices is dwarfed by the fibre price rally, although energy costs also represents a major concern to the producers.

Tissue machines at lower cost levels, regardless of the case, tend to hold advantages such as geographic location, for instance close to a harbour, fibre integration (more common in North America than in Europe), high tissue machine speed and width (scale). The energy concept also came to play a very important role during 2021 where for instance access to co-generation

was of great advantage. Tissue machines with these advantages also proved to be less volatile to the rise in input costs last year.

Modelled tissue machines in North America typically come out at lower cost levels than in Europe in the analysis (currency adjusted). Tissue machines and mills in North America tend to be larger than in Europe, offering prospects for economy of scale.

However, the major factors behind the lower cost levels and volatility are lower energy prices than in Europe, a higher share of integrated pulp and more companies befitting from higher pulp discounts due to their size as a buyer.

MODELLED TISSUE MACHINES IN NORTH AMERICA TYPICALLY COME OUT AT LOWER COST LEVELS THAN IN EUROPE IN THE ANALYSIS (CURRENCY ADJUSTED). TISSUE MACHINES AND MILLS IN NORTH AMERICA TEND TO BE LARGER THAN IN EUROPE, OFFERING PROSPECTS FOR ECONOMY OF SCALE. HOWEVER, THE MAJOR FACTORS BEHIND THE LOWER COST LEVELS AND VOLATILITY ARE LOWER ENERGY PRICES THAN IN EUROPE.

To the right on the North American curve (case 3), numerous tissue machines producing structured and textured tissue grades are found (such as TAD). These technology concepts demand more energy per produced tonne compared to conventional concepts (like DCT).

Upsides come in the form of higher bulk, softness, absorbency and price premium. In addition, if looking in terms of converted products where the TAD has a fibre cost advantage per roll due to the higher bulk, the cost position of standard vs. structured tissue machines can be reversed. AFRY estimates that about 40% of the total installed tissue production capacity in North America is within structured and textured qualities in which TAD dominates.

Regardless of the case, the 2021 increase in manufacturing costs was above any previous movements observed in AFRY's tissue cost modelling. Also, in several cases the costs were dangerously close to or even above levels considered profitable. With such turbulence experienced in the last two years, tissue producers are increasingly seeking ways to mitigate risks and volatility in input costs.

Initiatives to lower costs and to mitigate the cost fluctuation

Tissue producers see an increasing need to control cost fluctuation and, if possible, reach in general lower manufacturing costs. To achieve this, fibre and energy are two obvious areas to address. For instance, new and additional fibre sources are becoming more relevant.

Although based on the above analyses the cost increase for RCF based tissue was considerably less than for virgin fibre, the shrinking availability of traditional material (bright & sorted) limits or complicates significant increase of RCF usage. However, new less traditional sources are being addressed to a larger extent, like for instance recovered paperboards.

Clearly, the ability to source, handle

REGARDLESS OF THE CASE, THE 2021 INCREASE IN MANUFACTURING COSTS WAS ABOVE ANY PREVIOUS MOVEMENTS OBSERVED IN AFRY'S TISSUE COST MODELLING. ALSO, IN SEVERAL CASES THE COSTS WERE DANGEROUSLY CLOSE TO OR EVEN ABOVE LEVELS CONSIDERED PROFITABLE. WITH SUCH TURBULENCE EXPERIENCED IN THE LAST TWO YEARS, TISSUE PRODUCERS ARE INCREASINGLY SEEKING WAYS TO MITIGATE RISKS AND VOLATILITY IN INPUT COSTS.

and market products based on these "new" fibres opens opportunities for increased RCF availability and costs savings. Alternative virgin fibres, such as grass, straw and bamboo (with short rotation times) are being increasingly investigated and invested in among tissue manufacturers. These sources can be cost efficient and mitigate exposure to cost fluctuations compared to wood pulp, although the supply is limited.

Also worth noting is that while the access to fibre hedging tools has improved over the last years, traditional stakeholders within pulp and paper (including tissue) might be participating or investigating these opportunities to a larger extent than before.

In order to tackle the impact of increasing energy costs, higher energy efficiency is targeted by most producers and the effort is supported by technology providers. Specific energy consumption has decreased through technology developments in the press and drying section, water and heat recovery improvements, etc. Energy concepts have a significant impact on exposure to energy price fluctuations. Such concepts include own generation of power, usage of steam or exhaust gas in hood, etc. The switch from fossil fuels to biomass/biogas may require investments but offers a more stable cost environment.

Sustainability requirements and cost issues can be combined

Like in most industries, an increased

focus on sustainability and especially carbon footprint, is becoming of greater importance. Multiple "green" options are addressed of which many are related to fibre and energy. Therefore, important sustainability requirements can often be addressed together with the means to improve cost efficiency - and stability.

Alternative virgin fibre sources are motivated by appearance as a "green alternative" whether this is always the fact or not. In any case, these fibres can mitigate the impact of market pulp price fluctuations to some extent. In recovered fibre, new sources help to tackle not only the decreasing availability of bright sorted material and price fluctuations but are also seen as green, circular and innovative solutions.

As for energy, carbon reduction is a major driver behind actions taken, but can simultaneously mitigate the impact of cost fluctuations for fossil fuels. Increased investments and initiatives in technologies to utilise hydrogen, biogas and geothermal heat have been seen worldwide through the last years. In addition, concepts like full usage of biomass-based energy (steam heated hood) have been developed to be used even for fast running tissue machines (improved dust removal and large diameter Yankees).

Besides fibre and energy alternatives comes the overall improvement of efficiency and reduction of specific consumption figures. These are sustainability issues that have a clear correlation to the total manufacturing costs. In order to achieve these reductions, investments in improved technology as mentioned above are observed. This concerns water consumption, energy consumption and quality and volume of effluents.

ALTERNATIVE VIRGIN FIBRE SOURCES ARE MOTIVATED BY APPEARANCE AS A "GREEN ALTERNATIVE" WHETHER THIS IS ALWAYS THE FACT OR NOT. IN ANY CASE, THESE FIBRES CAN MITIGATE THE IMPACT OF MARKET PULP PRICE FLUCTUATIONS TO SOME EXTENT. IN RECOVERED FIBRE, NEW SOURCES HELP TO TACKLE NOT ONLY THE DECREASING AVAILABILITY OF BRIGHT SORTED MATERIAL AND PRICE FLUCTUATIONS BUT ARE ALSO SEEN AS GREEN, CIRCULAR AND INNOVATIVE SOLUTIONS.

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NEWS IN BRIEF

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GLOBAL

Essity reports 4.5% sales growth for 2021; announces further price hikes

Essity has announced sales growth of 4.5% year-on-year with organic sales up 3.3%. In the period 1 January – 31 December 2021, net sales also increased 0.1% to SEK121,867m. Market shares increased for 70% of branded sales in the retail trade; E-commerce sales increased organically by 15.9% to approximately 14% of net sales, corresponding to SEK17bn.

Operating profit before EBITA decreased 20% to SEK14,051m, while profit for the year was SEK9,810m.

Magnus Groth, President and Chief Executive (pictured), said: "Primarily within

Professional Hygiene, sales were negatively impacted by the Covid-19 pandemic and the related lockdowns and restrictions.

"At the same time, our hygiene and health solutions are more important than ever, and we can see a rapid increase in sales when societies re-open and restrictions are lifted."

He added that due to "significant cost inflation," adjusted EBITA fell 22% to SEK13,680m: "Higher costs for raw materials, energy and distribution reduced the margin by 4.8%.

"Higher volumes, higher selling prices, a

better mix and efficiency improvements had a positive impact on earnings."

During the year, emerging markets accounted for 38% of net sales and organic sales growth was 8.8%. Groth also announced that further price hikes will be implemented in 2022 to offset strong inflation costs: "We have taken strong actions to address the significant challenges in our operating environment. We implemented price increases in all business areas and further price increases will be implemented in 2022 to offset the strong cost inflation."



The VISION G3 Wrapper: Infinity's latest wrapper innovation

Infinity launches VISION G3 Wrapper

Infinity Machine & Engineering Corp. has announced the launch of its latest innovation, the VISION G3 Wrapper.

The automated packaging machinery manufacturer said the wrapper can produce packs up to five lanes wide, three layers high and six rows deep, all within a small footprint while using sustainable design practices.

The infeed of the machine features top and bottom choke belts, allowing for a larger maximum roll diameter, up to 250mm on two or three lanes or 190mm on all four lanes, all within a narrow machine.

This creates the possibility of adding a fifth lane without major re-work.

The infeed also features an integrated single bar and stacker, resulting in a shorter design.

K-C reports 2021 sales growth; Q4 Consumer Tissue sales decline 10%

Kimberly-Clark Corporation (K-C) has reported a 2% rise in its full-year 2021 net sales to \$19.4bn, as its Consumer Tissue segment reports 10% drop in fourth quarter.

Operating profit for the year was \$2,561m in 2021 compared with \$3,244m in 2020.

In the fourth quarter of 2021, net sales of \$5.0bn increased 3% compared to the year-ago period, including organic sales growth of 3%.

Organic sales in North America were even

with year-ago in consumer products and increased 2% in K-C Professional.

Mike Hsu, Chairman and Chief Executive, said: "Our teams have been executing well in this challenging macro and operating environment, maintaining cost discipline, balancing pricing initiatives, taking care of our customers, and continuing to build our brands and grow share. We were especially pleased with our topline growth in personal care and developing and emerging markets over the year."

He added the company will continue to invest in innovation and supporting its brands: "While we expect inflation and supply-chain disruption to persist into 2022, we are committed to recovering margins to pre-pandemic levels over time, and we are optimistic about gradual improvement later in the year."

In the Consumer Tissue segment, fourth quarter sales of \$1.6bn decreased 10%.

The company said the impact of the Softex Indonesia acquisition and exited businesses along with the 2018 Global Restructuring Programme decreased sales in the sector by 1%.

Volumes declined 7% and net selling prices decreased approximately 1%.

Essity announces price increases across all markets

Essity has said it will introduce price hikes across all its product categories and markets in an attempt to compensate for the "substantially higher costs" of raw

materials, energy and distribution.

Magnus Groth, President and Chief Executive, said: "We do not expect a decrease in the historically high costs for raw material, energy and distribution in the near term."

"Price increases are therefore essential to compensate for the higher costs while we continue to increase customer and consumer value through leading innovations and implement efficiency measures to achieve cost savings."

The timing and degree of the price increases will be managed locally.

Solenis increases prices in EMEA

Solenis has increased the price of all its polyacrylamide polymers and retention aids across the EMEA region by 8 – 15%.

Effective 1 February, or as customer contracts allow, the company said the price hike was required to "offset cost increases in raw materials, packaging, energy and transportation"

It also said it continues to face shutdowns and force majeure declarations from key suppliers.

Naama Lilach, Vice President Commercial Operations, Eurasia, Solenis, said: "Solenis is committed to keeping its customers supplied."

"Our recent acquisition of the SCL business is one of many activities we are currently undertaking that will enable us to secure materials and continue serving our customers."

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superior performance for our customers.
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Edson launches 4000TL-Robotic

Edson has launched the 4000TL-Robotic, a top-load case packer aimed at small to mid-sized companies that manufacture a variety of SKUs within the AfH towel and tissue industry.

The supplier said the machine uses a FANUC M-710iC/50 FP robot to provide a flexible top-load case packer with different end-of-arm tool options to efficiently handle specific applications.

It can handle a range of products in a variety of pack patterns, primarily HSC cases up to 12 picks per minute, and has a 10" Allen-Bradley colour touch screen HMI.

ERS launches CCM OCT dust filter into tissue market

Atlanta-headquartered Engineered Recycling Systems (ERS) has introduced its CCM OCT dust filter system into the global tissue, towel and non-woven converting markets.

A leader in dust collection, metal separation and trim removal systems, the company had previously focused on the corrugated box manufacturing arena to develop, change, and finalise the design.

ROMANIA

Pehart Group boosts capacity with €10m Constellation start-up

Pehart Group has increased its converting capacity after starting up its Körber Group-

supplied Constellation line.

Located at the company's plant in Sebeș, the line is part of a €10m investment to increase its presence in Romania and abroad.

Gabriel Stanciu, Pehart Group General Manager, said: "Our business strategy is twofold: to increase our production capacity in the Romanian market by strengthening the position of our brands in large chain stores and constantly increasing the quality of our products, and to expand our presence in external markets by expanding into new countries.

"The Constellation line will enable us to do this, and it is also equipped with advanced technologies that will lead to improvements of our Pufina products at the premium level."

MG TEC increases high-quality tissue capacity with start-up

MG TEC Industry has started-up its Andritz-supplied PrimeLineCOMPACT tissue machine at its plant in Dej.

The line has a design speed of 1,900m/min, a paper width of 2.85m, and produces high-quality tissue grades.

Dorin Mocan, Chief Executive of MG TEC Industry, said: "We have successfully started-up our new tissue production line and are proud of the perfect end-product quality.

"Based on this success, we have placed a repeat order with the same scope of supply and are looking forward to its installation."

BANGLADESH

Partex Star Group boosts capacity

Partex Star Group has boosted its bulky and soft tissue production capacity after starting up an iDEAL tissue machine.

Supplied by A.Celli Paper, the TM has a width of 2.8m, a maximum operating speed of 1,800m/min and a 15-foot forged Steel Yankee Dryer.

The scope of supply also includes an E-WIND T100 three-ply tissue slitter rewinder and a reel handling system.

CHINA

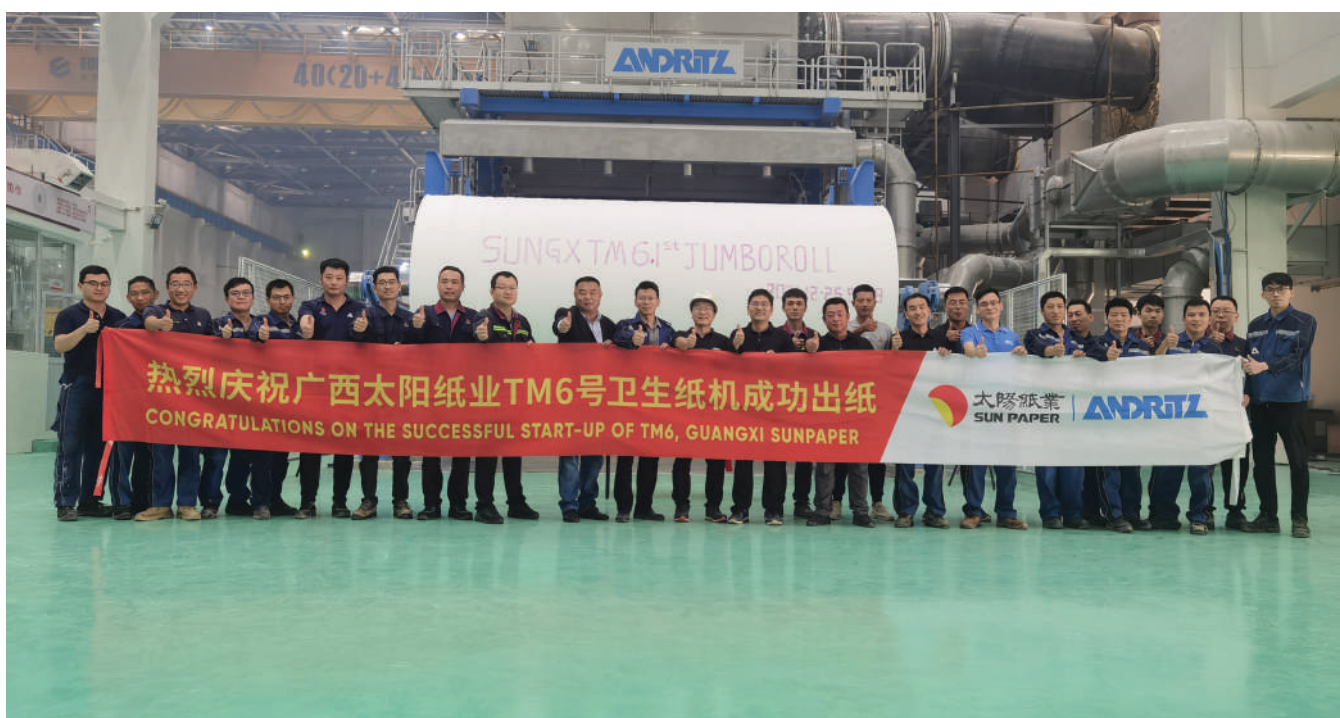
Guangxi Sun Paper boosts capacity with 60,000tpy start-up

Guangxi Sun Paper has started up the second of two Andritz-supplied PrimeLineTM W 2000 tissue machines at its plant in Beihai City, Guangxi Province.

TM6 has a design speed of 2,000m/min, a working width of 5.65m and a capacity of 60,000tpy.

As with the company's TM5 order, the scope of supply also included FibreSolve FSV pulpers, the paper machine approach flow systems, broke handling and fibre recovery, and automation systems.

It is equipped with a Steel Yankee with head insulation, heat recovery system and a Yankee Ecosteam system for re-evaporation.



Capacity boost: Guangxi Sun Paper starts up its second Andritz-supplied PrimeLineTM W 2000

ITALY'S TISSUE BUSINESS BECOMES MORE EXPORT-DRIVEN WITH 50% OF EXPORTS GOING TO NEW MARKETS

Even as per capita GDP has vastly increased over the last 14 years, low domestic demand growth has pushed the industry to seek new trade abroad backed by expansion and replacement strategy across manufacturing.

Italy plays two different yet highly significant roles in the global tissue business. The first is as a producer for domestic and export tissue production, the role in which we will explore in this report, and the other as an innovator, designer, and manufacturer of tissue production equipment. Italian engineering and design skills are sought out globally for tissue machines and converting equipment supplies — however, this report does not cover that equipment business.

Domestic demand for tissue products depends on economic and cultural factors. Italy's gross domestic product and population trends are shown in Figure 1. GDP is expressed as purchasing power parity per capita and illustrated as the blue line on the chart. Per capita GDP has vastly increased over the last 14 years and is expected to continue to support consumer purchases for tissue products. The population is shown on

the chart as the bars representing millions of people. Italy has had a relatively flat to decreasing population over the trend shown in Figure 1. An alternative data point from the world factbook suggests that Italy had an estimated 0.09% population growth in 2021. The ratio of births to deaths is less than one, meaning that any population growth is dependent on migration.

Inflation and unemployment are two economic factors that limit domestic growth in tissue demand. Figure 2 shows the inflation trend moderating from two high peaks to a lower range. However, inflation appears to be increasing again due to the global supply chain crunch. The unemployment rate is represented in Figure 2 as the bars and shows a build-up to peak unemployment in 2014 before gradually decreasing until its next increase in 2021. The unemployment rate is relatively high yet consistent with similar countries in Europe.



Bruce Janda
Senior Consultant, Fisher International

Overall, the economic conditions are positive to support continued growth in tissue demand per person and any change that would occur in the market due to population would be minimal and insignificant.

Italy's domestic tissue demand is partially met by imports, as shown in Figure 3. The major suppliers of Italy's tissue imports are France, Germany, Poland, Spain, Sweden, and Switzerland. The "all other" category sitting at the top of the bars is 30% of the total in 2021. These globally sourced imports represent 4% or less from any one country not named in the chart. Italy's tissue exports are shown in Figure 4, which are trending upward approximately ten times compared to the volume of Italian imports. This shows that Italy is a substantial tissue producer for exports. Italy's main tissue customers include France, Germany, Greece, Hungary, Poland, Spain, Switzerland, and the United Kingdom. Many of these are the same countries that also supply tissue to Italy. The overall trend of exports has been growing through the periods shown, and the "all other" category has been increasing as the aforementioned countries' business is shrinking. This now represents 50% of Italy's export business, but individual countries comprise less than 4% of the total. Italy's tissue business has started to become more export-driven with a more diverse customer base.



Figure 1

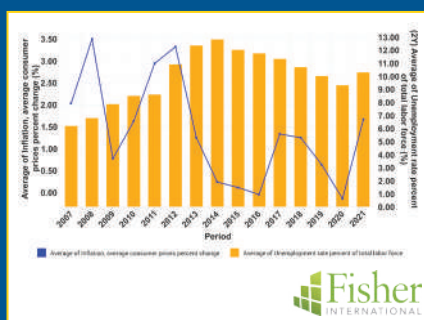


Figure 2

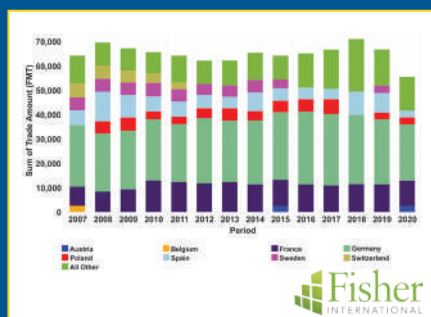


Figure 3

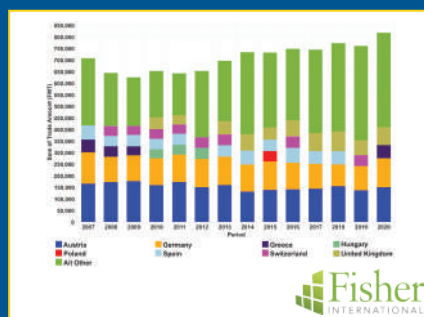


Figure 4

Italian tissue producers have also been building capacity outside of Italy during this period. They have operated in neighbouring countries for some time but have recently expanded their focus, such as Sofidel's expansion into the United States. It's important to note that this report shows only Italian domestic production statistics. Italian tissue manufacturers have embarked on a careful expansion and replacement strategy to grow and modernise their tissue production. Figure 5 shows the new tissue machine additions and old tissue machine deletions throughout the study period. It is reasonable to assume that most new machines have significantly more capacity and quality capability than the machines being scrapped.

Italy relies mainly on virgin market pulp for tissue production. The data in Figure 6 illustrates that 50% of the total Italian tissue furnish is made from eucalyptus pulp, while bleached southern softwood comprises 34% of the furnish. Recycled fibre consists of only 7% of the entire mixture. The "all other fibres" include some bleached and unbleached CTMP and other minor components for a total of 8% of the mix. Italian tissue production consists of predominantly premium fibres, which supports export development with premium products.

The Italian tissue finished product mix is shown in Figure 7. Consumer bath tissue makes up almost 44% of the total production while consumer towel represents nearly 21% of the total. Coupled with the Italian flair for the finished product emboss and design, this supports further development of the tissue export business.

Italy has started adding advanced tissue process assets to the Italian tissue machine fleet. Figure 8 shows that advanced tissue manufacturing makes up only 4% of production. Advanced tissue processes are considered through air drying or one of the other textured or structured processes. This small amount of advanced technology is well applied, as shown in Figure 9. 84% of the advanced technology capacity is devoted to consumer towels. Using this process, the improved thickness and absorbency of consumer kitchen or household towels provide more extensive consumer benefits with lower fibre intensity. Consumer bath advanced tissue benefits are positive but lower than towels (except in North America where very high bath softness is appreciated). Italian consumer bath represents only 16% of the total advanced technology production.

Figure 10 provides a perspective on Italy's average tissue machine quality versus its essential export partners. Italy occupies the centre of the chart with its giant bubble. The size of the bubble represents total capacity by country, the X-axis represents the average technical age of each countries' tissue machine fleet (technical age in years means the relative competitiveness based on when it was built and how recently it's been updated), and the Y-axis represents the average machine trim in centimetres. More comprehensive machines tend to be more efficient in energy and labour costs. Smaller markets like Hungary, Switzerland, and Greece tend to use narrower devices to add smaller portions. If Italy continues its active machine-building and replacement, it should evolve into a more competitive position.

The competitive cost curve for these trade partners is shown in Figure 11. Italy is in the centre of the chart, with the broadest bar representing its larger capacity. The Italian all premium version fibre mix means an increased cost over a country like Germany that uses more cost-effective recycled fibres. Energy cost is shown as the yellow bar and is relatively lower for Italy compared to the United Kingdom.

The cost curve analysis is complemented by manufacturing viability shown in Figure 12. Tissue manufacturing viability is a FisherSolve Next index that includes costs, the technological machine age, mill site, and corporate strengths to provide a look into the relative future viability or resilience of a region, country, mill, or

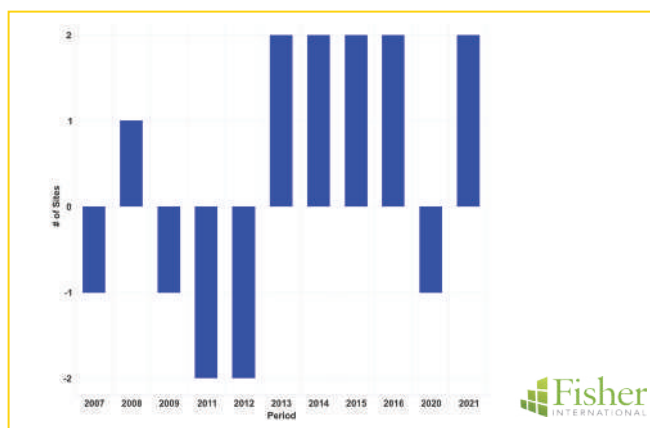


Figure 5

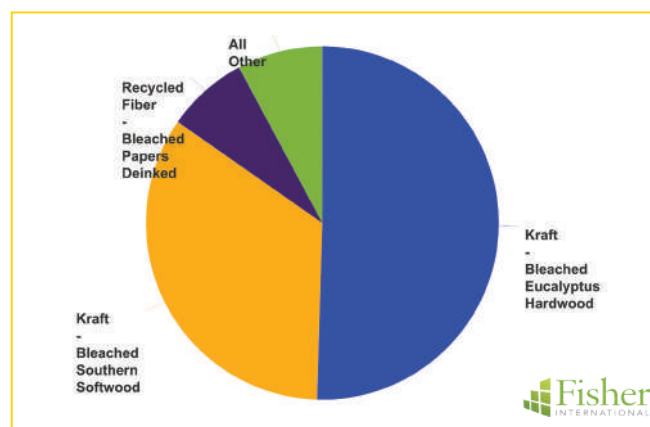


Figure 6

individual tissue machine. Italy's tissue machines possess an average viability, but are significantly better than the United Kingdom, Greece, and Switzerland.

Figure 13 shows the fuel, steam, and power inputs for the same countries' tissue fleets. FisherSolve Next can plot this as either total energy cost per tonne or total energy units per tonne. In this case, the total energy units are KJ per tonne shown. Total energy consumption per tonne is one component of carbon emissions and offers the relative efficiency of production for a generic team of energy. Carbon emissions also include the relative carbon content of a given energy source. Italy is relatively efficient compared to the United Kingdom and Germany on this measure.

The carbon emissions per tonne of tissue products are shown in Figure 14. This includes the relative energy efficiency shown in Figure 13. Italy's position is average in this group.

Italy will grow its tissue business with exports to make up for the stagnant domestic demand. Their tissue trade has traditionally been with neighbouring countries, but now 50% of the tissue exports are going to new markets. Further expansion of advanced tissue technology will depend on domestic product reception and the performance needed for export markets. Continued export growth could reset the competitive scene for Italy in several years. The increase in export volume should allow Italy to update and add tissue capacity and also provide good support for Italy's tissue equipment business.

Analysis of competitive position requires specifics on tissue producers and individual machines. This article presents a static summary of Italy's tissue industry today. Fibre prices, exchange rates, and environmental regulations will change, providing some participants with advantages and new challenges. Italy's tissue mills will continue to change hands and consolidate.



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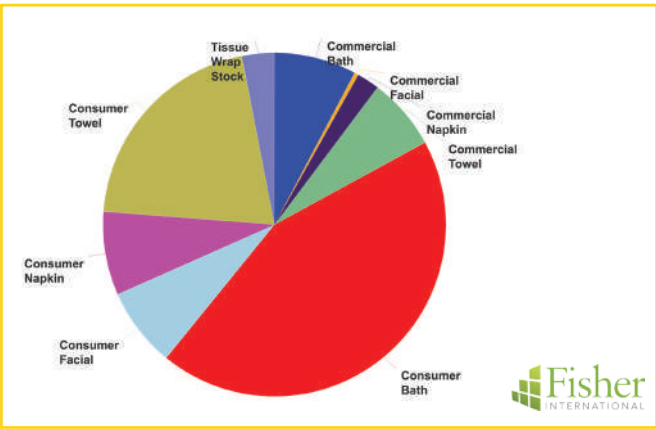


Figure 7

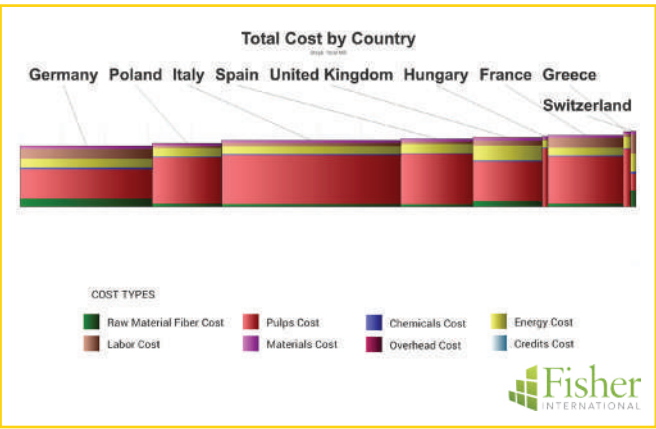


Figure 11

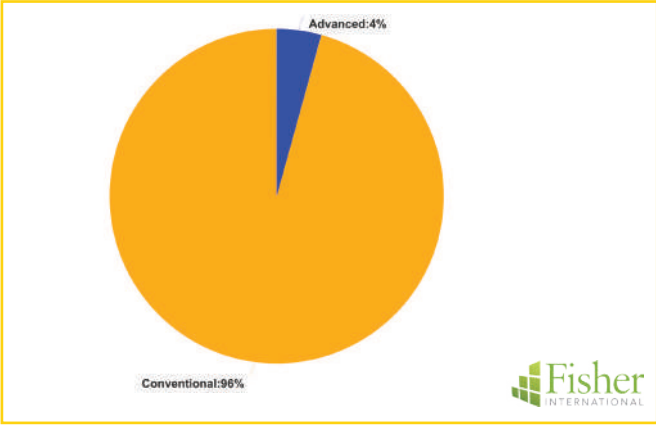


Figure 8

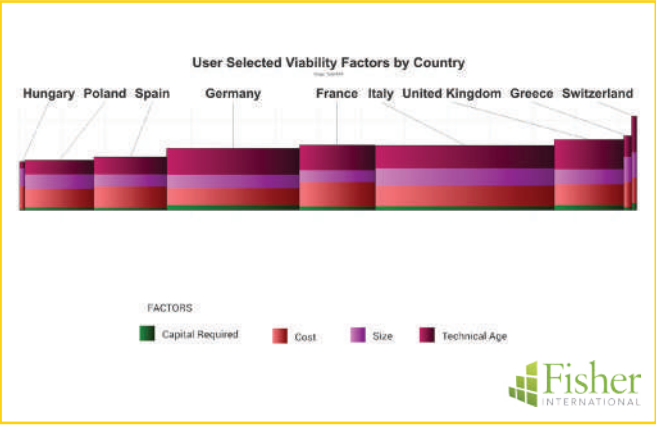


Figure 12

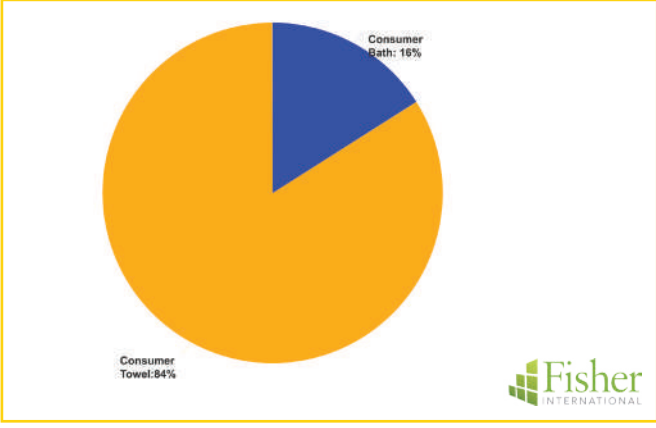


Figure 9

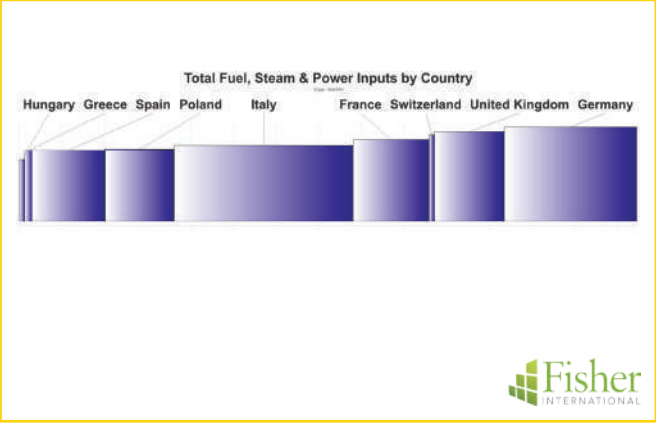


Figure 13

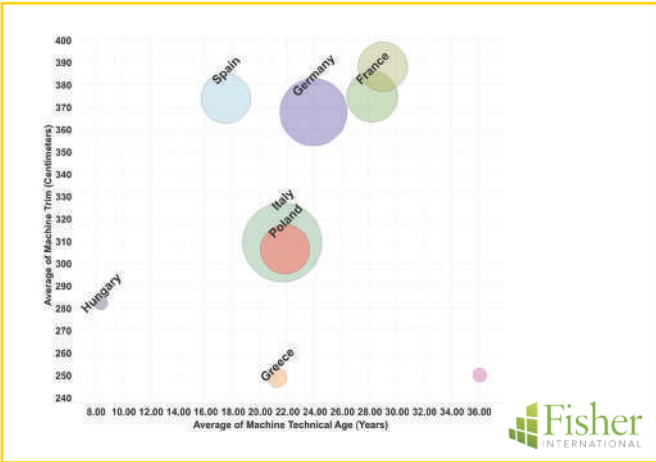


Figure 10

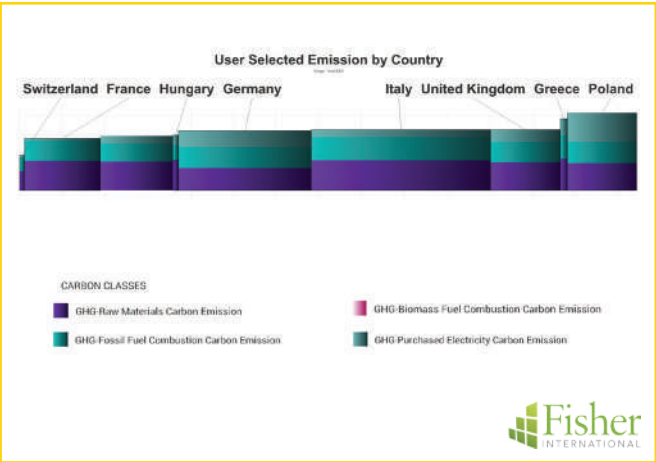


Figure 14

SAFETY IS THE WATCHWORD FOR THE POST-PANDEMIC, ENDEMIC ERA

Italy, the European tissue hub, has seen unprecedented growth figures for a developed market. Core trends of sustainability and digitalisation allied to the strength of local production and supply will shape future competition.



Ian Bell
Head of Tissue and Hygiene,
Euromonitor International

Italian tissue – from pandemic to endemic

Italy remains the centre of the European tissue industry from a consumption, production, and also from a manufacturing technology standpoint. In 2021, overall tissue, both retail and AfH, expenditure at manufacturer sales price (MSP) totalled just over USD1.66bn, ranked third in the EU block only behind German and France. On average, Italian consumers spent \$28 per capita on tissue products; this figure was almost equivalent to Poland but a good \$4 lower than other comparable Mediterranean markets.

Although undeniably developed, there is space for the market to grow and tap into prevailing trends which are currently pervading Italian society. Nevertheless, as with other FMCG, the tissue industry will face challenges in the medium term as its products will have to justify the portion of expenditure in what are likely to be difficult times for consumers.

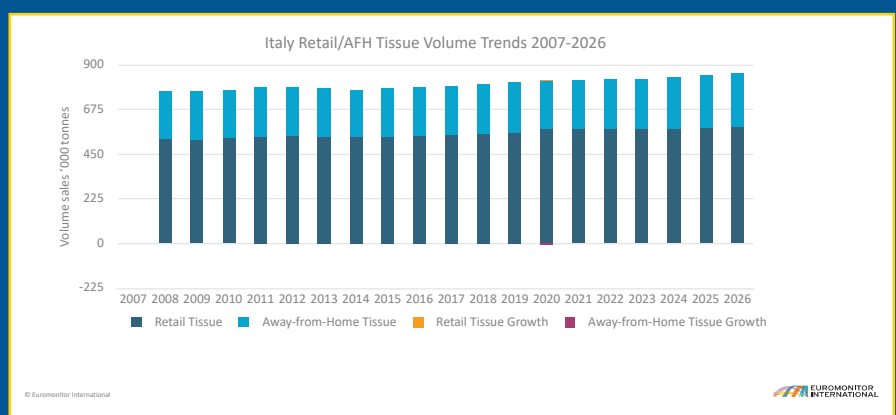
The impact of Covid-19

As with all other markets, the story for 2021 and into 2022 and beyond is one of the pandemic, consumer lifestyle changes and the journey to endemic coexistence with the virus. Predictably in 2020, the Italian market experienced a significant uplift due to Covid-19, a period of enforced home seclusion and a trend towards stockpiling. These core trends resulted in retail tissue volumes climbing by 3%, with toilet paper especially buoyant and growing by just shy of 4%. Although Italy was far from unique in this respect, for a developed market to grow by these numbers is unprecedented and is testament to the strength of local production and supply that the industry was able to satisfy in terms of a sudden spike in demand.

2021 bounce

The narrative of 2021 was still undeniably linked to the pandemic but

PREDICTABLY IN 2020, THE ITALIAN MARKET EXPERIENCED A SIGNIFICANT UPLIFT DUE TO COVID-19, A PERIOD OF ENFORCED HOME SECLUSION AND A TREND TOWARDS STOCKPILING. THESE CORE TRENDS RESULTED IN RETAIL TISSUE VOLUMES CLIMBING BY 3%, WITH TOILET PAPER ESPECIALLY BUOYANT AND GROWING BY JUST SHY OF 4%.



Source: Euromonitor International

there were signs that for much of the year the situation had improved and civilian life had at times returned to "normality". Like much of the continent, the first quarter of 2021 was one again characterised by restricted movement and the rollout of vaccination campaigns.

Between spring and the arrival of Omicron, life returned to some semblance of normality with the AfH sector benefiting from a return to eating out in addition to Italians choosing to holiday at home, part of the "staycation" trend which was common in Europe and set to remain a feature of the travel and hospitality industry well into 2022 and beyond.

As a result, retail tissue volumes marginally declined, by just 0.3%, over the year, dampened by a fall in toilet paper sales as consumers left their homes and services opened up significantly, while white-collar workers began to return to the office.

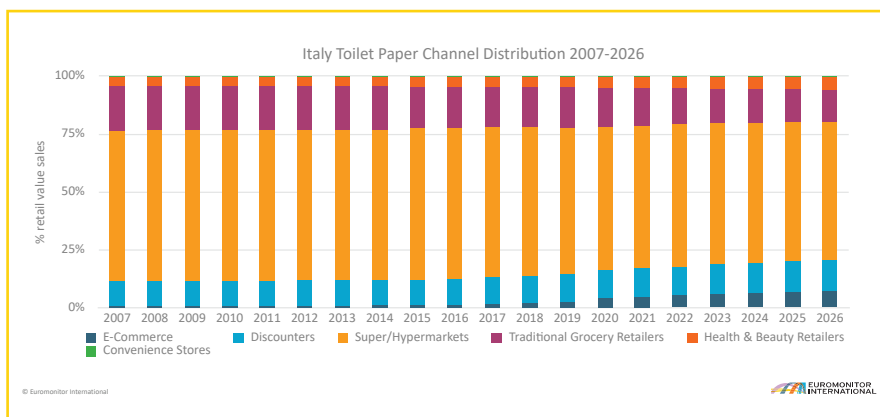
Medium-term outlook

The medium-term forecast for Italian retail tissue is one of cautious optimism, with volumes expected to record a CAGR of 0.5% over 2021-2026. The return of freedom of movement and a broader return to the office (with public workers currently the focus of attention) while reducing domestic demand will also further create opportunities for AfH options.

Nevertheless, although the home seclusion volume upturn enjoyed by tissue is expected to dissipate over time, there are threats that could undermine the dominant retail value portion of the industry.

While an unstable economy is partly to blame, there is disruption stemming from multiple sources. Already witnessed in 2021, the thorny issue of raw material and energy price inflation hit the industry, with retailers predictably against price increases while brands were keen to push them through.

In the end, most Italian retailers swallowed the increase at the expense



Source: Euromonitor International

of their own margins, but with energy and water costs predicted to increase and persist for the foreseeable future (many analysts are pointing to a two-year horizon) then the prospect of further price rises being passed onto the end consumer is incredibly likely. In a wider context, other FMCG industries are facing similar pressures, as are householders with rising utility bills and this all within an environment with possible increased taxation as the Italian government looks to control its debt levels.

From a consumer perspective, while the medium term is likely to present challenges, it is how the tissue industry re-enforces the message from the pandemic, especially around tissue products' proximity to domestic and personal hygiene.

These messages will likely live long in the mind of the consumer and this should continue to be a core message for the industry as it looks to insulate itself against competition, substitution and downtrading.

AfH competition

The Italian government has an objective; the pace of the vaccine rollout (which places Italy ahead of the majority of EU nations) and the introduction of mandatory vaccinations for the over 50s, in addition to severe social and work restrictions for those who remain unvaccinated, is designed to place Italy as one of the safest destinations in Europe.

For the AfH channel, which represents 20% of value sales, this is significant and is helping to drive a 2.5% value CAGR forecast for 2021-2026 as the country moves along the medium-term trajectory of eating out and holidaying, both locally and welcoming travellers from abroad.

Store-based retailing

The distribution of retail tissue in Italy remained dominated by store-based retailing in 2021. Among these retailers, discounters and drugstores gained consumers' preference as these outlets benefit from low price points and attractive deals. Prior to the pandemic, both channels recorded high levels of growth in Italy, with new outlets being opened and many consumers shifting their purchases from supermarkets and hypermarkets. Lower prices in discounters and a broad range of offerings in drugstores have been instrumental in the success of these retailers.

Given the likelihood of economic disruption in the post-pandemic era stemming from a combination of tissue price inflation pressures, disposable incomes being squeezed by inflation and likely higher taxation, then the discounter channel is likely to experience further expansion as consumers look to rationalise their expenditure. In 2021, there were some 5,500 discounters operating in Italy, holding 15% share of all grocery retail value sales: this figure will only increase as the channel is set to add a further 500 stores by 2026.

E-commerce growth

As with other developed markets, e-commerce also benefited from pandemic lifestyles, with retailers taking the opportunity to drive scale. This means that online is no longer niche and is set for continued growth as consumers increasingly switch their grocery shopping preferences away from traditional store

THE MEDIUM-TERM FORECAST FOR ITALIAN RETAIL TISSUE IS ONE OF CAUTIOUS OPTIMISM, WITH VOLUMES EXPECTED TO RECORD A CAGR OF 0.5% OVER 2021-2026. THE RETURN OF FREEDOM OF MOVEMENT AND A BROADER RETURN TO THE OFFICE (WITH PUBLIC WORKERS CURRENTLY THE FOCUS OF ATTENTION) WHILE REDUCING DOMESTIC DEMAND WILL ALSO FURTHER CREATE OPPORTUNITIES FOR AFH OPTIONS.

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environments. For example, the core toilet paper category is predicted to see value sales growing tenfold over 2016-2026, meaning that by the end of the forecast period, 8% retail value share will be held by the e-commerce channel.

This percentage tracks almost exactly against the broader share that e-commerce takes across all retail. One observation from further afield comes from China, with tissue one of the first categories to make the jump online for very similar reasons that could be facing Italian consumers in the coming years; how to access the best prices, which tends to be linked to large packs that are often inconvenient to carry around. Therefore, internet-based retail is extremely attractive in this respect.

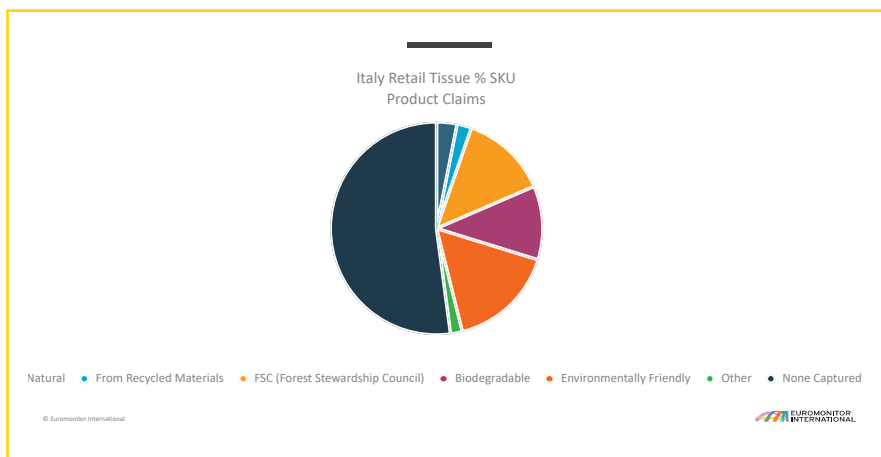
Pack size expansion?

Considering that many tissue items are bulky, and with higher pack counts providing improved value, Italian consumers are expected to continue to buy them online and in larger quantities. Therefore, retailers are expected to follow Esselunga's example of specific online offers, such as free shipping versus purchases of specific brands.

Away from e-commerce, there are prospects in home and garden specialist retailers, as the Italian government is investing large sums in supporting consumers who want to upgrade the efficiency of their homes, meaning that the number of home projects has exploded over the past year. Where there is building work, there is mess to tidy up and there are cross merchandising wins to be had for heavy duty towels and other paper-based alternatives to plastics.

Green is the word

Recycled toilet paper will see the strongest growth rates among all retail tissue categories over the medium term. Environmental sustainability is an important factor for many Italian consumers across all classifications of retail tissue, and



Source: Euromonitor International

CONSIDERING THAT MANY TISSUE ITEMS ARE BULKY, AND WITH HIGHER PACK COUNTS PROVIDING IMPROVED VALUE, ITALIAN CONSUMERS ARE EXPECTED TO CONTINUE TO BUY THEM ONLINE AND IN LARGER QUANTITIES. THEREFORE, RETAILERS ARE EXPECTED TO FOLLOW ESSELUNGA'S EXAMPLE OF SPECIFIC ONLINE OFFERS, SUCH AS FREE SHIPPING VERSUS PURCHASES OF SPECIFIC BRANDS.

this trend is widely expected to grow. To date, the industry has made progress with widespread FSC certification in addition to highlighting stories around commitment to circular economy initiatives. Sustainability is no longer a "nice to have" for European brands. The scale of legislation coming from the European Commission from the EU Green Deal is truly staggering and will increasingly affect all industries over time.

Plastic is a focus, resulting in the Italian tissue industry embracing waste reduction policies around packaging. Paper packaging is therefore set to become increasingly popular, due to new technologies that allow high efficiency machine-wrapping of tissue products. Soffass for example, is leading with a pledge to eliminate half the plastics from its packaging by 2030. Therefore, environmental claims will become a dynamic area in terms of development as part of brand competition.

Conclusions

Although the path from pandemic to endemic will be far from easy, there is much to be positive about for the Italian tissue industry as it transitions to "new normal" conditions. While economic issues are bound to ask questions of expenditure priorities, this will be the same story the world over and not restricted to Italy. There is enough to suggest that a continued focus on personal and domestic hygiene will be a strong growth driver for the industry in addition to embracing the two core trends of our time; namely sustainability and digitalisation. Both challenge the industry to change, maybe more rapidly than is comfortable, but they will also be the centre of future opportunities, leading to share gain of post-pandemic expenditure.

The future shape of competition is an interesting point, not least owing to the way that national producers are set to drive AfH competition as the big European destinations jostle for position. This will not only be linked to pricing, weather, or attractions but also now an additional metric around safety. Safety will be the watchword for the post-pandemic, endemic era.

PLASTIC IS A FOCUS, RESULTING IN THE ITALIAN TISSUE INDUSTRY EMBRACING WASTE REDUCTION POLICIES AROUND PACKAGING. PAPER PACKAGING IS THEREFORE SET TO BECOME INCREASINGLY POPULAR, DUE TO NEW TECHNOLOGIES THAT ALLOW HIGH EFFICIENCY MACHINE-WRAPPING OF TISSUE PRODUCTS. SOFFASS FOR EXAMPLE, IS LEADING WITH A PLEDGE TO ELIMINATE HALF THE PLASTICS FROM ITS PACKAGING BY 2030.

AFTER THE PANDEMIC HIT CONSUMER BUSINESS, 2022 IS THE YEAR OF RECOVERY FROM THESE NEGATIVE EFFECTS WITH KEY TRENDS OF SUSTAINABILITY AND INNOVATION

WEPA's new strategies progressing product diversity, flexible machinery, recycled paper, packaging, hybrid products, and efficient renewable energy. Bernhard Gross, Managing Director WEPA Italia, talks to TWM.



Photovoltaic plant: 5,000 modules are currently being installed across the roof of WEPA Italia's Lucca-based site

TWM/1: What's your current presence across Italy?

"In Italy, WEPA has two production sites: one in Lucca and one in Cassino. At these sites we operate three paper machines with a tissue production capacity of over 110,000 tonnes, equivalent to around one billion toilet paper rolls. The Cassino factory, with its very high level of automation, focuses primarily on rolled products.

"Operational excellence is key and we continuously invest in state-of-the-art manufacturing technology. It was only recently that we replaced one converting

"OPERATIONAL EXCELLENCE IS KEY AND WE CONTINUOUSLY INVEST IN STATE-OF-THE-ART MANUFACTURING TECHNOLOGY. IT WAS ONLY RECENTLY THAT WE REPLACED ONE CONVERTING LINE WITH A NEW HIGH-SPEED, BUT VERY FLEXIBLE LINE."

line with a new high-speed, but very flexible line.

"Our site in Lucca is our competence centre for the production of napkins and other folded products such as facial tissues and handkerchiefs. Operational excellence is of course equally important,

but innovations are key to success in this business segment. Colour, shape, print, material recipe, packaging and other customisations drive our discussions with customers. Our brand PERLA is known all over Italy for both tradition and innovation in the tissue napkin market."



"Known for tradition and innovation": the company's PERLA brand of tissue napkin products

TWM/2: How has your growth strategy in the Italian market changed during the past 18 months?

"The entire retail business in Europe was impacted by the Covid-19 outbreak. However, the AfH business was particularly affected. As WEPA Italia does not serve this business segment, we fortunately experienced less impact on volume. But at the same time, we saw huge variations within our product segments. While big diameter rolls were requested a lot more and kitchen towels saw unexpected growth, napkin volume declined, and we assume that the protection of masks against flu and colds made handkerchiefs less necessary.

"But we have a long-term vision and will therefore proceed with our strategy. As WEPA Italia, we contribute our share to the implementation of the WEPA Group vision to be the most sustainable and agile first-class partner for personal and professional hygiene solutions. We have already seen this decision confirmed by the market in recent months."

TWM/3: What plans do you have to grow in 2022?

"In our consumer business we saw certain product categories suffering from the pandemic. And 2022 for us is expected to be the year of recovery from these negative effects. At the same time our innovations in folded products have been progressed without delay, so we will accompany market launches with the necessary investments especially in our Lucca plant. For instance, new automation concepts to handle greater

"THE ENTIRE RETAIL BUSINESS IN EUROPE WAS IMPACTED BY THE COVID-19 OUTBREAK. HOWEVER, THE AFH BUSINESS WAS PARTICULARLY AFFECTED. AS WEPA ITALIA DOES NOT SERVE THIS BUSINESS SEGMENT, WE FORTUNATELY EXPERIENCED LESS IMPACT ON VOLUME. BUT AT THE SAME TIME, WE SAW HUGE VARIATIONS WITHIN OUR PRODUCT SEGMENTS."

product diversity will be implemented and more flexible machinery for new concepts of primary packaging has already been installed."

TWM/4: What efforts are you making in terms of sustainability?

"At WEPA we have a clear focus on sustainability. That is why we offer sustainable products such as toilet paper from our brand COMPRAMI in Italy, for example: the hybrid version of COMPRAMI consists of an intelligent combination of recycled fibres and cellulose and perfectly meets consumer demands in terms of ecology and comfort. Hybrid products with a 30% proportion of recycled fibres have a 20% improved environmental footprint.

"100% of our product packaging is recyclable or reusable and as WEPA

Group we have set the target of using recycled material for 60% of our packaging material by 2025 and saving 8,000 tonnes of primary plastics in our packaging every year.

"In terms of sustainable energy supply, we are currently installing a photovoltaic plant on the roof of the main building at our Lucca site. With around 5,000 modules installed on 11,000 square meters, this will be one of the largest photovoltaic installations in the Lucca region and will cover nearly 30% of the entire electricity demand of the converting factory.

"And as WEPA we are also exceedingly committed to the efficient supply of energy to our plants. Therefore, at our Cassino mill, our partner TEP is constructing a highly efficient combined heat, power and cooling plant, providing not only electrical energy and steam for the mill,

"AT WEPA WE HAVE A CLEAR FOCUS ON SUSTAINABILITY. THAT IS WHY WE OFFER SUSTAINABLE PRODUCTS SUCH AS TOILET PAPER FROM OUR BRAND COMPRAMI IN ITALY, FOR EXAMPLE. 100% OF OUR PRODUCT PACKAGING IS RECYCLABLE OR REUSABLE AND AS WEPA GROUP WE HAVE SET THE TARGET OF USING RECYCLED MATERIAL FOR 60% OF OUR PACKAGING MATERIAL BY 2025."



High level automation: the Cassino factory focuses primarily on rolled products



but also supplying heating and cooling for the nearby university district. In this way a smart community is being created."

TWM/5: What new trends are you seeing across the tissue market's sectors?

"Generally for the WEPA Group, in the AfH market we have developed from a private label and manufacturer brand focus towards a clear brand focus in the last two and a half years. Our brands Satino by WEPA and BlackSatino will play an essential role in driving our growth objectives and our brands play leading roles in sustainability. For example, BlackSatino is the only hygiene paper brand in Europe

"IN THE CONSUMER MARKET WE ARE PRESENT IN THE MAIN EUROPEAN COUNTRIES AT MOST OF THE RETAILERS. AS THE NUMBER THREE COMPANY HERE, WE ARE ONE OF THE TOP SUPPLIERS IN THE EUROPEAN HYGIENE PAPER MARKET AND A RELIABLE PARTNER FOR THE RETAILERS."

BERNHARD GROSS



(R-L): Bernhard Gross, Managing Director WEPA Italia, and Antonio Gallina, Mill Manager WEPA Italia

used in the Professional sector which has been awarded with the Cradle-to-Cradle silver category. With these strong brands, we want to grow beyond our home markets in DACH and BNL towards other countries in Western and Eastern Europe. Furthermore, we want to strengthen our service offering.

"In the Consumer market we are present in the main European countries at most of the retailers. As the number three company here, we are one of the top suppliers in the European hygiene paper market and a reliable partner for the retailers. Besides the supply of standard assortments we are aiming to implement a sustainable assortment at our customers. A clear goal is to bring our hybrid and recycling strategy forward in each region."

TWM/6: Are you seeing an increase in gross sales of tissue and towel products in Italy, and do you forecast that to continue?

"Currently, the commodity price situation causes challenges for all tissue manufacturers. Especially in situations like this, a great partnership between manufacturers and retailers is important

"IN TERMS OF SUSTAINABILITY, WE CONTINUE TO FOCUS ON RECYCLED PAPER AND PACKING, HYBRID PRODUCTS AS WELL AS TOP-IN-CLASS ENERGY EFFICIENCY AND AN INCREASED USE OF RENEWABLE ENERGY. WE SEE SIGNIFICANT GROWTH IN BOTH OF THESE ASPECTS. AND WE WILL THEREFORE CONTINUE TO INVEST IN SUSTAINABILITY CONCEPTS AND INNOVATIONS."

to overcome the obstacles together. We understand that aspects such as sustainability, delivery reliability and high product quality are important to our customers. In the end, it is not just about the lowest price. Sustainability and innovation are two of the main aspects we focus on as a company.

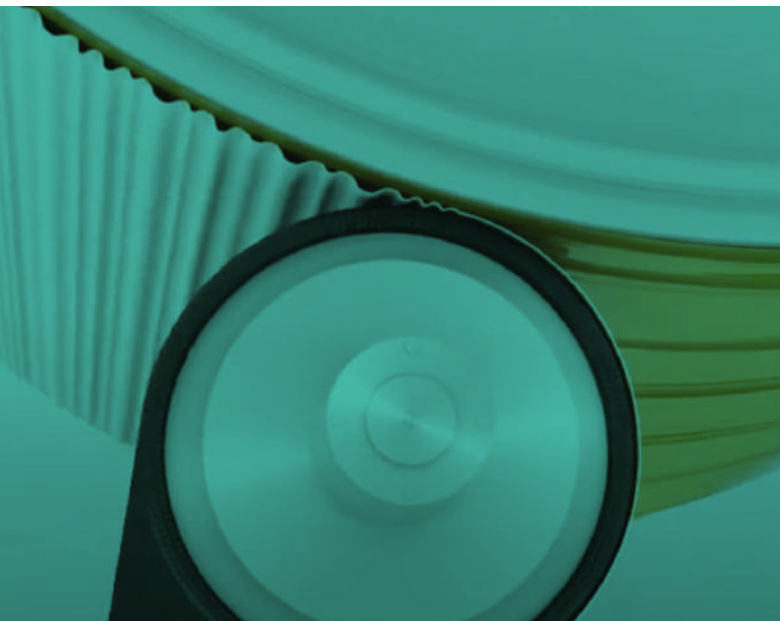
"In terms of sustainability, we continue to focus on recycled paper and packing, hybrid products as well as top-in-class energy efficiency and an increased use of renewable energy.

"We see significant growth in both of these aspects. And we will therefore continue to invest in sustainability concepts and innovations."



Above: WEPA's COMPRAMI hybrid product

Form a new attachment.



Get creping performance and tissue softness you'll prize with Buckman Yankee coating.

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ESSITY EXPECTS PROFESSIONAL HYGIENE MARKET IS SET TO GROW FASTER COMPARED TO PRE-COVID LEVELS

Italian operations at Lucca and Collodi playing leading roles in new “more agile and competitive” Consumer Tissue Private Label division for Europe announced in 2021. Here, Riccardo Trionfera, Commercial Director Professional Hygiene Essity Italy, talks to TWM



Essity's Italian HQ in Altopascio, Lucca: the plant is dedicated to branded products

TWM/1: What's your current presence in the Italian tissue market?

"In Italy, we provide complete hygiene solutions for professional sectors such as hotels, restaurants, catering, hospitals and so on. The company operates in Italy with the brands TENA, Tempo, Tork, Nuvenia, Libero, Demak'Up, Leukoplast, Jobst, Actimove, Cutimed and Delta.

"In 2020 Essity's Italy net sales resulted in €479m and we counted almost 900 employees.

"We have headquarters in Altopascio, Lucca, a sales and marketing office in Milan and three production sites in Porcari, Altopascio, and Collodi dedicated to the production of tissue products for Professional Hygiene, Consumer and Private Label. Altopascio specialises in folded tissue production with both hankies and napkins lines. The European Napkin Centre of Excellence of Essity also sits in

Altopascio, and it was inaugurated in 2019 with an overall investment of €47m.

"Lucca specialises in rolls production with lines producing toilet paper, kitchen rolls and industrial rolls; it also has paper machines producing mother reels. Collodi is a plant with paper machines specialises in colour tissue products producing for Altopascio, Lucca and external sales."

TWM/2: How has your growth strategy in the Italian market changed during the past 18 months?

"Italy's overall market for Professional Hygiene decreased in volumes during 2020 and Essity's strategy is primarily focused on recovering volumes lost due to the pandemic and to increase Essity's leadership position in the hygiene and

"IN ITALY, WE HAVE HEADQUARTERS IN ALTOPASCIO, LUCCA, A SALES AND MARKETING OFFICE IN MILAN AND THREE PRODUCTION SITES IN PORCARI, ALTOPASCIO, AND COLLODI DEDICATED TO THE PRODUCTION OF TISSUE PRODUCTS FOR PROFESSIONAL HYGIENE, CONSUMER AND PRIVATE LABEL. ALTOPASCIO SPECIALISES IN FOLDED TISSUE PRODUCTION WITH BOTH HANKIES AND NAPKINS LINES. THE EUROPEAN NAPKIN CENTRE OF EXCELLENCE OF ESSITY ALSO SITS IN ALTOPASCIO."

health sectors for our most relevant customer segments (Health care, Horeca, industry and commercial).

"In 2021, Essity announced the intention to create a new Consumer Tissue Private Label division in Europe dedicated to Private Label customers. In Italy Lucca and Collodi sites will be part of this new division while Altopascio will be dedicated to branded products. The objective of the new division is to become more agile and competitive in the Consumer Goods private label business and start seizing volume opportunities in the market."

TWM/3: What environmental changes as a business have you made in Italy?

"We work diligently to close the loop, using more from less, evolving traditional production practices to be innovative and sustainable in materials usage, partnerships, logistics and business models.

"We are the first to recycle hand paper towels with our Tork PaperCircle service and to use wheat straw to produce quality tissue products. We design smarter dispensers and packaging, thinner and better absorbing products. Some examples of our sustainability and circularity projects in Italy include:

- **Crush Paper:** a 100% Italian project, made in Collodi, to produce high quality tissue paper using alternative fibres. This is the case of recovering food waste (coming from orange peel, corn and coffee beans) and using this fibre to create a pulp that can replace up to 15% of virgin fibres coming from trees.
- **Paper sludge circularity project:** at our Lucca plants we reuse the paper sludge (which is left and normally disposed of after paper production) to produce new products such as packaging paper.
- **Re-Energy project in Altopascio:** a trigeneration system equipped with the most modern technologies and capable of supplying electricity to the entire plant, converting exhaust fumes into thermal energy. This is aiming at reducing Co2 emissions by 3.7 tonnes per year.
- Our packaging is manufactured using renewable or recycled materials by 77% (2020) – the target is to reach 85% by 2030.
- Usage of packaging with PCR (post-consumer recycled), increasing energy efficiency together with the increased use of paper packaging."

TWM/4: What are your plans and the growth trends you're seeing in each sector?

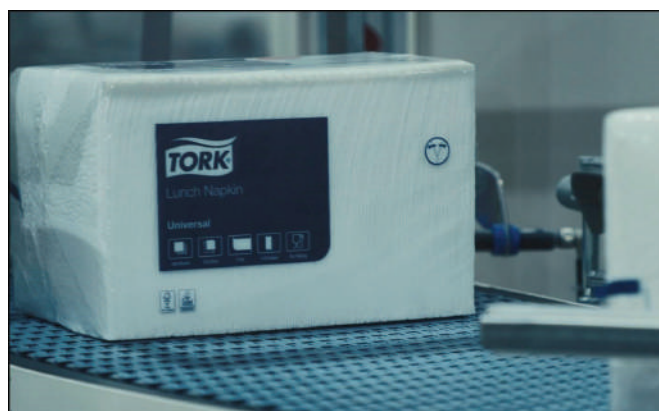
"Essity has a strong presence within all our sectors. Before Covid in Italy we were growing faster than the market and now producers, including ourselves, aim to recover volumes lost due to the pandemic. We aim to continue to increase Essity's leadership position in hygiene and health sectors.

"We believe the professional hygiene market will grow faster compared to the pre-Covid period due to increased hygiene standards."



"WE WORK DILIGENTLY TO CLOSE THE LOOP, USING MORE FROM LESS, EVOLVING TRADITIONAL PRODUCTION PRACTICES TO BE INNOVATIVE AND SUSTAINABLE IN MATERIALS USAGE, PARTNERSHIPS, LOGISTICS AND BUSINESS MODELS."

RICCARDO TRIONFERA



Essity's Tork product: the range is a leading global brand in the workplace hygiene sector

COVID DIDN'T CHANGE MY BUYING HABITS VERY MUCH ... BUT JUST WAIT UNTIL BABY ARRIVES IN MARCH

Brazilian-born world traveller Márcio Moura is, unsurprisingly, an avid football fan. His team is São Paulo's Corinthians, and Márcio lives in Belo Horizonte, Minas Gerais, where he works for the Federal Revenue Service of Brazil. He has travelled widely and has also lived and worked in South Korea, Africa and the UK. He and his partner Maria are expecting their first child in March.

At home, tissue and towel products play an important role in my daily life and my family uses all tissue and towel products, toilet paper, kitchen tissue, facial tissue, napkins, etc. I also have the habit of keeping toilet paper and facial tissue in the car's glove compartment as they come in handy when travelling.

Usually I buy these products at supermarkets and pharmacies. I've never ordered this kind of product online, mainly because it's quick and easy just to pop down to our local shops to see and buy the products. Occasionally I will bulk buy toilet paper to save some money.

When it comes to loo roll and napkins, I prioritise high-quality products. Especially toilet tissue which has to be soft and fairly thick, preferably double layered. In this case, the brand of the product is important and I tend to stick to it. I like the familiarity of a product I know works well, and I am conservative! But I'm not closed to experimenting with new brands either. My favourite is Kimberly-Clark for that matter ... and for the other products, price trumps quality. I usually choose the cheapest one with some quality.

In terms of sustainable products, despite recognising the importance of this issue I don't usually take it into consideration when buying products. Usually I assume the companies are responsible ... so the only two variables I use in my decision making process are quality and price. I may have been naive in this matter!

Whenever I've travelled abroad, you see that some of the poorer countries offer little variety of brands, and consequently it's harder to find quality products. However, I cannot complain about my experiences. In Africa, for example, I cannot recall bad experiences with toilet paper there. And even in Brazil, it's noticeable the differences



among regions with the quality and variety of products in supermarkets in poorer regions. Northern Brazil is more like Africa in its cultures and habits and there are fewer tissue and towel products available, whereas the south of Brazil is more similar to Europe, with a lot of high-quality tissue and towel products easily available.

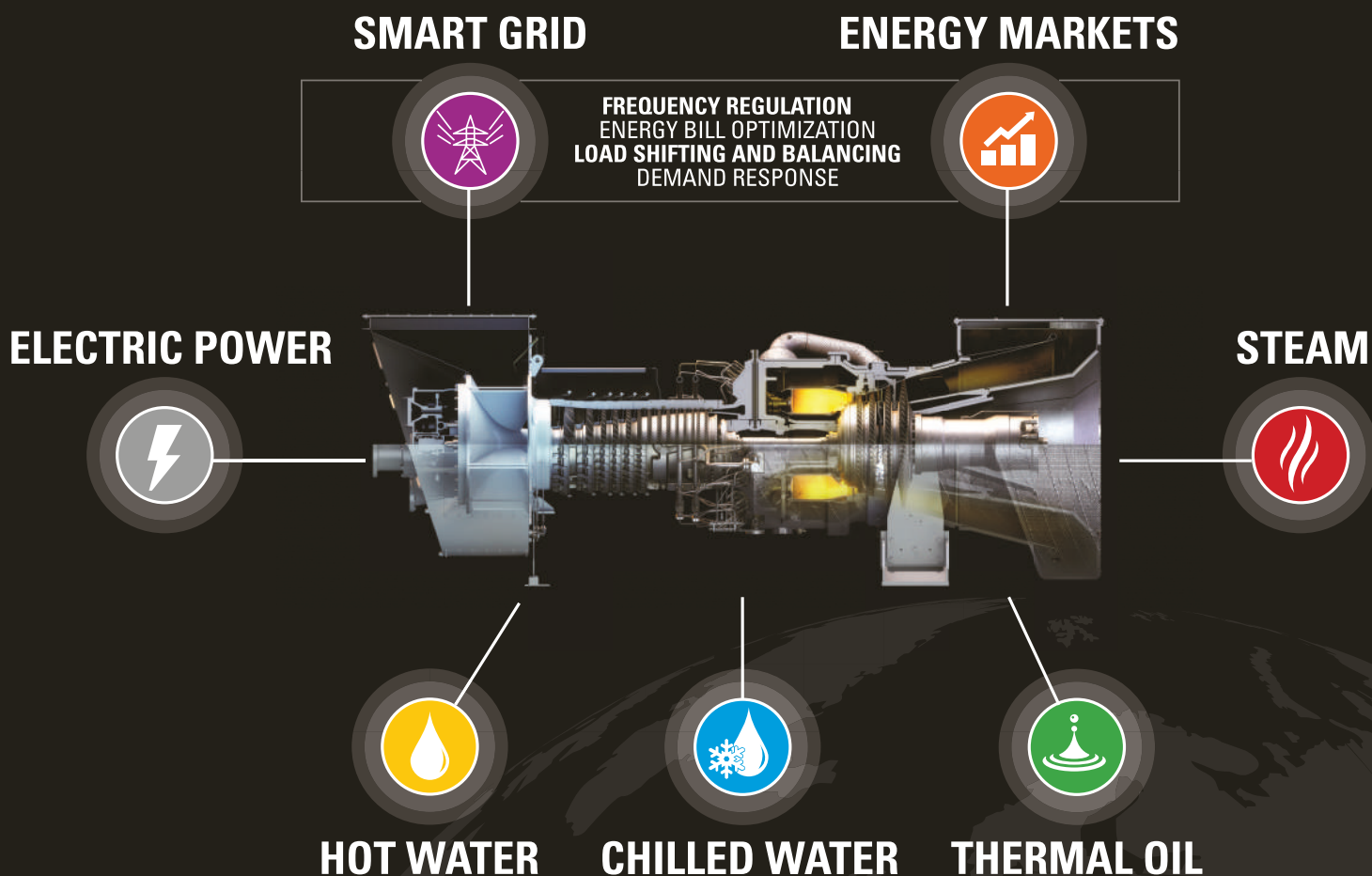
During the year I worked in South Korea I also noticed that there were many higher quality products there, especially those made for skincare. Koreans are very concerned about their skin, so for all kinds of products that touch your skin, you know they have good quality.

Since the outbreak of Covid-19, my

buying habits haven't changed. Even during the hardest time when restrictions were tightened and we were in lockdown, I kept buying at the supermarkets. At that time, I used to buy more quantities in fewer trips, not due to the fear of supply shortage but to avoid going out too frequently.

I think the biggest change to my household will arrive in March as we are expecting our first child. While we are – not yet – stocking up on products, I will be soon! A baby completely changes the routine of a household, so I'm certain the consumption of toilet paper and kitchen towel will increase enormously!

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SPECIAL FEATURE:

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Afghanistan	Confidential	Confidential	1	New	2022	16000	2.8
Africa	Confidential	Confidential	1	New	2023	30000	2.8
Africa	Confidential	Confidential	1	New	2022	20000	2.7
Africa	Confidential	Confidential	NA	Major Rebuild	2021	NA	NA
Africa	Confidential	Confidential	NA	New	2023	NA	NA
Asia	Confidential	Confidential	NA	New	2023	NA	NA
Algeria	Warak	Setif	2	New	2021	30000	2.8
Argentina	Celupaper	Buenos Aires	5	New	2022	23400	2.75
Australia	ABC	NA	NA	New	2022	140tpd	3.65
Bangladesh	Meghna Pulp & Paper Mills	NA	2	New	2022	18,500	2.9
Bolivia	Confidential	NA	4	New	2022	32000	2.8
Brazil	HP Papéis	NA	1	New	2021	32000	2.8
Brazil	Impel	NA	2	New	2022	22750	2.8
Canada	Kruger Products	Sherbrooke, Quebec	NA	New	2022	70000	5.6
Chile	CMPC Tissue	NA	17	Rebuild	2021	NA	2.7
China	APP	Rudong	NA	New	2022	65000	5.6
China	APP	Rudong	NA	New	2022	65000	5.6
China	APP	Rudong	1	New	2021	34300	3.6
China	APP	Rudong	2	New	2021	34300	3.6
China	APP	Rudong	3	New	2021	34300	3.6
China	APP	Rudong	4	New	2021	34300	3.6
China	APP	Rudong	13	New	2021	34300	3.6
China	APP	Rudong	14	New	2021	34300	3.6
China	APP	Rudong	15	New	2022	34300	3.6
China	APP	Rudong	16	New	2022	34300	3.6
China	APP	Rudong	5	New	2022	34300	3.6
China	APP	Rudong	6	New	2022	34300	3.6
China	APP	Rudong	7	New	2022	34300	3.6
China	APP	Rudong	8	New	2022	34300	3.6
China	APP	Rudong	9	New	2022	34300	3.6
China	APP	Rudong	10	New	2022	34300	3.6
China	APP	Rudong	23	New	2022	34300	3.6
China	APP	Rudong	24	New	2022	34300	3.6
China	APP	Rudong	25	New	2022	34300	3.6
China	APP	Rudong	26	New	2022	34300	3.6
China	Asia Symbol	Guangdong	11	New	2022	25000	2.8
China	Asia Symbol	Guangdong	12	New	2022	25000	2.8
China	Asia Symbol	Guangdong	13	New	2022	NA	5.6
China	Auswei Paper (Jiangmen)	NA	1	New	2021	17000	2.8
China	Baoding Ruifeng Paper	NA	NA	New	2021	NA	2.8
China	C&S Paper Co. (Tangshan)	Hebei	4	New	2022	26000	3.5
China	Confidential	NA	34	New	2023	NA	5.6
China	Confidential	NA	33	New	2023	NA	5.6
China	Confidential	Confidential	NA	New	2021	3500	3.5
China	Confidential	Confidential	NA	New	2021	3500	3.5
China	Confidential	Confidential	NA	New	2022	35000	3.5
China	Confidential	Confidential	NA	New	2022	NA	3.5

PROJECTS SURVEY

	PM SPEED (m/min)	SUPPLIER	COMMENTS
	1300	Baotuo	Crescent Former TM
	1700	Recard	Crescent Former TM
	1300	Recard	Crescent Former TM
	NA	Toscotec	CF
	1800	Toscotec	AHEAD 1.8
	2000	Toscotec	AHEAD 2.2
	2000	Valmet	Advantage DCT 100
	1300	Toscotec	MODULO-PLUS
	2000	A.Celli	A.Celli iDEAL Master 2000M
	1000	Recard	Fourdriner with double press and Steel Yankee
	1900	Hergen	Crescent Former Machine EVO 16
	1900	Hergen	Crescent Former EVO 16 ECO
	1300	Hergen	Crescent Former Smart Eco
	2200	Confidential	TAD
	1200	Recard	Modification of Crescent Former Machine
	2200	Valmet	Advantage DCT 200
	2200	Valmet	Advantage DCT 200
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1900	Andritz	PrimeLine™ W 2000 (ShoePress)
	1000	Kawano Zoki	BF-1000S
	1300	Baotuo	BC1300-2850
	1800	Baotuo	Crescent Former TM
	1900	Andritz	PrimeLine™ W 2000 (ShoePress)
	1900	Andritz	PrimeLine™ W 2000 (ShoePress)
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600
	1600	Valmet	IntelliTissue 1600

TWM's annual Projects Survey charts all new capacity being added, ordered or in final planning stages during 2021-2022, as well as noting any projects already planned for 2023.

Throughout the past year, the tissue industry across the globe has proven its resilience by navigating through the evolving pandemic and its challenges, as well as the barrage of price hikes and swift demand spikes and falls.

It's also proved itself to be a vital fail-safe for populations, by providing increased levels of hygiene which have now become an essential element of consumers' purchasing choices.

These positive developments for the global tissue market are backed up by this year's Projects Survey, which sheds some light on just how the tissue industry will respond as the world slowly starts to open up again.

An impressive 157 tissue projects are listed as being added, ordered or in final planning stages during 2021, 2022, and 2023. As always, caution must be taken with this figure due in large part to its sheer scope. The figures included here are based on the best information provided, and this has included TWM's extensive research into the global tissue industry over the past few years, as well as a reliance on reliable responses from the many companies contacted to detail their present and future developments.

In normal circumstances long-term investments are always subject to fluctuating economic influences. That reality has been further influenced by the extraordinary circumstances of the last few years with the Covid variants and excessive cost increases.

Many of last years predicted start-ups have been delayed and are now planned for 2022: some of the 'new' capacity announced this year in fact includes some of last year's estimate.

Additionally, and understandably, some companies declined to comment on their projects at this time, and there are also a substantial number of confidential projects.

The results been compiled from a year-long accumulation of tissue capacity data collected by TWM from companies across the world. Significant intel is gained from TWM's six annual Country Reports, which in 2021 included in-depth interviews with tissue mills in China, North America, Southeast Asia, Brazil, Germany and the

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
China	Dezhou Shenggang Paper	Qingyun County	NA	New	2021	NA	NA
China	Dezhou Shenggang Paper	Qingyun County	NA	New	2021	20000	NA
China	Fujian Jiayi Co.	Fujian	1	New	2022	15000	3.6
China	Guangning Nanbao Paper Co.	Guangdong	2	New	2022	20000	2.8
China	Guangxi Laibing Qiaohong Co.	Guangxi	3	New	2022	30000	2.8
China	Guangxi Plant Protect Cloud Industrial Co.	Guangxi	3	New	2022	30000	4.2
China	Guangxi Plant Protect Cloud Industrial Co.	Guangxi	4	New	2022	30000	4.2
China	Guangxi Sun Paper	Beihai City	5	New	2021	NA	5.65
China	Guangxi Sun Paper	Beihai City	6	New	2021	NA	5.65
China	Guangxi Sun Paper	Guangxi	9	New	2022	28000	2.8
China	Guangxi Sun Paper	Guangxi	10	New	2022	28000	2.8
China	Hengan Group	Yunfu	30	New	2023	NA	3.65
China	Hengan Group	Yunfu	29	New	2023	NA	3.65
China	Hengan Group	Yunfu	28	New	2022	NA	3.65
China	Hengan Group	Yunfu	27	New	2022	NA	3.65
China	Hengan Group	Hunan	NA	New	2022	40000	3.65
China	Hengan Group	Hubei	NA	New	2023	40000	3.65
China	Hubei Libang Paper	Hubei	5	New	2022	25000	3.5
China	Hubei Libang Paper	Hubei	6	New	2022	25000	3.5
China	Hubei Libang Paper	Hubei	7	New	2022	25000	3.5
China	Hubei Libang Paper	Hubei	8	New	2022	25000	3.5
China	Jiangxi Saideli	Jiangxi	21	New	2022	25000	2.8
China	Jiangxi Saideli	Jiangxi	22	New	2022	25000	2.8
China	Jiangxi Saideli	Jiangxi	23	New	2022	25000	2.8
China	Jiangxi Saideli	Jiangxi	24	New	2022	25000	2.8
China	Liansheng	NA	2	New	2022	NA	5.65
China	Liansheng	NA	1	New	2022	NA	5.65
China	Liansheng	NA	NA	New	2022	65000	5.6
China	Liansheng	NA	NA	New	2022	65000	5.6
China	Shaoneng Group	Hunan	9	New	2022	25000	2.8
China	Shaoneng Group	Hunan	10	New	2022	25000	2.8
China	Shaoneng Group	Hunan	11	New	2022	25000	2.8
China	Shaoneng Group	Hunan	12	New	2022	25000	2.8
China	Shaoneng Group	Hunan	13	New	2022	25000	2.8
China	Shaoneng Group	Hunan	14	New	2022	25000	2.8
China	Sichuan Huanlong New Material Co.	Sichuan	3	New	2022	25000	2.8
China	Sichuan Huanlong New Material Co.	Sichuan	4	New	2022	25000	2.8
China	Xinjiang Zhongtai Xingwei Co.	Xinjiang	1	New	2022	25000	2.8
China	Xinjiang Zhongtai Xingwei Co.	Xinjiang	2	New	2022	25000	2.8
China	Xinjiang Zhongtai Xingwei Co.	Xinjiang	3	New	2022	25000	2.8
China	Xinjiang Zhongtai Xingwei Co.	Xinjiang	4	New	2022	25000	2.8
China	Yunnan Hong Yuan	NA	1	New	2021	17000	2.8
China	Yunnan Nan'en Tangzhi Co.	Yunnan	2	New	2021	16000	2.8
China	Zhejiang Jiajiafa Paper Co.	Zhejiang	1	New	TBC	20000	2.8
China	Zhejiang Jiajiafa Paper Co.	Zhejiang	2	New	TBC	20000	2.8
China	Zhejiang Jiajiafa Paper Co.	Zhejiang	3	New	TBC	20000	2.8
China	Zhejiang Jingxing	NA	5	New	2022	65000	5.6
China	Zhejiang Jingxing	NA	6	New	2022	65000	5.6
Confidential	Confidential	NA	NA	Major Rebuild	2021	NA	NA
Confidential	Confidential	NA	NA	Major Rebuild	2021	NA	NA
Confidential	Confidential	NA	NA	Major Rebuild	2021	NA	NA
Confidential	Confidential	Confidential	NA	New	2021	70000	5.6
Confidential	Confidential	Confidential	NA	New	2022	50000	3.46

	PM SPEED (m/min)	SUPPLIER	COMMENTS
	NA	Baosuo	BC1300-3600 Crescent Former TM
	NA	Baosuo	BC1300-3600 Crescent Former TM
	1100	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1400	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	2000	Andritz	PrimeLineTM W 2000
	2000	Andritz	PrimeLineTM W 2000
	1800	Baotuo	Crescent Former TM
	1800	Baotuo	Crescent Former TM
	1700	Andritz	PrimeLineCOMPACT M 1600
	1700	Andritz	PrimeLineCOMPACT M 1600
	1700	Andritz	PrimeLineCOMPACT M 1600
	1700	Andritz	PrimeLineCOMPACT M 1600
	1500	Toscotec	TADVISION
	1500	Toscotec	TADVISION
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	2000	Andritz	PrimeLineTM W 2000
	2000	Andritz	PrimeLineTM W 2000
	2000	Valmet	Advantage DCT 200HS
	2000	Valmet	Advantage DCT 200HS
	1600	Baosuo Group Baotuo Paper Equipment Co.	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1600	Baotuo	Crescent Former TM
	1100	Baotuo	Crescent Former TM
	1100	Baotuo	Crescent Former TM
	1100	Baotuo	Crescent Former TM
	1100	Baotuo	Crescent Former TM
	1000	Kawanoe Zoki	BF-1000S
	1300	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	1500	Baotuo	Crescent Former TM
	2000	Valmet	Advantage DCT 200HS
	2000	Valmet	Advantage DCT 200HS
	NA	Toscotec	CF
	NA	Toscotec	CF
	NA	Toscotec	CF
	2000	Toscotec	AHEAD 2.0L
	2000	Toscotec	AHEAD 2.2M

Middle East. And to-date in 2022, with companies in Italy. Wide ranging news coverage has also reported on the latest investments from every continent.

Notable points to include

The tale of this year's chart is undeniably one of strong global growth across all geographies.

It represents a detailed snapshot of production strategies in all the major tissue regions and compares to last year's 146 tissue machine projects that were expected to come on stream or had already started-up in 2020, 2021 and 2022, the 101 projects noted in 2019, and the 115 projects noted in 2018.

Impressively, in 2022 almost half of all the world's tissue projects are listed in China, with 80 tissue machines expected to come on stream. There are also numerous other small confidential start-ups in China not listed here.

How exactly this will impact the overcapacity in a country with 1.4 billion people remains to be seen. Competition in the country's tissue market is likely to grow even fiercer. Machinery supplier Baosuo told TWM that 450,000 tonnes of production capacity were added in 2021, while in 2022, 500,000 - 600,000 tonnes of capacity will be added. In 2023, it said several of its customers will order new equipment.

Asia Far East continues to show the same strong growth from recent years, as seen in the number of projects there in this year's survey.

Interestingly, Japan has nine new start-ups planned – all of which are confidential.

Turkey continues to look robust with six large tissue machines that came on stream in 2021, or are expected to in 2022 or 2023.

Afghanistan is also expected to start up a new 16,000tpy TM in 2022.

At the start of 2022, what is increasingly evident is the increasing major challenge of overcapacity. Already a fiercely competitive market, the stakes are likely to rise even higher over the coming years as economies continue to evolve their way from the pandemic to endemic.

Both Essity and Sofidel have recently announced price hikes. In January 2022, Essity said it will introduce price increases across all its product categories and markets in an attempt to "compensate the substantially higher costs of raw materials, energy and distribution". And in the company's full-year 2021 results, President and Chief Executive Magnus Groth said that further price hikes will be implemented in 2022 to offset strong inflation costs: "We have taken strong actions to address the significant challenges in our operating environment. We implemented price increases in all business areas and further price increases will be implemented in 2022 to offset the strong cost inflation."

In early 2022, Sofidel also announced it will

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Confidential	Confidential	Confidential	NA	New	2021	38000	3.5
Confidential	Confidential	Confidential	NA	New	2021	38000	3.5
Confidential	Confidential	Confidential	NA	New	2021	38000	3.5
Confidential	Confidential	Confidential	NA	New	2021	38000	3.5
Confidential	Confidential	Confidential	NA	New	2021	60000	5.6
Confidential	Confidential	Confidential	NA	New	2023	35000	3.5
Confidential	Confidential	Confidential	NA	New	2023	65000	5.6
Confidential	Confidential	Confidential	NA	New	2023	65000	5.6
Confidential	Confidential	Confidential	NA	New	2023	75000	5.6
Croatia	Astrabel	Belišće	1	New	2023	NA	2.8
El Salvador	Alas Doradas	San Salvador	NA	New	NA	35000	2.8
EMEA	Confidential	Confidential	NA	New	2022	70000	5.6
Europe	Confidential	NA	NA	Major Rebuild	2021	NA	NA
Europe	Confidential	Confidential	NA	New	2021	70000	5.6
Greece	Intertrade Hellas	NA	NA	New	2022	244tpd	5.6
Greece	Maxi	NA	2	New	2021	38000	2.7
Guatemala	Papelera Internacional, Grandbay Group	Rio Hondo Zacapa	7	New	2022	60000	5.5
Hungary	Vajda Papir	Dunaföldvár	4	New	2022	80000	5.6
Italy	Cartiera Confalone	Montoro inferiore (AV)	1	New	2021	32000	2.85
Italy	Cartiera Ponte d'Oro Anscarta	Lucca	1	Rebuild	2021	NA	NA
India	Maxi	Katerini	NA	New	2021	40000	NA
India	Century Pulp and Paper	Lalkua	NA	New	2021	30000	2.8
Indonesia	APP	OKI	4	New	2021	41650	3.7
Indonesia	APP	OKI	3	New	2021	41659	3.7
Indonesia	APP	OKI	2	New	2022	41650	3.7
Indonesia	APP	OKI	1	New	2022	41650	3.7
Japan	Confidential	Confidential	4	New	2023	32000	3.6
Japan	Confidential	Confidential	2	New	2021	60000	5.6
Japan	Confidential	Confidential	16	New	2021	18000	3.4
Japan	Confidential	Confidential	7	Rebuild	2021	15000	3.4
Japan	Confidential	Confidential	3	Rebuild	2021	13000	2.1
Japan	Confidential	Confidential	2	Rebuild	2021	10000	3
Japan	Confidential	Confidential	3	Rebuild	2022	15000	2.5
Japan	Daio Paper Corporation	Kawanoe	NA	New	2021	70000	5.6
Japan	Marutomi	Ono mill	2	New	2021	22500	2.85
Middle East	Confidential	Confidential	NA	New	2023	NA	NA
Poland	Wepa Piechowice	Piechowice	NA	New	2021	40000	2.75
Romania	MG TEC Industry	NA	2	New	2022	NA	2.85
Russia	Arkbhum	NA	NA	New	2023	65000	5.6
Russia	Hayat Kimya	Kaluga	9	New	2021	70000	5.6
Russia	Hayat Kimya	Moscow	10	New	2022	70000	5.6
Saudi Arabia	MEPCO	Jeddah	4	New	2022	60000	NA
Saudi Arabia	Saudi Paper Group	Dammam	2	New	2022	30000	2.85
South Africa	Sappi	Stanger	NA	Rebuild	2021	NA	NA
South Korea	Mirae Paper	Jeonju	2	Rebuild	2021	NA	NA
Thailand	C.A.S Paper Mill Co.	Singburi	1	New	2021	30000	2.85
Tunisia	Azur Papier	NA	2	New	2021	38000	2.7
Turkey	Aktül Kagit	Pamukova	3	New	2022	65000	5.6
Turkey	Eczacibasi	Manisa	5	New	2023	70000	5.6
Turkey	Essel Kağıt	Osmaniye	3	New	2021	90000	5.7
Turkey	Europap Tezol	Mersin	4	New	2022	40000	2.92
Turkey	Hayat Kimya	Mersin	8	New	2021	70000	5.6
Turkey	Lila Kagit	Corlu	4	New	2022	70000	5.6
Ukraine	Kochavinska Paper Factory	NA	NA	New	2022	80tpd	2.8
UK	WEPA Group	Bridgend	NA	New	2022	65000	5.6
USA	Irving Tissue	Macon	NA	New	2021	75000	5.6
USA	ST Paper	NA	2	New	2022	NA	5.3

	PM SPEED (m/min)	SUPPLIER	COMMENTS
	2000	Valmet	Advantage eTAD
	2000	Valmet	Advantage eTAD
	2000	Valmet	Advantage eTAD
	2000	Valmet	Advantage eTAD
	2000/1800	Valmet	Advantage NTT
	2000	Valmet	Advantage DCT 135HS
	2000	Valmet	Advantage QRT 135
	2000	Valmet	Advantage QRT 135
	2000	Valmet	Advantage ThruAir
	1300	Andritz	PrimeLineCOMPACT S 1300
	2000	Valmet	Advantage DCT 100HS
	2200	Valmet	Advantage DCT 200TS
	NA	Toscotec	CF
	2200	Valmet	Advantage DCT 200
	2000	A.Celli	A.Celli iDEAL Master 2000L
	1.8	Recard	Crescent Former TM
	2200	Toscotec	AHEAD 2.2L
	2200	Toscotec	AHEAD 2.2L
	2000	Toscotec	AHEAD 2.2S
	NA	Toscotec	TT SYD Steel Yankee Dryer
	1850	Recard	Crescent Former TM
	2000	Valmet	Advantage DCT 100
	1700	Valmet	IntelliTissue 1700
	1700	Valmet	IntelliTissue 1700
	1700	Valmet	IntelliTissue 1700
	1700	Valmet	IntelliTissue 1700
	1300	Kawano Zoki	BF-15 Towel
	2000	Kawano Zoki / Valmet	DCT200HS
	1200	Kawano Zoki	BF-15 Towel
	1000	Kawano Zoki	BF-12
	1000	Kawano Zoki	BF-12
	3000	Kawano Zoki	BF-12 Towel double felt
	1000	Kawano Zoki	BF-15
	2200	Valmet	Advantage DCT 200
	1500	Toscotec	MODULO-PLUS
	1500	Toscotec	AHEAD 1.5
	2000	Toscotec	AHEAD 2.2S
	1900	Andritz	PrimeLineCOMPACT V (Steel Yankee)
	2000	Valmet	Advantage DCT 200HS
	2200	Valmet	Advantage DCT 200
	2200	Valmet	Advantage DCT 200TS
	2200	Toscotec	AHEAD 2.2L
	2100	Toscotec	AHEAD 2.2
	NA	Toscotec	TT SYD Steel Yankee Dryer
	NA	Toscotec	TT SYD Steel Yankee Dryer
	1850	Toscotec	AHEAD 2.2S
	1800	Recard	Crescent Former TM
	2000	Valmet	Advantage DCT 200HS
	2200	Valmet	Advantage DCT 200TS
	2000	Toscotec	AHEAD 2.2L
	2100	Toscotec	AHEAD 2.2S
	2200	Valmet	Advantage DCT 200
	2200	Valmet	Advantage DCT 200
	1500	A.Celli	A.Celli iDEAL START 1500S
	2200	Valmet	Advantage DCT 200
	NA	Valmet	Advantage ThruAir
	2000	Andritz	PrimeLineTM W 2000 (ShoePress)

increase the price of its products in all European markets and in all sales channels, a move which is the result of "continuing increases in the prices of raw materials and, in particular, energy, pulp and transport".

As enforced lockdowns and restricted travel across countries ease, along with the opening up of socialising, many areas of life will return again. Just how this impacts the market remains to be seen. But the central theme is emphatically one of expansion.

This year's Project Survey presents as many questions as it does answers.

157

TM projects in this year's survey

4

New tissue machines in Africa

80

Tissue projects listed in China

146

Projects listed in 2021's survey

CAUTION

All aggregates taken from the survey should be treated with some caution. While all care has been taken to publish comprehensive data, it is inevitable that projects will be missing or details incomplete. Many projects have also been delayed, so start-up data used in last year's Project Survey has had to be repeated. We welcome your help to ensure as comprehensive a survey as possible at the end of 2022.

PAPER MACHINE TECHNICAL THEME: AT THE LEADING EDGE OF THE INDUSTRY'S DRIVE TOWARD THE AUTONOMOUS MILL

In twenty years tissue machine technology has reduced energy consumption by half, and water consumption by up to 80%. Today, the level of innovation is as strong as ever driven by traditional best practice and accelerated by the challenges of the pandemic and rising costs. Digitalisation of production is evolving day-by-day, taking the industry towards its ultimate goal. Entire plants have now been started up remotely. Here, leading company personnel explain their extensive strategies for machinery launches, energy sourcing and storage, cost controls, and cogeneration.



Valter Canelli
Sales Director, A.Celli Paper



Stefano Marenco
Director Tissue R&D and PrimeLineTIAC
(pilot plant), Andritz



Qingyao Li,
Deputy General Manager, Baosuo Group
Baotuo Paper Equipment Co.



William Rodrigues dos Santos
General Manager, Hergen



Shinji Goda
Director and General Manager of Engi-
neering, Kawano Zoki



Alberto Tomelleri
Sales & MKT Director of Recard



Luca Ghelli
Toscotec R&D Director



Jenny Lahti-Samuelsson
Vice President Tissue Global Technology,
Pap Tissue Mills Business Unit, Valmet

TWM/1: What changes have you seen in terms of digitalisation over the past year?

Valter Canelli, Sales Director, A.Celli

Paper: "Data is amongst the strategic assets of our era and, if managed so as to exploit their full potential, they help guide business decisions and strategies. Moreover, the new logic dictated by the pandemic in progress has even accelerated this process. It is therefore essential to implement solutions that allow you to manage this precious information asset."

"In 2016, the A.Celli Group established its first department entirely dedicated to the development of innovative solutions for the analysis and management of the data of its machines. The business unit - Extreme Automation - is a start-up specialised in Big Data Analysis, IT infrastructures, Machine Learning and Artificial Intelligence, offering cutting-edge Industry 4.0 solutions capable of bringing significant benefits to tissue paper production plants, such as example:

- Improvement of efficiency and energy saving opportunities
- Product optimisation and relative standardisation
- Reduction in the number of out-of-specification products
- Reduction of raw material waste
- Reduction of downtimes
- Implementation of predictive maintenance processes
- Constant software updating.

"Furthermore, we must add that digital technologies have allowed us to be ever closer to the needs of our customers, even while respecting social distancing requirements. In particular, I refer to the opportunity of being able to guarantee the management of the production line remotely, both in the erection and start-up phases, and in the assistance and technical support."

Stefano Marenco, Director Tissue R&D and PrimeLineTIAC (pilot plant), Andritz: "During the last couple of years, digitalisation has continued to change the way of working in many ways. Especially with the global pandemic, this has accelerated the digital transformation and significantly impacted how we were used to operating and organising our daily business. With our digital solutions, we were able to rapidly adapt and compensate for many associated challenges that came along with the global restrictions. For

Valter Canelli

"DATA IS AMONGST THE STRATEGIC ASSETS OF OUR ERA AND, IF MANAGED SO AS TO EXPLOIT THEIR FULL POTENTIAL, THEY HELP GUIDE BUSINESS DECISIONS AND STRATEGIES. MOREOVER, THE NEW LOGIC DICTATED BY THE PANDEMIC IN PROGRESS HAS EVEN ACCELERATED THIS PROCESS. IT IS THEREFORE ESSENTIAL TO IMPLEMENT SOLUTIONS THAT ALLOW YOU TO MANAGE THIS PRECIOUS INFORMATION ASSET."

instance, our already available remote offerings allowed us to proceed with projects where a personal presence of engineers was not possible to the same extent anymore. This way we successfully started up entire plants remotely with very limited resources onsite and could therefore maintain the same level of professionalism and delivered quality to our customers. Since digitalisation still offers incredible potential to engage with colleagues and customers around the globe, most companies will continue to further develop these technologies and seize new opportunities to gain an edge over competitors."

Qingyao Li, Deputy General Manager, Baosuo Group Baotuo Paper Equipment Co.:

"In the past year, while the epidemic continued, most manufacturers such as Baotuo paper machine insisted on doing business through digital and networked technology. As there was reduce on-site service personnel, we were able to use the internet to maintain and upgrade equipment."

"The digital response more accurately shows the energy consumption of each part. It is more conducive to the improvement of Baotuo's paper machine technology and the stability of the paper machine."

"Using digital upgrading technology, Baotuo achieved a breakthrough in 1,800m/min Crescent paper machine in 2021, which is more energy-saving, more efficient and more stable than traditional paper machines."

William Rodrigues dos Santos, General Manager, Hergen: "The Covid-19 pandemic spread and speeded up the development of information exchange technologies. In this context we can list the home office, online schooling, conferences, webinars and mainly Industry 4.0. Hergen, along with its automation partners, is implementing more and more of these concepts on new projects

because we understand that once you have tools to collect more process data, the mill and our team can perform a more accurate analysis and a more precise corrective action."

"Additionally, with the proper automation level it is also possible to use remote operation and parameters to check-up, helping the mill team on troubleshooting and process optimisation."

"During the pandemic's first wave this remote assistance, along with a dedicated and skilful local team, made it possible for us to perform a tissue plant start-up in Poland. That would have been totally impossible just a few years ago."

"We understand that in some cases local intervention is needed, however digitalisation is here to help us all on a wide range of fields and is up to us to get the best out of it for our and our customers' benefit."

Shinji Goda, Director and General Manager of Engineering, Kawano e-Zoki:

"The use of the remote maintenance service K-Connect (Kawano e-Connect) and web conferencing has become very common in Japan. This is because many of our customers are dealing with household paper, and they are very wary of face-to-face meetings because they are concerned about the impact of the spread of Covid-19 on their production. Not all of our customers are ready for digital technology, and we expect that technology and services in this area will definitely grow in the future."

Alberto Tomelleri, Sales & Marketing Director, Recard: "Data collection - remote service."

Luca Ghelli, R&D Director, Toscotec: "Digitalisation has been well acquired as a concept by paper producers and distributors who realise the advantages of an improved

Stefano Marengo

“ONE OF OUR MAJOR MACHINERY LAUNCHES WAS THE UPGRADE OF THE ANDRITZ WELL PROVEN PRIMELINETM MACHINES TO 2,200M/MIN, BOTH THE SINGLE-WIDE 2.85M PRIMELINETM S 2200 AS WELL AS THE DOUBLE-WIDE MACHINE PRIMELINETM W 2200. THEY ARE AMONG THE FASTEST TISSUE MACHINES WORLDWIDE, WITH THE TARGET TO BOOST PRODUCTION CAPACITY, ESPECIALLY FOR LOWER BASIS WEIGHTS.”

process control, which translates into higher plant efficiency, better and faster communications with suppliers and customers, and more flexible internal procedures. Digitalisation helps us to better understand, describe and predict physical phenomena, also highlighting process connections that were not completely evident with simpler analysis or surveys, and allowing us to keep processes under control with more accuracy.

“Being aware of this, Toscotec developed its digitalisation processes to control the overall plant. The pandemic pushed us to use digital communication, which forced people to learn how to use this new way of exchanging information efficiently and organise all databases accordingly to be clear, complete, and accessible.

“In general terms, digitalisation encompasses all aspects of our work: from communication to product and operation design. In relation to our products and associated processes, Voith has achieved its Papermaking 4.0 portfolio results in terms of advanced process control, data visualisation and analysis. Together with Toscotec’s know-how and competence for tissue, they applied that experience to tissue products and processes.”

Jenny Lahti-Samuelsson, Vice President Tissue Global Technology, Pap Tissue Mills Business Unit, Valmet: “Digital development has taken off in a manner and pace that was difficult to anticipate. Even

before the pandemic we were strongly developing our remote services and digital tools and they really came into use when the virus struck. It helped us to take full benefit of the digital tools and we have further developed our way to operate in order to serve and support our customers. A concrete example is that we have carried out machine check-outs and start-ups at customer sites with our experts supporting remotely. This change is consistent and will also be a good complement to on-site services in the future.

“These are tools that can be good complements when it gets harder to find appropriate competence, especially as organisations are getting slimmer and tighter. Digitalisation of products is evolving day-by-day taking us towards more autonomous mills. The pace will be set by the actual needs from the industry and of course payoff of solutions.”

TWM/2: What machinery launches and tissue machine technical developments were key for you in 2021 and why was this?

Canelli: “Research and development is not only a precious activity for A.Celli, but it is the essential strategy for continuous growth and a forward-looking vision. Continuous improvement allows us to gain and maintain a competitive advantage in an increasingly competitive global tissue and paper industry. During 2021, thanks to the continuous development and improvement of our Yankee Dryers,

in A.Celli we have evolved our Yankee Dryer conceiving the innovative iDEAL Evo-Lock. Our new solution is built with all the A.Celli technologies already known and appreciated, including the shell forged from a single steel ingot, with the novelty of a unique and highly innovative head-to-shell connection system, which does not require the use of structural welds or bolts and allows to minimise the costs related to inspection operations and is equipped with technological solutions never seen before on a Yankee Dryer.”

Marengo: “One of our major machinery launches was the upgrade of the Andritz well proven PrimeLineTM machines to 2,200m/min, both the single-wide 2.85m PrimeLineTM S 2200 as well as the double-wide machine PrimeLineTM W 2200. They are among the fastest tissue machines worldwide, with the target to boost production capacity, especially for lower basis weights. They can be equipped with resource-saving components like the PrimePress XT Evo shoe press, the PrimeDry Stell Yankee and the PrimeDry Hood ST (steam-heated).

“These machines also feature Metris – Andritz digital solutions – which enable remote assistance during commissioning and start-up as well as improved operation.

“Beside this machinery launch, technical developments have been done in the field of reducing CO₂ footprint, as well as in the field of machine safety and efficiency increase. As an example I would like to point out the fully cantilever shoe press concept, which enables a faster change of the felt and shoe press belt, and at the same time is increasing the safety of this procedure in a high degree.

“During the past few years, demands for safety have become more and more important in the market. For the machinery supplier, a fundamental understanding of the machine directives and environmental protection standards are essential – Andritz has done lots of efforts to develop and include smart solutions for safe operation in our tissue machine concepts.”

Li: “With the in-depth promotion of the use of household paper, reducing costs and increasing the added-value of paper products is another new breakthrough in the development of papermaking technology in recent years.

Qingyao Li

“BAOTUO PAPER MACHINE HAS ALWAYS INSISTED ON LOW ENERGY CONSUMPTION, LOW PRODUCTION COST, REDUCING THE USE OF PLANT FIBRES AND PROTECTING THE ENVIRONMENT, AND HAS MADE GREAT PROGRESS IN TAD TECHNOLOGY. THE ADVANCEMENT OF TAD TECHNOLOGY BRINGS HUGE BUSINESS OPPORTUNITIES FOR THE DEVELOPMENT OF PAPERMAKING TECHNOLOGY”

"Baotuo paper machine has always insisted on low energy consumption, low production cost, reducing the use of plant fibres and protecting the environment, and has made great progress in TAD technology.

"The advancement of TAD technology brings huge business opportunities for the development of papermaking technology."

Rodrigues dos Santos: "Our latest tissue machines were developed with a total focus on the lowest media consumption possible. We realised that in most cases (mainly in developing countries) that the fastest machines are not the most profitable ones. The reasons were due to gas and/or electrical energy costs and a poor analysis of the energy matrix of the country or even region where a tissue machine is installed, resulting in a machine that is not the best for this particular application.

"For each project we analyse the customer energy matrix and define the YD size and hood parameters that result on the best cost-effective solution.

"For instance, in Brazil biomass is fairly cheap compared to other combustibles for boilers, so it is highly advisable to use a Yankee Dryer as large as possible to have a small contribution from the hood resulting on less gas and electrical energy consumption, thus a more profitable product. With that in mind we updated our intermediate Tissue Machine model with some features at the high end, i.e., we gave to the intermediate model all the stability features of a 2,200m/min machine combined with the cost of a 1,800m/min model. This results in a machine with impressive low media consumption, a flexible concept, which enables future updates in order to reduce the initial investment. That presents a competitive cost which is an important feature in such a competitive market."

Goda: "Air towels had been used in many toilets in public facilities and large commercial facilities in Japan, but their use was stopped as it could lead to the spread of Covid-19. Kawanoe has developed a new technology - Head Box - and installed a number of new towel machines to enable the production of bulky and highly absorbent towel paper."

Tomelleri: "We are always focused on satisfying our client's needs and supplying

Rodrigues dos Santos

"IN BRAZIL BIOMASS IS FAIRLY CHEAP COMPARED TO OTHER COMBUSTIBLES FOR BOILERS, SO IT IS HIGHLY ADVISABLE TO USE A YANKEE DRYER AS LARGE AS POSSIBLE TO HAVE A SMALL CONTRIBUTION FROM THE HOOD RESULTING ON LESS GAS AND ELECTRICAL ENERGY CONSUMPTION, THUS A MORE PROFITABLE PRODUCT. WITH THAT IN MIND WE UPDATED OUR INTERMEDIATE TISSUE MACHINE MODEL WITH SOME FEATURES AT THE HIGH END"

them with a global solution. Our capability to design, manage, manufacture, ship, install and start-up turnkey projects is our winning point. The key in the past few years was to be flexible and go beyond the standards in providing turnkey systems. For instance, by also supplying effluent treatment and freshwater treatments, or by supplying special machines such as winder duotype which are able to wind tissue paper and MG paper in the same machine, as we have done recently. The ability to include a cogeneration with a gas turbine in one of our projects was also quite important to win the order."

Ghelli: "In 2021, Toscotec's R&D team did extensive work on TAD technology and upgraded our original design with new ideas and concepts that led to a performance increase if compared with current performances of TAD machines worldwide.

"We also acquired several orders of double-width, high speed tissue machines where we implemented new solutions aimed to reduce energy demand, increase machine efficiency, and improve paper properties.

"In the tissue machine rebuilds market, we also received numerous orders of key components, including Steel Yankee dryers, Yankee hoods, headboxes, and shoe presses to be installed on existing plants to boost the performance and efficiency of existing machines. These projects gave us the opportunity to strengthen Toscotec's position as supplier of high- tech key components."

Lahti-Samuelsson: "In recent years we have launched several machine concepts within the hybrid segment that allows our customers to produce high end tissue products with lower environmental footprint. The demand for better tissue

quality in combination with sustainable results have increased the interest and sales of the hybrid machine concepts."

TWM/3: What progress have you made in 2021 in terms of energy reductions and sustainability on your TM projects?

Canelli: "A.Celli has always been committed to sustainability and all our solutions are designed and manufactured with this objective in mind. To reduce the consumption related to the drying phase, for example, in addition to the conventional suction press roll A.Celli now offers various configurations like double press, specially designed shoe press for Tissue applications, last but not least, our new X-ROLL solution. This latest solution is designed to combine the quality obtainable with the traditional single press configuration with an energy saving of over 16% in the drying phase, thanks to a 4% increase in the degree of dryness of the paper exiting the pressing process."

Marenco: "The projects focused on mechanical dewatering brought real improvements on our shoe press features collecting good results in new sales. Impressive results were also collected with our PrimeLineTEX at the pilot machine where top soft premium products were produced with very low energy consumption confirming the hybrid technologies as a valid replacement to TAD when sustainability and energy reduction are needed.

"Also in the thermal drying efficiency field, the Andritz Tissue Group successfully started up new steam recovery plants PrimeDry YES to produce steam from exhaust hot air of the Yankee hoods and we received additional orders for the upcoming year. With simple modifications of the existent plant, PrimeDry YES can easily provide 10-15% energy savings in the drying energy costs.



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A PATENTED REVOLUTIONARY SYSTEM FOR REEL HANDLING

- ZERO DAMAGE TO THE PARENT REEL

- Up to 7% optimization of warehouse storage and drastic reduction in the so-called "chimney effect" in case of fire
- Automatic handling of the reel core

MEET US AT TISSUE WORLD MIAMI
2022 - STAND C10

TISSUE WORLD
Miami 

Shinji Goda

"IN JAPAN, ABOUT 60% OF TOILET PAPER IS PRODUCED FROM RECYCLED PAPER. IN TERMS OF QUALITY, SUCH AS FEEL AND SOFTNESS, JAPAN'S RECYCLED PAPER PRODUCTS ARE SAID TO BE OF EXTREMELY HIGH-QUALITY WORLDWIDE. WE BELIEVE THAT RECYCLED PAPER PRODUCTS ARE SUSTAINABLE PRODUCTS THAT TRULY EMBODY RESOURCE CONSERVATION. JAPAN'S RECYCLED PAPER COLLECTION SYSTEM AND STOCK PREPARATION TECHNOLOGY MAKE IT POSSIBLE TO RECYCLE VARIOUS TYPES AND QUALITIES OF RECYCLED PAPER."

"Among more efficient products designing, intensive work was also done in supporting our customers in upgrading their assets. The Andritz service team worked a lot in energy assessment of plants in operation and assisted in planning to replace low efficiency equipment with new performing solutions. A leap in CO₂ emissions reduction and efficiency improvement was then possible with state-of-the-art solutions. We appreciated that a lot of paper mills offer huge potentials in energy improvements with focused rebuilds. Especially in a moment where energy costs are to dramatically increase, the return of the investments could be very fast and also be very profitable.

"New technology developments do help the industry to improve, but maintenance still remains a key factor in ensuring low energy costs and good efficiency of the systems. Andritz technology offers very standard solutions or very tailor-made products to help customers in upgrading their plants."

Li: "Baotuo has always insisted on using less fibre raw materials and lower carbon emissions to achieve the production of toilet paper. Reducing the moisture before the paper is loaded into the cylinder, improving the air pressure system of the idler to a hydraulic system, and removing more moisture with a stable line pressure, etc, are all energy-saving and production-enhancing goals to achieve sustainable development.

"At present, Baotuo paper machine leads the industry in unit energy consumption and has been recognised by the industry."

Rodrigues dos Santos: "We are about to start-up a high-speed tissue machine with a new drying concept that uses wet end hot air (over 300°C) on the hood from the

biomass boiler's thermal system, and on the hood dry end a simple extraction hood with internal heating to avoid condensation. This hood concept combined with a large Yankee Dryer and the hood heat recovery system enables a working speed of over 1,800m/min with low media consumption, resulting in a competitive final product cost. This new machine will also feature our stock injector which optimises the thick stock and white water mixing on the machine's wet end, and with that we are able to improve paper formation and a stable MD and CD profiles. This enables a steadier machine operation that takes machine performance to an impressive level."

Goda: "In Japan, about 60% of toilet paper is produced from recycled paper. In terms of quality, such as feel and softness, Japan's recycled paper products are said to be of extremely high-quality worldwide. We believe that recycled paper products are sustainable products that truly embody resource conservation. Japan's recycled paper collection system and stock preparation technology make it possible to recycle various types and qualities of recycled paper.

"In response to the trend toward the use of difficult-to-process paper due to the reduction of waste paper generated by digitisation, we will continue to make

full use of our papermaking technologies to produce high-quality products and contribute to the environment."

Tomelleri: "Saving energy and resources continues to be the main objective of the manufacturers of tissue machines. We have perfected the process in the peripheral areas of the machine - such as the approach flow system - by proposing, in addition to the elimination of the mix chest replaced by a static mixer, to also use the approach screen in medium consistency, thus ensuring a significant decrease in specific power to the fan pump. On the other hand, the thermal energy savings (about 30%) is substantial when using our not conventional stand alone, high load, double felted shoe press, which not being applied against the Yankee Dryer allows, in addition to extraordinary web dryness, also the maximum yield of the Yankee, not requiring increased thickness of the Yankee shell like conventional shoe presses requires. We have also to mention that with the natural gas level price raised in the last months alternative fuels have to be considered like Syngas."

Ghelli: "Toscotec implemented several solutions both on its tissue machines and on the design of complete plants associated with the reuse of exhaust energy within the process. Improvements were made in the air system of TAD machines or traditional technology, and in the recovery of energy from the complete process including stock preparation and approach system.

"We upgraded the design of Toscotec's press rolls to achieve maximum dewatering before the drying section without affecting paper quality, which reduces the energy-intensive drying needs at the end of the process. "Toscotec also developed new processes in 'mechanically' removing water from the paper without using heat, in order to reduce the overall energy demand of the tissue machine.

Alberto Tomelleri

"SAVING ENERGY AND RESOURCES CONTINUES TO BE THE MAIN OBJECTIVE OF THE MANUFACTURERS OF TISSUE MACHINES. WE HAVE PERFECTED THE PROCESS IN THE PERIPHERAL AREAS OF THE MACHINE - SUCH AS THE APPROACH FLOW SYSTEM - BY PROPOSING, IN ADDITION TO THE ELIMINATION OF THE MIX CHEST REPLACED BY A STATIC MIXER, TO ALSO USE THE APPROACH SCREEN IN MEDIUM CONSISTENCY, THUS ENSURING A SIGNIFICANT DECREASE IN SPECIFIC POWER TO THE FAN PUMP."

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"Digitalisation and process optimisation provided a value added by delivering faster, more precise responses to process variation and quickly achieving the best running conditions for a specific production. This led to an increase in the efficiency of the complete plant. All these activities allow us to offer production plants with lower consumption figures because of the improved technology and higher efficiency.

"During the past year we also started multiple projects aimed to reduce emissions and CO2 footprint by replacing traditional fossil fuels or gas."

Lahti-Samuelsson: "Fluctuation in pulp and energy prices have been tough challenges for tissue producers, but maybe energy consumption is the most critical challenge. It is especially tough for those who has an older machine asset where energy efficiency is low and thus faces a situation where it is hard to absorb the price increases. Here we see products like the Advantage ViscoNip press and ReDry as important and impactful tools that can help customers in lowering the energy consumption.

"Also, when it comes to fibre sources and their environmental impact we are now putting more emphasis into usage of alternative fibers to ensure high tissue quality and operational performance. In parallel we are also looking for new and refined ways of using MFC (micro fibrillated cellulose) in order to enhance paper quality, etc."

TWM/4: What technical demands for paper machine lines are you seeing from the market, and how are you responding? Where will your R&D be focused in 2022?

Canelli: "Nowadays every commercial demand coming from our customers needs to be deeply investigated in terms of energy consumption.

"This is the most delicate point towards which we see the attention of the market.

"The paper industry absorbs around 10% of the energy produced in the world, and is second only to that of steel. Much of the thermal energy is transferred to the machine in the form of steam, mainly for multi-cylinder continuous machines, or high temperature gas, in the case of tissue paper plants. A.Celli Paper's focus for 2022 is to continue investing in the development

of solutions aimed at energy saving, with particular attention to the cogeneration concept, intended as implementation of an auxiliary plant capable of simultaneously and virtuously generating the two forms of energy necessary for the paper mill, eliminating the need on the one hand to draw electricity from the grid and on the other hand to burn gas to produce steam in a boiler.

"A further topic to be explored will be the one linked to the use of alternative energies compared to the ones currently in common use in tissue and paper production plants."

Marenco: "Energy and sustainability will be a continuous key driver of our research also for 2022. The energy price increases in the last months of 2021 made European tissue producers push further their interest for new low energy consumption concepts and applications. In line with Andritz's "WE CARE" Environmental Social Governance programme, R&D and technology are reviewing the action plan for prioritising the development of new ideas.

"SDG (Sustainable Development Goal) 12 is in Andritz's eyeline and a related Life Cycle Thinking (LCT) concept in under review. We know that sustainability is not only products, but an attitude in the whole life cycle that needs to be assessed in its whole process. Deeper discussions with our customers need to be addressed for a more integrated vision of the tissue process.

"R&D will be focused on renewable energy use in tissue. A leap forward in the renewable energy storage is expected to happen very soon and tissue industry needs to invest in using this type of energy in the production processes. Drying processes will be greatly affected by new concepts and new needs. This represents the next challenge in tissue for PrimeLine Tissue Technology."

Li: "Previously, most of the customers' requirements for paper machines were high efficiency and low energy consumption. However, with the increasing concentration of the industry, large-capacity, low-energy-consumption, and high-efficiency equipment will increasingly become the needs of mainstream customers. The future direction of Baotuo paper machine will focus on continuous research and development and the promotion

of equipment with large production capacity, low energy consumption and full intelligence."

Rodrigues dos Santos: "The protection, maintenance and improvement of the environment has been a global concern for many years, and this will intensify in the years to come. For the paper industry - not only the papermakers but also the machinery builders - we must share the efforts to reach these goals.

"Based on that our R&D team is focusing on our shoe press design and targeting the reduction of drying energy requirements, and on the rational use of water discussing with machine fabric suppliers to minimise the use of fresh water on fabric conditioning, without affecting its lifespan and performance.

"We are offering to the market stainless steel rolls which waive the use of rubber cover contributing on the carbon footprint on paper business. We are also applying on our machines the most modern burners available which optimise the gas consumption and feature lower O_x and NO_x emissions."

Goda: "We believe that equipment that can produce products with higher added value than conventional products and flexible equipment that can produce a wider variety of products will be required.

"For paper machines, we will focus on the development of machines that can handle a wide range of basis weight. We are also a manufacturer of both paper machines and converting machines.

"At the same time, we are working on the development of a converting machine that can produce paper packaging products as an alternative to film, while enhancing product value and taking environmental issues into consideration.

"This year, we will start operating a pilot converting machine to develop products together with our customers. By combining the technologies of paper machines and converting machines, we will be able to meet the demands of the market."

Tomelleri: "Saving energy and resources will again be the focus for 2022 and in future years. Shoe press and cogeneration with gas turbine and recovery boiler are

Luca Ghelli

"THE MARKET IS URGENTLY REQUESTING THE IMPLEMENTATION OF REVOLUTIONARY PAPER MAKING TECHNOLOGIES WITH LIMITED ENERGY DEMAND. TOSCOTEC IS WORKING ON IMPROVING EXISTING TECHNOLOGIES AND DEVELOPING SOME DISRUPTIVE IDEAS THAT WILL BRING DOWN CURRENT ENERGY DEMANDS BY A HUGE AMOUNT. IMPORTANT RESEARCH EFFORTS HAVE BEEN ALLOCATED TO THESE AREAS."

the areas where the saving could be more significant. On one hand, with the shoe press increasing the dryness it is possible to minimise the water to be evaporated from the tissue web, and on the other, with a combination of gas turbine and recovery boiler we are recovering as much as possible the thermal energy introduced in the process."

Ghelli: "The market is urgently requesting the implementation of revolutionary paper making technologies with limited energy demand. Toscotec is working on improving existing technologies and developing some disruptive ideas that will bring down current energy demands by a huge amount. Important research efforts have been allocated to these areas."

"A new and more all-encompassing approach is required on the part of manufacturers in that the design of a production plant is no longer limited to the tissue making line but rather it constitutes a complete facility that produces the energy it needs, or outsources energy generated in compliance with new green regulations. Toscotec is well prepared to guide producers to implement this new all-encompassing approach."

Lahti-Samuelsson: "The interest in carbon neutrality and fossil free production is increasing rapidly. One way to achieve that is to ensure efficient tissue making processes. This has been high on our agenda for decades and will continue to be. Even though we are proud to say we have had good progress, we are constantly striving to improve resource efficiency and reduce the environmental impact of our equipment."

"There is a huge difference in energy and water usage when comparing a tissue machine designed in the 90s to a modern machine. Even though the 90s does not seem that long ago, a modern machine consumes half of the energy compared to a twenty-

year-old machine, and water consumption has dropped by as much as 80%. Good achievements but we cannot by any means relax; now there we need to take the next steps to further improve the environmental footprints. Developments on tissue machines have come a long way in a short time. At the same time, we are noticing a demand for higher efficiency and production capacity combined with fibre, energy and water savings. To achieve that we need to pay close attention to the runnability."

"Good runnability is a crucial part of our R&D work. Besides optimisation and improvements in machine and process design, our digital solutions through Valmet industrial internet are enablers to meet the need of improving operational efficiency."

"To achieve a fossil free operation is thus essential both for us and for our customers. Valmet's climate neutrality programme focuses on enabling fossil free production and operations for our customers but is also targeting to reduce CO2 emissions at our suppliers and our own operations."

TWM/5: Pre-Pandemic, the global tissue market was seeing steady consumption growth. What opportunities and challenges do you forecast for the global tissue market in 2022 and 2023?

Canelli: "The Corona pandemic caused contradictory developments in the tissue market and revolutionised the logic we were used to knowing."

Jenny Lahti-Samuelsson

"THE INTEREST IN CARBON NEUTRALITY AND FOSSIL FREE PRODUCTION IS INCREASING RAPIDLY. ONE WAY TO ACHIEVE THAT IS TO ENSURE EFFICIENT TISSUE MAKING PROCESSES. THIS HAS BEEN HIGH ON OUR AGENDA FOR DECADES AND WILL CONTINUE TO BE. EVEN THOUGH WE ARE PROUD TO SAY WE HAVE HAD GOOD PROGRESS, WE ARE CONSTANTLY STRIVING TO IMPROVE RESOURCE EFFICIENCY AND REDUCE THE ENVIRONMENTAL IMPACT OF OUR EQUIPMENT."

"One of the key questions of any future prediction is related to how and how quickly economies will recover from the influence of the pandemic and factors of production will return to align with standard levels and standards and trends (with particular focus on the aspect linked to energy consumption and the cost of raw materials)."

"In the meantime, all the players in the sector will look for ways to improve their production, to adopt sustainability requirements, to identify best practices by digitising the industrial assets to support the ongoing transition. Ultimately, we expect enormous opportunities in the field of digital solutions and data integration between processes and systems."

Marenco: "The Corona pandemic caused turbulence and changes during the past few years. From panic-buying at the beginning of the outbreak, to a decrease in the AfH market due to lockdowns and travel restrictions, which was partly almost compensated for by shifting some portion to the consumer market and increasing consumption in the medical care industry."

"Then, the situation got more and more stable and less restrictive, caused by a higher portion of vaccinations throughout the population and the reluctance of many governments to prescribe restrictions where possible. For 2022 and 2023 we expect a further increase in tissue consumption, especially in regions where the specific consumption is around or below the world average - in particular, those in China and the rest of Asia in line with increasing living standards as well as higher sensitivity to hygiene behaviour in general as a result of the learnings during the Pandemic. Also in South America, where we expect good growth rates in the coming years."

"Increasing pulp and energy prices are certainly a big challenge for the tissue



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producer and in addition to that the more and more stringent requirements of CO2 footprint reduction in line with the use of green solutions. This will trigger more optimisation of existing machineries and systems and will make new investments more restrictive, as we see already for example in China.

"And for the machine supplier? Andritz is prepared for these challenges and has started three initiatives, the "WE CARE" Environmental Social Governance programme, "CircleToZero" with the goal of achieving zero emissions and zero waste and Andritz has also introduced various "tissue solutions to reduce CO2 footprint". Supplying sustainable solutions to the tissue industry will be one of the major challenges but also opportunity in the coming years."

Li: "Affected by the global epidemic and fluctuations in pulp prices, some small papermaking enterprises have stopped production or even withdrawn from the market, and have been replaced by medium and large-scale powerful enterprises. Under the epidemic, as public awareness of hygiene has increased and the demand for toilet paper and hygiene products continues to grow, the trend of industrial concentration will become more obvious. Industrial concentration will bring about technological innovation and progress. It is an opportunity and also a challenge. Baotuo will keep abreast of market changes, adhere to technology research and development and technological innovation, and strive to remain invincible in market changes."

Rodrigues dos Santos: "Regarding tissue consumption, we believe that once the restrictions are lifted and life is back to normal the parameters are supposed to be back to pre-pandemic levels. However, it is quite difficult to point out when this is going to happen. It is visible that in countries where restrictions have been reduced the consumption started to grow again. We must be prepared to give to the market a quick answer when this demand increase occurs."

"Since the beginning of the pandemic we have seen a constant increase in pulp prices, and this fact allied with the reduction of demand has restrained new investments in both new machines and machine rebuilds. We believe that once the market stabilises all these projects will

Qingyao Li

"AFFECTED BY THE GLOBAL EPIDEMIC AND FLUCTUATIONS IN PULP PRICES, SOME SMALL PAPERMAKING ENTERPRISES HAVE STOPPED PRODUCTION OR WITHDRAWN FROM THE MARKET, AND HAVE BEEN REPLACED BY MEDIUM AND LARGE-SCALE POWERFUL ENTERPRISES. UNDER THE EPIDEMIC, AS PUBLIC AWARENESS OF HYGIENE HAS INCREASED AND THE DEMAND FOR TOILET PAPER AND HYGIENE PRODUCTS CONTINUES TO GROW, THE TREND OF INDUSTRIAL CONCENTRATION WILL BECOME MORE OBVIOUS."

move on and based on that we have been preparing our workshop and engineering with cutting edge machines and software to enable us to have the agility of response required by the market.

"We believe that the markets that will have a faster recovery are those where vaccination was more efficient and disseminated. Regarding new markets we believe that South America and mainly North of Africa are the regions that may feature the highest growth in terms of tissue consumption."

Goda: "I believe that the tissue market will continue to grow steadily on a global scale. In particular, with the rise in hygiene awareness due to the Covid-19, there will be more variations and more choices for household products. I hope that the value of paper as a household product will be re-evaluated and its use as a sustainable material will expand."

Tomelleri: "The Covid pandemic has had a big impact in the market with some crazy situations. Because of all the closures of restaurants and such, the AfH market was badly impacted but is now recovering and volumes and values are increasing. We also see a continuous growing in several areas of the world as Asia and Africa and also South America are showing good opportunities for business. In the evolved markets, the growth of private labels will proceed sustained by the market distribution chains, even despite an erosion of margins due to the strong competition. At the same time major challenges in the near future will be energy and transport and this two areas are heavily impacted in the tissue market, with costs increasing in the already critical situation due to the pulp price fluctuation."

Ghelli: "The quality gap between AfH and At-Home products has constantly been shrinking for numerous years, and

the pandemic speeded up this trend.

Technological advance may close the gap by delivering lower production cost and higher quality of the final product.

"At the same time, emerging markets will probably continue to raise their demand for quality, and this may open new opportunities for technologies which are still mainly developed by European manufacturers. Regarding the impact of cellulose price and availability on the market, the use of diverse, recycled, and recyclable fibres increased and brought a considerable advantage as a new source of raw materials. If the promise of a greener planet is maintained, we believe that sustainability will increasingly become a bonus and it will play a significant role as a driving force for paper producers and machinery manufacturers."

Lahti-Samuelsson: "We foresee a stable growth in tissue consumption in total. The AfH market will most likely catch up when life is going back to a more normal situation. There have been more investments during the pandemic than we dared to hope for two years ago. We are now also seeing China and Asia taking a step forward towards consumer products with premium quality."

"At the same time there is high pressure from authorities to reduce energy consumption and environmental impact. Valmet's hybrid concepts are well suited to match these demands in terms of quality, energy and fibre efficiency."

"Longer term, it's most likely that the hygiene awareness and concern will remain in the consumer's mind. This will stabilise the need for tissue and towel products on a higher level as well as create opportunities for innovations in this field."

HOW CHINESE TISSUE PERFORMED IN 2021... AND ITS DEVELOPMENT TARGETS FOR 2022

The Covid-19 pandemic has accelerated the intellectualisation of tissue machinery across the world, and no more so than in China. Here, in a comprehensive report, the National Household Paper Industry Association (CNHPA) examines that and the many other trends in the Chinese market for TWM.

ACCORDING TO THE PERFORMANCE REPORT FOR THE FIRST HALF OF 2021 PUBLISHED BY HENGAN, VINDA AND C&S, THE GROSS PROFIT MARGIN OR NET PROFIT OF THESE THREE LISTED COMPANIES DECLINED. IN THE FIRST THREE QUARTERS OF 2021, VINDA'S GROW PROFIT KEPT INCREASING, BUT ITS GROSS MARGIN DECREASED; THE NET PROFIT OF C&S DECLINED, WHICH REFLECTS THE IMPACTS OF RISING RAW MATERIAL PRICE AND FIERCE MARKET COMPLETION ON COMPANIES.

In 2021 the total capacity for the Chinese tissue paper market was nearly 2.6m tonnes. While there are some projects that have been put into operation but not announced, this new total 2021 capacity figure significantly exceeds that of 2020.

A total of 62 companies in 16 provinces launched new tissue capacity, and 112 tissue machines across the country were put into operation during 2021. Located mainly in Hebei and Guangxi, these major projects of top enterprises totalled more than 880,000 tonnes of new capacity. They comprised:

- Gold Hongye Paper - Nantong, Jiangsu: 240,000tpy;
- Gold Hongye Paper - Xiaogan, Hubei: 120,000tpy;
- C&S - Xiaogan, Hubei: 100,000tpy;
- Taison Group - Suzhou, Anhui: 280,000tpy;
- Taison Group - Jiujiang, Jiangxi: 80,000tpy;
- Libang Group - Xiaogan, Hubei: 50,000tpy;
- Lee & Man - Jiujiang, Jiangxi: 54,000tpy.

In addition to the launched capacity, many new capacity expansion projects have also been signed. The planned new capacity announced by top companies such as Hengan, Vinda, C&S and Gold Hongye totalled more than three million tonnes. Moreover, companies that already have a presence in the papermaking industry chain such as Asia Symbol and Shanying International have recently announced new tissue paper projects to mark their entry into the industry.

According to the performance report for the first half of 2021 published by Hengan, Vinda and C&S, the gross profit margin or net profit of these three listed companies declined. In the first three quarters of 2021, Vinda's grow profit kept increasing, but its gross margin decreased; the net profit of C&S declined, which reflects the impacts of rising raw material price and fierce market completion on companies.

In the first half of 2021, the gross profit margin of Hengan Group's tissue paper business dropped by 5.8% to 29.2%, and its sales business revenue was 4.697bn yuan. In the same period, the gross profit margin of Vinda's tissue paper business decreased by 1.6% to 37.82%, and its business revenue was HK \$7.509bn. In the first three quarters of 2021, Vinda's business revenue increased by 15.1% to HK \$13.19bn.

In the first half of 2021, C&S's business revenue was about 4.248bn yuan, an increase of 17.46% over the same period last year. Net profit was about 407m yuan, a decrease of 10.06% over the same period last year. In the first three quarters of 2021, C&S' business revenue was about 6.275bn yuan, an increase of 12.95% year-on-year, and its net profit was about 484m yuan, a decrease of 27.88% over the previous year.

Market pulp prices hit a record high

According to data from Chinese customs, the price of imported market pulp rose quickly from January – July 2021. By July 2021, the average prices of imported bleached softwood pulp and hardwood pulp had risen to \$923 and \$690 per tonne respectively, hitting a record high since 2012 (Graph 1).

The domestic tissue paper enterprises mainly take imported pulp as raw material. The price of raw materials rose sharply in 2021, reducing the profit of domestic tissue paper enterprises, and making small and medium enterprises face more pressure of competition.

The overall price of bamboo pulp and bagasse pulp in 2021 was obviously higher than 2020.

Price of tissue parent roll varied with pulp price

In the first three quarters of 2021, the price of tissue parent rolls took on the trend of rising first and then declining. The reasons include rising price of raw materials, overcapacity and serious



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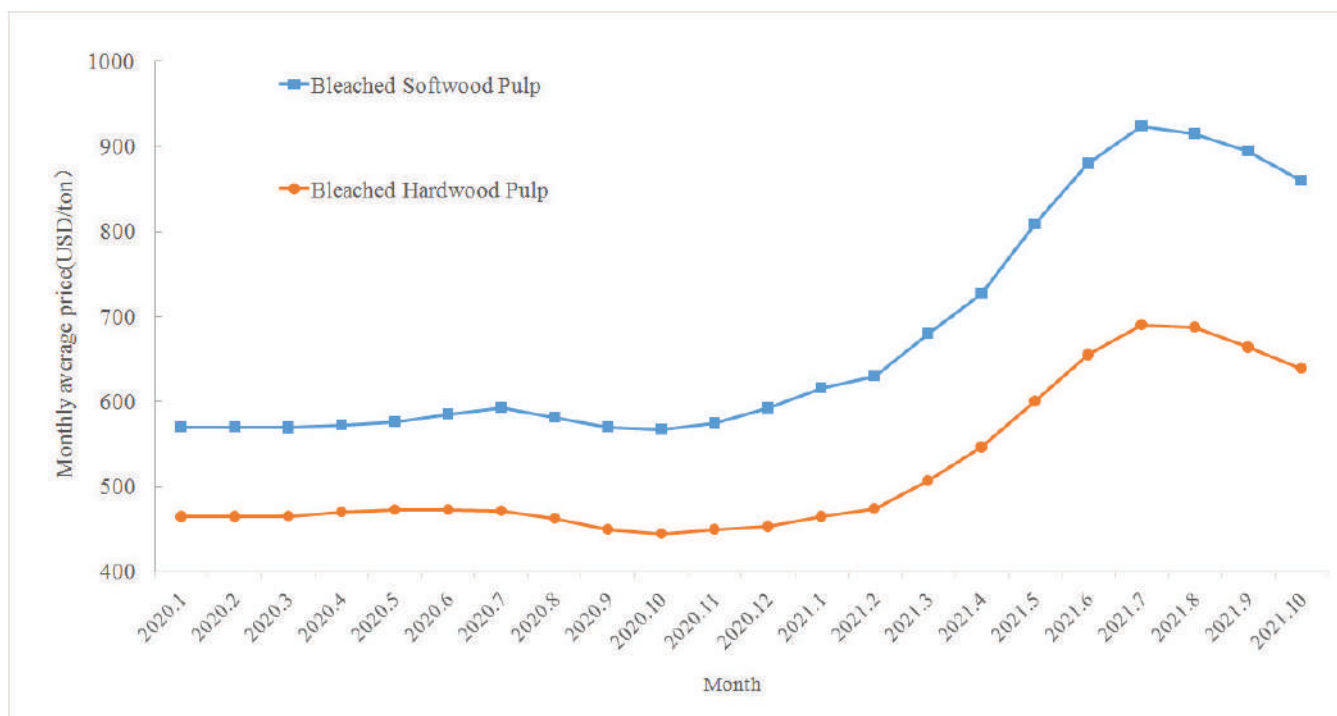
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Above: Graph 1

market competition. The rise in price of tissue parent rolls is lower than that of imported market pulp, so tissue parent roll enterprises will face much more pressure.

Product upgrade and innovation

Product upgrade and innovation of tissue paper enterprises have been concentrated on two aspects during 2021. The first is the combination of 'product package design' and the second, 'cultural intellectual property' to highlight brand positioning. For example, Vinda launched two new products with a space element.

And C&S introduced oil painting-effect series products, creating high-end brand positioning (Image 1).

Elsewhere, Gold Hongye's brand Breeze introduced the series themed 'Renaissance of Love for City,' to celebrate the 100th anniversary of the founding of the CPC. Breeze also introduced two-colour tissue in the Young series - this tissue adopts new packaging so that two colours of tissue can be pulled out alternately.

Botare introduced the Dongdongqiang tissue series, exploring the traditional Chinese style through blending some elements of the Tang Dynasty. Babo of Vanov launched the 'Crazy Dunhuang' series (Image 2) and 'Life in Kitchen' series products (Image 3).

Development of featured products to

explore diversified competition

The second aspect of product upgrade and innovation is the development of featured products. Anti-bacteria and sterilisation tissue paper have been introduced, including:

Breeze's Lotion series facial tissue combines skin care and bacteriostatic functions, which it says reaches a 99% antibacterial effect;

Babo introduced anti-bacteria series soft tissue (Image 2). It has moisturising essence, a soft touch, and long-acting anti-bacteria effect through the complex formula of natural plant extracts;

Zhejiang Jingxing launched its sterilisation series tissue.

Differentiated goods also include high-end embossed products, including:

Tempo launched the Flash series kitchen towel (Image 4) which it said adopts new air flash technology, with stronger absorption and 3D embossing, making it more compact;

Libang Group launched its 'Featured' series of facial tissue in 2021, which adopts a four-sided embossing process;

Yusen Group launched new embossed facial tissue which it claims has a smooth and skin-friendly surface.

New equipment and technology

Intelligence, remote monitoring of equipment operation and remote maintenance are still the key points of high-end equipment. Furthermore, the Covid-19 pandemic accelerated the intellectualisation of equipment, remote



Image 1: C&S introduced oil painting-effect products creating high-end brand positioning



Babo of Vanov launched the 'Crazy Dunhuang' series Image 2, left, and 'Life in Kitchen' series products Image 3



monitoring of running conditions, remote maintenance and installation guidance, which have become the focuses of high-end equipment development.

Tissue Machine developments include:

Hengan International ordered two TAD tissue machines from Toscotec, said to bring excellent bulk, softness and water-absorbing ability to products, and giving a new impetus for the tissue machine market in China; Converting Machine developments include:

- Baosuo launched a new automatic draw-out facial tissue converting machine;
- Dechangyu launched the glueless-bonded toilet tissue converting machine;
- Korber introduced a new rewinder and embossing unit.

Import and export market

At present, the output and product types of the Chinese tissue paper market have satisfied domestic demands. The Chinese tissue paper industry is mainly export-oriented, and the import volume is still low and only accounts for a small proportion in the Chinese tissue market.

Figure 1 and Figure 2 show the import and export volume and value of China's tissue paper in the first three quarters from 2017 to 2021. The import volume and value of tissue paper in the first three quarters of 2021 increased. However, the total volume was still low. The import volume was around 320,300 tonnes. At present, the output and product type of the Chinese tissue paper industry has satisfied the demands of the domestic market. International trade



Image 4: Tempo launched the Flash series kitchen towel which it said adopts new air flash technology with stronger absorption and 3D embossing

REMOTE MONITORING OF EQUIPMENT OPERATION AND REMOTE MAINTENANCE ARE STILL KEY POINTS OF HIGH-END EQUIPMENT. THE COVID-19 PANDEMIC ACCELERATED THE INTELLECTUALISATION OF EQUIPMENT, REMOTE MONITORING OF RUNNING CONDITIONS, REMOTE MAINTENANCE AND INSTALLATION GUIDANCE.

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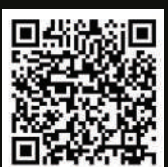
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is dominated by export, and the import volume is still low and accounts for a lower proportion in the Chinese tissue market.

Exports of Chinese tissue paper in the first three quarters of 2021

In the first three quarters of 2021, the export volume and export value of tissue paper in China showed a double-digit decline. The export volume was around 472,500 tonnes, down 30.12% and 17.8% than the first three quarters of 2020 and 2019 respectively.

Finished products had a higher proportion in exports, and exported products are gradually developing to high-end products. The average export price dropped. Seen from export value, the tissue handkerchief and facial tissue accounted for the highest ratio in the first three quarters of 2021, while toilet tissue accounted for the highest ratio in the first three quarters of 2019 and 2020. The structure of export product is gradually developing towards high-end products, but the average export price fell.

Dual-carbon target

With the China Carbon Emission Trade Exchange launched on 16 July 2021, enterprises in the tissue industry took actions one after another and began to make overall arrangement of green and high-quality development:

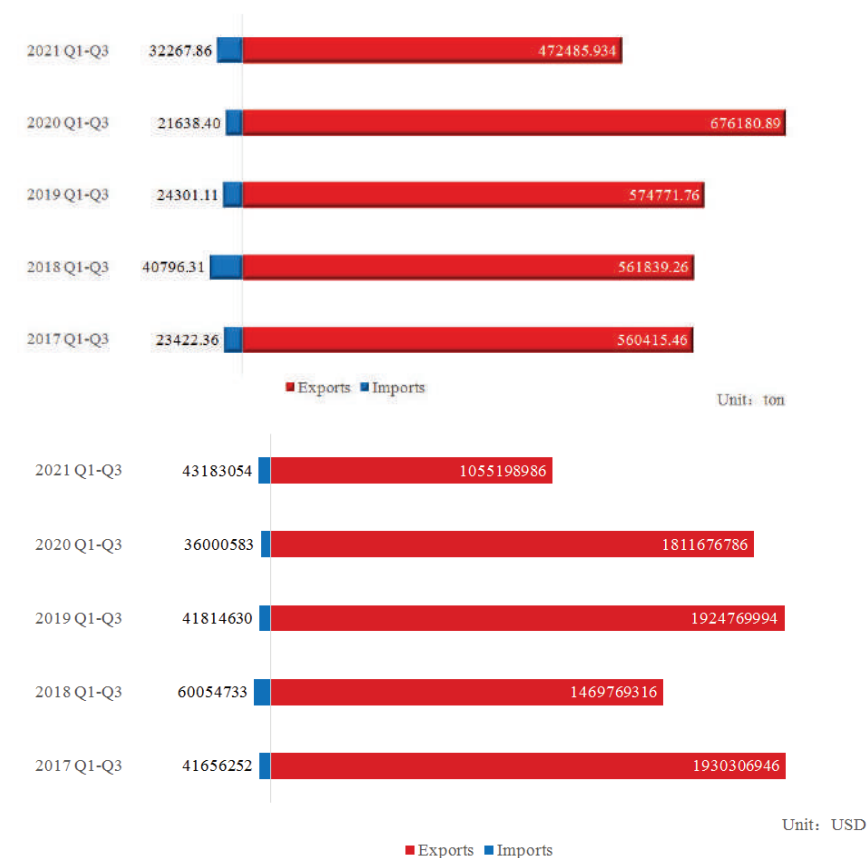
Hainan announced that it would try out the environmental impact assessment of carbon emissions in papermaking and other industries; Gold Hongye successfully held 'Carbon Neutrality' products seminar in Hainan on 20 May 2021 and introduced its move into carbon neutrality at the meeting;

Valmet announced its development plan of moving toward the future of carbon neutrality. The target is to reduce carbon dioxide emissions during its operation and across its supply chain by 80% and 20% respectively by 2030; Orient Champion launched new products using paper package. We believe that more and more enterprises will take part in the advancing of the Dual Carbon target.

Innovation of the marketing channel

Babo and Focus Media launched a "One Hundred Cities" strategy through strategic cooperation. Lee & Man Paper signed a strategic cooperation agreement with Yunji to launch unbleached bamboo pulp soft tissue.

Gold Hongye has achieved a strategic cooperation with Suning Carrefour, and



Import and export volume and value - Figure 1 and Figure 2

searches for new breakthrough in sales.

C&S has signed the strategic cooperation agreement with Fenlai and realised multi-win along with the e-commerce platform based on Social Network. In cooperation with Shenzhen Tencent Computer System Co. Xiamen C&D Paper & Pulp Co. will build an internet platform for the pulp and paper industry, providing comprehensive and high-quality supply chain services for upstream and downstream enterprises in the industry.

Challenges and reflections

The problem of overcapacity: The capacity that was put into operation in 2021 greatly exceeded that in 2020, and the accumulated overcapacity is growing, increasingly affecting the operating rate of the whole industry. The planned new capacity announced by the industry in 2022 and beyond exceeded nine million tonnes, so enterprises should make rational investment.

Dual-carbon target, green development: With the implementation of national development strategy of the Dual Carbon target, the pressure from electric energy, heat energy and other resources will cause a significant impact on the operation of enterprises. The realisation of low-carbon and green development is the only way to enterprise transformation.

Differentiation development

The overall development of China's tissue paper industry is relatively mature, and product structure is relatively stable. However, with the intensification of market competition, how to discover customer demands, develop differentiated products and avoid homogenous competition is one of the main problems that enterprises in the industry need to consider.

Improving the digital marketing capacity of brands

With the rapid development of the internet economy and the effect of the pandemic on people's consumption habit, the influence of new retail on product marketing has become more important. The industrial enterprises should seize the opportunity of new retail, and improve the digital marketing of brands.

Technology upgrade: In the stage of industrial transformation and upgrading, in order to complete technology upgrade, decrease cost, increase benefit and transform towards high-quality development, companies need to improve their technological innovation capacity.

Win-win cooperation: Enterprises need to make long-term plans and build long-term and stable supply chain relationships so as to better respond to future market change.

SUPPLY CHAIN CHALLENGES IN UK HOME AND INTERNATIONAL MARKETS AT UNPRECEDENTED LEVELS

Spiraling energy costs, rising inflation, changing labour market forces, and Brexit regulations adding to pandemic restrictions have created issues “we have never faced before at such high levels.” Consumer Markets Analyst Simon Creasey reports on the industry’s response.



Simon Creasey
Consumer Markets Analyst

Last year talk of ‘shortages’ dominated the news headlines. There was a shortage of truck drivers that led to shortages at the petrol pumps and of goods stocked on supermarket shelves. There was a shortage of workers to fulfil numerous different tasks, from picking fruit and vegetables on farms to working in meat processing plants, due in part to issues like the Covid-19 pandemic. In some countries there was also a shortage of energy, which had a major impact on individuals and on businesses, as prices soared and many energy companies went under.

While these shortages attracted widespread media attention, other shortages that are slightly more hidden from the view of the general public sailed under the radar.

In addition to the well documented shortage of labour, there was a shortage of equipment and machinery parts for some industries and there was a shortage of the raw materials needed to make products.

Tissue companies were not immune from the shortage issue. But just how bad did the problem get for the industry, what impact did it have on the ability of companies to produce tissue and towel products as they would normally, and how did these companies deal with the fallout? Most European tissue companies were affected by the shortage of labour and HGV drivers, but the issue was more acute for businesses located in the UK following Brexit, which was dealing with the fallout of many skilled EU workers returning to their home countries or other EU member states.

As Oday Abbosh, Founder and Chief Executive at UK-based Better All Round, explains: “It is no secret that the labour market in general has been more challenging than at any time in recent history, whether that is specifically for HGV drivers or more general labour supply. We are seeing the impact of Brexit filter through in this regard.”

It is a view shared by Armindo Marques, Director at UK-based Poppies Europe. “The UK benefitted for many years from a constant inflow of European workers into the labour market,” he says. “Since the end

of the Brexit transition period in December 2020 this pool of workers dramatically reduced.”

Another major challenge Abbosh reports surrounds the availability of raw materials. He says that “pretty much anything” related to fibre has had unprecedented demand, restricted availability and increasing prices over the last 12 months or so.

“For example, the pandemic and the resultant working from home directives have impacted how much paper is available for recycling impacting recycled tissue paper availability and pricing. At a time when most manufacturers are looking to make their product portfolio more sustainable, it’s no surprise that we are seeing demand impact supply.”

Marques says his businesses’ operations have also been affected by supply chain issues surrounding the sourcing of raw materials.

“Packaging has been a real struggle to source,” he says. “Even the simplest of the cardboard boxes has become a problem with some board grades just impossible to find and the lead times five times longer than normal. Plastics have seen the same trend, especially polypropylene.”

Also in high demand and short supply are all-important machinery parts. Abbosh says the company has experienced “significantly longer lead times and shipping/container costs at unprecedented highs from the Far East”.

Not all companies in the sector have been adversely affected by the shortages, which appear to have blighted some countries more than others. Pau Vila, Transformation Manager at Spain-based LC Paper Group, says there have been no real issues in his country relating to the availability of pulp as the pulp his company uses comes mostly from Spain, but there have been some problems surrounding the availability of certain chemical products.

“Some of them are very specific and just a few suppliers carry them, so a failure in the supply chain of a certain supplier of key chemical products can result in the inability to source that essential product for tissue paper manufacturing,” says Vila.

TISSUE COMPANIES WERE NOT IMMUNE FROM THE SHORTAGE ISSUE. BUT JUST HOW BAD DID THE PROBLEM GET FOR THE INDUSTRY, WHAT IMPACT DID IT HAVE ON THE ABILITY OF COMPANIES TO PRODUCE TISSUE AND TOWEL PRODUCTS AS THEY WOULD NORMALLY, AND HOW DID THESE COMPANIES DEAL WITH THE FALLOUT?

"Fortunately the delays we have suffered in delivery of key chemical products have been of just a few days, so we have been able to reschedule our production planning to avoid disruptions. We are also suffering difficulties to cover labour vacancies, but up to this moment they have not been relevant enough as to halt the production."

The one challenge that almost all tissue companies say they had to grapple with over the last 12 months was the spiraling cost of energy, which has shown little sign of abating as we move through the first quarter of 2022.

"The unprecedented price of gas and electricity has created situations we as an industry have never faced before at such high levels and continued to escalate throughout the months from spring through to year end," explains Paul Fecher, Founder and Chairman at UK-based Northwood. "No matter how one uses hedges to mitigate, the spot amount left unhedged has been so dramatic that the businesses have no choice but to face price increases as the UK government is doing nothing to assist industry cope with these external effects."

As Fecher points out there is only so much businesses can do to mitigate against some of the challenges the industry has encountered over the last 12 months. On the labour front, Abbosh says his company was forced to review its remuneration structure to reflect the changing demands of labour market forces.

"Whilst the HGV driver issue has affected us, we have learnt to become nimbler in our logistics operations to accommodate shortages," he explains. "Although the story has disappeared from the national newspaper headlines, it is an issue we continue to deal with, so we will just have to keep on adapting."

Marques says the labour shortage also created a major challenge for Poppies because following the acquisition of the facial tissue division of Terinex at the end of 2020, in addition to the company enjoying further organic growth, 60 more members of staff needed to be hired. "To tackle this challenge Poppies adapted its recruitment strategy along with rewarding loyal employees," he says. To counter raw material shortages, Armindo says that for the company's facial tissue lines it reviewed "some of our skillsets and tried different types of board to maintain supply. Of course, this did come at a cost, not only the increased price of the raw material, but the loss of efficiency in the production lines that had to run on unoptimised material along with all the testing time involved".

To get around its sourcing problem Abbosh says Better All Round moved many of its paper supplies from the Far East closer to home, largely due to inflated

VILA ADDS THAT LAST YEAR THE COMPANY'S ENERGY COSTS IN SPAIN SKYROCKETED FROM 85€/MWH TO AN EYE-WATERING 280€/MWH AND AS A RESULT OF THE INCREASE IN ENERGY, RAW MATERIAL AND TRANSPORT COSTS INCURRED BY THE BUSINESS IT HAS BEEN FORCED TO PASS THESE PRICE HIKES TO THE COMPANY'S CUSTOMERS.

shipping container costs.

"This brings the benefit of lowering the carbon footprint of products, but it does make accessibility to alternative fibres such as bamboo more challenging," he adds. "Consequently, we have been investing in innovations and circular working practices to make our products more environmentally friendly, and we are excited to be able to reveal more on this in 2022."

This avalanche of issues hitting the industry all at the same time has inevitably contributed to price increases across the category. Vila says his company's market data shows the mean parent reel price increased significantly, from 950€/TN in August last year to 1200€/TN in November. "That is not due to the shortages of raw materials, but due to the price increase on those raw materials coupled with the cost increase on energy," he says.

Vila adds that last year the company's energy costs in Spain skyrocketed from 85€/MWh to an eye-watering 280€/MWh and as a result of the increase in energy, raw material and transport costs incurred by the business it has been forced to pass these price hikes to the company's customers.

Fecher says that his business has also already shared some price increases with its customers. He looked at a number of ways of mitigating inflationary pressures impacting the business and will continue to explore options, but there is "no escaping the fact that we will continue to see the serious need for price increases as the businesses adjust to the new realities of inflation the likes of which very few of us have lived through in modern times".

He adds: "With governments speaking of inflation at around 5% [which] is a joke we are all experiencing double digit inflation and this needs to be realised and passed onto the consumers throughout the supply chain."

Abbosh agrees that due to the combination of different inflationary

pressures hitting the sector even those businesses that have not yet imposed price hikes will find it necessary to do so in the future.

"We have a range of pricing mechanics in place to deal with adjustments in price as needed, and we are working collaboratively with our customers in this regards given everyone is facing the exact same pressure points," he says. "There are multiple pressures on all elements of manufacturing of paper products and it is inevitable that we will see prices rise in the market."

Of course, pushing these rises through is not without its challenges. As Marques acknowledges: "It is always difficult to increase prices, especially in the 'away from home' market where the norm has been prices going down for decades and made possible by investment in technology."

"But this time around there is no gain of productivity that could contain the inflation. Prices are going up due to the strong imbalance between the offer and demand in such a short period of time that there is nothing that can be done to offset it. Poppies had to put prices up to the customers, we had no choice, however we kept the increase as low as we could."

While tissue companies can offset some of the shortage issues affecting the sector by putting in place some of the workarounds highlighted above, the major ongoing issue for energy intensive businesses is the political situation surrounding the gas supply in Europe.

This has still not been resolved and the energy crisis looks set to continue, particularly during the first quarter of 2022, when demand for energy is naturally higher over the last few months of winter. Marques does not expect a resolution to this issue to come any time soon and as a result he fears that the industry could be in for a bumpy ride in the months ahead.

"2020 was horrible, 2021 was difficult, 2022 the battle continues..." he says.

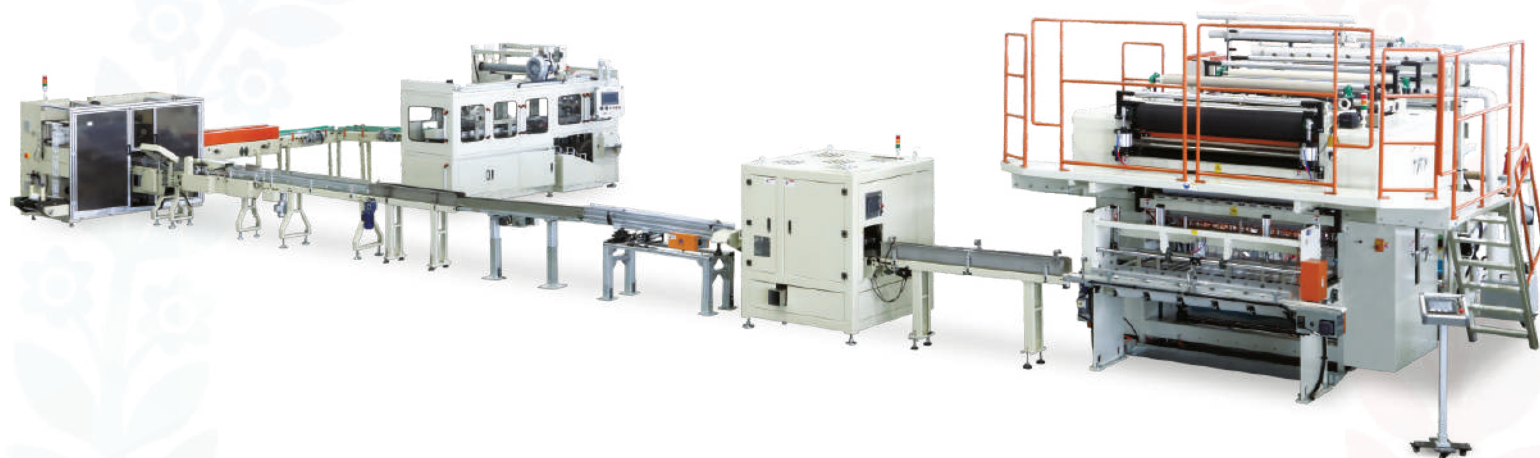
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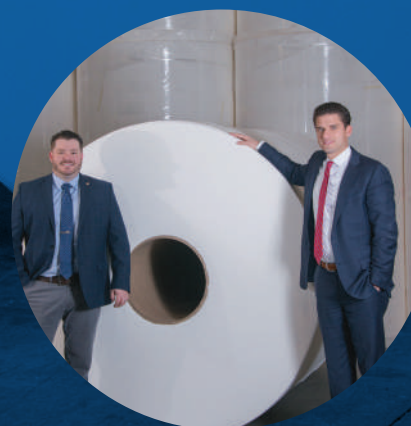


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