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TISSUE WORLD MAGAZINE

TISSUE WORLD

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Plus ...

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OPERATIONS REPORT: WEPA GROUP

"Sustainability is the new normal."

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▲ Operations Report

"We have defined five strategic fields of action for our sustainable future orientation: our foundation as a basis, future fibres, operational efficiency, sustainable hygiene paper portfolio and its innovative further development." WEPA Chief Operations Officer Harm Bergmann-Kramer.

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Cover: Sustainability is the new normal. Manufacturers and consumers are adjusting to the new economic reality in Germany in the wake of the major on-going challenges of recent years. Image by Stefano Vuga, Founder, PURPLEPRINT Creative, Spain/Italy, www.purpleprint.eu

Valmet's climate program

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FUNDAMENTAL CHANGES ARE UNDERWAY IN EUROPE'S LARGEST ECONOMY

Helen Morris

Senior Editor, Tissue World Magazine

Germany's green transition may have been accelerated by five to ten years. And remarkably, it could have proceeded at a faster pace still.

Global challenges of the last three years triggered what would seem to be systemic changes among manufacturers and consumers. Notwithstanding a surprise contraction in Q4 2022 GDP of -0.4% against -0.2% predicted, the longer-term trends are better. Destatis, the German Federal Statistical Office, contrasts the 2022 dip against Q4 performance in two prior years of +0.9% and +0.3%, and growth of +0.2% is expected for the rest of 2023. Germany, population 84.1 million, has long set green targets. Historically heavily reliant on engineering and coal, the Energiewende programme towards renewable energy began 13 years ago. The pathway towards 2050 – although a climate-neutral Germany is now said to be possible by 2045 – included an accelerated phase-out of nuclear power by December 2022, half of electricity supplies sourced from renewable energy, and coal use phased out by 2038.

An early leader in offshore wind and solar PV, targets increased to 20GW of offshore wind by 2030 and 40GW by 2040, alongside investments in 5GW of hydrogen by 2030. Targets during the best-of-times are prone to slippage, and the military conflict in Europe constitutes a category different threat to those ambitions. TWM's *Country Reports* chart the remarkable recalibration brought about by the combined challenges of the last three years. Green transitions have speeded up, and consumers are using energy more efficiently. The surprising reluctance to embrace e-commerce seems to be receding, and investment in renewables has increased. The unemployment trend is favourable, sitting at about 3.5% currently.

For tissue, the slow-growth stage continues but with significant underlying changes: machine replacements and upgrades are focused on cost and quality improvements, hygienic consumption has growing importance, and the search for quality at the right price is catered for by a strong private label sector. The rate of decarbonisation has accelerated, and TWM's analyses suggest the outlook could look much better in two to three years.

Quote of the edition

It is a phrase subjected to much speculation in recent years, and now Harm Bergmann-Kramer has defined it: "Sustainability is the new normal." The WEPA Chief Operating Officer explains what it means for the German tissue giant in *Country Reports*.

Top issues for global tissue corporations

In the next two years nearly 70% of companies plan to invest in on-site green energy with solar panels or wind turbines. Two thirds are investing in equipment to reduce carbon emissions, and more than half aim to reduce plastic use and change fuels to fossil-free options. Just 18% rank sustainability as "not a top priority" now, even though it ranked the second highest when asked about key improvement areas. These key insights are among the results of the Finnish technology company Tietoevry's Global Tissue Industry Study 2022, partnered with Fisher International, I-Plan, Valmet Automation and supported by Tissue World between June – October 2022. Some 36 tissue producer corporations from 22 countries took part. Full report in *World News*.

How long is a work of art? How long can you make the paper?

The answer to that question, in practical terms, is 250 metres. Italian artist Enrico Mazzone, however, likes the grand tradition of his country's great artists. So he will have continuous lengths. The work is titled *The Book of Revelation*, and the finished work will be one kilometre long. Enrico worked his way up to this scale as his previous artwork *Rubedo*, based on Dante's *Divine Comedy*, was the then largest work of art on paper – 97 metres long.

Koehler Paper's Greiz paper production plant in Germany is providing its Eco Black recycled paper for the artwork. He says of his canvas: "I am attracted to all kinds of products that are linked to pulp. This raw material is very versatile. I consume a lot of paper, and I believe in the sustainability of the ecosystem. This paper has deep and rich black colours, is made in a carbon-neutral manner, is lightfast, and is resistant to bleeding, colour migration, and rubbing." Enrico explains all, with examples of his work, in *ConsumerSpeak*.

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MARKET PULSE 2023: AMERICAN TISSUE'S ROLLERCOASTER RIDE IS NOW ON THE SMOOTHER TRACKS

AfH is largely back to pre-pandemic levels. AH is seeing structural changes in buying habits, pressure on spending power, a rise in private label, and the return of the frugal consumer. US market survey by AFRY's Sanna Sosa, Senior Principal, and Sivashankari Bharathi, Consultant. A TWM report.



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North American tissue demand has been on a rollercoaster ride since the first days of the Covid pandemic in early 2020, characterised by double digit ups and downs in market demand. 2022 year-end market indicators show another slump in At-Home tissue demand during the second half of the year, coinciding with consumers' struggles with spending power. The AfH tissue market was in recovery mode through 2022, driven by increased mobility and return to service

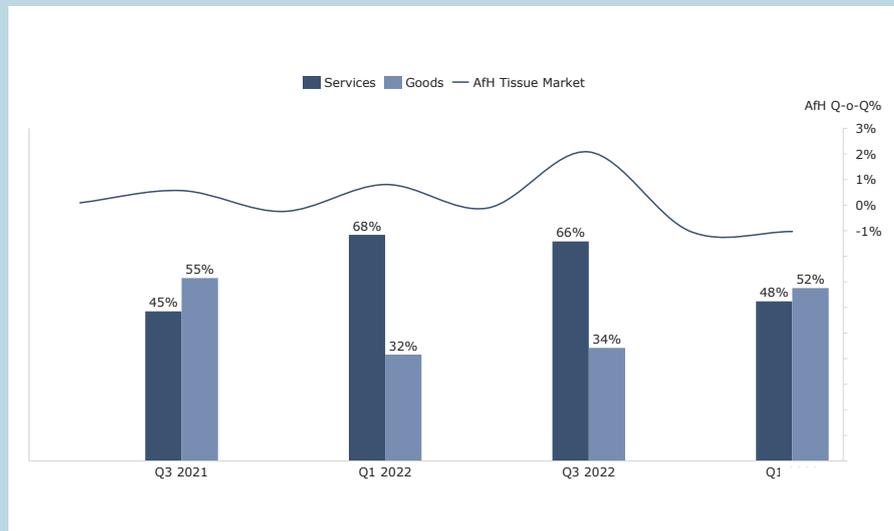


Figure 1: Share of consumers likely to increase purchases on services vs. goods

sector patronage.

To gain insights on what to expect in 2023, AFRY surveyed over 300 American consumers to take a pulse on people's mobility and spending habits. Will the tissue market volatility continue? How are consumers translating pressures on their wallets into tissue paper purchases? Are people back at pre-pandemic levels of service sector consumption? Has there been a structural shift in mobility impacting AfH tissue demand long term?

AfH tissue market in recovery

The pandemic has been an especially tumultuous time for the AfH tissue sector and producers. Before the pandemic, American AfH tissue demand was steadily growing close to the rate of GDP, at about +2% per year, until Covid-19 shut down parts of the AfH market due to stay-at-home orders. People cocooned in their homes and shifted spending from services and experiences to goods. AfH tissue consumption hit a decade low in 2020 at 2.6m tons after a close 15% drop in demand. However, since then the AfH tissue segment has been in recovery as

people have been returning to service sector consumption.

Results from AFRY's consumer surveys – which have been conducted every six months since 2021 - illustrate how, by the beginning of 2022, people had increased spending on services rather than goods (Figure 1), which coincides with the recovery of the AfH tissue sector. However, AFRY's latest consumer survey conducted in January 2023 shows the smallest difference in consumers increasing spending on services vs. goods. If 2022 was a strong recovery year for service sectors, including the AfH tissue sector, the growth in 2023 is likely to moderate as most of the pent-up service sector demand may already have been released and the concerns over inflation, economy and spending power weigh on consumers' wallets.

The AfH tissue market consists of five main end-use service sectors, as shown in Figure 2. Over 40% of North American AfH tissue consumption is estimated to take place in food service settings or in take-out. The travel industry represents about a quarter of AfH tissue demand, followed by healthcare, office buildings and

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education and government sectors, which are estimated to represent less than 15% of AfH tissue demand each.

The pandemic drove the biggest hits (or even a temporary halt) on the travel industry, as cruise ships stopped sailing and air travel and hotel stays declined by an estimated 50-60% in 2020, based on data from International Air Transport Association and leading airlines and hotel chains. In-person education also swiftly moved on-line, leaving schools and university campuses temporarily empty. Virtual visits in the healthcare sector increased significantly as people avoided hospitals and doctors' offices in fear of being exposed to the Covid virus. Food service saw the smallest disruption overall, thanks to the boom in food delivery services. Where are American consumers currently in terms of returning back to these key sectors of AfH tissue consumption?

Service sectors already at pre-pandemic levels

The most recent AFRY consumer survey of over 300 American consumers, conducted in January 2023, shows that people have already largely returned to pre-pandemic levels of key AfH tissue end-use service sector patronage (Figure 3). Especially, 87% of the respondents are already back at using healthcare sector services at or above pre-pandemic levels. We asked the consumers to rate their level of activity on a scale from one = well below pre-pandemic level, three = at pre-pandemic level, five = well above pre-pandemic level. Accordingly, consumption of healthcare sector services received the highest average rating, which indicates that people are using healthcare services above the pre-pandemic levels potentially due to amplified interest in health and wellbeing combined with the backlog of pushed back visits in the middle of the pandemic.

Hotel stays and return to school campuses (and student social life) had the second and third highest level of return to pre-pandemic behaviours. Working in-person in the office, and potentially related to reduced number of in-person work meetings, airline travel had the lowest return rates to pre-pandemic level of use. Notably, respondents from the Northeast and the West Coast had the lowest return rates back to working in office environments, especially in the West Coast with all the various tech companies.

Structural shift impacting office buildings

AfH tissue consumption in office buildings is experiencing a structural shift, as people continue to work in hybrid work models.

The latest AFRY consumer survey reports

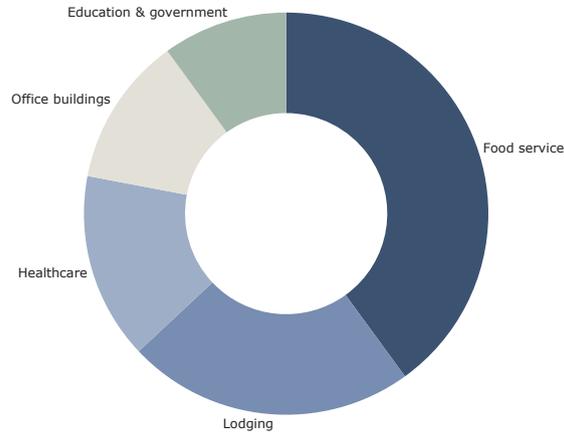


Figure 2: AfH tissue demand by end-use market segment

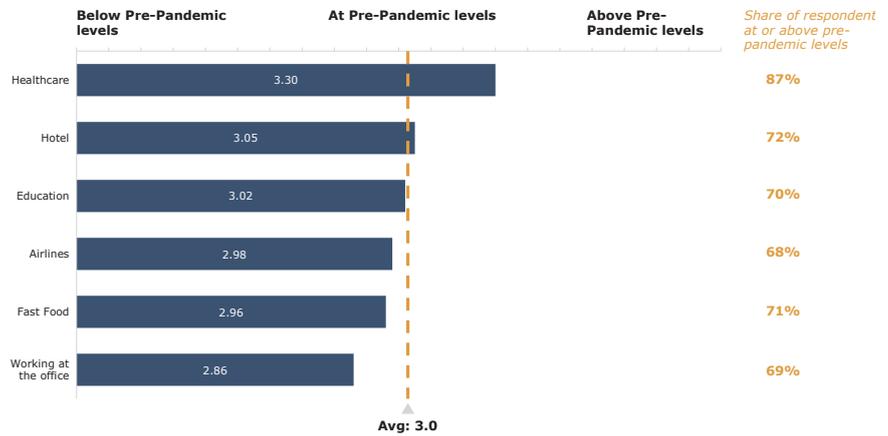


Figure 3: Return to main AfH tissue end-use market settings

THE MOST RECENT AFRY CONSUMER SURVEY OF OVER 300 AMERICAN CONSUMERS, CONDUCTED IN JANUARY 2023, SHOWS THAT PEOPLE HAVE ALREADY LARGELY RETURNED TO PRE-PANDEMIC LEVELS OF KEY AFH TISSUE END-USE SERVICE SECTOR PATRONAGE. ESPECIALLY, 87% OF THE RESPONDENTS ARE ALREADY BACK AT USING HEALTHCARE SECTOR SERVICES AT OR ABOVE PRE-PANDEMIC LEVELS.

that 60% of the respondents work from home at least some days of the week (Figure 4). This is an uptick after steady decline in the number of respondents reporting to continue to work from home or in hybrid models through 2021 and 2022, as companies and people started the partial return to offices. The uptick may indicate that employees and employers are still calibrating the new balance between in-office and remote work modes.

One trend seems to be clear; the

hybrid work model is here to stay. Firstly, consistently 55-60% of the respondents in our survey samples can work from home at least some days of the week. Secondly, we can see a clear correlation with younger generations working more in the hybrid model. Some 73% of Generation Z respondents (born after 1997) are working from home at least some days of the week versus only 42% of baby boomers (born 1946-1964). A dramatic generational difference.

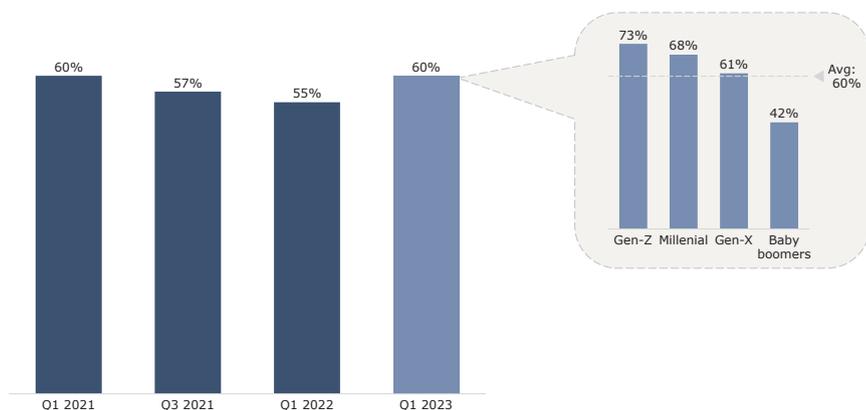


Figure 4: Share of consumers that will work from home at least some days of the week

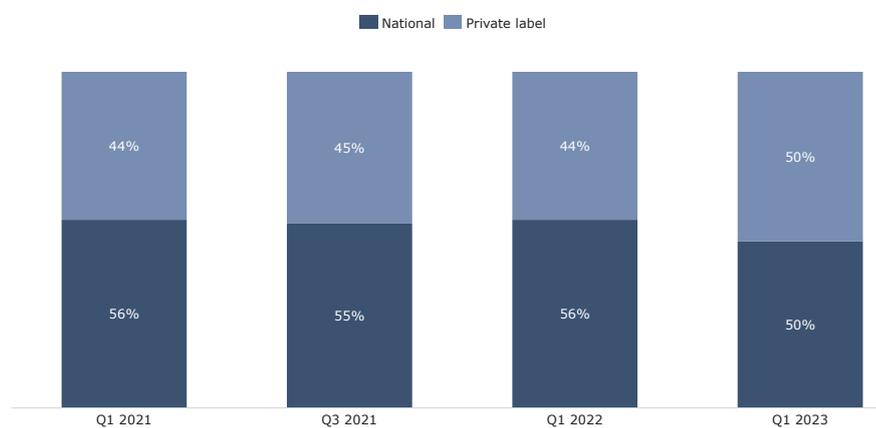


Figure 5: Share of respondents buying private label vs. national brand tissue products

CONSUMERS HAVE BEEN COPING WITH RECORD HIGH INFLATION. ALTHOUGH INFLATION IS EXPECTED TO MODERATE IN THE US IN 2023, IT REMAINS ABOVE HISTORICAL AVERAGE. THEREFORE, WE AT AFRY WANTED TO INVESTIGATE HOW ARE CONSUMERS' ECONOMIC CONCERNS IMPACTING AH OR RETAIL TISSUE PURCHASES. ARE CONSUMERS BUYING LESS BULK AND THEREFORE HAVING LESS ROLLS IN INVENTORY?

Steady but more moderate growth outlook for the AfH tissue sector in 2023

The pandemic, combined with Generation Z entering the workforce, brought along a structural shift to working more from home and jumping more often on video conference calls than on flights to attend a meeting in person. The lower volume of daily commuters should help traffic congestion, but also reduce the foot traffic in downtown coffee shops and lunch spots, negatively impacting AfH tissue product

demand. Therefore, the AfH tissue market size may not have reached its pre-pandemic level, yet.

However, American consumers are back at service sector consumption and back out visiting doctors' offices, getting their hair cut in salons and traveling again. The Biden administration is planning to end the Covid-19 emergency declarations on 11 May, 2023, which seems to fit the people's mood and mobility. Hence, AfH tissue demand recovery should continue in 2023,

although at steadier and more moderate rate than over the past two years.

AH tissue sector: the return of the frugal consumer

Consumers have been coping with record high inflation. Although inflation is expected to moderate in the US in 2023, it remains above historical average. Therefore, we at AFRY wanted to investigate how are consumers' economic concerns impacting AH or retail tissue purchases. Are consumers buying less bulk and therefore having less rolls in inventory? Are consumers shifting towards lower cost products, such as smaller packaging sizes and private labels, to save money?

As we well know, consumers stockpiled on tissue products during the early months of the Covid-19 pandemic and at onsets of new Covid-19 variants. The hoarding and buying in bulk, and then consecutively drawing product from built up inventories in closets and storerooms, has caused significant volatility in retail tissue purchases since the beginning of the pandemic. To get clues for what is in store for AH tissue demand in 2023, we surveyed our respondents regarding the packaging size of tissue product purchases.

Some 30% of the survey respondents indicated that they are currently buying smaller pack sizes than before. At the same time 36% of respondents have increased tissue products purchasing frequency. This means that close to a third of consumers are shifting and adjusting their tissue purchasing habits away from larger packaging sizes, most likely to save money.

Private label market is up

Also, on the trend of cost-conscious consumers, private label tissue consumption has been growing in the US over the past decade. We estimate that private label tissue products have grown to about a third of the American retail tissue market volume.

In our consumer pulse surveys, 44% to 50% of respondents have reported buying private label tissue products since 2021 (Figure 5). It is important to note that the surveyed consumers are not always buying private label tissue products, but also shop national brands, and the survey does not give visibility into purchased volumes which are likely to inflate the survey results compared to the overall market share of tissue private labels. However, the survey supports the growth trend of private labels and records the highest share of consumers likely to buy tissue private label products rather than national brands in January 2023 at 50% of respondents.

Growth in private labels can be attributed to the younger generations of shoppers,



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especially the Millennials. According to a study by the National Retail Federation, looking at private label products overall, 77% of Millennials reported they would not want to buy the same products their parents did. Similarly, the highest share (57%) of the Millennials in our survey sample favoured private label tissue products over national brands.

Consumers, and especially the younger generations, are opting for private label tissue products mostly driven by their cheaper price point (Figure 6). Close to half (48%) of the survey respondents named private labels being a cheaper option as the main purchase driver, followed by good quality of the products by 36% of the respondents. Only 17% of the respondents indicated that trust and loyalty with the retailer was the main draw for them to buy private label tissue products.

More use for kitchen paper towels

In addition to gaining visibility into consumers' tissue inventory building habits and private label purchasing preferences, we wanted to take a snapshot of how the pandemic has increased the use of kitchen towels for keeping kitchen and other home surfaces germ free. Some 40% of the survey respondents specified that they indeed have increased the use of kitchen paper towels since the Covid-19 pandemic.

Figure 7 summarises the variety of ways and purposes people are using kitchen paper towels. Some 27% of the respondents are using paper towels for general cleaning purposes, which is likely up since the pandemic. Paper towels substituting napkins has been a trend among the younger consumers. Accordingly, 23% of the respondents reported using paper towels as napkins, followed by 22% in food preparation and 19% as hand towels, which share is likely also up since the pandemic. Only 9% of respondents use the harsh textured towels as facial tissue. However, that seemed to bother the male respondents less. Women favoured paper towels used for general cleaning and hand towels more than the men.

These trends should positively impact kitchen towel demand in 2023, and beyond.

Outlook for 2023 tissue demand

AFRY's tissue consumer survey results indicate continued positive outlook for the AfH tissue segment, but more stressed market conditions, or at least more cost conscious consumers, for AH tissue in 2023.

Recovery of the AfH tissue demand is likely to continue, but at an even more moderating rate. The double digit up and down swings in demand should be behind us, as people continue to steadily increase their patronage across service sectors

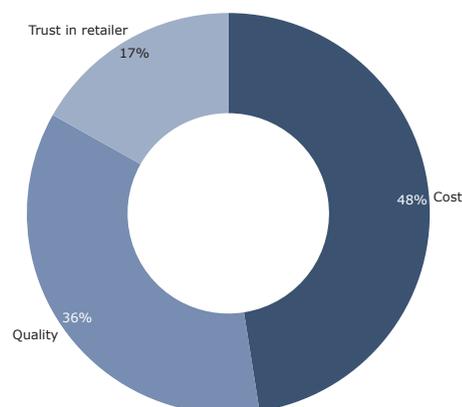


Figure 6: Why do you buy private label tissue paper products?

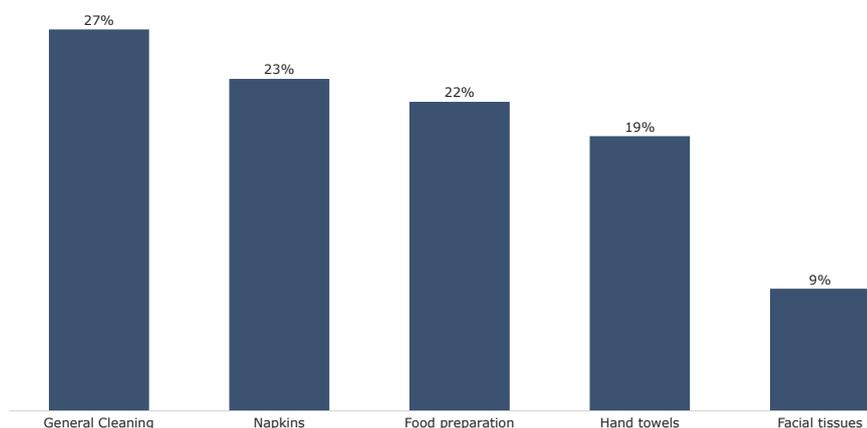


Figure 7: What do you use kitchen paper towels for?

IN ADDITION TO GAINING VISIBILITY INTO CONSUMERS' TISSUE INVENTORY BUILDING HABITS AND PRIVATE LABEL PURCHASING PREFERENCES, WE WANTED TO TAKE A SNAPSHOT OF HOW THE PANDEMIC HAS INCREASED THE USE OF KITCHEN TOWELS FOR KEEPING KITCHEN AND OTHER HOME SURFACES GERM FREE. SOME 40% OF THE SURVEY RESPONDENTS SPECIFIED THAT THEY INDEED HAVE INCREASED THE USE OF KITCHEN PAPER TOWELS SINCE THE COVID-19 PANDEMIC.

where AfH tissue products are mainly consumed. Office buildings are the only key tissue end-use segment where we see AfH tissue consumption to structurally remain below pre-pandemic levels.

Consumers' concerns over spending power are curbing the desire and ability for some consumers to buy in bulk and have tissue products sit in home inventories. Therefore, smaller pack sizes and products with value market positioning should do

well. Private label products are poised to continue to take market share, as consumers continue to find them to be low cost, good quality product alternatives.

GLOBAL NEWS UPDATE

A roundup of news from across the global tissue industry. To get the very latest news go to www.tissueworldmagazine.com

SWEDEN

Metsä Tissue boosts capacity by 70,000tpy with TM investment

Metsä Tissue is to boost its production capacity after investing in a Valmet-supplied tissue machine to be installed at its Mariestad mill. Production on the tissue machine is estimated to begin during the second half of the year 2025, and once up and running the total production capacity of the machine will be 70,000tpy, increasing the mill's total production capacity to 145,000tpy.

The new tissue machine is part of the company's €370m Mariestad tissue mill expansion and modernisation project.

In 2022, Metsä Tissue also received an environmental permit for its mill expansion, and it said the energy consumption of paper production at the site will be reduced by 30% with the new paper machine.

The company added that the investment will also reduce carbon dioxide emissions in accordance with its sustainability goals, which include committing to make its mills fossil free by 2030.

Esa Paavolainen, Vice President, Projects, Metsä Tissue, said: "With the new tissue paper machine, we are increasing the supply of locally produced sustainable fresh fibre-based tissue papers to the Scandinavian markets and by that enabling reliable local supplies of high quality tissues to consumers.

"The new paper machine technology brings great environmental benefits. We are able to diminish our water consumed in the paper manufacturing process by 50% as well as the energy saving reductions."

The company added that the plant's expansion is focused on sustainable fresh fibre production, meaning that the total percentage of fresh fibre-based products manufactured at the mill will be 80% when the expansion is completed in the second half of 2025. Metsä Tissue's Mariestad mill produces tissue paper products sold under the brands Serla, Lambi and Katrin and customers' private label products. After the expansion the mill will have three tissue paper machines.

Sofidel announces renewable energy agreement for Buñuel plant in Spain

Sofidel has signed a 10-year supply agreement with Spanish renewable energy company ACCIONA Energía, a move it said will save the group 12,870 metric tons of CO₂ per year. The Power Purchase Agreement (PPA) covers the company's plant in Buñuel, Navarra, and will provide it with 90 gigawatt hours per year of renewable electricity from ACCIONA Energía's renewable facilities in Spain. It will also provide for the supply of electricity with 100% renewable origin accreditation certified by Spain's National Commission for Markets and Competition, as well as access to ACCIONA Energía's GREENCHAIN application, a platform based on blockchain technology that allows the renewable origin of energy to be tracked in real-time.

Using this tool, Sofidel said it will know which ACCIONA Energía production plant and which renewable source supplied each MW to its plant. Riccardo Balducci, Sofidel Energy & Environment Director, said: "In line with its path toward a low-carbon economy, Sofidel is pursuing a multi-option energy procurement policy, linked to the different legislative, infrastructural and environmental contexts in which it operates.

"The signing of the PPA with ACCIONA Energía fits into this pattern and represents a decisive step toward achieving our goals."

Sofidel added its 2030 CO₂ emission reduction targets have been approved by the Science Based Targets initiative (SBTi) as consistent with the reductions needed in order to limit global warming to well below 2°C under the Paris Agreement. These objectives include a 40% reduction in Scope 1, Scope 2 and Scope 3 CO₂ emissions in relation to its suppliers' pulp production activities; in addition to a further objective of a 24% reduction in Scope 3 CO₂ emissions per metric ton of paper.

SPAIN

Navigator acquires Gomà-Camps Group's consumer tissue business

Portuguese pulp and paper business the Navigator Company has completed the acquisition of Gomà-Camps Group's

consumer tissue business in Spain and France. Established in 2005 and further expanded in 2018, Gomà-Camps belongs to one of Spain's oldest and most prestigious family-owned companies, having operated in the field of paper production for over 260 years. Included in the purchase of "GC Consumer" are Zaragoza-based Gomà-Camps Consumer and Castres-based Gomà-Camps France, increasing Navigator current production capacity to 165,000tpy. A spokesperson for Gomà-Camps confirmed to TWM that the company's professional business sector continues for Gomà-Camps S.A.U (La Riba).

Navigator said the acquisition is "part of an ambitious plan for diversification and development," strengthening its position as the second largest Iberian producer of tissue. It added it expected to see the group contribute a new growth cycle in the tissue business segment, and that the factories would boost new business in Spain and France. In the tissue business, Navigator expects consolidated sales of tissue paper in excess of €300m.

GUATEMALA

GrandBay Papelera Internacional boosts premium capacity by 60,000tpy with TM start-up

GrandBay Papelera Internacional has started-up a Toscotec-supplied double-width AHEAD 2.2L tissue machine at its Rio Hondo Zacapa site in Guatemala. PM7 line will add over 60,000 tons to the mill's annual production capacity. The GrandBay Group has also recently signed with Toscotec to install a second AHEAD 2.2 tissue line (PM5) at Papeles Nacionales' Pereira facility in Colombia. Toscotec will supply the PM5 line as a turnkey operation scheduled to come online in 2024. Rio Hondo Zacapa's PM7 has a sheet trim width of 5.5m, a design speed of 2,200m/min, and according to the supplier "is designed to deliver the maximum possible drying efficiency with the lowest energy consumptions. It is equipped with a shoe press of the upgraded design TT NextPress, a third-generation TT SYD Steel Yankee Dryer, and high efficiency TT Hood.

Toscotec said its patented TT SAF DD (Short Approach Flow system with Double

Dilution) “ensures efficient stock dilution in two steps resulting in a significant reduction of electrical energy consumption.”

Alberto Matos, GrandBay Project Engineering Manager, said: “This is the first tissue line supplied by Toscotec that we have installed, and the machine is producing high quality tissue. We expect it to quickly achieve good runnability and high energy efficiency.”

Papelera Internacional is part of the GrandBay Group, a leading Latin American company dedicated to the manufacturing, conversion and sales of personal care and home products of premium quality.

AMERICA

P&G targets premium market boost with TM investment

Procter & Gamble (P&G) has increased its premium consumer bath tissue production after investing in an Andritz-supplied PrimeLineTAD tissue machine. Delivery of the machine at the company’s Family Care plant in Box Elder, Utah, is scheduled for 2024, with start-up of production planned for 2026. The supplier said it will have a “state-of-the-art energy efficient process equipment to meet P&G’s demanding sustainability targets.”

P&G is one of the largest manufacturers of premium consumer bath tissues and paper towels in North America. In 2007, it also started up an Andritz-supplied TAD tissue/towel machine at its Green Bay, Wisconsin site, and another TAD tissue/towel machine at its Box Elder facility which started up in 2011.

ITALY

Lucart signs 10-year renewable energy purchase agreement

Lucart has signed a 10-year Corporate Power Purchase Agreement (Corporate PPA) with Plenitude (Eni) Società Benefit, a move it said will reduce its CO2 emissions related to the purchase of electricity from the national grid by around 30%. The agreement covers the entire production of a Plenitude wind farm, located in Abruzzo, with a capacity of 10 MW.

The generated renewable energy totals around 18 GWh per year and will be used to cover a significant share of Lucart’s Italian plants. Massimo Pasquini, Chief Executive of Lucart Group, said: “This agreement fits perfectly into our medium-term energy transition plans.

“It allows us to reduce the carbon footprint of our operations and stabilise our energy costs at a time of uncertainty due

to the effects of geopolitical events on the energy market.”

The operation is part of a broader plan by Lucart to reduce climate-changing emissions related to energy consumption, which includes installing solar generation plants at its factories in Europe, installing biomass power plants for the production of electrical and thermal energy, and reducing electricity consumption by the technological renovation of its production systems.

ITA acquires intralogistics business Taiprora

Italia Technology Alliance (ITA), A.Celli Paper’s holding company, has boosted its presence in the national and international market for advanced intralogistics solutions after acquiring the majority of Italy’s Taiprora. Located in Abruzzo, Taiprora has been developing software and automation systems for production and intralogistics for 30 years, and has previously been present in the pharmaceutical, automotive and food and beverage sectors. Following the purchase, it will integrate its knowledge for the supply of fleets of vehicles and stacker cranes for automatic warehouses, as well as development of software for internal logistics flows (WCS – WMS), for ITA, the holding company of the Celli family of businesses.

The move means that ITA will diversify its offering from paper, tissue and nonwoven industries, and now include the pharmaceutical, automotive, food and multipurpose markets. Francesco Alfieri, President of Taiprora, said: “The operation is the result of the integration of two different worlds and sectors, but which share an extremely wide and interesting area of contact.

“We want to increase research and focus on creative innovation to achieve ambitious goals in a future full of opportunities and challenges for us and our territory.”

Mauro Celli, shareholder of ITA, added: “Our development model is based on the acquisition of new skills to create more value for our customers, ensuring proven solutions and measurable results with the best practices of the global market.

“We invest in leading companies in their sector that have a history of reliability and good reputation. The entry of Taiprora corresponds exactly to these success criteria, and complements the group’s digital offering: from the user interface of the production line to logistics and warehouse management, to IoT and Big Data analysis.”

POLAND

Zeus boosts packaging abilities with Polpack acquisition

Irish-owned packaging company Zeus has further consolidated its operations across Europe after acquiring Polish packaging materials distribution and packaging machinery solutions business Polpack.

Headquartered in Warsaw, privately-owned Polpack has seven sales offices across Poland supported by warehousing, logistics and manufacturing facilities, offering bespoke solutions to a diverse customer base. During the past 12 months Zeus said it has added a further €75m of revenue through acquisition and added the Polpack purchase represents the start of a programme of further growth plans in 2023 aimed to increase business to revenues of more than €500m.

Zeus Chief Executive Keith Ockenden said: “We set up Zeus Poland in 2010 with revenues now exceeding €5m and a full range of packaging solutions for food production, retail, manufacturing, e-commerce and 3PL organisations.”

GLOBAL

Tietoevry report: Industry leaders across 22 countries reveal how business fundamentals are being reviewed

Key trends for the global growth of the tissue industry will focus on further developments in profitability, sustainability, and digitalisation, according to findings in Finnish technology company Tietoevry’s Global Tissue Industry Study 2022.

Tietoevry conducted the study together with partners Fisher International, I-Plan, Valmet Automation and supported by Tissue World between June – October 2022.

The aim was to find new ways and areas to improve and focus on efficiency, enable cross-border thinking, and support a sustainable industry future. Some 36 tissue producer corporations from 22 countries and on four continents responded to the study, of which most respondents were on C-level and in other top management roles. The study revealed that tissue companies have the biggest performance gaps in profitability, energy efficiency, demand planning and forecasting, digitalisation and making good use of the data.

Key findings include:

- The outlook for tissue businesses is uncertain in many ways, and business fundamentals are being reviewed

because of the volatile market situation, with rising raw material costs and increasing inflation;

- One of the biggest uncertainties relates to the cost and availability of raw materials and their shortages are leading to substantial increases in price in numerous areas and extended lead times;
- Increased inflation has such a dramatic and overall impact because it raises the costs of the entire supply chain;
- Consumers purchasing power has also been reduced, which puts tension on production costs and sales prices;
- Tissue producers are under pressure to protect their profitability and search for efficiency through sustainability and digitalisation.

In terms of sustainability, over the next two years nearly 70% of respondents are planning to invest in producing green energy on-site with solar panels or wind turbines. Two thirds of respondents are investing in any equipment that helps reduce carbon emissions, while over half are aiming to reduce their use of plastic and are changing their fuels to fossil-free options.

And while 36% of tissue producers said they are an industry leader when it comes to sustainability, 18% said sustainability is “not a top priority” for their company now – even though sustainability ranked the second highest when asked about key improvement areas.

Digitalisation was seen as a key success enabler in a turbulent market with Chief Executives wanting to establish data driven business, and their number one priority was the Manufacturing Execution System (MES). Production operations were the biggest key focus area in the following 12-month period when applying new technologies such as AI. Some 85% of respondents chose production when asked about areas where they are going to apply new technologies, while 57% chose maintenance and 52% energy.

Jarmo Ropponen, Head of Sales and Marketing, Tietoevry Industry, Pulp, Paper and Fibre, said: “It has been a very interesting journey to be able to release this unique study’s results into the global tissue market.

“Multiple ecosystem partners and the entire global industry arena have been involved. We have been able to work across borders, companies, operations, and geographies in the wider global tissue industry ecosystem arena, enabling us to identify and uplift more common interest topics which will help all parties to contribute for more sustainable futures.”

BRAZIL

INPEL boosts high-quality production capacity with start-up

Indústria de Papéis (INPEL) has diversified its product offering after starting up a Hergen-supplied Crescent Former Smart Eco tissue machine. The project is part of a R\$25m investment programme to increase the company’s product portfolio and its production and paper quality. TM2 is a Crescent Former model SMART HCF-920 and has been started-up at the company’s plant in the northwest region of the State of Rio de Janeiro.

The scope of supply includes an iNOVA FLOW Hydraulic Head Box, which the supplier said will enable the production of high-quality double-ply tissue.

The SMART ECO has a 12ft Smart Steel Yankee Cylinder which Hergen said results in an increased drying capacity with low energy consumption.

The machine was designed to work with an extraction hood producing up to 57tpd of tissue at 2,760mm paper width on the reel.

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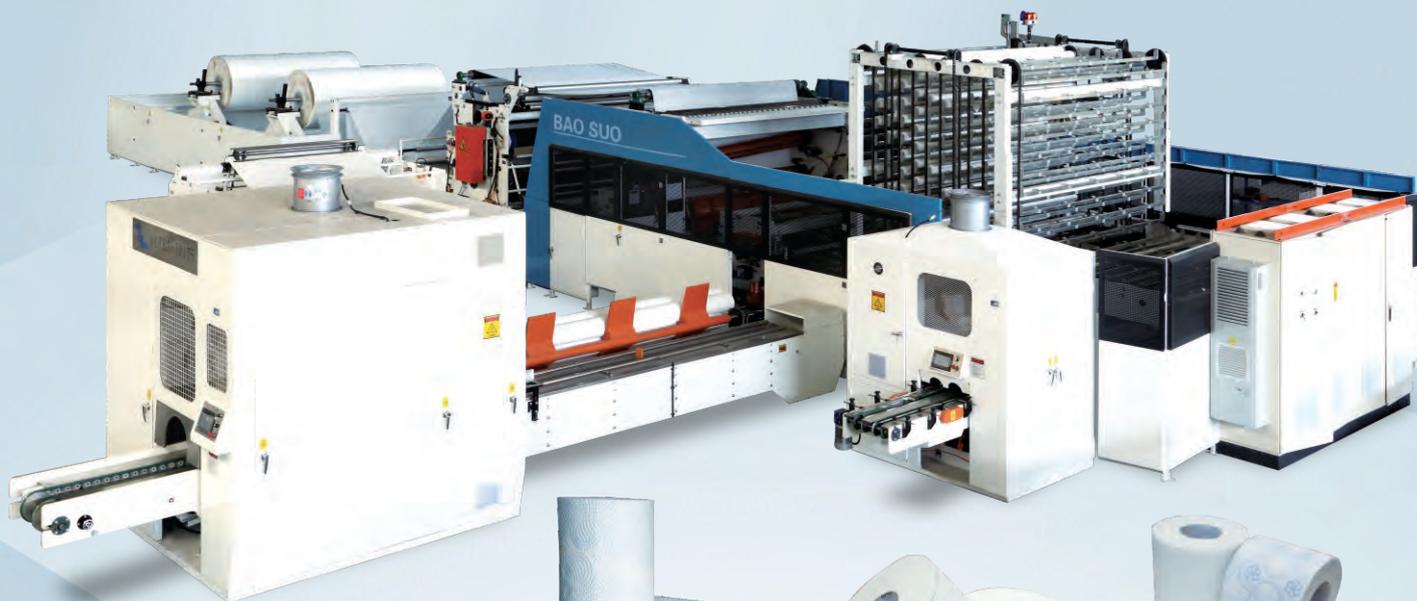
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UNDER ENERGY-PRICE PRESSURE GERMANY'S SLOW-GROWTH STAGE SEES ITS DECARBONISATION RATE ACCELERATE

Economic growth of 0.2% is now forecast for 2023 instead of a recession. With machine replacements and upgrades focused on cost, quality and energy improvements, two-to-three-year prospects look promising.

When this column last focused on Germany more than two years ago, the world was dealing with the severe disruptions of the Covid-19 pandemic. However since then, businesses have reopened as the number of cases began to decrease. As we began to return to our altered normalcy, it was difficult to imagine a more significant disruption to tissue manufacturing and consumer consumption than what we had just experienced. Yet, the Russian/Ukraine war that occurred in early 2022 has surpassed the pandemic disruptions due to the extreme interruption it created in Europe's energy supplies. This analysis will focus on how the war's impact to energy supply and cost have affected German and European tissue production and future viability.

Despite Germany being the largest economy in Europe and the fifth largest in the world, the high costs and decreased availability of energy, especially natural gas, affected numerous aspects of society. German tissue makers like Hakle had to declare restructuring due to the extreme

energy cost challenges that occurred just before winter. Tissue manufacturers requested additional energy price caps and warned of potential tissue paper shortages. Fortunately, the winter of 2022-2023 was much warmer than expected, and Germany is now forecasting economic growth of 0.2% for the rest of 2023 instead of a recession. Strong headwinds remain as other trading partners forecast recessions in 2023 and domestic energy cost subsidies are withdrawn.

Germany's adjusted GDP per person trend is shown in Figure 1. 2009 (Great Recession) and 2020 (Covid-19) were the only years that experienced a decline in economic growth in this trend. Germany went through a slight decline in population from 2008 through 2011, but the population growth resumed thanks to increased immigration until it reached a pause in 2022. Both the population recovery and economic growth provides good support for continued tissue consumption in normal times. Still, the German consumer is under the same energy pressure as the tissue mills.



Bruce Janda
Senior Consultant, Fisher International

German inflation and unemployment trends are shown in Figure 2. The unemployment trend has been very favourable, sitting at about 3.5% currently, and the burst of inflation that occurred in 2022 due to the energy price disruption is dissipating. However, the country is an export-focused economy, and this positive economic news does not account for the energy pressures on Germany's trading partners.

Tissue import and export trends are shown in Figures 3 and 4. Imports and exports are generally balanced and have slightly decreased in the past several years. Most of the tissue trade with nearby neighbouring countries is two-way.

The effect of the mature and slow-growing German tissue business is shown in Figure 5, illustrating that there is no net change in the size of the tissue machine fleet. New tissue machines were added in 2008 and 2015, followed by older machine shutdowns in 2009 and 2016. These new machines were more productive than the machines removed, and existing machine improvements and de-bottlenecking supported the remaining domestic growth.

About 60% of tissue mills have integrated recycled paper fibre production on-site, as shown in Figure 6. About 25% of tissue sites are non-integrated using market

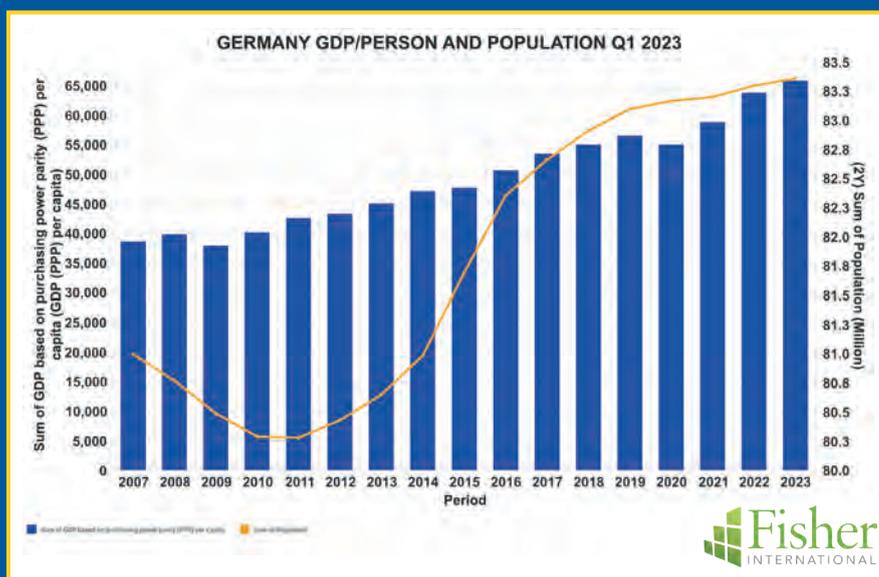


Figure 1: Germany's GDP/Person and Population

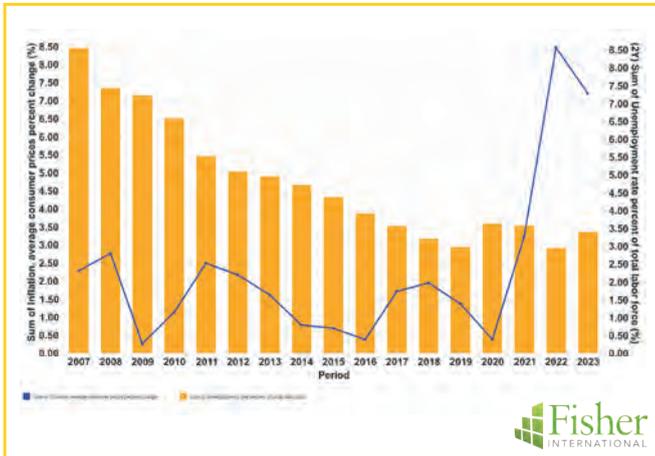


Figure 2: Germany's Inflation and Unemployment

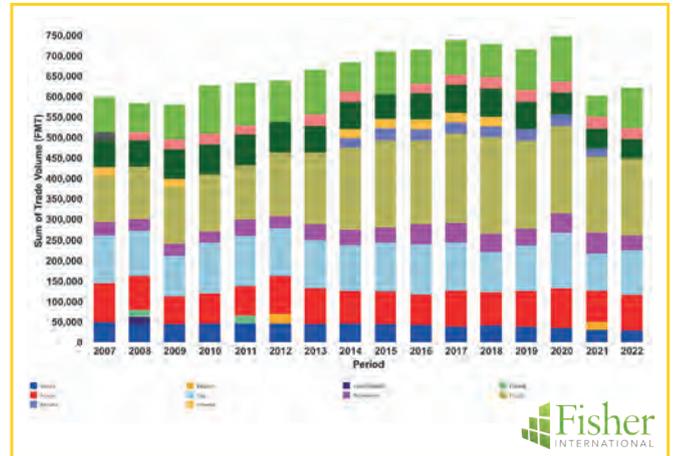


Figure 3: Germany Tissue Imports Trend

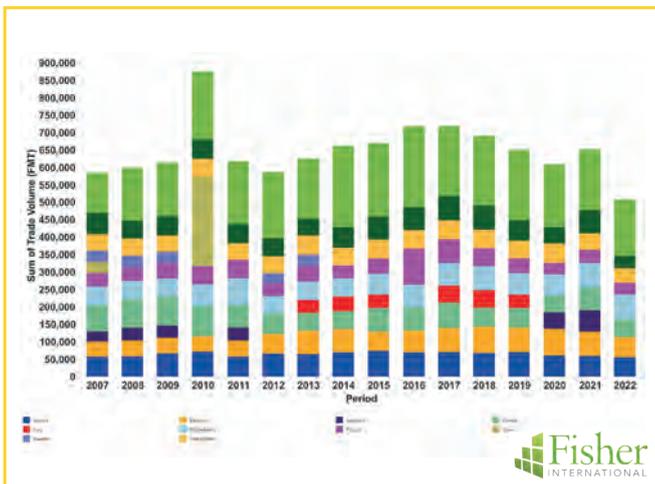


Figure 4: Germany Tissue Exports Trend



Figure 5: Germany Tissue Machine Count Changes Trend

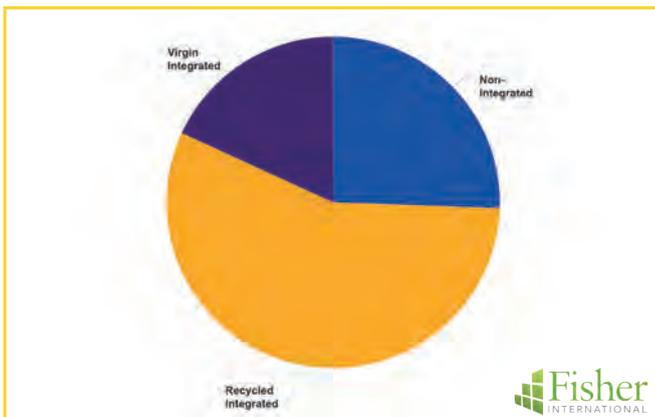


Figure 6: Germany Tissue Mill Site Types

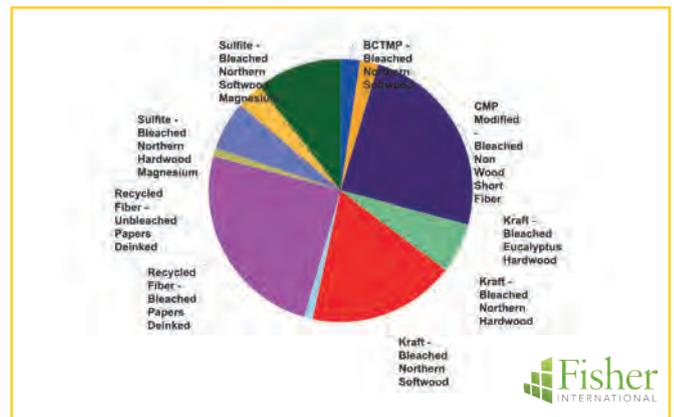


Figure 7: Germany Tissue Fibre Sources

pulp. The rest of the sites are virgin fibre integrated with fibre production on-site. Integrated tissue production sites tend to have lower costs.

Figure 7 shows the source of tissue fibres for all the mill integration types. In addition to the recovered paper recycled fibre, Germany uses a significant fraction of non-wood short fibre and CMP/BCTMP lower-cost fibres. The proportion of bleached kraft northern softwood and eucalyptus used in tissue is smaller than many of Germany's neighbours. This makes for a

lower cost furnish that offers somewhat lower consumer qualities such as softness and absorbency.

Figure 8 shows that Germany has a strong commercial tissue business mainly focused on towels for hand drying. The consumer tissue segment shows strong production of bath and facial tissue and towels for household cleaning.

Consumer and commercial towelling are important as it drives applying advanced tissue technology for towel production to yield absorbency gains with less fibre

consumed per drying instance. This applies to commercial towelling for hand drying and consumer home towels for cleaning and spill recovery. Figure 9 shows that a small amount of German production uses advanced technology to texture and shape the tissue before drying. This technology is employed exclusively for towels, as shown in Figure 10. This is normal for Europe compared to North America, where advanced technology is also used for bath and facial tissue. The difference in consumer requirements for strength and



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softness optimisation makes advanced technology a requirement in North America for tissue integrity at very low strength. The higher bath and facial tissue strengths in Europe do not require advanced technology to make consumer-preferred products.

The following benchmark analysis of German tissue production uses a comparison set of tissue-producing countries selected from trade partners shown in Figures 3-4. The selected producers include Austria, Belgium, France, Italy, Netherlands, and Sweden. The United States was added to the set to compare to lower energy costs outside the Eurozone.

Figure 11 benchmarks tissue machine quality. The size of the bubbles represents the total production capacity of each country versus the average tissue machine technical age on the X-axis and the average machine trim or width on the Y-axis. Italy and Germany have the most up-to-date tissue machines on average in this set. German tissue machines tend to be wider than Italian machines, but significantly narrower than the older machines in the United States.

A similar style comparison is shown in Figure 12 for water consumption and water risk. Again, the size of the bubbles represents the tissue capacity of each country. Germany uses the least amount of water to produce a ton of tissue compared to all the other examples. The United States provides a counterpoint in water consumption at about five to six times the average German consumption. Therefore, Germany is rated a relatively low water risk.

Benchmark average tissue ton production cash costs are shown in Figure 13. The width of each bar represents the total tissue production tons for each country, and the height of each bar represents the average cost to produce a ton. Germany tends to have a slightly higher cost than Sweden, Italy, France, and Austria. However, Belgium and the Netherlands are relatively high-cost producers. The stacked colour bars provide reasons for the cost differences observed. The United States shows the lowest energy costs as the yellow bar in the stack. France also has very low energy costs due to the French focus on nuclear electric power generation. Germany has relatively low fibre and pulp costs, but the average German energy costs are more than double the cost per ton of the United States or France. Austria, Germany, and the Netherlands see the highest energy costs in this comparison.

Figure 15 benchmarks the total energy cost per ton of tissue production to dig further into the energy cost differences. The energy cost for on-site fuel and steam is relatively low for the United States, France, and Sweden. France, Italy, and the United States also benefit from low grid electricity prices.

It is too soon to say how these energy costs will settle as the Eurozone and the world adapt to the new wartime energy situation. The post-war energy cost structure is expected to focus on sustainability and decarbonisation. The countries have adapted by temporarily reopening carbon-intensive energy sources like lignite or coal. However, much was done to advance low-carbon and renewable energy. The Economist magazine projects that “as a happy consequence, the green transition may have accelerated by five to ten years.” Although German tissue producers are probably not as happy looking at this chart.

Figure 15 illustrates the cost per ton of energy, and energy prices are somewhat subsidised by the different tissue-producing companies distorting the comparison and future prediction. Figure 16 shows the same chart, except that the cost of energy used per ton of tissue production is replaced by the units of energy required per tissue ton.

German tissue production still uses more energy units (GJ) than

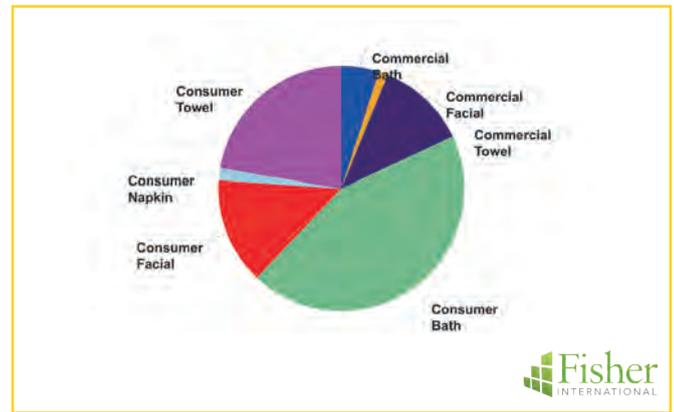


Figure 8: Germany Tissue Finished Products

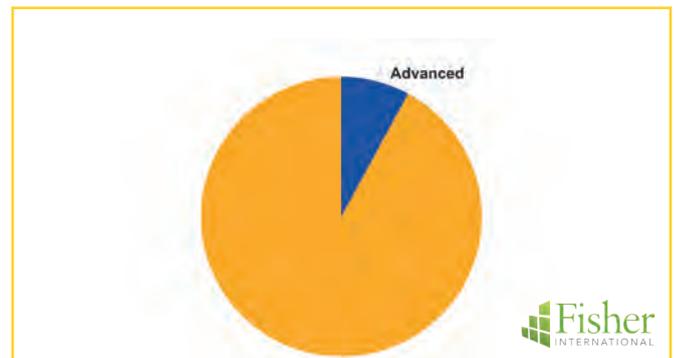


Figure 9: Germany Advanced Tissue Production

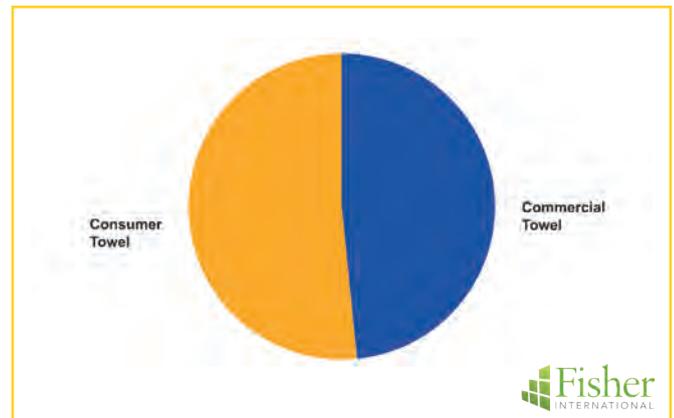


Figure 10: Germany Advanced Tissue Products

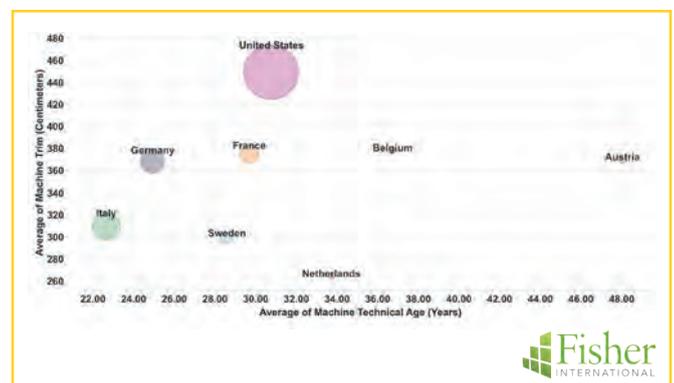


Figure 11: Germany Tissue Machine Quality

everyone else except the United States. North America is relatively energy self-sufficient and has not seen the energy cost pressure of the Eurozone countries. American consumers and tissue producers may disagree, but they haven't seen the energy shortages or

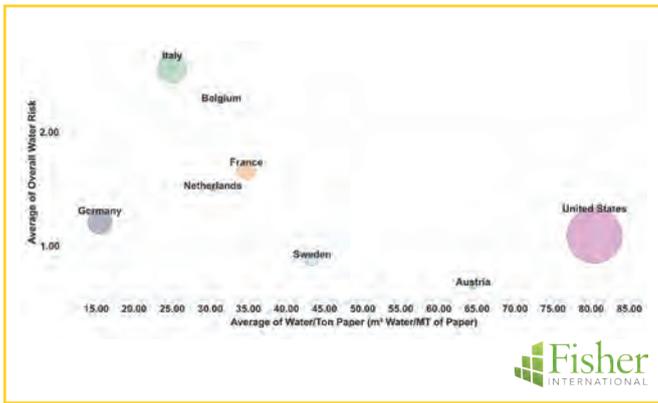


Figure 12: Germany's Water Consumption and Water Risk

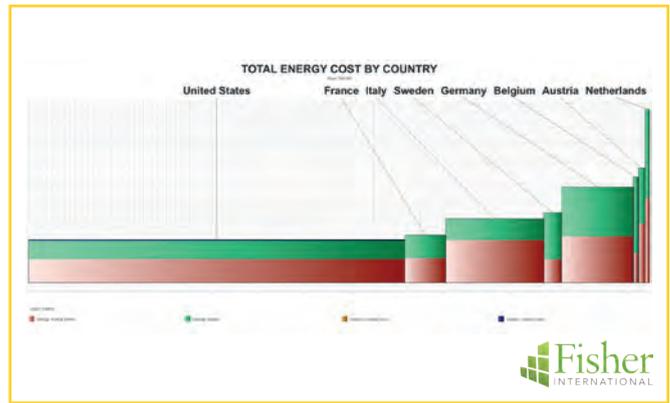


Figure 15: Total Energy Cost per Ton

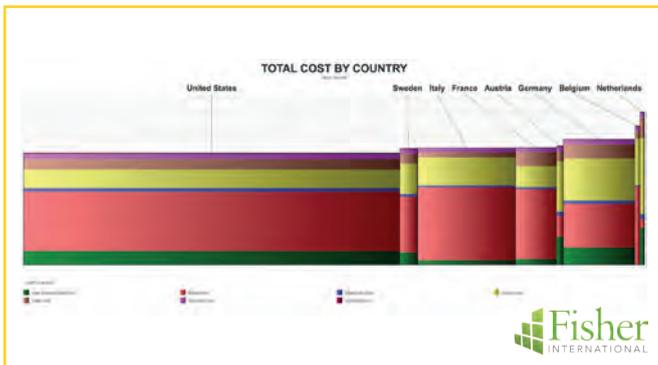


Figure 13: TW Germany 2023 Benchmark Costs

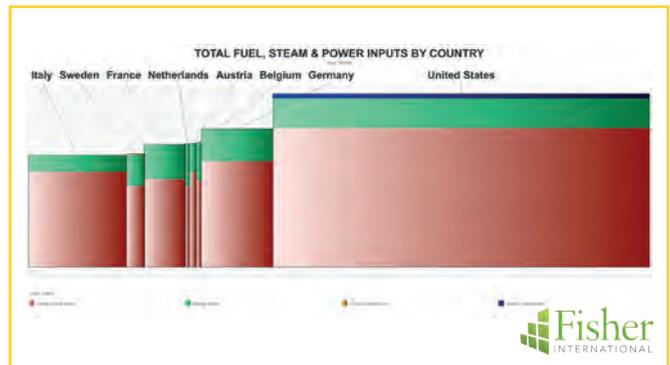


Figure 16: Energy Consumption GJ/Ton

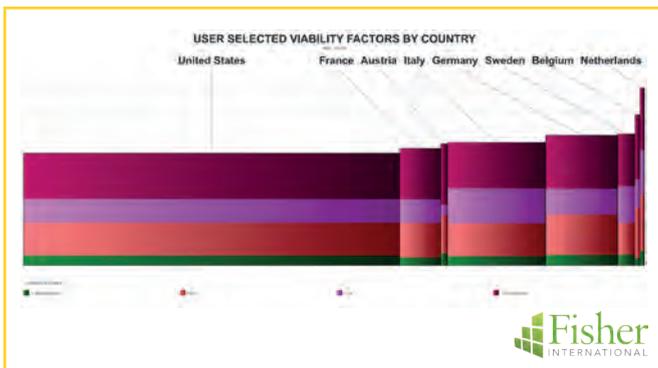


Figure 14: Germany Tissue Viability

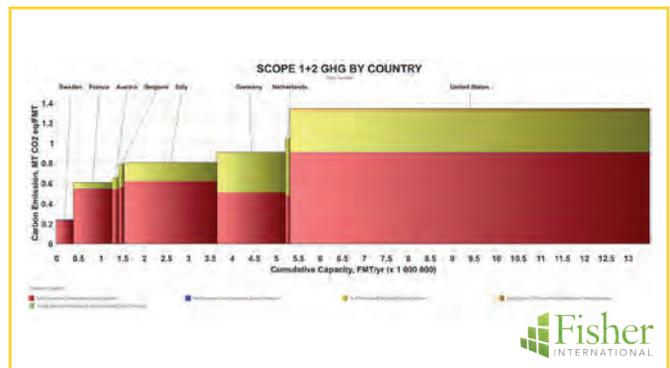


Figure 17: Scope 1 and 2 Carbon Emission per Ton of Tissue

price disruption from the war on the same scale as Europe. Both the United States and Germany have tissue energy reduction work to do.

Figure 17 benchmarks carbon emissions directly using Scope 1 (fuel burned on site) and Scope 2 (electricity purchases). This chart is driven using fuel by units (GJ) like Figure 16 versus Figure 15 costs. Again, the United States is far above the average emission rate per ton, and Germany is slightly elevated. The opportunity shown for Germany is reducing the larger rate of Scope 2 emissions as high-carbon fuels are withdrawn again and replaced by lower-carbon natural gas and zero-carbon renewables.

Scope 3 emissions are upstream and downstream of the tissue production and

include fibre production in market pulps. This could be interesting if included in the carbon emission measurement. It would benefit advanced tissue processes if they reduced the basis weight and carbon content of the pulp required if measured on a consumer-use basis.

Germany's tissue business continues in a slow-growth stage, with machine replacements and upgrades focused on cost and quality improvements. Germany is an active tissue trader with its neighbours but is currently disadvantaged by energy costs and carbon emissions compared to the average of the trade group. The war energy supply disruption has exacerbated these issues. Still, there is also hope that the rate of decarbonisation has accelerated, and this analysis could look much better for

Germany in two to three years.

This analysis looks at a snapshot of German and western European tissue-making based on country averages in an extraordinary time of energy price shocks and supply chain disruption.

Analysis of competitive position requires specifics on tissue producers and individual machines. This article presents a static picture summary of Germany's tissue industry today. Fibre prices, exchange rates, and environmental regulations will change, providing some participants with advantages and others with new challenges. Spanish tissue mills will continue to change hands and perhaps consolidate; neighbouring countries may invest in tissue-making capacity, thus affecting Germany's imports and exports.

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GERMAN CONSUMERS FINALLY DECIDE THEY LIKE TISSUE VIA E-COMMERCE

Notorious resistance has eased thanks to promotions, enforcement of personal data protection, same-day delivery, the ability to order anytime anywhere, auto-repeats, and already adept younger shoppers. By Ana Tique, Consultant, Euromonitor International.



Ana Tique
Consultant,
Euromonitor International

Record-breaking inflation rates and challenging circumstances on the production front have been forcing tissue prices in Germany to increase considerably. Simultaneously, the last three years brought shifts in consumer behaviour that are still drawing the reality of post-pandemic times and beyond,

when value-for-money and sustainability-driven innovation play crucial roles in differentiating brands. As tissue consumers prepare for challenging economic times ahead, companies are expected to support them with solutions.

The reopening of businesses in Germany post-Covid brought the boost in AfH volume that the industry had craved since the pandemic started. A slight shift from retail tissue needs to AfH was observed as life slowly went back to normal.

However, this resuming of normalcy was also met with record-breaking inflation in 2022. Even before September, when a whopping 10% inflation rate hadn't been observed in years, German consumers started resorting to essential purchases and preparing for a somewhat uncertain future. This price change in tissue products was driven mainly by challenging circumstances including massive increases in raw material costs that reached up to 50% in some components, further aggravated by the war

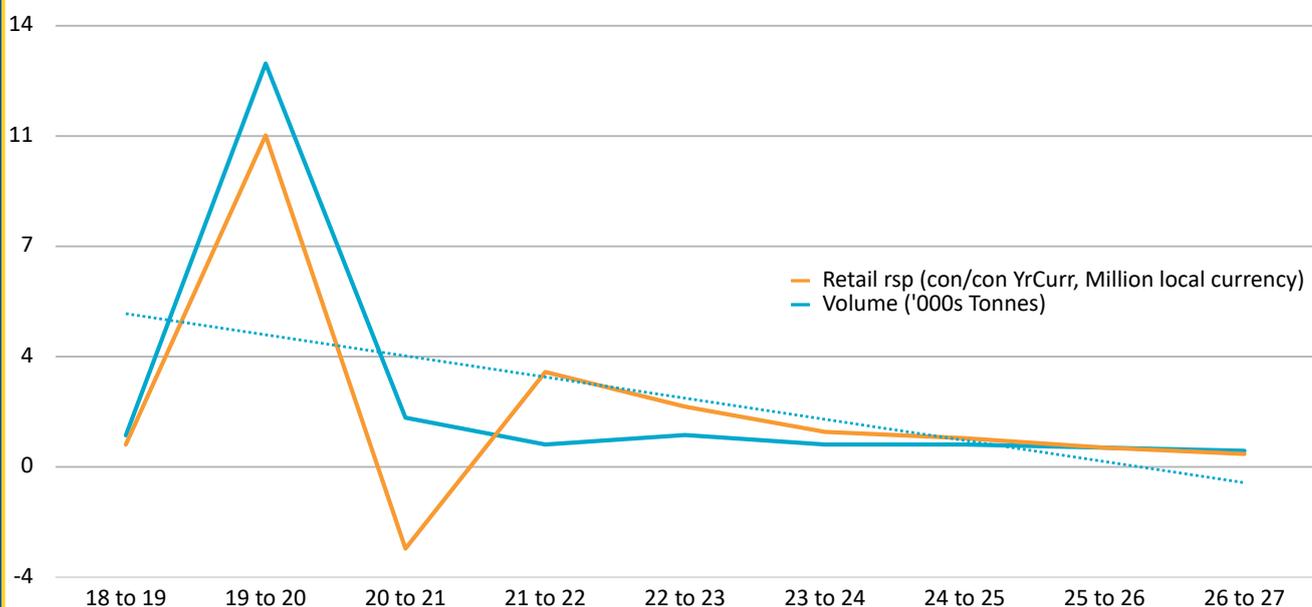
in Ukraine and supply chain disruptions. As many companies struggle to keep business going, unavoidable price increases are only adding to the consumer's challenge of keeping their budgets afloat.

Moreover, subtle societal changes are glimpsing how the tissue market will look in the future. Consumers kept some of their heightened awareness of hygiene habits and disease prevention from the pandemic, and products such as facial tissues and pocket handkerchiefs are seeing continuous levels of consumption. Responding to this shift, more on-the-go tissue products are now available through a wider array of distribution channels.

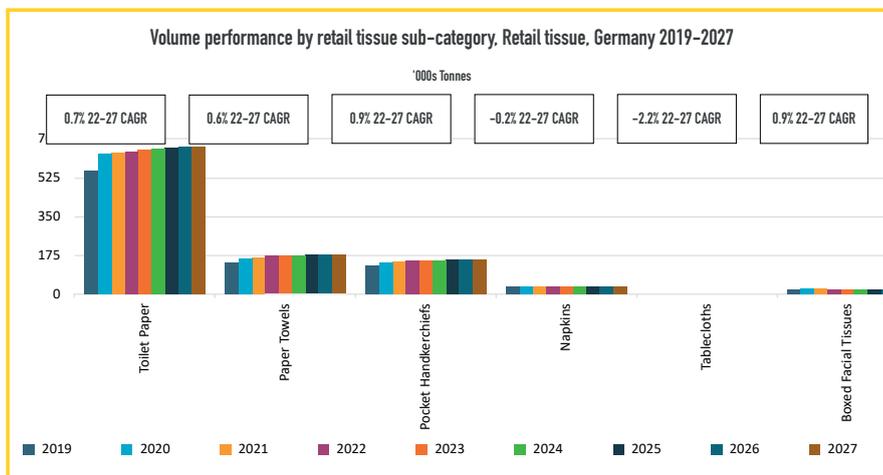
Private Label provides more options for German consumers' needs

The eminence of a recession is forcing German consumers to save where possible. Divided by the need to control their finances and live up to their sustainability aspirations, Germans are finding in private

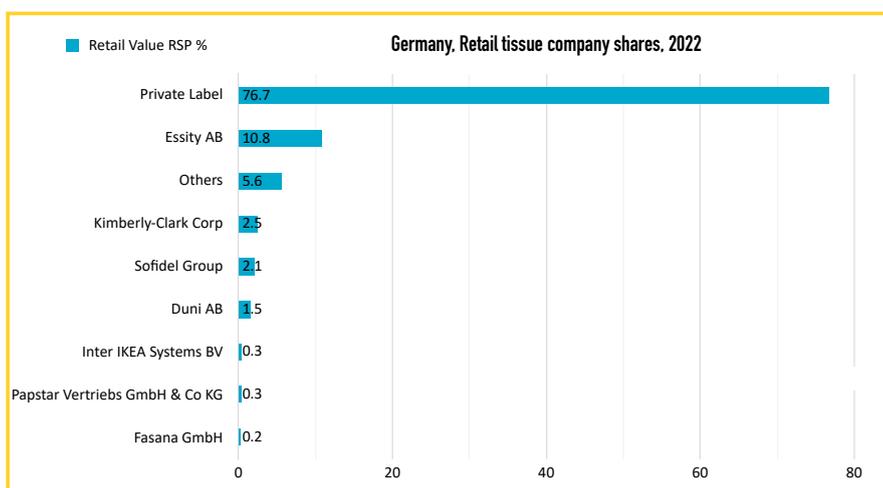
Germany, retail tissue, y-on-y growth %, volume vs nominal value 2019-2027



Source: Euromonitor International from UN Food and Agriculture Organisation (FAOSTAT)



Source: Euromonitor International from UN Food and Agriculture Organisation (FAOSTAT)



Source: Euromonitor International from UN Food and Agriculture Organisation (FAOSTAT)

THE COVID-19 PANDEMIC BROUGHT ARGUABLY THE MOST NOTICEABLE CHANGE IN GERMAN CONSUMER BEHAVIOUR: HOW THEY BUY. NOTORIOUSLY RESISTANT TO DIGITAL CHANGE, GERMANS HAVE BEEN SOFTLY NUDGED INTO ONLINE SHOPPING AT A TIME WHEN SOCIAL DISTANCING WAS A NECESSITY, AND THE HABIT HAS COME TO STAY.

label the answers to their tissue dilemmas through a wider supply of affordable, high-quality, and sustainably made products on retail shelves.

Retail giants such as Aldi, Lidl, Edeka, Rewe, dm, and Rossmann have been supporting the growth of private label tissue products in Germany, and their sales performance shows the consumers' trust. Arguably, when it comes to tissue products, while some "good-enough" everyday products will do, performance is a must for particular hygiene categories or functional items, such as antibacterial products. With the development of private label products, a good compromise in value for money is increasingly being reached. Not only are these products

affordable alternatives to brand names, but their commitment to investing in innovation has positioned them side-by-side with the most recognised brands.

Looking for a balance between sustainability and cost

Sustainability is a growing concern in Germany, and consumers have been striving to find alternatives that don't break the bank or compromise quality. At the same time, concerns for protecting the environment only increased during the pandemic, and education on sustainability or the promotion of circular economies is on the rise.

The need for businesses to provide greener alternatives to highly polluting

products is becoming essential and differentiating. Examples such as washable and reusable items or alternative compostable and biodegradable materials have been in the limelight as possible solutions. Businesses are responding with more environmentally-friendly options such as washable and reusable napkins and tablecloths instead of paper-based ones, hand driers instead of paper towels, and other mechanisms that can help create a smaller footprint in the environment.

Some new challenges are to be met, nevertheless. Less margin to invest can mean slower innovation in ecological alternatives and new product development. The dilemma remains of the disposal of reusable products after the end of their lifecycle and the question of how much energy and resources are being saved. As sustainability has been a German aspiration for years and a value the population shares, it's unsurprising that the urgency in finding solutions will resume as soon as the economic storm passes.

Growing digitisation in Germany is changing the way consumers buy

The Covid-19 pandemic brought arguably the most noticeable change in German consumer behaviour: how they buy. Notoriously resistant to digital change, Germans have been softly nudged into online shopping at a time when social distancing was a necessity, and the habit has come to stay. According to Euromonitor's Voice of the Consumer Lifestyle Survey fielded in January and February 2022, some of the advantages of e-commerce that are gaining German tissue consumers' preference include same-day delivery, the ability to order at anytime from anywhere, or to set up a subscription for auto-replenishment.

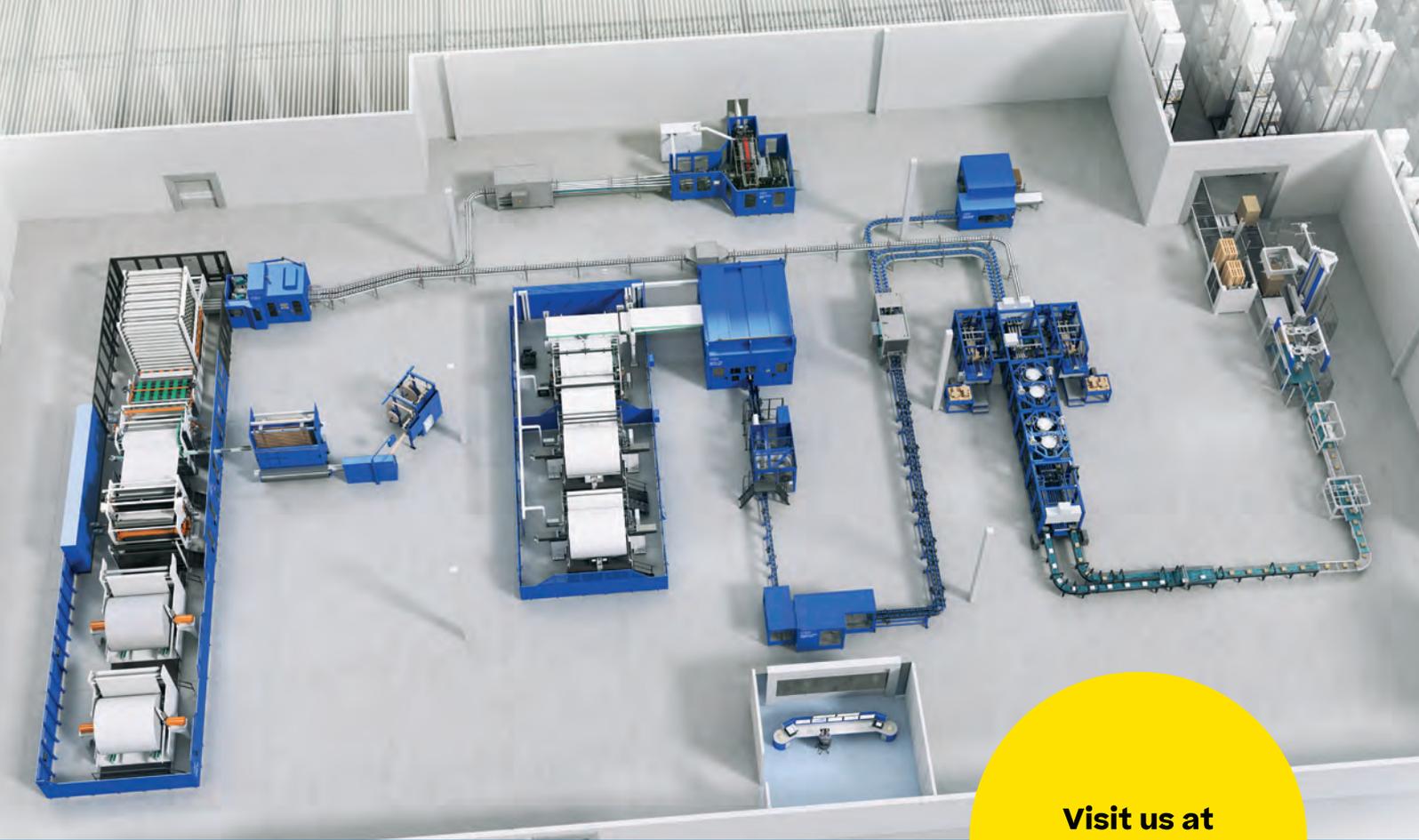
Additionally, e-commerce usually provides shoppers with promotions and deals that are very welcomed, especially in an economic crisis. Continuous enforcement of personal data protection in Germany, expanded to cybersecurity, has also been contributing to more reassurance in online shopping safety. It's to be expected that a less bureaucratic process of securely providing personal data can further turn consumers' preference towards digitalisation.

Moreover, younger generations are more digitally apt and comfortable using digital tools to the benefit of their everyday lives. Bearing these in mind, transparency and reliability are sure bets for industry players to stay in the game.



INDUSTRY PARTNERSHIPS KEY TO TACKLING CHALLENGES WITH SUSTAINABILITY AND INNOVATION THE DRIVERS

With a market share of 25% in its home country, tissue giant WEPA Group has ambitious plans to maintain the top spot. Here, WEPA Chief Operations Officer Harm Bergmann-Kramer details his vision.



Visit us at
koerber-tissue.com

Unlocking the full power of tissue

The Körber ecosystem is a revolutionary business model developed jointly with other Körber Business Areas and highly qualified external partners.

We now integrate the technologies making up a tissue production environment into a single and complete solution to enable tissue converters:

- maximize OEE;
- streamline procurement;
- build long-term strategic partnerships.



Shaping your success in tissue



WEPA's Mainz Consumer production plant: Around 80% of the company's revenue is generated by its Consumer business unit

TWM/1: Describe WEPA Group's current presence in the German tissue market, and any recent investments made...

"In Germany, our market share is 25%, and we have five production sites. Our Giershagen, Leuna, Kriebstein and Mainz plants produce for our Consumer business unit and our Müschede plant for our Professional business unit. Around 80% of our revenue is generated by our Consumer business unit and approximately 20% by our Professional business unit. The yearly production capacity of our German plants ranges from 60,000 to 127,000 tonnes per plant. Operational excellence is key, and we continuously invest in state-of-the-art manufacturing technology. In 2022, at our Leuna site we implemented a new Gambini line with Air-Mill technology. Thanks to this innovative converting technology we are able to produce premium kitchen towels while using less raw material at the same time."

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

"The past 18 months have been characterised by multiple external crises such as Covid-19, supply chain disruption, the energy crisis and inflation, and we have adapted in a very agile way to master these challenges. The rise in energy prices was also a significant challenge and we had to adapt our pricing. However, this has not changed our straight path forward to

become the most sustainable and agile first class partner for personal and professional hygiene solutions.

"Sustainability is the new normal. As a family business, we have clearly positioned ourselves to become number one in sustainability in our industry. In Europe, WEPA is leading the market in the production of hygiene paper from recycled fibre, and we consistently stick to our ambitious sustainability strategy."

TWM/3: What plans do you have to grow in 2023/the next five years?

"Investments at WEPA have to make a clear contribution to greater sustainability. We have defined five strategic fields of action for our sustainable future orientation: our foundation as a basis, future fibres, operational efficiency, sustainable hygiene paper portfolio and its innovative further development.

"These are reflected in our sustainability strategy, and we strive for continuous optimisation of our existing assets, rather than volume growth."

TWM/4: In terms of market sectors, describe your presence in each, and your plans and the growth trends you're seeing for each.

"In the AfH market, the WEPA Group has developed from a private label and manufacturer brand focus towards a clear

brand focus. 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 used in the Professional sector which has been awarded with the Cradle-to-Cradle silver category. "Recently, we launched BlackSatino GreenGrow – our first sustainable hygiene paper made from Miscanthus. With our strong brands, we want to grow.

"Furthermore, we want to strengthen our service offering. For example, we started to take back used hand towels in Germany and use these as a source of fibres to create new hygiene paper. This requires innovative workflows and processes as well as the right equipment. In the Consumer market, we treat our customer's private labels as brands. We want to help our clients to be more successful in their assortment. Especially in terms of sustainability, we as private label specialists will continue to develop concepts for the end consumers together with our customers.

"Sustainability is our common goal and a clear focus in every product development. It is not a trend; it is the new normal. We are ideally positioned for this because we have great expertise in this area as we have been using recycled fibres for the production of hygiene papers since the 1980s.

"To us circular economy is extremely important. We do a lot of research and development in this area and invest in state-of-the-art technology. We have succeeded in improving our recycling process even further. Thanks to this we can produce an innovative high-quality hygiene paper made of fibres from recycled cardboard now. This requires know-how, experienced staff and the right production facilities – from stock preparation to paper processing."

TWM/5: What growth potential is there for these products in Germany?

"We continue to see growth potential in the AfH market and have developed in this business unit from a private label producer which is also selling brands to a producer of branded products which is also selling private label products. This continues to be our growth focus for the future also.

"In the consumer business we can see that consumers have become more cost-conscious due to the continuing inflation. At the same time, quality and sustainability aspects remain important factors. Against this background, private label products are attractive for many people. They traditionally play an important role in the German market and this could further intensify.

"We are finding that more and more people expect the products they buy to be sustainable, and when it comes to hygiene paper made from recycled fibres we are the experts."

TWM/6: What changes as a business have you made in terms of sustainability?

"We are constantly working to improve our efficiency: on the one hand our machine efficiency to ensure ideal output in our production, and on the other hand our energy efficiency. Over the next few years, we will invest significantly in more sustainable processes, in the fibre, in the energy and in the logistics sector.

"Especially in recent years, we have felt how rapidly the importance of sustainability is growing in society in general and also among our customers and consumers. Sustainability is one of the core values of the WEPA Group and as European market leader in the production of hygiene paper from recycled fibre we have already achieved significant accomplishments.

"However, we have set ourselves ambitious goals to fulfil our vision to be the most sustainable and agile first-class partner for personal and professional hygiene solutions in our industry.

"In 2022, the WEPA Group committed to the Science Based Targets initiative. To contribute to limiting global warming to a maximum of 1.5 degrees Celsius, WEPA has committed itself to reduce its emissions by 52.5% until 2030.

"Already today, 100% of WEPA packaging is recyclable and can thus be reused. In addition, we continuously work to optimise our packaging to reduce the use of primary plastic, e.g. by leaving out the handle. The share of recycled material used for packaging is to be increased to 60% by

2025. This enables us to save 8,000 tonnes of primary plastic each year. We strive to increase the share of recycled fibres and alternative fresh fibres in the raw material mix to at least 60% by 2030, thus reducing the ecological footprint of the fibres used by at least 25%. In the past months we have also introduced two sustainable raw material innovations: recycled cardboard and Miscanthus. Both contribute to achieving this aim."

TWM/7: Are you seeing an increase in gross sales of tissue and towel products, and do you forecast that to continue?

"Recent gross sales increases were mainly driven by inflation. The trend has slowed down. However, future development is hard to predict as all cost drivers became strongly volatile and price sensitive."

TWM/8: What key challenges and opportunities are there as we start 2023?

"The current – uniquely high - energy prices are causing challenges for all tissue manufacturers. In situations like this, great partnership between manufacturers and retailers is important to overcome the obstacles together. In terms of opportunities, sustainability and innovation are two of the main aspects we focus on as a company. Talking about sustainability, we continue to focus on recycled paper and recycling processes. We will continue to invest in sustainability concepts and innovations."



"Operational excellence is key": The company says it continuously invests in state-of-the-art manufacturing technology

CIRCULAR ECONOMY PIONEER ESSITY PRODUCING PAPER CO2 FREE

Thorsten Becherer, Site Manager at Essity's Mainz-Kostheim, Germany-based plant, explains the latest advances in award winning e-save programme.

TWM/1: What's unique about the Mainz-Kostheim plant?

"We are pioneers in terms of sustainability and ecological production in the paper industry, as demonstrated by numerous sustainable innovations in recent years. Our Essity site in Mainz-Kostheim is a blueprint for this. It is the main factory for our Tork brand and its hygiene products, and also one of the largest production sites located in the Rhine-Main area of Germany.

"In 2017, Mainz-Kostheim was the driver behind the world's first circular economy for used paper towels with the Tork Paper Circle. Within the Tork Paper Circle, used towels are collected separately from customers in the hotel and catering industry, from companies or administrations and returned to the production process at the Kostheim site. In 2023, we achieved a breakthrough on the way to net zero at our site - Essity produced paper CO2-free. In addition to using electricity from renewable energies, the mill is also using green hydrogen for the first time as the final component in a sustainable production process."

TWM/2: Are developments there a reaction to the energy crisis, customer demand, etc?

"We take over a pioneering role at our site towards net-zero and pave the way with various measures – despite the current crises. We feel responsible to limit the global warming as much as possible. We have therefore already developed a concept to become CO2-free back in 2018. Now we are implementing it continuously. For us, energy efficiency and a reduction in energy consumption are key steps to become "climate neutral".

TWM/3: How has your growth strategy in the local market changed during the past 18 months?

"With the outbreak of the worldwide Corona pandemic, the awareness and social interaction of hygiene has changed and become more important. Paper towels

are the most hygienic method of drying their hands. For us at the Mainz-Kostheim site, hygiene and hygiene standards are a top priority in the development of our products. We have been increasing our efforts in the areas of skincare, as well as wiping and cleaning."

TWM/4: What further plans do you have to grow at this plant and in Germany?

"I would like to underline the innovative character of our site and the absolute determination to make a positive contribution to climate protection. We are convinced that our steps and measurements will strengthen our business in the future. One example here: we are investing in additional capacity for our Tork PeakServe system for washrooms. This is the latest innovation for high-traffic washrooms, where there is a huge focus on cleanliness while at the same time ensuring a smooth flow of visitors and reducing the needed amount of transports."

TWM/5: What are your plans for increased sustainability, energy efficiencies, plastic reduction, etc?

"As part of the Net Zero Commitment, Essity has committed itself to CO2-neutral production by 2050. We are taking several steps towards this goal in Kostheim. First, we are systematically working on energy efficiency with our e-save programme. Saving energy is crucial and we lead the way by investing in energy-efficient technical solutions and generally changing attitudes towards energy use. Our e-save programme was awarded with the Energy Efficiency Award by the German Energy Agency DENA in 2012. This award is given annually and Essity is one of the first/only in the energy-intensive industry to receive it.

"Secondly, we aim to systematically reduce the use of plastic at our site. In addition, we are taking action towards 'Green logistics' for the entire logistics



Pioneering role: Thorsten Becherer, Site Manager at Essity's Mainz-Kostheim

chain. Therefore, we are investing at the site to reduce the number of trucks needed to transport our goods. A good way to do so is for example by compressing our products."

TWM/6: Do you forecast a continued increase in tissue product use, and if so, what is driving that increase?

"People choose paper towels as the most hygienic method of drying their hands, a fact that now has been confirmed by a study conducted by the University of Leeds in the UK. Hand drying with a towel is optimal for ensuring optimal hand hygiene. Especially since the Corona pandemic, people use washrooms more often to clean their hands.

"In general, we see a high focus on wiping and cleaning. Hence, we are experiencing an increase in tissue and towel products. Gross sales of tissue and towel products are partly driven by higher usage due to higher hygiene standards."

TISSUE WORLD

Düsseldorf

MARCH 28 - 30 | 2023
MESSE DÜSSELDORF

SHOW GUIDE



Portfolio

TISSUE WORLD

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WELCOME

Welcome to the Messe Düsseldorf for Tissue World Düsseldorf 2023.

Tissue World is returning to Europe after a 4-year absence, and it can't come at a more important time for the industry. The ongoing energy crisis has brought renewable projects to the fore, and it is the need to find a workable solution that makes cooperating and sharing ideas invaluable. With that in mind, our conference theme is 'The Roadmap, the Riskmap: Plotting a course for Tissue in uncertain times'. In our conference sessions we hope to offer you practical answers to pressing questions on profitability and sustainability, so that we can move forward towards a brighter future, together.

Along with our conference we also have a fantastic trade show to offer visitors. With over 140 exhibitors from around the globe on our trade floor, our exhibition promises to offer valuable networking opportunities to professionals from across the tissue supply chain. Attendees will also get the chance to see the latest products on display, allowing you to upgrade your equipment and enhance your systems.

Overall, Tissue World Düsseldorf will be a chance for the global tissue industry to reconvene in one of Europe's most mature tissue markets for 3 days of networking, learning, and sourcing products. I look forward to seeing you on the show floor!

Tom Hill
Event Director
Tissue World Düsseldorf



WHAT'S ON



SUSTAINABILITY AT THE SHOW

The tissue industry is known for its efforts in sustainability and has constantly been leading the push for a greener future. As a key part of the industry Tissue World shares this drive for sustainability and our events reflect that through a number of incentives designed to make them as green as possible:

Better stands

Better Stands is our landmark campaign to reduce the waste that stands and booths at exhibitions can create. We are working with customers to phase out all disposable stands at our EMEA events by 2024.

Better Stands also shows how sustainable business can be better business too. Reusable structures not only reduce waste but they can reduce the time it takes to construct and take down stands, reduce the cost of design and construction and allow for investment in higher quality and more successful stands.

Sustainability sessions

The Tissue World conference includes a number of presentations aimed at helping business leaders improve their sustainability efforts, while continuing to operate a successful business in the current climate. These include:

28th March	11:50 – 12:15	Sustainability is a Choice, Riika Joukio (SMS Session 2)
29th March	11:15 – 11:40	Hygiene for tens of millions of people every day – sustainably, Tobias Lüning (SMS Session 4)
29th March	11:40 – 12:05	Sustainability in Action: Building a resilient and thriving business, Khalid Saifullah (SMS Session 4)
29th March	12:05 – 12:30	MP Hygiene's high speed papermill, Laure Miribel (SMS Session 4)

There is also a number of sessions aimed at improving sustainability from a technical standpoint. These will look at particular parts of the tissue creation process, and how businesses can reduce their environmental impact. These include:

28th March	15:20 – 15:40	Fossil-free tissue production, Luca Linari (Technical Session 1)
28th March	16:35 – 16:55	Naturcell: the best alternative to reduce the environmental footprint of your paper, Robert Mirande (Technical Session 1)
30th March	10:55 – 11:15	Using Enzymes to Reduce Tissue Production Energy Costs by 5+%, Bud Chase (Technical Session 3)

Event Venue

In addition to our Better Stands initiative, we have removed all aisle carpets from our trade show. The carpet industry still produces significant carbon emissions, and we want to do everything we can to make our show more climate friendly.

The catering at Tissue World Düsseldorf all comes from locally sourced suppliers, meaning less travel and less carbon emissions.

Event Badges

We have transformed our event badges for Tissue World Düsseldorf, making them greener than ever. The plastic wallets we used to house the tickets have been removed, and the lanyard's are now made out of P.E.T plastic sourced from recycled bottles. Even the ink is eco-friendly!

Show guide

Even the words you are reading are sustainable! The show guide comes as part of our magazine to save paper and is printed locally. The pages are made from FSC certified paper, so you can rest assured that it has been produced and harvested in a responsible manner.



PRODUCT HIGHLIGHTS

To see more of the products showcased at the show, scan here



Our trade show is hosting over 140 exhibitors, each with their own products on display. These are just a few of our top picks:

Xiamen C&D Paper & Pulp Co.Ltd **Stand E66**

Xiamen are launching their bamboo tissue products and wet wipes, aimed at consumers who prefer to tree-free paper products with sustainable and eco-friendly concept. Bamboo tissue can help to protect trees from harvesting on our planet. It can out yield pine 6 to 1 in biomass production. This means it is a great alternative raw material for household tissue products.

KAPP-CHEMIE GmbH & Co. KG **Stand E60**

In the tissue sector, KAPP-CHEMIE focus on water-based flexographic printing inks and eco-friendly glues for the hygienic industry. At Tissue World you will get an overview on their product series of printing inks and glues.

Microline **Stand D52**

Microline will be launching their latest model to be engineered and manufactured by: Eco Wrap 1050: a multi-pack bundler for folded products and rolls. This machine guarantees the complete absence of packaging material waste, while simultaneously cutting energy consumption: the saving in terms of wrapping material means being able to lower the shrink-wrapping temperature, with a positive impact on consumption.

Aktul Kagit **Stand H50**

Established in 2011, Aktül Kağıt started to produce tissue paper from 100% virgin wood pulp using ViscoNIP Technology, and says it was the first company in the Turkish tissue paper industry to use such technology. It produces private label products for local chains, markets and abroad, as well as jumbo rolls for local and international converting facilities.

B&B Verpackungstechnik GmbH **Stand C50**

B&B Verpackungstechnik GmbH will be exhibiting Bag converting machines, Bag filling machines, Shrink wrapping machines, Stretch wrapping machines, Case packer, Top- and sideload types, Tray- and wrap-around case packers and Rollpackers in Düsseldorf.

Infinity Machine & Engineering Corp **Stand F40**

Set to debut in 2023, Infinity's Optic M1 poly bundler has been designed from the ground up with the unique needs of the European tissue market in mind. The machine features the ability to swap between a flight bar and upender allowing for bundles with core-up and core-down roll configurations.

Julia Utensili **Stand K53**

Julia Utensili is today one of the world's largest producers of knives for cutting tissue paper rolls, with a range of diameters from 610 to 1200 mm. The search for the highest quality level has pushed Julia Utensili to develop an innovative product, now officially PATENTED, both in the standard 4.76 mm thickness and in the thinner 3.8 mm thickness.

Futura S.p.A. **Stand F20**

Together 2.0 has been developed over the past 12 months, created by Futura and Plusline to integrate converting and packaging, from logs to shelf-ready, packaged rolls. The result is unprecedented process continuity, simplified production flow and a compact layout saving up to 65% of the space occupied per packaging line.

IMA TMC **Stand F10**

TMC will be exhibiting their complete solutions dedicated to the primary and secondary packaging of Tissue rolls for the Consumer and Away From Home market. From wrapping, through bundling, and up to palletizing IMA TMC provides high speed and flexible technologies.

TECH TALKS - IN THE TECH TALK THEATRE

Tech Talks at the show will examine the latest machine safety and machine monitoring practices during quick fire sessions on the exhibition floor. These sessions are bite-size and free to attend for everyone, make sure not to miss out on the latest from leading names in our industry.

28 March 2023 - 14:00-15:00

Sessions on this afternoon will cover:

- Tissue meets Nonwovens - a look beyond the horizon – Thomas Weigert - Senior Expert Technology Spunlace & Drying - Trützschler Nonwovens & Man-Made Fibers GmbH
- Tissue machine safety – Thomas Nager - Machine Safety Expert - Andritz AG
- Real Time, Remote Machine Monitoring: Crepe Blade Vibration and Sheet Imaging – Timothy Patterson - Research Fellow - Solenis
- The world's first third party approved quick suppression system - Raúl Moreno - Firefly AB

29 March 2023 - 14:00-15:00

These four sessions will discuss:

- How to prevent dangerous combustible dust accumulations in the tissue industry – Christoph Ritter - Technical Sales Manager - SonicAire Europe
- Development of a laboratory method to evaluate absorption behavior of tissue papers – Prof. Dr. Helga Zollner-Croll - Professor in Biogenic Fibers, Associate Dean - Hochschule München, Paper Technology
- Automated online flow cytometry as a tool for real-time microbial monitoring in process water streams - Filipe Frias - Sales & Application Specialist - onCyt Microbiology AG
- Tissue and Towel Grades – Steve Jonas - Globe Machine Mfg.

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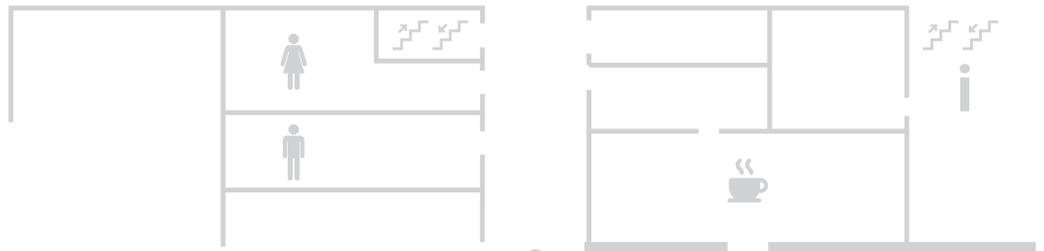
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EXHIBITOR LIST

9.Septembar - Tissue Converting.....	E42	MONGIN	E50
A.Celli Paper s.p.a.....	E32	Mpac Langen	K50
Abu Dhabi National Paper Mill	K10	Multipack Srl	D44
Aetna Group S.p.A.....	E56	N.C.R. Biochemical S.p.A.....	D43
Akkim Kimya Sanayi Ve Tic. A.S.....	F40	Narsingh Dass & company Pvt. Ltd.	E63
Aktül Kağıt Üretim ve Pazarlama A.Ş.....	H50	Northern Engraving and Machine	K30
ALWIN MANUFACTURING CO. INC.....	C23	O.M.T. S.r.l.....	D40
AMOTEK S.r.l.....	D22	Ocean Associate Co., Ltd.	A34
ASB Service Srl	K63	OCME Srl	E56
Asia Pulp and Paper	L22	OK Science and Technology Co.,LTD	E43
August Blecher GmbH & Co. KG	A50	OMET SRL	G20
B&B Verpackungstechnik GmbH.....	C50	OPTIMA nonwovens GmbH	D22
BHM-INGENIEURE Engineering & Consulting	H40	OVERMADE	J22
BTG Eclepens S.A.....	A20	Paniker, SL	H62
Buckman Laboratories NV	F10	Paper Board Alliance	C40
C. G. Bretting Manufacturing.	H20	Paper Converting Machine Company	K30
Cellwood GmbH	F70	Papeterie Le Bourray	H54
Chishui Newland Import and Export Trading	A30	Partex Tissue Limited	C30
Clouth Sprenger GmbH	C32	Paul Wegner GmbH & Co. KG	F70
Convermat Corporation	J20	POINT MAKINA.....	G60
Crown Paper Mill LLC	G40	Policarta Gi. Co. used machines	C20
Delsar Lame Srl	A32	Polimek SRL	A36
E80 Group S.p.A.....	G10	ProJet B.V.....	J50
Eczacıbaşı Consumer Products.....	E30	PROPAPER Solutions GmbH	A36
EDT	J40	Pulsar Engineering srl.....	D32
EMIRSON Global Kimya Sanayi A.Ş.....	G70	Renova Srl	C31
Enerquin	K51	Representations Nicolas Pelletier	E72
ENP PUBLISHING GROUP	K43	Robopac SpA	E56
ESSEL SELULOZ VE KAGIT SAN.TIC.A.Ş.....	E68	Röchling Industrial Oepping GmbH & Co. KG	A36
Euroincis Srl	H52	Runtech Systems.....	H32
Europap Tezol Kağıt Sanayi Ve Ticaret A.....	E52	S.T. MACCHINE SPA.....	L34
European Tissue Symposium (ETS).....	D74	SABA Automation Srl.....	L20
FAN Separator GmbH.....	B56	SchaferRolls GmbH & Co. KG	J52
Fansa Paper	G82	SDF Schnitt-Druck-Falz Spezialmaschinen GmbH	D50
Filtereco Srl	E53	Senning GmbH	D22
Firefly AB	D20	Servipap LLC.....	D60
FIS Impianti SRL	F72	Serv-o-tec GmbH	C10
FIT International Inc	C10	SharpCell Oy.....	C21
Futura S.p.A.....	F20	SOLENIS	J60
Gambini S.p.A.....	H10	SonicAire.....	B50
Giotto Technologies srl.....	H22	Sorgato srl.....	K23
GloCell Oy.....	C22	Spraying Systems Co. - Europe	F71
Hayat Kimya Sanayi A.S.....	H30	SPS CORPORATE	D30
HELL Gravure Systems GmbH & Co. KG	F60	Star Paper Mill Paper Industry LLC.....	H53
Hergen Converge to Evolve.....	G50	STAX Technologies d.o.o	K30
ICM Makina Mühendislik Ltd STI	J10	Stefi Machines	H61
IGPC GmbH	D64	SVECOM P.E. SRL	J30
IMA - TMC SPA	F10	Taison Group / WR fibers B.V.	A40
Indevco Paper Making	H66	Tapio Measurement Technologies Oy.....	D61
Industrie Cartarie Tronchetti Spa.....	F30	Tappi's Paper 360.....	D72
Infinity Machine & Engineering Corp	F40	Technology Blade.....	E41
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Julia Utensili SRL	K53	Tietoevry Industry	E51
Julius Schulte Söhne GmbH & Co. KG	E20	TISSUE TEC Sales & Service GmbH.....	D60
Kadant	G61	TISSUENET GmbH	K50
KAIROS SRL	J42	TKM GmbH.....	B30
KAPP-Chemie GmbH & Co. KG	E60	TOSCANA SPAZZOLE INDUSTRIALI S.R.L.....	H64
Kawasaki Gas Turbine Europe GmbH	K42	UNIMATEC Prägesysteme GmbH.....	C52
Klippans Bruk AB	G72	United Converting Tissue Srl	G52
Körber Tissue S.p.A.....	G30	Universal Tissue Machine Co. LTD	H65
KOTYORA KAGIT A.S.....	D10	VALMET	E22
Lange Lyche	J50	Viking Pulp and Paper Mill Company	K40
LIUZHOU FEXIK INTELLIGENT EQUIPMENT CO., LTD.....	K60	Villforth Siebtechnik GmbH.....	F70
Mac Due S.R.L.....	H44	WEKO Weitmann & Konrad GmbH & Co. KG	B40
MAFLEX Srl.....	H42	Winkler - Dunnebler (W-D).....	K30
MAN Energy Solutions.....	J50	Xiamen C&D Paper & Pulp Co., Ltd	E66
MARE S.p.A.....	F50	YONTEM KAGIT LTD	E68
Matthews International GmbH / SAUERESSIG	F62	ZETAUTOMATION Srl	L20
Megall Paper Co Ltd	L54	ZHEJIANG JIECHENG NEW MATERIAL TECHNOLOGY	E70
Microline Srl	D52		

FLOORPLAN



SCAN TO VIEW THE EXHIBITOR LIST

↑
VISITORS
ENTRANCE

↓
REGISTRATION
& CONFERENCE
THEATRE

↑
VISIT
ENTR

Catering Area

G70 G72

G61 G62
G60

H60 H61 H63 H65
H62 H64 H66

J60

K63
K60

Media Stand
L54

G50 G52

H50 H53 H54
H52

J50 J52

K51 K53
K50

G40

H40 H42 H44

J40 J42

K42 K43
K40

L34
L32
L22
L20

G30

H30 H32

J30

K30

G20

H20 H22

J20 J22

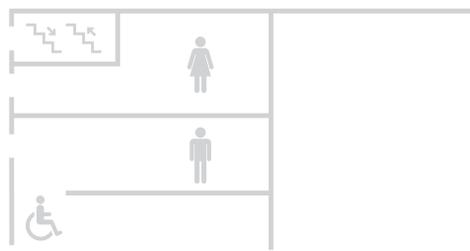
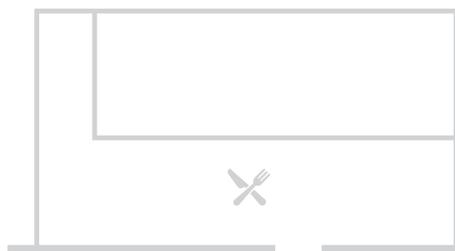
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REGISTRATION
& CONFERENCE
THEATRE

REGISTRATION
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THEATRE

VISITORS
ENTRANCE

CONFERENCE AGENDA



For more details on the Conference Agenda scan the QR code

The Roadmap, the Riskmap. Plotting a Course for Tissue in Uncertain Times

TUESDAY, 28 MARCH 2023 - MORNING

09:00 - 10:35

**Senior Management Symposium
Session 1 - Navigating A New World**

09:00 - 09:25

KEYNOTE ADDRESS

Navigating a European family business in the VUCA world - 2023 as an important year for resilience and sustainable success

How will the WEPA Group achieve its vision to be the most sustainable and agile first-class partner for personal and professional hygiene solutions? To drive change in a world that is increasingly volatile, uncertain, complex and ambiguous, a clear strategic direction and a purpose that answers the "why" are key success factors.

Martin Krengel, CEO, WEPA Group, Germany

09:25 - 09:50

The Geo-economic Challenges for 2023

There are two major events that have shaped our reality during the last year. The first was the Covid-19 pandemic which we thought it is over but wasn't. The second major event was the war in Ukraine. The global economic war has begun to shape the world's economic structure. While all this happens, Europe is at the core of all transformations and will set, in many ways, the future of the world's economy.

Antonia Colibășanu, Chief Operating Officer, Geopolitical Futures

09:50 - 10:15

The supply chain as a competitive advantage in a VUCA world

It is a perfect 'VUCA world' (volatility, uncertainty, complexity, and ambiguity) and in this context the resiliency and effectiveness of our global supply chain is an important competitive factor. The actual situation requires a more substantial shift from manufacturing focus into a customer centric end-to-end value chain. The VUCA world is also impacting the workforce ecosystem. Circular economy requires that we develop also different types of raw materials and we are proud of our integrated straw mill facility in Mannheim, Germany. This is the world's first facility in the tissue industry to use integrated agricultural by-products for large-scale production.

Donato Giorgio, President Global Supply Chain, Essity

10:15 - 10:35

PANEL DISCUSSION - SESSION 1

Panelists:

Martin Krengel, CEO, WEPA GROUP

Antonia Colibășanu, Chief Operating Officer, Geopolitical Futures

Donato Giorgio, President Global Supply Chain, Essity

10:35 - 11:00 COFFEE BREAK

11:00 - 12:40

Senior Management Symposium

Session 2 - Post-pandemic consumer trends and brand marketing

11:00 - 11:25

Building a Successful Brand. Brick by Brick

Sara will reveal the secrets behind fast growing successful brands vs. non growing brands. She will explain her key steps in successful brand building – this includes both B2B brands and B2C brands. She will give examples of potential pitfalls to avoid when working strategically with branding as a business discipline and she will provide her key observations about the tissue market.

Sara Riis-Carstensen, Strategic Brand Advisor, LEGO's former Global Brand Director, Denmark

11:25 - 11:50

The changing face of European tissue consumers: Beyond the pandemic

Sharing results of consumer and industry surveys and highlighting successful case studies from various countries as of 2022, followed by projecting how the next few years are likely to shape of for the European tissue industry, Euromonitor will provide recommendations on how businesses in tissue industry can adapt to the changing face of European consumers.

Ana Tique, Consultant - Client & Insight, Euromonitor International, Germany

11:50 - 12:15

Sustainability is a Choice

Presenting the view of the retailer sector, Riikka Joukio talks about the need of joint efforts of companies and individuals to build a sustainable future. She describes Kesko's actions towards their sustainability vision: We enable sustainable choices for our customers and drive change throughout the value chain.

Riikka Joukio, Executive Vice President, Sustainability and Public Affairs, Kesko, Finland

12:15 - 12:40

PANEL DISCUSSION - SESSION 2

Panelists:

Sara Riis-Carstensen, Sara Riis-Carstensen, Strategic Brand Advisor
Ana Tique, Consultant - Client & Insight, Euromonitor International
Riika Joukio, Executive Vice President, Sustainability and Public Affairs, Kesko
Chris Forbes, Co-founder and Executive Director, Cheeky Panda

12:40 - 15:00 - FLEXI-TIME - LUNCH BREAK - EXHIBIT VISITS

TUESDAY, 28 MARCH 2023 - AFTERNOON

15:00 - 17:15

TECHNICAL SESSIONS

SESSION 1: Manufacturing, Fiber and Energy

15:00 - 15:20

Fibre supply and manufacturing cost dynamics

Fibre prices stayed on inflationary levels for a historical long period of time after starting to climb in late 2020. Along with surging energy costs, the outcome on tissue manufacturing costs in the industry has been extreme. Just as in previous cycles, supply of fibre was a key driver behind the rise in costs. As the access to suitable and competitive spots to grow fibre is tightening, the development and handling of these elements are becoming increasingly important.

Hampus Mörner, Manager, AFRY Bioindustry Management Consulting

15:20 - 15:40

Fossil-free tissue production

In this speech, ANDRITZ will present three methods it has developed: fully electric heating (hood and Yankee drying), syngas fuel and green Hydrogen fuel. These methods can be applied in conventional machines and TAD technology.

Luca Linari, Managing Director, Andritz Novimpianti, Italy

15:40 - 16:00

Holistic approach and new technology to minimize our footprints

There is a potential with new technology and fossil free fuels to reach an energy consumption of 1700 kWh/ton with zero CO2 emissions by 2025. A holistic approach to reduce energy consumption and thereby environmental footprint in Tissue production is a must. It is not enough to have the best equipment, the equipment has to fit into sections and system that together will form the production line. It does not stop there, even if you have a good production line you must know how to use it, you have to find the centerlines, the best operating practice.

Jenny Lahti Samuelsson, Manager, Global Tissue Technology, Valmet

16:00 - 16:15

Q&A/ PANEL DISCUSSION - TECH SESSION 1 (PART 1)

Panelists:

Hampus Mörner, Manager, AFRY Bioindustry Management Consulting
Luca Linari, Managing Director, Andritz Novimpianti
Jenny Lahti Samuelsson, Manager, Global Tissue Technology, Valmet

16:15 - 16:35

Building Information Modeling (BIM) - an innovative tool for planning and maintaining a tissue mill

Designing with BIM helps clients, designers and contractors to visualize the project in a virtual environment to identify any potential risk concerning design, construction and interfaces to be coordinated between building design, process engineering and operational issues. As data is collected in the 3D model throughout the design and construction phase, it can be analyzed and used to develop ways to make processes more efficient. BIM is also improving safety by pinpointing potential hazards and issues before they become a real problem. By using BIM potential risks can be detected upfront in the model which helps to create safe conditions during construction, installation, operation and maintenance.

Mr. Peter Oksakowski, Managing Director & Owner, BHM Ingenieure, Austria

16:35 - 16:55

Naturcell: the best alternative to reduce the environmental footprint of your paper

Naturcell is the pulp from Ence developed to reduce its environmental footprint and help our customers reduce theirs. To evidence the difference Ence carried out the Environmental Product Declaration of the standard bleached pulp and Naturcell and compared the main parameters of each pulp. This presentation focuses in the importance of such differences and how customers value them.

Roberto Pablo Mirande Duhalde, Product Development Director, ENCE Energía y Celulosa, Spain

16:55 - 17:15

Q&A/ PANEL DISCUSSION - TECH SESSION 1 (PART 2)

Panelists:

Mr. Peter Oksakowski, Managing Director & Owner, BHM Ingenieure, Austria
Roberto Pablo Mirande Duhalde, Product Development Director, ENCE Energía y Celulosa, Spain

CONFERENCE AGENDA



For more details on the Conference Agenda scan the QR code

The Roadmap, the Riskmap. Plotting a Course for Tissue in Uncertain Times

WEDNESDAY, 29 MARCH 2023 - MORNING

09:00 - 10:35

**Senior Management Symposium
Session 3 - Supply Chain and Other Risks**

09:00 - 09:25

The Outlook for Market Pulp

Supply/Demand; Capacity Outlook; Production Costs; China Situation.

Pierre Bach, Research Manager, Hawkins Wright, UK

09:25 - 09:50

Challenges and uncertainties facing the Tissue Industry

By transforming data into information, various scenarios can be accurately modelled to equip and prepare businesses for a wide range of eventualities. With these tools at their disposal, tissue enterprises should harness the intelligence available to them to ensure they survive and prosper in an unpredictable world.

Urban Lundberg, Senior Consultant, Fisher International

09:50 - 10:15

Cyberdangers and The Human

This presentation will start with an overview of the cyber dangers which threatened the world the past years. What should you be afraid of as a company or organisation? Are you sure you did the right thing to solve these cyber security related problems? 3 decades of security experience bundled in a short pragmatic and passionate view on how to solve the basic problem and possibly the cyber dangers now and in the future.

Eddy Willems, Security Evangelist, G DATA Cyberdefense, Germany

10:15 - 10:35

PANEL DISCUSSION - SESSION 3

**Pierre Bach, Research Manager, Hawkins Wright
Urban Lundberg, Senior Consultant, Fisher International
Eddy Willems, Security Evangelist, G DATA Cyberdefense
William Nelson, President, E80 Group Inc.**

10:35 - 11:00 COFFEE BREAK

11:00 - 12:40

Senior Management Symposium

Session 4 - Defining a sustainable future

11:00 - 11:15

Meeting the 2030 and 2050 targets

This presentation will look into long-term strategic perspectives on issues affecting the industry such as climate change and energy efficiency. Our objective is to be the most competitive, innovative and sustainable provider of net-zero carbon solutions by 2050. How will this be achieved within the EU legislative framework under the Green Deal?

Anna Papagrigoraki, Sustainability Director, CEPI - Confederation of European Paper Industries

11:15 - 11:40

Hygiene for tens of millions of people every day - sustainably

- Environmentally efficient raw material suitable to hygiene tissues
- Sustainably produced in a short value chain
- Local production to secure continuous supply

Tobias Lüning, Sr. VP Central Europe, Metsä Tissue

11:40 - 12:05

Sustainability in Action: Building a resilient and thriving business

Star Tissue is one of the UK's leading independent tissue converters, producing products based on both virgin and recycled fibers, sold as brands or for private label, to consumers and AFH customers. Major investments have spurred impressive growth and highly flexible manufacturing, while maintaining the highest ethical and environmental standards. How has this success story evolved in challenging times and what next for this family-owned business?

Khalid Saifullah, Managing Director, Star Tissue

12:05 - 12:30

MP hygiene on track for pioneering high speed papermill with exclusive air system and strengthening its CSR strategy.

Independent family business and AfH market leader in the French tissue market, the AHEAD 2.2 tissue machine 2024 start-up will mean its CO2 footprint will be one of the lowest in the world. This important investment will take MP Hygiene to another level by doubling our mother reels manufacturing capacity and strengthening our environmental commitment. Besides this, MP Hygiene has the ambition to implement its CSR policy by producing locally, using materials with the lowest possible environmental impact, using means with the lowest energy consumption, and putting people at the centre of our strategy.

Laure Miribel, Deputy CEO, MP Hygiene, France
Marc Miribel, President, MP Hygiene, France

12:30 - 12:50

PANEL DISCUSSION - SESSION 4

Panelists :

Anna Papagrigoraki, Sustainability Director, CEPI
Tobias Lüning, Sr. VP Central Europe, Metsä Tissue
Khalid Saifullah, Managing Director, Star Tissue
Marc Miribel, President, MP Hygiene

12:50 - 15:00 - FLEXI-TIME - LUNCH BREAK - EXHIBIT VISITS

WEDNESDAY, 29 MARCH 2023 - AFTERNOON

15:00 - 17:15

TECHNICAL SESSIONS

SESSION 2: Converting and Packaging Solutions

15:00 - 15:20

How innovative production processes are paving the way for a more sustainable future in our industry - WEPA's new raw material innovations for even more sustainable hygiene paper products.

This presentation will provide insights about the technical innovations necessary to use fibres from Miscanthus and recycled cardboard in the production process as well as details about the outstanding sustainability and quality features of products made from these fibres.

Harm Bergmann-Kramer, COO, Member of the Management Board, WEPA Group

15:20 - 15:40

Warm-up Contactless enables tissue converters and product developers to achieve product differentiation at a better cost.

This presentation will discuss recent results that demonstrate the significant advantages of Warm-up to improve desirable product properties and enable product differentiation at a better cost.

Claudio Muñoz, Sr. Director, Global Strategic Marketing, Körber

15:40 - 16:00

SDGs through innovation

Together 2.0 has been developed over the past 12 months, created by Futura and Plusline to integrate converting and packaging, from logs to shelf-ready, packaged rolls. The result is unprecedented process continuity, simplified production flow and a compact layout saving up to 65% of the space occupied per packaging line.

Matteo Giardini, Business Development Director Plusline, Futura Converting

16:00 - 16:15

Q&A/ PANEL DISCUSSION - TECH SESSION 2 (PART 1)

Panelists :

Harm Bergmann-Kramer, COO, Member of the Management Board, WEPA Group
Claudio Muñoz, Sr. Director, Global Strategic Marketing, Körber
Matteo Giardini, Business Development Director Plusline, Futura Converting

16:15 - 16:35

Innovative and sustainable new technologies

for the complete line. It includes the entire production process, from reel to palletization. The advantage is to have a single point of contact, operating with a recognized brand and great technological expertise. A "Full Service Provider" collects the needs of its customer and guides him in the design, construction and production of the complete line from reel to palletization.

Alberto Colombo, Project and Key Account Manager, OMET, Italy

16:35 - 16:55

Solutions for AfH Rolled Products

Maxima developed a portfolio of converting solutions – PROMAX - intended for the AFH market, with special attention of these three steps of the converting process:

- 1) Embossing
- 2) Rewinding
- 3) Cutting

Enrico Ruglioni, European Sales Director, Maxima Tissue, Italy

16:55 - 17:15

Q&A/ PANEL DISCUSSION - TECH SESSION 2 (PART 2)

Panelists :

Alberto Colombo, Project and Key Account Manager, OMET
Enrico Ruglioni, European Sales Director, Maxima Tissue

CONFERENCE AGENDA



For more details on the Conference Agenda scan the QR code

The Roadmap, the Riskmap. Plotting a Course for Tissue in Uncertain Times

THURSDAY, 30 MARCH 2023 - MORNING

09:00 - 11:30

Senior Management Symposium

SESSION 3: Innovative materials, products and processes: Case studies

09:00 - 09:20

How to Accelerate Digital Transformation Securely

Achieve successful digital transformation that includes secure and reliable operations, stakeholder alignment, and effective risk management. During our session, you will learn how to reduce cybersecurity risks while embracing digitalization.

Stefan Turi, Industrial Network and Cybersecurity Sales Executive, Rockwell Automation

09:20 - 09:40

The Smart Evolution: Beyond 4.0

Moving beyond industry 4.0 to approach the evolution of a Smart Factory allows you to realize value in a sustainable way for the future. Starting from this perspective, the advantages of combining hardware and software technology to transform a production and distribution facility into a flexible, safe and digitalized plant capable of keeping up with market changes and challenges will be presented. One of the latest innovations developed by E80 Group goes in this direction: Eagle Trays, a solution that automates and integrates picking operations by assembling and handling non-homogeneous pallets with different products, all managed by a unique software platform.

Massimo Bertuccio, Sales Director, Tissue and Robotic Division, E80 Group

09:40 - 10:00

Moving from Descriptive to Prescriptive Analytics Using AI: Success Stories in Tissue making

In this presentation, we will discuss how we took the next step to feedback control using real-time predictions. We illustrate how using a predictive model for wet tensile can drive operator learning, reduction in lab test variability, optimization of wet strength chemistry, and even lead to an adjustment of targets due to improved control. Finally, we will discuss how adding predictive models for additional dry-end parameters can be combined to drive optimization of fiber and energy

Prof. Kamran Paynabar, Co-Founder and Chief Science Officer, ProcessMiner

Matthew Callicott, OPTIX Development & Implementation Manager, Global, Solenis Global Digitalization Strategies

10:00 - 10:15 COFFEE BREAK

10:15 - 10:35

A. Celli & Intertrade Hellas - A case study of success

At the end of 2021 the leading Greek converting company Intertrade Hellas SA and A.Celli Paper began their partnership for a new project involving the design, installation and commissioning of a iDEAL® complete turnkey tissue production line, from stock preparation to the final product. A project that ended in January 2023, with the successful startup of the line and the production of the first Jumbo roll, with great satisfaction from all the parts involved.

Luca Billi, Sales Manager, A.Celli

10:35 - 10:55

Data Driven Operations - How to lead your Tissue business with data?

Data driven business capabilities of MES (Manufacturing Execution System) will be introduced and will provide the required business transparency and KPI's to lead operations with increased Tissue mill efficiency resulting to continuous sustainability and profitability improvements. Several case study examples on how data can be put in action for automated/assisted decision-making will be shown.

Jarmo Ropponen, Head of Sales and Marketing, Tietoevry Industry, Pulp, Paper, Fibre

10:55 - 11:15

Using Enzymes to Reduce Tissue Production Energy Costs by 5.0%

Enzymes are the most efficient and natural way to modify and ultimately break down organic materials which is why they are Nature's evolutionary tool of choice. Continuing developments in enzyme technology allow tailoring of specific blends of enzymes for each mill designed to target energy savings through both function and application technique. Never has energy optimization been of more strategic value to our industry because energy availability and price have the potential to put all tissue mills into a compromised position. This paper will provide mechanistic explanation and real-world commercial examples of how enzyme technologies lead to more stable tissue machine operation and substantial energy savings.

Bud Chase, Vice President, Tissue, EDT

11:15 - 11:35

OraCrepe™ Next: WEPA trusted Oradoc innovation in flexible Yankee doctoring

The Yankee area is a crucial one and any innovation in this area may entail important benefits to all the papermaking process. Oradoc R&D staff improved the already existing OraCrepe™ blade holder to make it even more performing in a wider range of applications. WEPA, one of Europe's most important tissue paper player, trusted our expertise and was the first customer to experience first-hand the benefits of this brand-new flexible doctor: after more than 1 year of R&D activities and 2 years working in the paper machine, the pilot installation on creping position of PM16 in Porcari plant (Italy) proved successfully, with great satisfaction of WEPA team.

Maurizio Tomei, Sales & Customer Service Manager, Oradoc MTK

11:35 CLOSING OF TWD Conference



EXHIBITOR PROFILES

9.Septembar - Tissue Converting

E42



info@9septembar.com
www.9septembar.com

9. Septembar - Tissue Converting is a manufacturer of tissue converting machinery from Serbia, Europe. The company successfully produces machines for napkin and handkerchief production, as well as rewinders and slitters for more than 40 years. Besides these well known machines, our product range includes machines for tablecloths, placemats and dental bibs. Various models may fulfill each customer's demand, from hobby program to fully automated turn key solutions. More than 400 9.Septembar machines successfully operate in more than 40 countries world wide.

A.Celli Paper s.p.a

E32



www.acelli.it

INTEGRATED TISSUE PRODUCTS MAKER, Consumer (At Home) Finished Products, Away-from-Home (AFH) Finished products, Tissue Converter, Paper making machinery, Process automation and control, Doctors and creping blades, Stock preparation, fiber processing and pulping equipment, Fibers: Market pulp and recycled fiber, Chemicals and chemical technologies, Converting machinery and supplies, Printing machinery and supplies, Wrapping/Packaging equipment and supplies, Transport and logistics, Energy and Power, Testing machines, Engineering

Abu Dhabi National Paper Mill

K10



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www.adnmp.ae

Set up in the year 2000 under the conglomerate of Abu Dhabi National Industrial Projects (ADNIP), the Abu Dhabi National Paper Mill (ADNPM) is one of the largest and most advanced manufacturer of jumbo tissue rolls in the United Arab Emirates. Currently having a yearly production capacity of more than 95.000 tons of tissue in various grades from three production lines along with the flexibility of paper recycling plant. The newest machine is a Valmet NTT machine (New Texture Tissue), setup in 2015 and the only one of its kind in the Middle East. The new NTT technology has a big advantage in bulk, softness and water absorbency of the different tissue grades.

ADNPM produces jumbo tissue rolls in various grades that includes table napkins, kitchen and hand towels, facial and toilet tissues, in white and a range of other FDA-approved colors.

ADNPM is FSC Certified and a regional market leader, believing in innovation and continuous development. Our products are manufactured to global standards, and most sought after by local, regional & international converters.

Aetna Group S.p.A.

E56



info@aetnagroup.com
www.aetnagroup.com

Aetna Group is the world leader in the packaging sector, specialized in end-line solutions. It boasts approximately 1850 employees, among them over 280 technicians are involved in the after sales service. The Group provides customer service in more than 130 countries, thanks to its 12 subsidiaries in France, UK, Germany, Spain, USA, Russia, USA, Mexico, Brazil, China, Thailand, and South Africa.

The Group production ranges from semi-automatic wrapping machines with smart technology to innovative automatic solutions for your packaging, industrial wrapping machines, shrink wrapping machines and cartooning machines, palletizers, AGV & LGV shuttles and tailor-made packaging solutions.

Akkim Kimya Sanayi Ve Tic. A.Ş.

E40



akkim.com.tr

Akkim Kimya, the leading chemicals producer of Turkey, was established in Yalova in 1977. Akkim is a chemicals company that has been serving over 70 countries in six continents with its wide range of products, including chlor-alkali & derivatives, peroxides, methylamines, persulfates, bisulphites, textile auxiliaries, paper, water treatment chemicals, construction chemicals and plastic additives.

Aktül Kağıt Üretim ve Pazarlama A.Ş.

H50



info@aktulkagit.com.tr
www.aktulkagit.com.tr

Aktül Kağıt started to produce tissue paper from 100% pure cellulose in 2011 in Pamukova/Sakarya. Established on a total area of 186.615 m2, with open area of 115,644 m2 and closed area of 70.971 m2, Aktül Kağıt has an annual paper production capacity of 210,000 tons, with a converting production capacity of 160,000 tons. In 2021, it broke a world record by producing 75,276 tons of paper per year with the KM-1 machine, which is one of the 3 paper machines it owns.

With the "Visconip Technology" used for the first time in the Turkish market it has become a pioneer in the paper industry in the country, and increases its production capacity with new investments every day in order to supply products to the customers at world standards, and, the Company, currently exporting its products to 60 countries, meets the consumers' demand for toilet paper, paper towels, napkins, and handkerchiefs, and the converting facilities' demand for the high quality semi-finished products needs.

**ALWIN MANUFACTURING
CO. INC.****C23**www.alwin.com

Since 1928, Alwin Manufacturing Co., Inc. has been a leading producer of towel, tissue and napkin dispensers for the away-from-home market. Dedicated capability provides Alwin with the versatility and ability to optimize design and manufacturing efficiencies, contributing to Alwin's value added philosophy.

Our injection molded plastic parts are produced in-house, providing Alwin with the added technology and plastic manufacturing skill to meet the evolving dispenser needs of our customers in the 21st century. Our goal is to exceed our customers expectations for product quality, value and service. We're always here to help with answers, creative solutions and attention to detail.

AMOTEK S.r.l.**D22****AMOTEK**sales@amotek.com
www.amotek.com

Since 1977 AMOTEK is an Italian company experienced worldwide in the design and manufacture of automatic bagging machines and complete packaging lines. In the tissue sector it offers horizontal bagging machines using premade bags for kitchen and toilet rolls, jumbo toilet and AFH rolls as well as for the multiple bagging of prepacked facial tissues and interfolded tissue towels (low and high perf).

ASB Service Srl**K63**info@asbservice.it
www.asbservice.it

ASB is the new multi-brand spare parts hub focused on serving the Tissue Converting and Packaging Industry.

We are specialized in the manufacturing and distribution of BLADES and COMPATIBLE SPARES through our production facility and a worldwide network of certified suppliers and manufacturers.

We focused our activity on the manufacturing of high quality perf/anvil blades following our customers needs in terms of product specifics, packaging safety requirements and delivery times.

Our products:

- Blades for rewinding and packaging machines
- Spare parts for Tissue paper converting plants
- Industrial Machine Retrofitting

Asia Pulp and Paper**L22**Chandra_Suprpto@app.co.id
Ajit_k_Tiwari@app.co.id
<https://asiapulppaper.com/>

Asia Pulp & Paper (APP) Sinar Mas delivers quality products to meet the growing global demand for tissue, packaging, and paper. With annual combined production and converting capacity of over 19 million tons per annum, we market our products in more than 150 countries across six continents.

Innovative Products, Sustainably and Responsibly

Transforming customer insights and technologies into innovative products that sustainably and responsibly

Tissue Division has its facilities in Java and Sumatra islands. Within the current market challenge, besides producing standard tissue products we have been evolving into speciality paper manufacturer. WE are committed to create niche markets by offering non-OBA and food contact compliant products with working closely with the related converters.

**August Blecher GmbH
& Co. KG****A50**info@blecher.com
www.blecher.com

More than 165 years of experience in the manufacturing of circular knives at BLECHER stand for a steady and consecutive development work with continuously increasing efficiency and quality.

We are setting new performance benchmarks with our technical engineering support and our high-quality cutting tools for the converting part of the tissue industry.

We offer a 360° Package, with LogSaw Blades, Grinding Wheels, Lubricant, Perforation and Anvil knives, which were harmonized to each other, to bring the best possible performance in total.

BLECHER create modern, tailor-made quality products.

**B&B Verpackungstechnik
GmbH****C50**mail@bub-group.com
www.bub-group.com

We are a mechanical engineering company which specializes in the development and production of bag making and packaging machinery. Every day more than 220 employees work on individual technical solutions for you at the 16,000 m² production facilities in Hopsten (Germany) and Green Bay, Wisconsin (USA).

**BHM-INGENIEURE
Engineering & Consulting****H40**Sabine.grassl@bhm-ing.com
bhm-ing.com

BHM INGENIEURE is an Engineering & Consulting Company, with approx. 160 engineers and project managers, working mainly for the Paper Industry since 1992. BHM is located in Austria and has 5 subsidiaries as well as several Network Partners in various countries.

We are experts in the field of Site Development, building related Overall Engineering and Project Management. Our customers are several leading Tissue Producers as well as entrepreneurs in this business. We offer engineering solutions from the first idea up to the start-up of the tissue mill.

BTG Eclepens S.A.**A20**grant.downham@btg.com
btg.com

BTG is a multinational provider of highly specialized process solutions for the global pulp and paper industry

Buckman Laboratories NV**E10**europe@buckman.com
www.buckman.com

Helping tissue makers succeed takes commitment only Buckman can bring. We train our reps to know your industry and understand nuances that affect your operation. We surround that expertise with the latest smart technologies, patented innovations and customer-centered solutions. Whatever challenges you face, we're equipped to help address them. We're more than chemistry. We're Chemistry, connected.

C. G. Bretting Manufacturing.,

H20



sales@bretting.com
www.bretting.com

– Bretting proudly celebrates 130 plus years! Focusing on designing and manufacturing tissue and towel converting equipment with a dedication to industry leading service and support. Our innovative solutions throughout our interfolder and napkin folder product lines continue to expand. Absolut, a Bretting company, has enhanced our current product line, offering paper bag equipment, wet wipe and non-woven folding and rewinding equipment. We continue the LEAN Journey along with our on-going research and development providing the competitive advantage best value solutions. As a World Class manufacturer, Bretting delivers on our promise, earning the right to be the customer's choice.

Cellwood GmbH

F70



info@cellwood.de
www.cellwood.de

Cellwood Machinery is a family owned business from Sweden that has its subsidiary Cellwood GmbH located in Germany. We are a supplier for the pulp and paper industry with customers all over the world.

Our products:

KRIMA Disperser-hot dispersing system

GRUBBENS Pulper-under machine & dissolving pulper

ALGAS Microfilter-fiber and water recovery

METRANS Conveyor-full automatic bale handling system

Chishui Newland Import and Export Trading

A30



info@nlbamboo.com
www.nlbamboo.com

Newland Bamboo is a bamboo tissue paper manufacturer with rich experience in private label production. We supply high-quality bamboo tissues and provide creative and earth-friendly solutions to distributors, retailers, and importers worldwide. Our products meet the BRCGS Consumer Products Certification. Visit our website today to learn more about our unique bamboo tissue products and services!

Clouth Sprenger GmbH

C32



info@clouth-group.com
www.clouth.com/de/clouth-group

Clouth Sprenger GmbH was founded in 2002. As a medium-sized company that is active as a supplier of special tools for the paper industry, it specialises in the production and refinement of creping blades and coating coater blades with high-quality wear protection coatings. The processes in the area of finishing bring about a double benefit: longer running times and maximised productivity.

Convermat Corporation

J20



info@convermat.com
www.convermat.com

Led by Shaw and Frank Shahery, Convermat is the leading global supplier of parent rolls of tissue, pulp, packaging, and nonwovens, operating in more than 80 countries worldwide.

Our mission is to develop long-term partnerships with our clients as their trusted source and supplier. We stand for long-term partnerships, integrity, and environmental and social responsibility.

Crown Paper Mill LLC

G40



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sunny.amin@ittihadpapermill.com
www.crownpapermill.com

Crown Paper Mill is one of the leading producers of Jumbo Tissue Paper rolls in the United Arab Emirates. The mill covers a total area of 50,000 sqm, with an annual production capacity of 100,000 tonnes. Headquartered, in the Industrial city of Abu Dhabi (ICAD), the mill's "Prime Quality" Jumbo Rolls come in various grades such as Facial, Toilet, Kitchen Towel, Napkin, C-Fold and Carrier Tissue. All high-quality tissue grades are produced from the highest virgin pulp grade sourced from all over the world.

Delsar Lame Srl

A32



www.delsarlame.com

Delsar Lame is a company born over 30 years ago that supplies products and services in the field of industrial cutting.

The experience of one of the founders, combined with the technology and the new organization due to the acquisition by the company leader in the printed media industry Sacau Sr.l., made Delsar Lame one of the most important company in the cutting sector.

E80 Group S.p.A

G10



tissueworld2023@e80group.com
www.e80group.com

E80 Group specializes in the development of automated and integrated intralogistics solutions for factories and distribution centers in various business fields. The tissue sector has been an important stepping stone for the Group, which started designing and producing tailor-made solutions perfectly suited to the automatic handling of parent reels.

Eczacıbaşı Consumer Products

E30

ECZACIBAŞI
CONSUMER PRODUCTS

info@eczacibasituketim.com
www.eczacibasituketim.com

For more than 50 years, Eczacıbaşı Consumer Products has been offering new and innovative hygiene products to consumers in personal & household & baby care and AFH categories. ECP, serves Neighboring markets through the manufacturing, marketing, and distribution of tissue paper products by investing in the Paper category that enable its total production capacity to reach 250 thousand tons

EDT

J40



bchase@edt-enzymes.com
www.edt-enzymes.com

EDT is a bio-industrial company specializing in enzyme-based treatments for the pulp and paper industry. Since its inception 28 years ago, EDT has developed more than a dozen different programs to help mills produce more tons, higher quality tons, less costly tons and more sustainable tons. EDT's programs include treatments for deinking wastepaper, fiber modification for tissue, paperboard, and P&W grades, enhanced repulping of wet strength broke, pitch and stickies control, energy reduction and yield improvement. All EDT treatments are mill-specific enzyme blends tailored around fiber substrates, mill system and desired benefits. Please visit EDT's Booth #J40 to learn more.

EMIRSON Global Kimya Sanayi A.Ş.

G70

info@emirson.com.tr
www.emirson.com.tr

EMIRSON Global's goal, as a partner, is to meet customer demands in the most efficient way, at the right time with right materials. We offer a wide range of products, enabling you to expand your business strategically with new opportunities.

- Horeca & Consumer Tissue Paper Products
- Tissue Jumbo Rolls
- Baby Diapers
- Sanitary Napkin
- Wet Wipes
- Greyboard
- Spunlace and Airlaid
- Raw Materials for Hygiene Industry
- Chemicals for Forest Products Industry
- Carbon Black
- Laboratory Equipments
- Tissue Machine and Equipments
- Melamine
- Other Transit Operations

Enerquin

K51



info@enerquin.com

enerquin.com

OVER 40 YEARS OF DRYING PROCESS KNOWLEDGE AND EXPERIENCE

We provide mills with unique solutions for paper and board drying, tissue drying, energy efficiency, and building ventilation. We take pride in offering the highest quality products with innovative engineering, design and manufacturing.

Enerquin expertise includes:

- Paper and Board Dying Technology
- Tissue Drying Technology
- Energy Saving Solutions
- Building Ventilation
- Dry Runnability Solutions

ENP PUBLISHING GROUP K43



stephane.richard@groupenp.com

paperfirst.info

TissueFIRST App is a mobile app addressing the global tissue community with the latest industry news.

ESSEL SELULOZ VE KAGIT SAN.TIC.A.Ş.

E68



ugur.iseri@essel.com.tr

www.essel.com.tr

Since entering the market in 2011, Essel Selülöz ve Kağıt Sanayi Tic. A.Ş. has taken its place among Turkey's important tissue paper manufacturers with its investments, state-of-the-art technology and expert staff, for the purpose of producing environmentally and economically sustainable tissue paper with a value and quality that will meet consumer satisfaction,

Essel realizes its production in 4 separate facilities located in Zonguldak/Çaycuma in the north, and Osmaniye in the south of Turkey, with a Professional team of 500 people and fully automated advanced production lines.

Focusing on offering environmentally friendly products for both our world and health, Essel produces all of its products with cellulose obtained from 100% certified FSC forests. With its sensitivity to nature, it has also deployed purification and recycling facilities that support zero waste production to minimize carbon emissions.

Exporting to 60 countries in 5 continents with its ever-growing talented team, Essel manufactures approximately 600 kinds of products in different weights such as toilet paper, paper towels, box/practical tissues, napkins, dispenser napkins, dispenser towels and Z napkins and offers them to the domestic and foreign markets.

Steadily expanding its customer portfolio through regular investments, Essel acts with the mission of being a Pioneer and well-established player in the global tissue paper production market. By developing environmentally sustainable solutions to pulp and tissue paper requirements in the national and international arena, Essel produces valuable and high quality tissue paper products.

In this context, the largest tissue paper machine with the highest production capacity in Turkey and Europe was deployed by the Italian company Toscotec at the Osmaniye factory in 2021. With this development, by the first quarter of 2022, Essel, supported by Turkey's largest pulp inventory, reached a point to produce 130,000 tons/year of reels and 1,500,000 parcels/month (18,000,000 parcels/year) of finished products.

Euroincis Srl

H52



info@euroincis.com
www.euroincis.com

A Company specialized in embossing cylinders and systems, that offers qualified products and services that keeps up to date on all new technologies to meet and customize the needs of the Tissue market. Technology is our focus: Tip to Tip, Flat to Tip, all over and border pattern. ROLLS: Kitchen and Industrial Towels, Toilet Paper, FOLDED PRODUCTS: Napkins, Handkerchiefs, Towels, Kitchen Placemats.

Europap Tezol Kagit Sanayi Ve Ticaret A.

E52



www.tezol.com.tr/en/home/

EUROPAP TEZOL is a group of companies founded in 1932 contains three paper mills and a converting plant in two different facilities located in Izmir and Mersin /Turkey. Total production capacity is 100.000 tpy. We can produce tissue from 15 gsm up to 35 gsm in all types of jumbo rolls for Facial Tissue, Toilet Paper, Napkin, Dispenser Towel, Kitchen Towel productions in 1-2-3 plies.

European Tissue Symposium (ETS)

D74



www.europeantissue.com

ETS is the European Tissue Paper Industry Association. Its members represent the majority of tissue paper producers throughout Europe and around 90% of the total European tissue production. Spreading the message of optimal hand drying after hand washing as a factor to stay healthy and hygienic, is among ETS key priorities. ETS stays updated with the relevant market and technology developments while keeping up with the latest environmental and product safety regulatory requirements. ETS was founded in 1971 and is based in Brussels.

FAN Separator GmbH

B56



pulp.paper@fan-separator.de
www.fan-separator.de

The pioneer in separation technology "FAN SEPARATOR GmbH" - a company of the Austrian BAUER Group - is presenting its latest product upgrades. From the FAN "PSS" Separator, for separation of fibrous wastewater, the "SPS" for secondary sludge and the "BP" for the dewatering of pulper reject. FAN SEPARATOR: FANTastic for the paper industry and the environment!

Fansa Paper

G82



info@fansapaper.com
www.fansapaper.com

FANSA Paper

Fansa Paper is a manufacturer of industrial paper that operates in an integrated paper factory in Izmir. Thanks to the jumbo rolls manufactured in various spectra for various markets in the main paper machine, Fansa Paper brands have access to a wide product portfolio. The converting facility produces all segments of industrial type paper for both private label clients and its own brands.

Filtereco Srl

E53



info@filtereco.com
www.filtereco.com

Filtereco is an Italian leading manufacturer of filtering plants and filters, with longtime specific expertise in paper sector and converting sector, particularly in glue filtration, with its self cleaning filters. Filtereco is pleased to announce that is now launching a new patent pending filter for paper industry, that will revolutionize all the preceding filtration systems.

Firefly AB

D20



info@firefly.se
firefly.se

Firefly is one of the world's leading supplier of fire prevention systems to the process industry. Since 1973, Firefly has specialized in creating tailor-made systems of the highest technical standard, in order to protect the process industry from costly fires and dust explosions.

With a range of products and solutions covering everything from spark detection and water spray extinguishing to flame detection and water mist suppression, Firefly can offer a safe fire prevention solution for your company.

FIS Impianti SRL

F72



www.fisimpianti.it

Established in 1969, FIS IMPIANTI is based in Cassina de' Pecchi, in outskirts of Milan on an area of 10.000 sq mt, of which some 3400 for workshop and warehouse and 1200 for offices.

For more than fifty years FIS Impianti has been designing, developing, manufacturing and installing wrapping and handling systems for palletised items (with or without wooden pallet). By using plastic films the loads are fully protected during freight and stocking, both in-door and out-door.

Despite being present in many markets FIS Impianti decided to focus on the paper and tissue production: a field where protection is very important. The first machine delivered to a paper mill dates back to the early '80s: it was a stretching film wrapping machine for paper rolls coming from the pope and destined to converting. Since then FIS specialised in this field producing semi-automatic of fully automatic wrapping machines. Furthermore we can supply a wide range of special equipment for paper rolls handling up to the final shipping stage. In the last years FIS has also developed brand new software for improving the production line of paper and tissue, in particular, our software can recognise the product, measure it, weight, transmit the data and/or printing them on the roll. Do not hesitate to contact us: we will be glad to offer our customers our experience and flexibility for the evaluation of projects and manufacturing of special, tailor made machinery

FIT International Inc**C10**fitintl.com

A United States based manufacturer and worldwide distributor of advanced doctor blade chamber technology, pumping, and automated wash systems. AUTOFlex provides the ability to wash multiple chambers, anilox rolls, pumps, and hoses within an incredibly short period of time. Providing maximum ink recovery and minimal waste.

With repeatable performance and consistent results, AUTOFlex systems are able to quantify and guarantee Ink loss, wash time, wash waste, and Delta E on color/job change.

AUTOFlex systems incorporate robust designs and inert materials to ensure stable performance and corrosion resistance. Tool less operation reduces risk of injury and accelerates set-ups.

FIT also provides electronic pumping systems for automating balance, flow, speed control, printing, and ink recovery. Integrated system design maintains total control of the liquid circuit.

Futura S.p.A.**F20**www.futuraconverting.com

Futura S.p.A. is the technological leader for the production of converting machinery for consumer and AFH tissue markets.

Futura invests considerable resources in R&D, including FuturaLab, where innovation takes shape and is tested in real operating conditions on a latest-generation converting line.

Futura's production site is in Lucca, Italy, while support is guaranteed worldwide through Futura North America and Futura Latin America, and service points in China, Japan and Australia.

Futura acquired Plusline in 2020. They have already transformed tissue converting automation and integration, including Together 2.0, which receives tissue logs directly from the rewinder, and generates packaged, shelf-ready rolls.

Gambini S.p.A.**H10**

beyond tissue

info@gambini.groupwww.gambini.group

Gambini S.p.A. is a family-owned Italian company that has been in the machinery-making business for over 150 years. They offer tissue paper converting lines, retrofit components and a 24/7 service assistance worldwide. Gambini's advanced consumer and professional tissue converting lines are designed for efficiency, flexibility and safety, with a focus on high-quality finished products. The revolutionary AirMill wet embossing technology creates additional value in tissue converting and paper mill production processes. Gambini's vision is to enhance people's health and well-being, going beyond tissue. They are committed to innovation and customer service, making them a leader in the global tissue field.

Giotto Technologies srl**H22**info@giottotechnologies.comwww.giottotechnologies.com

Giotto Technologies represents the new Baosuo's view on the tissue paper production & converting machinery market. Giotto Technologies, thanks to Baosuo Group, is nowadays the only company in the market capable to provide final users with complete equipment's line for the production, converting, packaging and palletizing of tissue products.

The company has been founded by Italian professional engineers with a long and deep experience in tissue technologies with the aim of offering reliable, competitive and energy saving tissue converting and paper making equipment.

The role of Baosuo, Chinese leader in the production of equipment for paper making and tissue converting, gives Giotto Technologies the strength to satisfy customers with an overall quality proposal that brings them competitive long-lasting advantages.

GloCell Oy**G22**jarmo.kahala@glocell.fiwww.glocell.fi

GloCell Oy provides fiber furnish optimization software and consulting services for pulp and paper industry. By using our main product called SoftaCell™, optimal fiber mix for a tissue product can be found, in terms of quality and cost. Our core innovation is based on understanding fiber physics, mathematical modelling, and understanding of pulp and paper industry. We have refined hands-on knowledge and deep theoretical understanding to easy-to-use tool.

Hayat Kimya Sanayi A.S.**H30**murat.ozero@hayat.com.trwww.hayat.com/en-ke/

Established in 1987 and operating in the FMCG sector, Hayat provides employment to over 10.000 people in Turkey and international organizations by bringing 16 brands together with consumers such as Molfix, Bebem Natural in the baby care category; Molped in feminine care category; Joly, Evony, Goodcare in the personal health care category; Bingo, Gleen, Test, Has in the home care category; Papia, Familia, Teno, Focus, Nelex in the tissue category; Sholk in the pet care category.

Including Turkey, 21 production facility investments in 8 countries, including Egypt, Iran, Algeria, Russia, Nigeria, Pakistan and Vietnam; operating with sales and distribution companies in Morocco, Bulgaria, Kenya, Thailand and Malaysia; Hayat also continues to strengthen its regional position and deliver its brands to millions of homes around the world by exporting to more than 100 countries in 5 continents.

Hayat is the largest tissue manufacturer in the Middle East, Eastern Europe and Africa, and ranks 4th in the "World's Largest Branded Baby Diaper Manufacturers" league.

HELL Gravure Systems GmbH & Co. KG

F60



info@hell.de

www.hell-gravure-systems.com/

HELL – the successful engraving industry brand

HELL Gravure Systems – a Heliograph Holding company – is an innovation leader in the manufacture of prepress engraving systems. As an inventor of pioneering technologies, the company is continuously redefining international standards. With its numerous technical solutions, HELL leads the market in its many core areas of expertise – the electromechanical and direct laser engraving of gravure and embossing cylinders and the high-resolution direct engraving of elastomer printing forms for relief printing. The latest industry highlights are the Helioklischograph K5, the AutoCon automated production line with one or more Helioklischograph K500 systems, and the Cellaxy and PremiumSetter direct lasers.

Hergen Converge to Evolve G50



hergen@hergen.com.br

www.hergen.com.br

Hergen is a developer of state-of-the-art solutions for the paper industry, with a manufacturing site with modern large machines and a unique infrastructure that allows the complete construction of the equipment. With approximately 250 professionals who form the staff of the industrial park located in Rio do Sul, a town in the center of the state of Santa Catarina – south Brazil, Hergen is dedicated to the development and manufacture of equipment and machines for the tissue, packaging and special paper segments. Founded in 1976, the company has international operations in Latin America, North America, Europe and Asia.

ICM Makina Mühendislik Ltd STI

J10



icm@icmmakina.com

<http://icmmakina.com>

ICM is a manufacturer of paper converting machinery for the production of tissue paper. The portfolio includes the production lines for bathroll-paper towel, the production lines for Z-fold dispenser towels, V-fold facial tissue and dispenser towels, numerous machines for packaging and cardboard, as well as embossing rollers all over the world.

IGPC GmbH



tech@ig-papierchemie.de

<https://ig-papierchemie.de/>

IMA - TMC SPA

F10



elisa.montagnini@ima.it

www.ima.it

For over 20 years, IMA TMC has been providing primary and secondary packaging machines from the converting outfeed up to palletizing. IMA TMC's wrappers, bundlers and palletizers are well recognized in the Tissue market for their high-speed and extreme flexibility. Come to our stand and discover our sustainable packaging solutions made of paper or 100% recyclable polyethylene.

Indevco Paper Making

H66



papermaking@indevcogroup.com

www.indevcopapermaking.co

INDEVCO Paper Making, a division of INDEVCO Group, operates two manufacturing companies in Lebanon and Egypt, UNIPAK Tissue Mill (UTM) and Interstate Paper Industries (IPI). Our plants produce 90,000 MT/year of virgin and recycled tissue parent reels for tissue converters in the USA, Europe, the Middle East and Africa. IPM focuses on sustainability initiatives throughout the manufacturing process.

Industrie Cartarie Tronchetti Spa

F30



reception@ictit.eu

www.ictgroup.net/it

ICT Group has been operating in the tissue business since 1978. Today a leading European producer, ICT has offices and production sites in Italy, Poland, Spain, France, Germany and UK. Products include premium toilet paper, kitchen towels, napkins and facial tissue through its own brand Foxy and retailer's private labels. The business also includes the sale of parent reels to converters. ICT Group today employs 1733 people with a turnover of more than € 1 billion.

Infinity Machine & Engineering Corp

F40



gsense@infinitymec.com

<https://infinitymec.com/>

Infinity Machine & Engineering Corp. is a world-wide leading manufacturer of automated packaging machinery for the tissue paper industry. We are also a provider of engineering services for all tissue product converting. Infinity has full-service sales, service, engineering, and manufacturing facilities in both the Green Bay, WI (USA) and in Bologna (Italy), two cities considered to be the tissue packaging capitals of the world. For as long as our value proposition satisfies our markets and our customers, our intention is to grow without limits and to do our best to realize our maximum potential.

ISRA Parsytec GmbH

H60



info@isravision.com

www.isravision.com

Reduce web breaks by at least 50%.

ISRA is the world's leading supplier of web quality monitoring systems for tissue and paper manufacturers from formation to the final reel. ISRA's web inspection systems (WIS) allow a reliable recognition of tiniest defects, while the web break monitoring (WBM) performs precise detection and classification of process disturbances with fast root causes analysis. In addition to WBM and WIS, the unique multilayer tissue Converting Control System (CCS) avoids web breaks by automatically reducing the converting speed, and the Paper Quality Management System (QMS) gives you all the info needed to streamline your production.

JAEGER GmbH

K20



www.jaeger-gmbh.com

On-Site Service for Yankee / MG cylinder; grinding, metallization, all mechanical services to include condensate removal systems and doctor systems, diagnostic services to include profile and thermography, balancing, safety inspections and troubleshooting.

Julia Utensili SRL
K53


juliacom@julia.it
www.juliautensili.com

Julia Utensili is today one of the world's largest producers of knives for cutting tissue paper rolls, with a range of diameters from 610 to 1200 mm.

The search for the highest quality level has pushed Julia Utensili to develop an innovative product, now officially PATENTED, both in the standard 4.76 mm thickness and in the thinner 3.8 mm thickness.

User have many advantages, regarding the quality of the cut products and the productivity of the tool.

Julius Schulte Söhne GmbH & Co. KG
E20


sbrueggen@schulte-duesseldorf.de
www.schulte-duesseldorf.de

Julius Schulte Söhne GmbH & Co. KG is Germany's only independent producer of core board. Since 1886 we are in private family ownership and produce paper and board in Düsseldorf ideally located in the heart of Europe.

We are the recognized partner for all board solutions in the industry at market leaders and medium or small sized private customers.

We are one of Europe's leading core board suppliers to the European tissue industry and offer customized core board solutions for 1-ply and 2-ply core winding applications for consumer and AfH tubes. In addition we offer technical support at the customers' site.

Kadant
G61
KĀDANT

info@kadant.de
www.kadant.com

Kadant develops, manufactures, and markets a wide range of doctoring, cleaning, and filtration systems and related consumables used in process industries worldwide. Our products, technologies, and services play an integral role in enhancing process efficiency, optimizing energy utilization, and maximizing productivity in resource-intensive businesses. We also offer a variety of high quality doctor and roll cleaning blades, doctor and roll cleaning blade holders, yankee dryer cleaners or filtration systems to improve the productivity of your tissue machine

KAIROS SRL
J42


info@kairossrl.com
www.kairossrl.com/azienda

Kairos aims to be a reliable new player capable of representing a valuable alternative to traditional manufacturers in the market dominated by large corporations. The company's goal is to focus its business not only on consulting and project management, but also on the supply of spare parts and after-sales service, which for customers is a crucial point for the correct and efficient maintenance of their production lines. Furthermore, the company has undertaken an ambitious project in the design of fully automatic, highly energy-saving, efficient and flexible Interfolder lines that occupy less space, resulting in lower maintenance costs.

KAPP-Chemie GmbH & Co. KG E60


www.kapp-chemie.com

KAPP-CHEMIE is a medium-sized company within the chemical industry, employing approximately 100 people. The company was founded in 1970 and has been part of the STOCKMEIER Group since 2007. Our focus is on the development, production and distribution of specialised chemical products for the paper and textile industries. With our segment 'Services', we offer individual customer solutions.

Kawasaki Gas Turbine Europe GmbH
K42


Kawasaki Gas Turbine Europe GmbH

marscheck@kge-gmbh.com
Kawasakiwww.kawasaki-gasturbine.de/en/

Kawasaki Gas Turbine Europe GmbH supplies and services Gas Turbine Generator Sets, preferably for high efficient Combined Heat and Power Systems with a package power of 1,8 MWel up to 34 MWel. By using the Gas Turbine from Japan the units are packaged in Germany respecting European/German norms and standards. We can deliver an extended scope of supply e.g. including Gas Booster, Steam- or Hot Water Boiler, M&L-Voltage distribution, Transformers etc. Kawasaki is pushing the Hydrogen fuel use for our 1,8 MWel Gas Turbine, which is the only industrial Gas Turbine worldwide which can run with 100% Hydrogen.

Klippans Bruk AB
G72


info@klippansbruk.se
www.klippansbruk.se

Klippans Bruk is a niched mill located in the south of Sweden producing white and colored mother / jumbo reels.

We supply napkin / serviette / table top / medical use converters all over the world. With a wide range of standard colors, regular production cycles and flexibility we serve the tissue market with a high quality product. Meet us at G72!

Körber Tissue S.p.A.
G30


www.koerber-tissue.com

As the only truly integrated and global provider of advanced solutions for the papermaking sector, Körber empowers manufacturers to succeed. We offer the industry's most comprehensive portfolio of tissue technology across the entire value chain – from roll to fold, from converting to packaging.

KOTYORA KAGIT A.S.
D10


info@kotyora.com.tr
www.kotyora.com.tr

The vision of the Kotyora is to produce the high quality and sustainable products for personal and professional hygiene solutions. Kotyora with its headquarters and 3 big facilities 46.000m2 located in Istanbul is the largest manufacturer company that produces diverse hygiene and cleaning items by using highest technology and high quality raw materials.

In addition to the great success we have achieved in domestic area, we export directly high-quality products with exceptional service 92 countries.

PRODUCTION LINES
 DISPENSER-PAPER GROUPS-CHEMICAL LIQUIDS-SCENTING SOLUTIONS-DUSTBINS-CLEANING CLOTHES

Lange Lyche

J50



LANGE LYCHE

info@petax.de
www.langelyche.no

Lange Lyche Teknisk is the European partner of Fournier Industries Inc., Canada. Lange Lyche Teknisk AS was founded back in 1931. Lange Lyche Teknisk AS offers this first class and next generation dewatering machine across Europe. The Rotary Press has proven to be second to none on dewatering of all kinds of sludge. Lange Lyche has Rotary Press pilots available for testing in Europe. Please contact us for arrangement of pilot testing at your facility.

Products: - RotaryPress

LIUZHOU FEXIK INTELLIGENT EQUIPMENT CO., LTD.

K60

ZODE 卓德 FEXIK

fexik@fexik.com, zode@zode.cn
fexik.cn, zode.cn

FEXIK is a high-tech enterprise, integrating R&D, production sales, dedicating to whole complete automatic household tissue production line equipment raw paper to finished package, offering perfect solutions to maximize value for customers. We have been committing to research innovation for many years, have a number of national invention patents, have passed international CE, ISO9001 certificates.

Our products include toilet rolls packing machine, kitchen towel packaging machine, facial tissue packing machine, toilet paper kitchen towel production line, facial tissue hand towel production line, other household tissue paper machines, which are exported to Middle East, Asian countries, Americas, Europe, Africa.

Mac Due S.R.L

H44



www.macdue.com

MAFLEX Srl

H42



info@maflex.it
www.maflex.it

We started in 1997 and we are now able to supply complete lines for converting Tissue paper rolls, for both the Consumer and AFH markets. Our machinery has grown both from a structural integrity and reliability point of view, with performance exceeding 600m/min.

To meet the needs of our customers, extremely competitive and better trained, in a globalised market, in 2019 we expanded the headquarters doubling the operational surface and we have completely renovated the company with new offices a new image.

We are specialized in the production of complete lines for converting Tissue paper rolls, inovative and reliable machinery, for all companies operating in the sector.

MAN Energy Solutions

J50



MAN Energy Solutions

info@petax.de
www.man-es.com

MAN Diesel & Turbo Schweiz AG, headquartered in Zurich, is the world's leading supplier of blowers and turbo machinery. In Zurich, MAN Energy Solutions produces both axial and centrifugal compressors, primarily for the oil, gas, and paper industries. Customers receive worldwide after-sales services under the MAN PrimeServ brand.

Products:

- TURBAIR® Blower Type RT
- TURBAIR® Blower Type RT
- TURBAIR® Vacuum Systems Specially designed for dewatering and felt conditioning for Tissue machines. The TURBAIR® blowers are available as single stage RT blowers, vacuum up to 58 kPa or as multi-stage blowers with a maximum of four different vacuum levels up to 75 kPa.

MARE S.p.A.

F50



sales@mare.com
www.mare.com

MARE S.p.A. is a privately owned company that manufactures, supplies and distributes functional and process chemicals to the paper industry.

All grades of paper and board, tissue and towels are of strategic importance to MARE, which has been at the forefront of chemical innovation in the industry for decades.

Many of the products used in the industry today originated in MARE's laboratories.

MARE is one of the few companies able to produce and market the full range of sizing chemicals and wet strength resins technology that the industry requires to meet today's quality and legislative requirements.

Production facilities are located in Italy, Germany, Sweden and Austria, where state-of-the-art equipment is operated by highly qualified, experienced and dedicated personnel.

Matthews International GmbH / SAUERESSIG

F62



SAUERESSIG®
www.saueressig.com

As leading international supplier along the pre-press stage as well as rotogravure and embossing cylinders, SAUERESSIG Surfaces offers a strong technical expertise in the field of tissue and hygiene products, nonwovens, glass and metal as well as wood, flooring and plastics processing industry. Modern manufacturing processes, creative designs and excellent embossing results.

Megall Paper Co Ltd

L54



myd@megall.com.cn
https://megall.com.cn

Microline Srl**D52**

info@microlinesrl.it
www.microlinesrl.it

Microline is a manufacturer of automatic end-of-line packaging machines which to respond to the needs of a whole variety of products, has devised solutions which simultaneously offer utmost versatility, safety and efficiency. The Microline's solutions— for shrink-wrappers, flow wrappers and horizontal and vertical case packers for paper rolls, paper tissues, boxes, napkins and interfolded products, connection systems and palletisers— in fact guarantee a specific answer for every type of product and need. In order to offer a complete service, Microline offers services such as: layout design, organisation of conveyor systems, assembly, maintenance, commissioning, personnel training and supply of spare parts.

MONGIN
MONGIN**E50**

— le concept de coupe —

s.mukha@monginindustry.com
www.monginindustry.com

Mongin is a French manufacturer of industrial blades.

We produce different knives : LOG SAWS blades, perforation and anvil blades, bi-metal blades, dished knives, counter blades, knives blocks, crush and crush perforating knives, packaging knives and slitters.

Our experience and knowledge enable us to manufacture special tools.

Mpac Langen**K50**

frank.vanbentum@mpac-group.com
<https://mpac-group.com/how-we-work/sectors/health-personal-care/tissues/>

Mpac Langen is specialized in Cartoning and Casepacking of Tissue products. Mpac provided more than 60 Tissue cartoners. The Langen MAESTRO Tissue cartoner and ALISIO casepacker create a complete line solution with the highest guaranteed efficiency available in the market.

MAESTRO and ALISIO are fully automated, flexible high-speed continuous motion machines, fully tailored to meet your exact requirements, using different speeds and infeed options, up to high speeds of 450 cartons per minute.

Integrated with upstream Tissue Interfolders, the Langen MAESTRO Tissue cartoners are designed for all kinds of Tissue clips, handling different sizes and pack styles.

Mpac Langen is represented by the company TISSUENET in the Tissue industry.

Multipack Srl**D44**

www.multipack.net

N.C.R. Biochemical S.p.A.**D43**

info@ncr-biochemical.com
www.ncr-biochemical.com

NCR Biochemical is an international chemical company specialized in water treatment, biotechnology and process additives in the paper and sugar industries. We produce the best chemical technologies, find the best solutions for our customers, develop our own dosing systems and have thirty years experience and expertise in pursuing quality, safety and environmental responsibility.

Narsingh Dass & company Pvt. Ltd.**E63**

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pooja.t@theconiferous.com
www.theconiferous.com/

Since our inception 75 years ago, we have established ourselves as one of the leading board and paper traders. Through paper export, we distribute highly efficient and effective sustainable solutions in the United States, Mexico, Jordan, the Middle East, the United Arab Emirates, Southeast Asia, and other neighbouring regions.

Our goal is to provide our customers with a 360° solution in the fields of hygiene, printing, and packaging: Medical Packaging, Hygiene Packaging. We strive to make our present and future hygienic, sustainable, and secure so that future generations can reap the benefits of our Earth's resources more efficiently.

Northern Engraving and Machine**K30**

Northern Engraving and Machine



NorthernEngraving@pcmc.com
www.northernengraving.com

From tissue, to nonwovens, towel, plastic and more, Northern Engraving and Machine (NEMCO) provides solutions that bring our customers' ideas to life since 1939. As part of BW Converting Solutions (BWCS) platform, we offer support from our trusted team of professionals worldwide. This connection uniquely positions us with direct access to many of the engineers who design the machines that manufacture your products and their unparalleled knowledge. Regardless of the application, by using our careful, time-tested process, we will supply you with the highest quality engraved embossing rolls in the industry. For more about Northern Engraving, visit northernengraving.com.

O.M.T. S.r.l.**D40**

info@omttommasi.com
www.omttommasi.com

O.M.T., Italian leading manufacturer of Lucca Tissue Valley, designs and manufactures complete automatic lines for the production and the wrapping of paper napkins, from 40 years.

Always focused on R&D, our lines feature:

- the highest level of technology and innovation
 - fully customized lines for any needs, from basic to sophisticated solutions, from medium to big production capacities.
 - high speed napkin folding lines, single lanes and double lanes, for printed and neutral napkins
 - automatic napkin wrapping machines
- OMT has developed the unique Glue-Less ECO Point to Point Microembosser; this innovative system allows the production of an Uncontaminated microembossed napkin, free from added chemicals and potential bacterial charge. A SOFT napkin and a 'GREEN', ECO-friendly final product.

Ocean Associate Co., Ltd. A34



louis@ocn.com.tw
www.ocn.com.tw

Established in 1981. We are manufacturers and exporters of tissue paper converting machines in Taiwan for 33 years.

We are supplying tissue converting machines as follows:

1. Facial Tissue Making Machine (Interfolder in Manual or Automatic Transfer Type), with optional point to point emboss roll and lamination unit.
2. Paper Napkin Making Machine (Napkin Folder in Vacuum or Mechanical type, single lane or multi-lane) with optional craft paper bander.
3. V-Fold and Z-Fold Hand Towel Making Machine (Manual or Automatic Transfer Type), with steel to steel emboss rolls, steel to rubber emboss rolls with lamination or not, and with craft paper bander and log saw.

We have exported more than 1000 machines to more than 30 countries, including the end-users in China, Hong Kong, South East Asia, New Zealand, Australia, South Pacific, India, Pakistan, Mid-East, Egypt, Africa, Europe, U.S.A., Canada, Caribbean, Central and South America.

OCME Srl E56



info@ocme.com
www.ocme.com

OCME, together with Robopac, is the main brand of Aetna Group.

OCME is one of the largest packing manufacturing companies with the widest range of solutions suitable for all customer product needs.

It provides solutions with a high technological content of System Integration - from fillers to secondary packaging machines, from palletizing & depalletizing to internal logistics - which can be customized at high levels, responding and anticipating the trends of the main international markets.

OK Science and Technology Co.,LTD E43



okluo@gz-ok.com
www.nicepacker.com

OK Science and Technology Co.,LTD is China leading tissue paper converting and packing machines manufacturer more than 10 years. Besides of paper machines, our business has expanded to packing material manufacturing and we listed on the Main Board of Shenzhen Stock Exchange successfully in 2022 (stock code 001223)

OMET SRL G20



COMM@OMET.IT
<https://tissue.omet.com/en/>

OMET leading worldwide manufacturer of converting machines. ASV Line for the production of V-fold products as facial or towels; AS Line dedicated to production of paper towels. TV503 and TV840 Line, folding machines single and double lane resp. for napkins and other disposable products production in tissue, non-woven and other materials. FV Line, machine for vacuum-folded napkins with automatic change of format and ply. MF Line provide maximum flexibility in terms of folding options with a new folding head based on vacuum/mechanical technology. TV503 and MF lines can be integrated with exclusive digital printing unit, Chameleon. Soon on the market the XV Line, machine related to large-volume, up to 25.000 pieces/min, the WIN Line for interfolded napkins production and a line dedicated to tablecloths production.

OPTIMA nonwovens GmbH D22



nonwovens@optima-packaging.com
www.optima-packaging.com/en/nonwovens

OPTIMA nonwovens GmbH plans, develops and produces packaging systems for paper hygiene products such as diapers, bandages and rolls of toilet paper. These systems feature high speeds, format and packaging flexibility, as well as careful product handling. The result is well-designed, sustainable sales packaging that pleases consumers at the point of sale.

OVERMADE J22



info@overmade.it
www.overmade.it

OVERMADE designs and produces complete paper and tissue manufacturing machines from the pulper to the winder. Our company history begins in 1961 with the foundation of OVER MECCANICA and is made of passion for the paper industry. Since 2015 OVERMADE is not only continuing a business that had already completed hundreds of plants worldwide, but also, chose to look to the paper production future and invest in ECO and LOGIC solutions. Our know-how, solidly built on decades of experience, has been recently enlarged with the implementation of POWERMADE: a company specialised in drying systems and energy saving solutions

Paniker, SL H62



paniker@paniker.com
www.paniker.com

Paper Board Alliance C40



info@pbaspa.com
www.paperboardalliance.com

Paper Board Alliance group is the largest non-integrated European group in the production of recycled paperboard for industrial applications. icP and Tecno Paper are part of the PBA Group.

icP is specialist in manufacturing board for toilet paper and kitchen towels rolls support; Tecno Paper specializes in machinery for tissue paper, kraft and packaging, paperboard and cardboard, special paper, continuous machine sections and components for stock preparation.

The group's companies value tradition, high-quality products, sensitivity, and care for environmental issues, which makes this group a model of reference in the paper industry.

Paper Converting Machine Company K30



pcmc@pcmc.com, sales.tissue@pcmc.com
www.pcmc.com

Paper Converting Machine Company (PCMC), part of global equipment manufacturer Barry-Wehmiller and its BW Converting Solutions platform of five industry-leading brands, specializes in the design and manufacture of high-performance converting machinery for the tissue, nonwovens, hygiene, package-printing and bag-converting industries worldwide. Its product offerings include rewinding, laminating, printing, embossing, perforating and packaging equipment for tissue and towels; folding and converting machines; and a complete range of flexographic printing presses and laser anilox cleaners, serving the flexible-packaging, prime-label and carton-converting industries. Through its Northern Engraving brand, PCMC also provides the manufacture and engraving of embossing rolls. For more information, visit pcmc.com.

Papeterie Le Bourray
H54


contact@lebourray.fr
www.lebourray.fr

Papeterie Le Bourray, founded in 1844, manufactures responsible high quality products with no limit of colors and assure the best performance to its customers.

Partex Tissue Limited
C30


mmislam@danishbd.com
www.danishbd.com

Partex Tissue Limited is the newest concern of Partex Star Group under the category of Tissue paper. The factory building constructions starts back in 2018. This is the first tissue factory in Bangladesh, which is equipped with all European machines. By that people of Bangladesh will enjoy the first hygienic Jumbo Roll along with all types of consumable Tissue papers. Currently our export destination is south Korea, india, Nepal, Sirlanka, UAE and many more

Paul Wegner GmbH & Co. KG
F70


info@paul-wegner.de
www.paul-wegner.de

Over 100 years ago the Paul Wegner Blade Company was founded in Hagen Germany in 1908.

We love what we do and we do it with passion". This motto represents the company's values and attitudes towards its customers. As a family business our main goal is to create a sustainable economy and to guarantee our employees a safe workplace. The Paul Wegner GmbH & Co. KG is a four-generation business, which aims to improve its competition internationally and to further ensure the best quality for our customers.

Products:

Doctor Blades, Creping Blades, Ceramic coated Creping Blades, Special Knives, Perforating Knives, and many more

POINT MAKINA
G60


info@pointmakina.com
www.pointmakina.com

POINT MAKINA

Point Makina is manufacturing tissue converting machines at its own modern production facilities Istanbul, Turkey.

Point Makina focused on manufacturing mainly rewinders, slitters, core makers, logsaw and accumulators as well as automatic Non-Stop high speed toilet paper and towel production lines.

We also produce various lines for industrial jumbo products, napkin and dispenser towel production lines.

All machines are designed by our professionals under our registered brands Opus and Technology Point Makina.

Point Makina also provides spare parts and Technical Services by its specialised teams.

Policarta Gi. Co. used machines
C20


info@policartagico.com
www.policartagico.com

Tissue converting and packaging machines:

- supplying and/or re-vamping of used machines
 - brand new machines and turn-key solutions
- Band-saw for tissue rolls "OMNIS CASUS".
Versatile: it cuts from 90 to 400 mm in diameter and from 90 to 600 mm in length.
User-friendly: touch-screen panel in customer's language to set all parameters. Almost no tools needed.
Safe for workers: it accomplishes to latest CE rules.

Environment-friendly: only 9 kw of installed power.

Why keeping to invest in huge machines to solve small needs?

Less is more.

Polimek SRL
A36


info@polimek.it
www.polimek.it

Polimek was founded at the end of 2015 by Mr Policastro with 30 years experience in doctoring systems.

We are able to design and manufacture any kind of doctor for paper & board, tissue and non woven applications.

In order to ensure success in all our projects we use the rule tailor made, so that each installation is perfectly designed and developed to meet the needs of the customer.

The success of this policy is achieved through the highly skilled personnel and by using the latest equipment and production facilities

Projet B.V.
J50


info@petax.de
www.pro-jet.nl

Professional high pressure water jet technology" ProJet BV is a company with many years' experience in the paper, board, tissue and nonwovens industries. Our production optimizing equipment offers cost effective and high quality solutions for every challenge in the production line. Users of ProJet equipment gain a competitive advantage from production flexibility and increased runability.

Products:

- Tail & Deckle Cutter
- Power Cleaner
- Cleaner for Dryer Fabrics
- Cleaner for Former Fabrics & Press Felts

PROPAPER Solutions GmbH
A36


info@propaper.de
www.propaper.de

The company PROPAPER was founded in 2011 and is a service provider for the paper industry.

At its core is an experienced motivated service team that supports paper mills in maintenance, small rebuilds, and service work.

Being already well settled in the paper industry, PROPAPER decided in 2019 for targeted investments in personnel and machinery.

It created the possibility to produce precise turned and milled parts according to customer specifications or following their own design as individual parts or small series.

We design, manufacture components and install assemblies for all plants.

Pulsar Engineering srl

D32



info@pulsarengineering.com
www.pulsarengineering.com

Pulsar is specialized in the engineering and manufacturing of products conveying and handling solutions. Since 1989, it has been focusing on the tissue industry, where it is recognized as "THE" specialist in the design and manufacture of conveying systems. During its evolution, Pulsar has developed a range of applications with the aim of becoming a global provider of services and products.

Pulsar offers its staff's expertise to assist customers through the project definition phase, from the analysis of the plant and the machines composing the line and the products, in order to create a functional factory layout, compliant to the expected results and operator friendly.

Renova Srl

C31



info@renova-srl.com
www.renova-srl.com

RENOVA SRL is an Italian company that offers application know-how in web tension control systems and roll handling systems. Brakes, mechanical chucks, web tension control systems and roll pushers are all manufactured in the Milan plant. Renova provides innovative solutions for companies operating in the paper, cardboard, converting, tissue, wire & cable industries and many others.

Renova's mission is to offer innovative, high-quality and customer-oriented products in order to increase productivity and safety levels, while reducing maintenance costs. Visit our web site www.renova-srl.com.

Representations Nicolas Pelletier

E72



nicolas.pelletier@rnp-group.com
www.rnp-group.com

Robopac SpA

E56



info@robopac.com
www.robopac.com

Robopac, together with OCME, is the main brand of Aetna Group.

Robopac offers a wide range of solutions and services for the end-of-line packaging industry: from semi-automatic wrapping machines to automatic machines, shrink wrappers and case packers.

A versatile and diversified offer that creates an important added value through seamless integration of products from each business units within Aetna Group.

Röchling Industrial Oepping GmbH & Co. KG.

A36



robaproducts@roechling.com
www.roechling.com/oepping

WE MOVE TISSUE. With innovative solutions. Worldwide.

For more than 300 years now we are successful in pioneering solutions and developed to a global leader for functional wear parts as well as smart solutions for tissue machines. We are a reliable premium supplier of various parts made of high-performance plastics, dewatering elements, ceramics, sealing systems for suction rolls, coating rods and beds, headbox lamellas and cleaner cones, just to mention a few.

Runtech Systems

H32



runtech.sales@irco.com
www.runtech.fi

Runtech Systems is a global provider of engineered systems tailored to the pulp and paper industries. Runtech's patented solutions include energy efficient vacuum system and heat recovery optimization, runnability optimization, dewatering, doctoring and cleanliness optimization as well as ropeless tail threading, including related services, spare parts and paper machine audits and consulting. Our main target is to bring notable energy savings and highly improved process efficiency for board, tissue and paper mills. Today, Runtech is part of Ingersoll Rand.

S.T. MACCHINE SPA

L34



info@stmacchine.it
www.stmacchine.it

ST Macchine is an international leader in the paper industry focused on the design and production of the following machinery and equipment:

Pressurized and hydraulic headboxes.

Fourdriniers.

Systems for complete stock preparation.

Water Treatment Systems in the paper mill, industry and municipality.

Stock chest, whitening towers, vats and mixers.

Structural (medium-heavy) items in sub-contractor role for the paper industry for the major manufacturers of tissue and other related machines for linerboards, fine paper, coated paper and cardboard.

Machinery for synthetic and carbon fibres.

Pipes, couplings, flanges and valves for pulp, compressed air and water loops.

ST Macchine is continuously focusing on improving its technologies and looking for new markets to install them in order to keep and improve its leading international position in the supply of equipment for paper industry and water treatment.

SABA Automation Srl

L20



pollini@sabasrl.com
www.sabasrl.com

Since 2005, SABA AUTOMATION offers customised end-of-line automation solutions for the tissue industry.

For this purpose, SABA AUTOMATION manufactures palletizing robots, a wide range of transport systems for products and pallets, automatic wrapping machines, labelling machines, and warehouse entry and exit areas. Automatic guided vehicles complete the range of end-of-line solutions.

SchaferRolls GmbH & Co. KG

J52



info@schaferrolls.com
www.schaferrolls.com

When it comes to roll covers in tissue manufacturing and converting, SchäferRolls has been a leading light in outstanding performance for decades. Based on the experience of numerous successful applications all our covers are developed with the commitment to take productivity and resource efficiency of your tissue line to new levels. We show how tisQ.X and Q.dura help to save energy and resources.

**SDF Schnitt-Druck-Falz
Spezialmaschinen GmbH** **D50**


info@s-d-f.de
www.s-d-f.de

SDF GmbH is a worldwide leading manufacturer of high-quality tissue converting machinery from Germany and has gained an excellent reputation for airlaid and nonwoven converting equipment.

The range of manufacture comprises:

- The next generation of the world's first digital napkin printing machine Model DigiPlus and DigiFlex, since 2014 on the market. For advertising and personalized napkins and high quality napkins for small orders
- High-speed napkin folders with and without printing, Model OmegaPlus, EcoLine, EcoCompact, SpeedStar
- Folders for nonwoven wipes, Model UltraWeb
- Rotary cross-cutters for place mats, Model VariPlan
- Reel to Reel printing machines, Model AstraFlex

Senning GmbH **D22**


info@senning.de
www.senning.de

Over 70 years of development and construction of packaging machines is the basis for our reliable and innovative solutions for the professional wrapping of paper and tissue products. We are a medium-sized mechanical engineering company with 51 employees. - as an independent GmbH and part of the OPTIMA Group.

Servipap LLC **D60**


www.tissue-tec.de

Servipap's enthusiasm and dedication to the tissue paper industry contribute to creating renewed solutions in the ever-growing tissue market worldwide. We serve the tissue converting industry with a wide range of tissue converting machines and services that position us and our customers in an efficient and cost-effective level. We are constantly expanding our offerings in machinery and services as our markets evolve with current demands. Our products include high-quality tissue converting machines, jumbo rolls of tissue, towel, napkin & core stock, mechanical and electronic assistance on machinery, and spare parts for most machines.

In partnership with TISSUE TEC GmbH, an outstanding trade partner of Servipap, we welcome you to visit us in our booth.

Serv-o-tec GmbH **C10**


www.servotec.de

Serv-o-tec specializes in the manufacture of small and medium size printing and folding machines. We are located in Langenfeld (close to Düsseldorf), Germany. Serv-o-tec has gained worldwide reputation for providing innovative machine solutions to our customers. Serv-o-tec machines are designed and build to produce high quality printed design napkins, logo printed napkins for the away-from-home market, all folding styles including bookfold, flat products and many more. Visit our booth to learn more about our new developed folding head and print unit or get information on other machines.

SharpCell Oy **C21**


pekka.kesti@sharpcell.fi
www.sharpcell.fi

We are a family-owned company based in Finland manufacturing airlaid nonwoven paper. Our paper is widely used in tabletop, healthcare, hygiene and wiping applications. We use sustainable wood fibers mainly from Scandinavia, always FSC certified. Need airlaid nonwoven material that is compostable, approved for food contact and dermatologically 'Excellent'? We have a solution for you.

SOLENIS **J60**


soleniscommunications@solenis.com
www.solenis.com

Solenis is a leading global producer of specialty chemicals focused on delivering sustainable solutions for water-intensive industries, including the pulp, packaging paper and board, tissue and towel, oil and gas, petroleum refining, chemical processing, mineral processing, biorefining, power, municipal, and pool and spa markets. Owned by Platinum Equity, the company's product portfolio includes a broad array of water treatment chemistries, process aids and functional additives, as well as state-of-the-art monitoring and control systems. These technologies are used by customers to improve operational efficiencies, enhance product quality, protect plant assets, minimize environmental impact and maintain healthy water.

SonicAire **B50**


moreinfo@sonicaire.com
www.sonicaire.com

SonicAire fans are durable, energy-efficient, and specifically designed to keep fugitive dust from collecting and becoming a problem. Our BarrierAire technology keeps dust from reaching overhead spaces, eliminating costly, time-consuming cleanings. No more facility shutdowns, putting your employees in danger on lifts and ladders to clean, or paying expensive cleaning companies to do it for you.

Sorgato srl **K23**


info@sorgato.com
www.sorgato.com

Since 1978, 45 years experience, always evolving.

Sorgato is an Italian company, specialized in the design, manufacturing and installation of tailor-made industrial systems for dust suction, air filtering and broke handling systems.

The ongoing commitment in the development of always more performing technical solutions, the continuous training and R&D investments, lead the company to offer high quality industrial system solutions all over the world.

We approach every project in the name of uniqueness and personalization, starting from the analysis of the real needs of our customers and suggesting the best technical solutions then.

Spraying Systems Co.-Europe **F71**


Spraying Systems Co.
Experts in Spray Technology

info.eu@spray.com
www.spray.com

Spraying Systems Co. is the world's leading manufacturer of spray nozzles and spraying systems. We develop custom nozzles, injectors, headers and complete spray systems.

Paper, packaging and tissue mills look to Spraying Systems Co. for technology to optimize spray operations throughout the manufacturing process. We offer more products for this industry than any other provider, from non-clogging nozzles to comprehensive automated systems, all designed to help you reduce water usage, downtime and scrap, while improving quality and efficiency.

Our local spray technology experts provide fast, hands-on service and we offer quick delivery from strategically-located manufacturing facilities on six continents.

SPS CORPORATE

D30



CORPORATE

thobi.ahmad@spscorporate.com
[www.SUNPAPERSOURCE.COM](http://www.sunpapersource.com)

SPS CORPORATE [PT Sun Paper Source & PT Sopanusa Tissue & PackaSPS CORPORATE [PT Sun Paper Source & PT Sopanusa Tissue & Packaging Saranasukses] is a leading tissue paper producer in Indonesia, which is located in Mojokerto, East Java. It produces over 150.000 tonnes of tissue paper per year. We are the second biggest tissue paper producer in South East Asia. As of today, the company exports the majority of its production capacity, serving customers in more than 70 countries around the world. We produce

Star Paper Mill Paper Industry LLC

H53



info@starpapermill.com
www.starpapermill.com

Star Paper Mill Paper Industry LLC is located in the Industrial City of Abu Dhabi (ICAD). We have a crescent former tissue machine from Recard Italy with the latest flexi-nip shoe press technology, enabling us to achieve higher bulk and softness. The machine deckle is 3.6 m having two rewinders with a capability of rewinding upto 4 ply. The annual production capacity is around 36,000 metric tonnes of world class prime quality virgin tissue paper. SPM produces a wide spectrum of hygienic tissue paper in various grades ranging from the most delicate 12.5 gsm to 42 gsm towels.

STAX Technologies d.o.o.

K30



marketing@staxtechnologies.com
 sales@staxtechnologies.com
www.staxtechnologies.com

STAX Technologies company was founded in Cacak, Serbia, in 2002. Since then, it has been constantly moving forward. Core business of our company consists of development and production of packaging machines in tissue industry. The company successfully delivers and installs the equipment from its wide portfolio in more than 70 countries on 5 continents. Our production portfolio consists of complete packaging systems for hygienic paper, including wrappers, bundlers, case packers, as well as palletizing and pallet stretching systems. Almost three years ago STAX has become member of great Barry Wehmiller family. We are proud to be one of the five companies which is the part of BW Converting Solutions Platform. Together, we are able to provide full turnkey solutions in tissue production industry.

Steffi Machines

H61



info@steffi.gr
<https://steffi.gr>

STEFFI MACHINES - PAPER CONVERTING MACHINERY

SVECOM P.E. SRL

J30



svecom@svecom.com
www.svecom.com

Svecom-P.E. for over 60 years, produces expanding systems for winding and unwinding material on reels for the tissue, converting, paper plastic, paper converting, materials, etc. industries.

It develops and designs customized products: expanding shafts and chucks, rollers, rotating safety chucks and handling systems.

Taison Group / WR fibers B.V.

A40



chen@wrfibers.com
www.wrfibers.com

The world's largest bamboo pulp producer. The world's largest bamboo jumbo rolls producer.

The world's largest bamboo finished tissue producer. We can supply full range bamboo pulp/jumbo rolls tissue/finished tissue/bagasse pulp.

Our finished tissue includes toilet tissue, facial tissue, kitchen towel and hand towel.

This can be made of 100% bamboo pulp and 100% wood pulp also the recycle pulp.

We also have bagasse/bamboo pulp disposable tableware.

Taison & WR fibers is your partner of one stop buying.

Tapio Measurement Technologies Oy

D61



info@tapiotechnologies.com
www.tapiotechnologies.com

Tapio analyzers are well known for unique high resolution analyses that can locate the sources of quality variation. Our latest innovation, PapEye Crepe, is a mobile crepe analysis system using pocket camera linked to PapEye analysis platform for easy and quick crepe analysis.

Tapio PMA analyzer is a high resolution analysis system and analysis service for MD and CD samples using multiple sensors such as bw, caliper, ash, gloss, transmission and others. WinTapio Software includes multiple features such as profile correlation, spectrum, SOS and others.

Tappi's Paper 360

D72



tappi.org

TAPPI fosters the vitality of the global forest products, pulp, paper, tissue, packaging, and associated industries by delivering unsurpassed technical knowledge, valuable networks, and professional growth for our members.

Technology Blade

E41



info@technologyblade.com, sales@technologyblade.com
www.technologyblade.com

Technology Blade, which adopts the principles of quality, speed and customer satisfaction as its priority; provides service in the field of sharpening, manufacturing and all kinds of grinding of industrial knives.

We are dedicated to providing quality industrial machine knives to the packaging, processing, printing and converting industries powered by personalized service and technical expertise.

The superior quality of our knives combined with our vast knowledge of the industrial machine knife industry is what makes us a valuable partner and supplier to businesses worldwide.

Texam Technologies Private Limited

H63



info@texamfoils.com
www.texamfoils.com

TEYMAN CONVERTING, S.L. D70**Teyman**administracion@teyman.com
www.teyman.com

Hey. This is Teyman Converting and we're machine manufacturers. Our designs are focused on converting machines and automation. We're specialized in tissue converting. 28 years of experience behind us and a worldwide experience in the last decade. We're looking forward to satisfy your needs with our products.

Tietoevry Industry E51

www.tietoevry.com/tipstissue

Tietoevry is your trusted industry digitalization partner. Our TIPS Industry Solutions and Services is the leading industry-specific MES/ERP, already installed over 300 locations worldwide. It's optimized for pulp, paper, fibre, board, packaging and tissue customers with industry best practices. Tietoevry has 24,000 experts specializing in digitalization having customers in more than 90 countries.

TISSUE TEC Sales & Service GmbH D60**TISSUE TEC**

Sales & Service GmbH

info@tissue-tec.de
www.tissue-tec.de/

TISSUE TEC is your reliable partner for selling your obsolete tissue converting equipment or your perfectly networked source if you are looking for used tissue converting machinery. Our current machinery list contains machines for the production of - toilet and kitchen rolls - industrial / jumbo rolls - napkins - pocket handkerchiefs - handtowels - facial tissues - table covers / table runners

TISSUENET GmbH K50**TISSUENET** GMBHheiko.feldt@tissuenet.de
www.Tissuenet.de

Tissuenet, a Germany based company, is specialised in the trading of New and 2nd hand Tissue Converting machinery. With over 40 years experience in our Industry, we are Your partner in finding the right equipment and/or selling Your surplus machines in an open and transparent way. Tissuenet has sold machinery worldwide to more than 70 countries and built strong personal relations with all sized convertors over the past decades.

Tissuenet is the exclusive Sales Partner of Mpac Langen in our Tissue Industry since 2002, with more than 60 Tissue Cartoner and Casepacker installations worldwide.

TKM GmbH B30paper@tkmgroup.com
www.tkmgroup.com/en/tissue-converting-industry

For more than 100 years, the TKM Group as a family business, stands for quality and sustainability in products and services. As the world market leader of Industrial knives for the tissue converting industry & Logsaws, it is our ambition to develop highly efficient tools and solutions with innovative ideas and advanced technology, all while setting sustainable trends.

TOSCANA SPAZZOLE INDUSTRIALI S.R.L. H64info@toscanaspazzole.it
www.toscanaspazzole.it

TOSCANA SPAZZOLE INDUSTRIALI is the result of a handcraft tradition which dates back to the second half of 19th century joined to a constant technical and entrepreneurial evolution, developed till today. Thanks to our flexibility, to the experience achieved by working in contact with our clients and to high technological innovation, TSI can design, manufacture and repair punched brushes by request. Over 2.500 brushes produced every year for the converting industry, We produce SPREADER and CLEANING brushes from 1 meter up to almost 4 meters, SPEADER brushes for machine that go up to 1000 m/Min, also for large format 'paper machines

UNIMATEC Prägesysteme GmbH C52info@unimatec.com
www.unimatec.com

For more than 30 years, UNIMATEC has been a strong and reliable partner as to the design, manufacturing and commissioning of embossing machines and embossing rollers for the metalworking and the tissue and foil industry alike. Our in-house laboratory facility enables us to develop and test customized embossing processes in manifold variations for our customers.

United Converting Tissue Srl G52

www.uctissue.com

Our venture began in 2004 with the aim of designing and building machines and accessories that would simplify the tissue converting industry through innovation. We offer solutions for the converting of Industrial roll, Consumer rolls and interfolded products as well as single modules and efficient customer care.

Universal Tissue Machine Co. LTD H65alex@universalmachine.com.tw
www.universalmachine.com.tw

Based in Taiwan Universal Machine Co started over 10 years old offering to the market high tech solutions in Tissue conversion lines.

Our main machines focus are Interfolder, table transfer automation, rewinders, wrapper machines, high speed log saw, etc. We usually focus on our client necessities to making our machine specially design and adjustment to achieve every client desires. If your company are looking for high tech, with excellent building quality and mainly a good price, we have the solutions promptly to make your business grow faster. Don't hesitate to contact us at H65 booth.

VALMET



katarina.ahsberg@valmet.com
www.valmet.com/tissue

Valmet is a leading global developer and supplier of process technologies, automation, flow control and services for the pulp, paper, energy, and other industries. Our 17,000 professionals work close to our customers and are committed to improving our customers' performance – every day. The company has over 220 years of industrial history and track record in continuous improvement and renewal.

E22

WEKO Weitmann & Konrad GmbH & Co. KG



sales@weko.net
www.weko.net/de/

The non-contact minimal application of liquids and powder to a wide variety of materials is our specialty. Our systems save you fresh water, chemicals and energy. A clear cost-benefit advantage for you and for our environment. Tests for sprayability and trials outside of your running production - we do them for you in our WEKO TechnologyCenter.

B40

YONTEM KAGIT LTD



fkarakaya@yontemkagit.com
www.yontemkagit.com.tr

We are one of the largest domestic producer of cellulose and paper industries in TURKEY. As Yontem Group; Since 1996, we have always focused on quality in our productions. YONTEM PAPER is in Kocaeli – İzmit and produces Toilet papers, Paper Cups, Gloves, Kitchen paper towels, Z Folds, paper Napkins, Surface cleaning wet wipe, for homes and for industrials use. In addition to dozens of brands and hundreds of products we also produce special order products for domestic and international Markets.

E68

Viking Pulp and Paper Mill Company



export.team@viking.com.tr
www.viking.com.tr

Viking Paper, based in İzmir, Turkey, entered the hygienic paper industry in 1996. Today, it has an annual volume of 45.000 tons and operates with a portfolio of 5+ brands, 80+ products. Viking Paper adopting sustainable quality as a principle, offers products for both local & global markets with its rich product range consisting of toilet paper, towel, napkins, etc.

K40

Winkler + Dünnebier (W+D) K30



sales.hygiene@w-d.de
www.w-d.de

As the world's leading technology, systems solutions and service partner, Winkler+Dünnebier (W+D), founded in 1913, offers a broad range of highly efficient integrated manufacturing equipment for the envelope, mail, tissue and hygiene industries. W+D's core competencies are the processing and handling of thin and inhomogeneous materials, such as paper, tissue and non-woven, at high speeds and with tight tolerances. With its innovative and tailor-made system solutions and services, W+D focuses on the entire internal value creation chain of its customers. Today, W+D operates in the Mail Solutions and Hygiene Solutions business units and it is part of global equipment manufacturer Barry-Wehmler and its BW Converting Solutions platform of five industry-leading brands. The Hygiene Solutions division stands for system solutions for the manufacture and packaging of tissue folding and hygiene products.

E66

Xiamen C&D Paper & Pulp Co., Ltd



fqy@cndpaper.com
xuhuangji@cndpaper.com
www.cndpaper.com

Founded in 1992, the Company has developed into the advanced pulp and paper supply chain operator in China. On one hand, We provide comprehensive supply chain services of wood chip, pulp, parent reels for upstream and downstream customers, helping them integrate resources and create added values. On the other hand, We professionally offer Private Label Production for both Away From Home and Consumer paper products, partnering with brand owners and leading sourcing companies globally.

ZETAUTOMATION Srl



info@zetaautomation.it
www.zetaautomation.it

ZETAutomation was born in January 2006 and since 14 years it is working in the filed of end-of-line automatic machines. The Company is made up of a qualified staff, which has a thirty-year experience in the case-packers field. In these years ZETAutomation entered the Italian and Worldwide marketplaces acquiring orders from big Italian and Foreign Companies.

L20

ZHEJIANG JIECHENG NEW MATERIAL TECHNOLOGY



account@jc-nonwoven.com
www.jc-nonwoven.com/

Zhejiang Jiecheng New Material Technology Co., Ltd. specializes in the production and operation of spunlace non-woven new material series products. It has two world leading professional spunlace non-woven production lines and professional technical teams, mainly developing, producing and selling beauty materials, industrial materials, etc.

E70

Villforth Siebtechnik GmbH F70



info@villforth.com
www.villforth.com

Villforth Siebtechnik GmbH kann auf eine über 150-jährige Firmentradition zurückblicken und ist heute in vierter Generation zu 100% in Familienbesitz.

Das Unternehmen hat sich auf die Herstellung von Synthetik-Sieben, insbesondere im Bereich der Formiersiebe für die Papierindustrie spezialisiert. Alle Siebe werden unter Einhaltung der höchsten Qualitätsstandards in Reutlingen gefertigt.



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KOEHLER'S ECO BLACK RECYCLED PAPER — 250 METRES OF IT — TO HELP DISPLAY ENRICO'S GRAND ONE KILOMETRE AMBITION

Italian artist Enrico Mazzone's work includes *Rubedo*, a visual representation of Dante's *Divine Comedy*, and the largest work of art said to have ever been made on paper. Always on the search for a new challenge, he is now being sponsored with 250 metres of recycled paper from Koehler Paper's Greiz production plant to produce his largest-scale project yet . . . at one-kilometre total length. He speaks to TWM about inspiration, and his paper and tissue preferences.

My last project, *Rubedo*, is the biggest work of art to have ever been made on paper. It has a height of four metres and a length of 97 metres, and took around 6,000 pencils to complete over a period of five years.

Yet as an artist, I am constantly searching for inspiration and challenges, and so obviously I wanted to create something even larger.

The Book of Revelation aims to do just that. It is being produced on paper with a total length of one kilometre, and, due to its size, is being completed in four parts: four x 250 metres.

For this task, German-headquartered

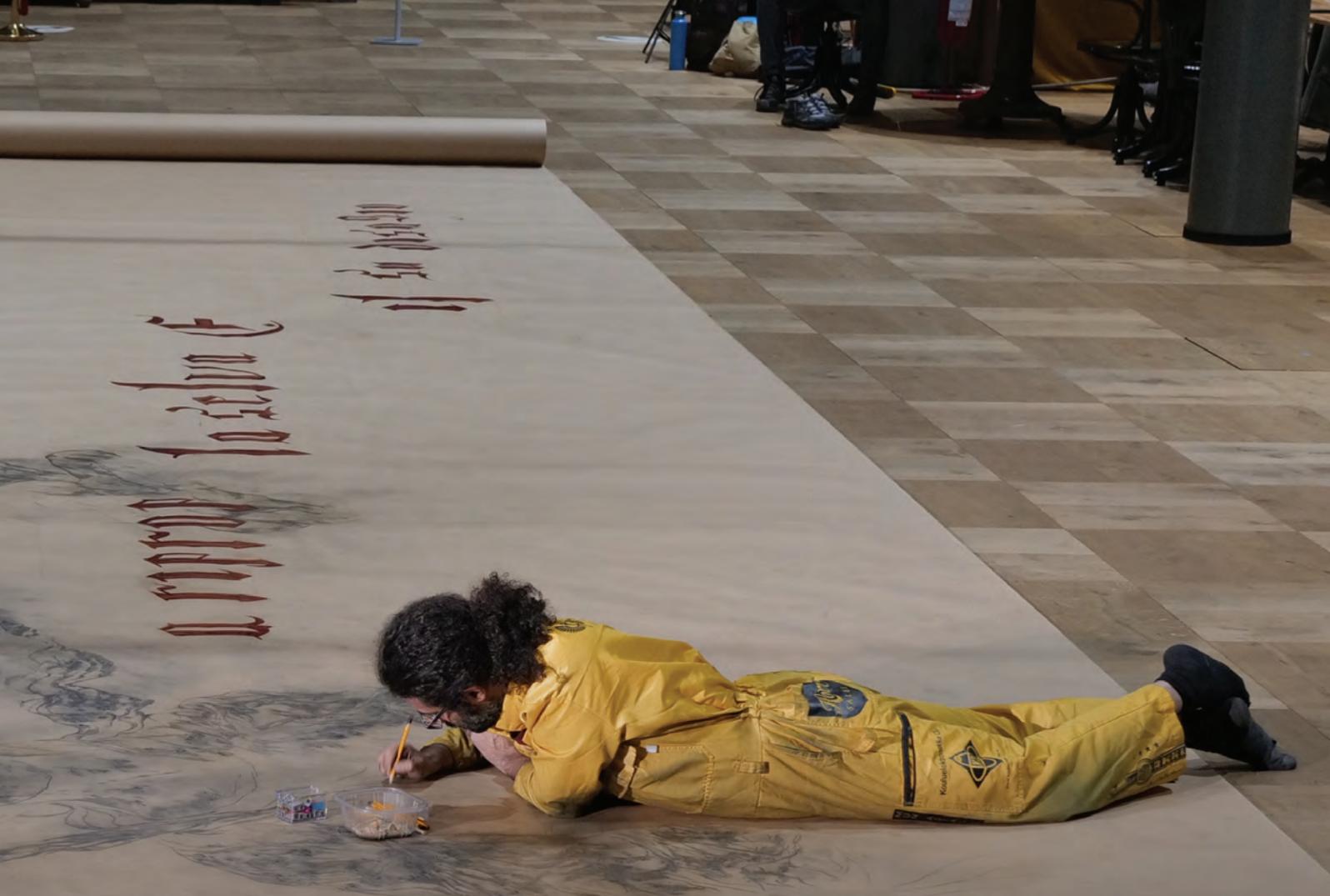
speciality paper manufacturer Koehler Paper has provided me with its latest innovative, and sponsored me with 250m of its Koehler Eco Black recycled paper. This paper has deep and rich black colours, is made in a carbon-neutral manner, is lightfast, and is resistant to bleeding, colour migration, and rubbing.

I chose this paper for the *The Book of Revelation* project because the book, the *Divine Comedy* and the *Ossian's Saga*, is vividly and emotionally rich and tasteful in its imagination.

To complete the project, I use pencils to draw thousands of small points very close to each other so that areas are filled.

I am very fond of the graphic tradition which implies the acknowledgment of the figure by staring at the details. Small and indicative objects make an icon eligible by giving charm and incantation to the full picture. There is also, as the title implies, something more that must be revealed, and specifically what the audience can find out is abnormally meaningful. This kind of project, therefore, looks at the viewer's position rather than the artist's ego when we talk about the scale of size.

My own opinion stands between a provocation and a logical scientific method by German philosopher Hegel: Hypothesis (1), Thesis (2) and Synthesis (3). Black



paper with a blue outline craft makes the composition quite hard to catch by standing from a far distance (1) ... but by stepping closer, something starts to shift and some of the figures start to emerge (2).

When the enigma is finally considered, the masterwork is shown as another point of view, completely different beside the first observation. That's why it fits well to work with the key word of revelation.

My interest in large scale drawings can be summed up by the beautiful German word *streben* – a verb that means to strive. To move, lean or slope in a certain direction. Observing from a far distance brings me back to investigate philosophical and logistic meanings.

Of course, as an artist I am attracted to all kinds of products that are linked to pulp. This raw material is very versatile as an art tool. I consume a lot of paper, and I believe in the sustainability of the ecosystem. My art range shifts and sweeps between all kinds of paper and cardboard for artwork.

In Finland, where I live, the area of paper's use is increasing due to its recyclability and sustainability. Excessive plastic pollution is now pushing towards banning single-use plastic products, whereas paper packaging is seen as an alternative to replace that plastic packaging.

With my artwork, it is also interesting



to gather theoretical information on the life cycle of paper and paper products, and their longevity. To achieve, I have collected information on the sources of paper, the production process, the paper products that are available, and the recycling process of the used papers. It is interesting to also compare paper in Finland to that in the Southern Europe zone, where I come from. We are seeing more products and more biocraft orientation. However, that doesn't necessarily mean a product is better quality, but rather that the region likes the variation of the type of products that middle Europe has. For instance, I miss recycling paper a lot there.

In my small way, I am also trying to contribute to innovating a more sustainable green economy. I believe we should become aware how the globe has a lack of resources, and as much as we exist in this lifetime, it is a smart thing to give back what it is we use by recycling wherever possible. There is little excuse not to, as it depends how much consumerist wishes give more importance to a product over the environment, even if it is the cheapest and un-serving product.

Quality is always beside the price, and that makes the difference for me as an artist and as a human being.

VIEW FROM THE INSIDE – LEADING COMPANIES EXPLAIN THEIR STRATEGIES FOR R&D, COST CONTROLS AND TARGETED CUSTOMISATION TO MEET EVOLVING TARGETS

High levels of flexibility – a necessity caused by unprecedented economic circumstances – characterise the global industry response in the supply chain to production ... constant monitoring, advanced diagnostics, efficient data storage, intelligent automation, co-generation, carbon-reduced sourcing, and more.



Jenny Lahti Samuelsson
Vice President, Tissue Global Technology, Valmet



Paolo Raffaelli
Chief Technology Officer, Toscotec



Shinji Goda
Director, General Manager of Design Dept., Kawano Zoki



Marcelo Marlon Silveira dos Santos
Head of Application Engineering, Hergen



Benny Peng
Vice president, Baosuo Paper Machinery Manufacture Co.



Roy Vincent
Director Technical Sales, Andritz Tissue North America



Valter Canelli
Sales Director, A.Celli Paper

TWM/1: With inflation impacting the global tissue market, how is your company evolving its R&D and technologies to support your customers?

Jenny Lahti Samuelsson, Vice President, Tissue Global Technology, Valmet: "Our main focus in all development projects for the whole life cycle is on lowering the total OPEX, helping our customers to be as efficient as possible in all phases; e.g. ROI with short start up curves, low energy consumption as well as being fibre and water efficient.

"Our development is aiming on lowering energy consumption in all aspects, for instance:

- Providing technologies utilising energy in waste heat streams;
- Hybrid technologies to produce higher tissue quality using less fibres compared to conventional technologies and when comparing to TAD we can get closer to or similar quality but at a much lower energy consumption;
- Utilising the combination of our own development such as Advantage ViscoNip press, Advantage ReDry and Advantage AirCap Hood;
- Development in next generation water removal in any of the process steps;



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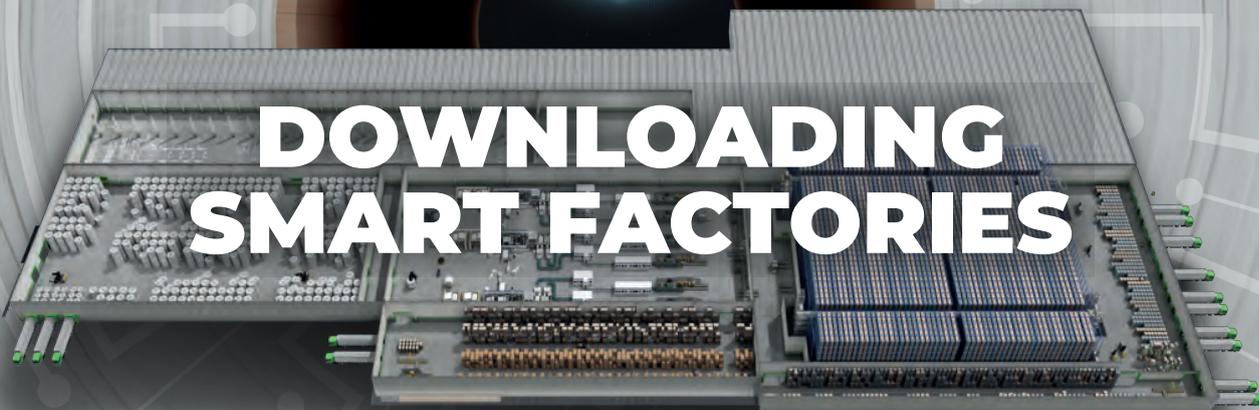
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- Increasing overall asset efficiency by digital tools, “easy to run” technology will of course minimise waste and energy consumption.”

Paolo Raffaelli, Chief Technology Officer, Toscotec: “We are constantly looking at market demands, as well as considering cost and future availability of papermaking process resources.

“Over the last year we have further strengthened our R&D activities to develop higher energy efficient technologies supporting real and specific customers’ needs. This supports the possibility of more customised solutions also applicable on new or existing assets through dedicated surveys and feasibility analyses.

“Recent achievements resulted in energy saving solutions, which cover different operational areas, ranging from multiple heat recovery to steam generation, automatic energy balance, or use of electric based, zero carbon process air systems.

“However, the stability of the papermaking process and its actual control represent both a large energy efficiency driving factor so that digitalisation and Industry 4.0 packages, largely available within our group, combined with state-of-the-art technologies, representing a big step ahead that is real and already possible today.”

Shinji Goda, Director, General Manager of Design Dept., Kawano Zoki: “It is said that the price of the household paper products in Japan is the lowest in the world. For that reason, it is necessary for us to raise the product price and make it fair.

“We started operation of our pilot test machine in 2022 to provide any additional value to our customers’ products, engaging in developing new products such as making long roll products, and improving absorption better and using complex materials.”

Marcelo Marlon Silveira dos Santos, Head of Application Engineering, Hergen: “In a market that becomes more and more competitive daily, we support our customers with solutions customised for each energy matrix. This involves always evaluating customer demands and costs of the available media to deliver the best possible solution, not only in terms of final product but also so it is a competitive product when concerned with paper quality and reasonable cost. This gives our customers some advantage in their markets.

Paolo Raffaelli

“OVER THE LAST YEAR WE HAVE FURTHER STRENGTHENED OUR R&D ACTIVITIES TO DEVELOP HIGHER ENERGY EFFICIENT TECHNOLOGIES SUPPORTING REAL AND SPECIFIC CUSTOMERS’ NEEDS. THIS SUPPORTS THE POSSIBILITY OF MORE CUSTOMISED SOLUTIONS ALSO APPLICABLE ON NEW OR EXISTING ASSETS THROUGH DEDICATED SURVEYS AND FEASIBILITY ANALYSES.”

“We understand that even though we have standard solutions regarding machine sizes, each solution (not only the PM itself) must be customised because only in doing so is it possible to reach our customers goals.

“With that premises in mind our R&D department is working on two solutions to improve the paper machine’s energy efficiency. The first is our shoe press technology which targets a reduction of the overall thermal energy consumption (drying energy), and the second solution improves the bulk and feel of the paper quality and optimises a concept that was launched last year. It was developed for countries where access to natural gas is not possible or is too expensive for a competitive product. It consists of using the boiler heat to increase the impingement temperature of the hood wet end and improve the paper machine’s drying capacity resulting in very little steam consumption.”

Benny Peng, Vice president, Baosuo Paper Machinery Manufacture Co.: “2022 is the year we have seen the greatest impact of the global epidemic for three consecutive years. The economic downturn and inflation will deeply affect the global paper towel market. With the full opening of the epidemic, the demand for paper towels has picked up rapidly. In order to stabilise and popularise the price of household paper consumer goods, some developing countries or regions no longer rely on raw paper imports, and encourage local enterprises to introduce paper-making equipment to produce by themselves.

“In this way, production costs are effectively controlled, commodity prices are stabilised, and it plays a positive role in the stable development of the local consumer paper consumer goods market.

“The strategic planning goal is no longer limited to the development of modularisation, so that enterprises can better grasp the market dominance. Combining the strong strength of Baosuo Enterprise Group, Baotuo Company

adheres to the purpose of creating an overall solution for intelligent equipment for household paper companies, invests with the best cost performance, produces the most competitive products, and thus obtains good returns and shortens the investment recovery period.

“Papermaking enterprise customers which are the first to step into the ranks of intelligent and digital information technology have deeply felt this dividend.”

Roy Vincent, Director Technical Sales, Andritz Tissue North America: “Inflation has mostly impacted our overall costs and equipment lead times, as with everyone else. It has also impacted our customers’ operating costs and profitability. Nevertheless, Andritz is still committed to its long-term strategy. Including our pilot machine, we are constantly allocating around 10% of our tissue segment revenues to R&D and new product development annually, utilising those state-of-the-art trial facilities as a springboard for innovative developments.

“We have made significant progress on fossil energy reduction by developing efficient green energy equipment and our intention is to keep improving in this area. Our customers need these new developments and energy options to operate more effectively, especially considering the challenges from the global energy instability we are all faced with.

“Our PrimelineTM and our PrimelineTAD can offer solutions using steam or electric heating technologies for drying, significantly lowering CO₂ emissions. Andritz is also working on advanced hot air exhaust recirculation systems to lower any energy waste to the atmosphere.”

Valter Canelli, Sales Director, A.Celli Paper: “The trend of recent years in all industrial sectors and, above all, in manufacturing, is to move towards green policies, whether they are eco-sustainability or pure energy saving. Constant monitoring solutions, advanced diagnostic tools,

efficient data storage, processing and consequent intelligent automation allow you to optimise existing processes and obtain flawless products by consuming the least amount of energy possible.

"With the aim of saving energy, the macro parameters of a tissue machine that A.Celli Paper can act on are:

- Degree of refining, on which we will intervene by setting the related parameters;
- Stock consistency in the headbox;
- Vacuum level on the suction press and on the suction boxes;
- Steam temperature and pressure inside the Yankee Dryer;
- Temperature of the air emitted by the extractor hood.

"The main targets that are taken as a reference for the setting of the tissue machine are the daily quantity and the quality of the paper to be produced. Once these two objectives have been defined, the plant can be optimally set to obtain the greatest energy savings and maximum efficiency by combining the five variables above, which are able to directly affect the consumption of electricity and fuels.

"Thanks to A.Celli's machine learning solutions, the plant's software will be able to pursue the set objectives by modifying the process control strategy, limiting or even eliminating both out-of-specification production and excessive consumption of chemical additives, energy and variable sources. The result will be greater operational stability and a reduction in waste.

"The intelligent controls and assistance provided to the operator in the execution of his tasks will be able to facilitate a series of diagnostic sequences that will result in adaptive setpoints and predictive controls, with scheduled maintenance proposals aimed at minimising downtime."

Jenny Lahti Samuelsson

"DURING THE LAST DECADE WE HAVE LOWERED THE ENERGY CONSUMPTION IN OUR CONVENTIONAL TISSUE MACHINES (DCT MACHINES) BY 25% THROUGH DEVELOPING AND IMPROVING PRODUCTS SUCH AS THE VISCONIP PRESS, REDRY (PRE-PRESS WEB HEATER), AIRCAP HOOD AND VENTILATION OPTIMISATION SYSTEMS SUCH AS THE ADVANTAGE BALANCE CONTROL. THESE TECHNOLOGICAL STEPS HAVE REDUCED CO₂ EMISSIONS."

TWM/2: What are your latest efforts towards environmentally-friendly tissue production?

Samuelsson: "During the last decade we have lowered the energy consumption in our conventional tissue machines (DCT machines) by 25% through developing and improving products such as the ViscoNip press, ReDry (pre-press web heater), AirCap Hood and ventilation optimisation systems such as the Advantage Balance Control. These technological steps have reduced CO₂ emissions.

"Furthermore, we have worked on enabling 100% flexibility in the hood air heating technologies such as electrical heaters and hydrogen burners. We can also combine these with gas burners which have substantial flexibility as different fuels can be used. This enables a CO₂ free tissue production.

"In parallel, we have focused our development on fibre and energy saving technologies. The hybrid concepts mentioned earlier, when comparing to conventional lines can make a better product at lower fibre usage. If comparing to TAD technology the quality is very close and even overlapping but at an energy consumption cut with 40-50%."

Raffaelli: "Most of our resources over the last couple of years were dedicated to eco-efficient technologies, with the visible result of various active projects, most of them targeting full decarbonisation. This is achievable by replacing traditional fossil fuels with alternative heating sources, and partial or total electrification, always in combination with breakthrough processes for papermaking.

"At the same time we are focusing on carbon-reduction technologies and validating energy efficient solutions, also driven by savings in the valuable natural resources of clean water and wood fibres.

"Targeting an improved general process runnability is additionally an effective tool to determine real efficiency figures on net paper production volumes. This leads to

digitalisation and process control, which many companies have implemented already or will have to consider over the next few years."

Goda: "The recycling rate of used paper in Japan is still very high compared to other countries. However, there could be growing concerns of the supply shortage of used paper in the future. Therefore, some customers have started to develop the technology to make renewable sources from alternative materials not previously used. Furthermore, they seek their own procurement routes with companies and local government. Our company proceeds with the development of our latest technology for use with these recycle materials. We believe that recycled materials will be utilised further in terms of attention to the environment."

Santos: "We concentrate most of our efforts on the reduction of media consumption because the reduction of energy and water usage is directly connected to effluent generation and NOx and COx emissions. We do so to optimise the use of fresh water, keeping it to a minimum and on the optimisation of the drying process with our high-performance Steel Yankee Dryer and Yankee Hood. We are aware of the fierce competition faced by our customers, and we use our innovative solutions and creative engineering to help them reaching their goals with minimum impact on the environment."

Peng: "Reducing steam consumption and power unit consumption, and reducing emissions, are the ultimate goals pursued by paper-making enterprises. Based on this concept, stabilising the linear pressure of the roller is to effectively remove more moisture from the upper cylinder paper sheet and increase the speed and output of the machine. Depending on the model, it is necessary to upgrade the pneumatic system to a hydraulic system and a water pressure system.

"Large roller diameter pressing systems easily solve the problem of vehicle speed and do not rely on natural gas combustion to save energy. The multi-level waste heat recovery system makes the unit consumption of steam more economical. The newly developed energy-saving TAD paper machine will also start operation in 2023, saving more than 40% of fibre materials. The energy-saving turbo blower replaces Roots blower and water ring pump, reduces noise, and saves electricity, etc. We have always put the safety of equipment, energy conservation, and environmental

protection at the top of the project!"

Vincent: "Sustainability is an essential part of Andritz's business strategy and our corporate culture, and all employees are committed to participate. We have defined specific initiatives such as "We Care" and "Circle-To-Zero", to steer these important efforts.

"As well known, in 2018 Andritz inaugurated the PrimeLineTIAC – our Tissue Innovation and Application Centre – located in Graz, Austria. This is a complete pilot tissue machine where many different machine configurations and technologies are tested, developed, and optimised. This is an excellent tool for Andritz and its customers to develop opportunities to reduce the overall CO₂ footprint by investigating various inputs and outputs of the process: furnish (alternative fibres), energy sources (gas, steam, electricity), fresh water, chemicals, effluent and emissions.

"We have various programmes in place that involve each of these aspects in one way or another, with the goal to support our sustainability targets. For example, we look at ways to optimise the water balances to reduce fresh water use, find ways to use the effluent emissions, investigate ways to replace waste streams and turn them into products, produce tissue grades with alternative fibres, test different mechanical concepts to reduce thermal drying demand, improve digitalization to enhance efficiency of production and save resources, etc.

"We believe that sustainable solutions will continue to be a key area of focus in the upcoming years as the world's conscience is evolving towards the protection of our environment.

"To provide one concrete example, Andritz has optimised its shoe press design and concept. Our PrimePress XT Evo, with its patented loading design ensuring a constant pressure in CD, and along with its edge control system and optional cantilevered design, has really helped tissue manufacturers capitalise on energy and fibre savings without sacrificing on their OEE (Overall Equipment Effectiveness). For example, in dryness mode, the after-press dryness can increase by up to 6% compared to a suction press roll, resulting in thermal energy savings of up to 24%. In quality mode, the paper bulk is improved, resulting in better paper quality and/or possible fibre savings of up to 10% compared to conventional presses.

"Another example is the Andritz PrimeTurnUp system, our full width

Valter Canelli

"THERE ARE SEVERAL WAYS THAT TISSUE PRODUCERS CAN WORK TO REDUCE THEIR ENVIRONMENTAL IMPACT. FOR EXAMPLE, THEY CAN USE SUSTAINABLE SOURCING PRACTICES TO ENSURE THAT THE RAW MATERIALS THEY USE ARE GROWN AND HARVESTED IN AN ENVIRONMENTALLY RESPONSIBLE WAY. THEY CAN ALSO USE ENERGY-EFFICIENT MANUFACTURING PROCESSES AND RECYCLING AND COMPOSTING PROGRAMMES TO REDUCE WASTE AND DECREASE THEIR CARBON FOOTPRINT."

single wrap turn-up system, which has delivered 99+% efficiency whilst eliminating dust contamination that highly contributes to increasing production and reducing emissions."

Canelli: "In general, tissue production can have a significant environmental impact due to the large amount of water and energy required to grow and process the raw materials, as well as the emissions associated with transportation and disposal of waste.

"However, there are several ways that tissue producers can work to reduce their environmental impact. For example, they can use sustainable sourcing practices to ensure that the raw materials they use are grown and harvested in an environmentally responsible way. They can also use energy-efficient manufacturing processes and recycling and composting programmes to reduce waste and decrease their carbon footprint.

"A further solution is to produce tissue paper using electricity produced from renewable sources such as solar or wind power, which can help to reduce CO₂ emissions. This not only helps to reduce emissions but also helps to promote the use of clean energy and supports the transition to a low-carbon economy.

"Last but not least, we can't forget that thermal energy can also be used to produce tissue paper using a cogeneration system, which is a type of power plant that generates both electricity and thermal energy.

"Cogeneration systems can use a variety of fuels including natural gas, biomass, or waste heat from industrial processes. This thermal energy can be used for tissue paper production as well as for other industrial processes or for heating in nearby urban areas. It can also be shared between companies to improve energy efficiency and reduce costs. This is a common practice, especially at industrial parks where different companies share a cogeneration plant and use the energy produced by it."

TWM/3: What have been the most important technical developments made at your company during 2022, and what can we expect in 2023?

Samuelsson: "We are putting a lot of emphasis on energy and CO₂ minimising solutions, not necessarily meaning new disruptive development but utilising already known technology used in other processes and applying to the tissue making process.

"In 2022 we further developed our digital solutions and capability in supporting our customers remotely. That work will continue and be enforced during 2023 to increase our customer's asset efficiency by optimisation and trouble-shooting."

Raffaelli: "Several innovations were officially announced by Toscotec during 2022, some related to solutions achieving improved process performances and energy balance/recovery, some to the use of renewable or alternative energy sources.

"New technologies, such as the latest design of TADVISION and INGENIA, were also introduced for the production of premium and ultra-premium quality grades with reduced energy demand.

"Along with the above, and with the perspective of energy transition from fossil-based to zero-carbon industrial operations, we introduced TT Hydrogen Burner, a new generation of 100% hydrogen fuelled burners designed and tested for Yankee hoods.

"TT Induction SYD (Steel Yankee Dryer) is another significant carbon-reduction breakthrough that redefines Yankee dryer technology entirely, by using electric induction instead of steam energy to dry the paper web, thereby possibly cutting direct greenhouse gas emissions to zero with the proper electrical source.

"INGENIA is a new concept tissue machine that produces premium structured tissue paper close to the quality of TAD paper but using 35% less energy.

"Looking at 2023, more advances will

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Benny Peng

“AT PRESENT, IN THE 1800M/MIN HIGH-SPEED MACHINE, WE STILL INSIST ON USING THE HIGH-EFFICIENCY HOT AIR CIRCULATION STEAM RECOVERY SYSTEM WITHOUT NATURAL GAS ASSISTANCE. THESE ARE THE PRODUCTS OF COMPREHENSIVE OPTIMISATION TECHNOLOGY UPGRADES FOR PAPER MACHINE ROLLERS, DRYING CYLINDERS, GAS HOODS, AND HEAT RECOVERY SYSTEMS. IN 2023, WE WILL CONTINUE TO STRENGTHEN THE PROMOTION OF THIS MODEL IN DOMESTIC AND OVERSEAS MARKETS.”

come on CWP (Conventional Wet Press) machines with added electric based solutions in place of natural gas, or at least as an alternative energy source, and applications of the latest technologies in terms of heat recovery systems and renewable energy with a larger use of our Papermaking 4.0 portfolio.”

Goda: “Our company is striving to develop not only products from conventional pulp, but also from various kinds of materials such as used paper and complex materials, utilising our pilot facilities set up in our Technical Centre. We expect that new products and new functions will be created through these efforts in 2023.”

Santos: “During 2022 we started-up a tissue machine with an innovative hood design, which consists of using the boiler high temperature gases to heat up the air that then goes to the hood wet end, enabling it to run with temperatures up to 300°C. We use the exhaustion to heat up the fresh air that goes to the dry end canopy hood and with this hood concept allied with our Steel Yankee Dryer we manage to reach an excellent cost/produced ton ratio which makes us and our customer very optimistic as we can achieve good results and the machine still has some room for optimisation.

“For 2023 we plan to explore further this hood concept evaluating its usage and performance with different presses layout such as a single suction press, double presses and shoe press, and this is being developed by our R&D department.”

Peng: “The high-end models to be launched in 2022 have been successively put into production at major customers such as Zhongshun C&S Paper Co. (Tangshan), Asia Symbol (Jiangmen, Jiangxi), Sun Paper Group (Guangxi), and Hengan Group (Hunan).

“At present, in the 1800m/min high-speed machine, we still insist on using the high-efficiency hot air circulation steam recovery system without natural

gas assistance. These are the products of comprehensive optimisation technology upgrades for paper machine rollers, drying cylinders, gas hoods, and heat recovery systems. In 2023, we will continue to strengthen the promotion of this model in domestic and overseas markets.

“In 2023, with the full liberalisation of the domestic epidemic situation, the mainland will face greater domestic demand and market growth, and the global economy will definitely recover and improve compared to the previous three years. We are optimistic about both domestic and overseas markets. We have also systematically planned and sorted out the supply system, production chain and technical service team to meet the next market’s needs.”

Vincent: “We have several new developments that our team is proud of. Andritz has introduced the PrimeDry Hood E, which uses the same air system as gas or steam-heated hoods, but electric heaters replace gas burners or steam heaters. The PrimeDry Hood E does not need combustion air, so this increases energy efficiency for the hood drying system by up to 4% compared with gas-heated systems.

“Electrical heating offers a further advantage as there are no products of combustion emitted to the air. Tissue mills can expect a reduction in CO₂ emissions of approximately 70% of the tissue machine – a particular advantage in parts of the world, Europe and the USA included, where mills have limitations or incur costs related to CO₂ emissions.

“As well, we developed a patented configuration to retrofit existing gas-fired drying systems with a hybrid gas/electrically heated approach, allowing a mill to switch to the preferred option, depending on cost and availability of the energy source during a specific operating period. This allows a mill utmost flexibility with regards to drying cost reduction, energy savings and emissions reduction.

“We continue to optimise our very

successful Steel Yankee Dryer and have demonstrated its capability for TAD applications. We have developed and refined drying concepts using steam and electrical heated components that will be applied for conventional dry crepe and TAD tissue machines; we continue to investigate advanced or ATAD drying concepts to reduce energy usage in TAD; we developed and installed high-performance dust removal systems to improve machine and machine-room cleanliness, reduce sheet breaks and machine maintenance, and increase machine operating efficiency; we installed and started up our PrimePress XT Evo cantilevered shoe press on a new tissue machine in North America; and we continue to grow our installed base of industrial automation and digitalisation products and services that are part of our Metris brand.

“Moving into 2023, we intend to optimise these developments and push innovative technologies even further. We have several active projects that will be installed and started up with new technologies.

“For example, we are cooperating on a project in Europe with our customer and our equipment partners where we will generate high-pressure steam for a large Yankee and steam-heated hood by using a boiler with biomass as fuel, resulting in an almost fossil-free thermal energy system. The biomass is used to generate syngas (fossil-free fuel) and this fuel will feed a specially developed Syngas Yankee hood burner. Mills are seeking options to replace LPG or Natural Gas in tissue dryers with an alternative solution to reduce CO₂-emissions, reduce operation costs or to improve fuel availability.”

Canelli: “Among the main features of quality tissue paper is a high bulkiness and softness. How can this be achieved by using a conventional configuration with a single press nip and, at the same time, decrease energy consumption? The answer is our A.Celli X-Roll solution developed to optimise the configuration with a single press nip in order to obtain tissue paper of equal quality and, at the same time, a reduction in energy consumption associated with the drying area.

“In terms of energy savings, we were able to detect - from tests performed on a pilot line - that the A.Celli X-Roll solution leads to a 4% increase in the degree of dryness of the paper exiting the pressing process compared to the conventional configuration, which translates into an energy saving of over 16% in the drying phase.

“Another important characteristic for

many types of paper is the softness of the papers for hygienic-sanitary use is the bulk. In these cases where it is essential to implement a correct and effective pressing process, the A.Celli SMARNIP-T mini shoe press is the ideal solution to optimise the dryness and mechanical properties of the paper.

"The SMARNIP-T is an innovative shoe press concept designed to be simple, user-friendly, and at the same time energy saving effective. We are now dedicating our efforts to introduce a new product that combines the profiling capabilities with a unique loading system into the market."

TWM/4: What overall trends in tissue machine technology will have the greatest impact on the production process in the next five years?

Samuelsson: "The volatile geopolitical situation we are seeing will demand high flexibility in everything from the supply chain to production, which can mean importance of flexibility in fuels that can be utilised for e.g., drying, depending on where you are in the world and what kind of energy sources you have available, e.g. electricity from waterpower with zero CO₂ emission.

"Of course, the ever-increasing awareness and regulations around sustainability will continue and for us this means continuing with energy efficient development as well as minimizing consumption of natural resources like water and fibres. Also utilising different kinds of fibre sources, alternative fibres, will be a tool to be more flexible and sustainable.

"Another area is to understand all waste streams and taking care of this waste and create value from it, which at the end of the day will be of more and more importance.

"The fourth area I want to bring up is competence and how to ensure that the

industry attracts and retains competence. This we see is getting more difficult over the years and here our development within digitalisation comes to play its role together with the training programmes for different levels in the production organisation."

Raffaelli: "The ability to react to market needs, despite the current global tissue business instabilities, represents a critical but at the same time challenging opportunity for any OEMs.

"Without doubt decarbonisation and fossil-free operations - to match climate neutrality - will continue to be the driving path for design and solutions over the coming years, with the need to progressively match the zero carbon emissions in the process.

"This will be achievable by means of further development and implementation of more conventional technologies on the one hand, and on the other by introducing new engineering concepts and breakthrough processes, potentially redesigning the traditional papermaking approach.

"At Toscotec we have already started a larger implementation of electric heating systems, from hot air systems, with burners replacement with resistance element heaters, to TT Induction SYD.

"Digitalisation is also crucial to optimise the tissue making process over the complete industrial cycle, with the certainty that only necessary resources are used, reducing energy, water, and fibre use to a minimum to maximise efficiency."

Goda: "The overall trends for tissue machine manufacturing in Japan are seeing market demands for household papers becoming further complicated. Our company is the only manufacturer of both tissue machines and converting machines in Japan, and this year we have established a framework that allows us to verify the quality of the final product by utilising

our pilot machines. We believe that not only improving the quality of the parent rolls, but also how to add value by using our framework will make our products competitive in the future."

Santos: "In the years to come we will see more and more machines running with a shoe press, which is an equipment that has a huge potential for further development and can reduce thermal energy consumption keeping the paper bulk and softness. We also believe that apart from the Steel Yankee Dryer - which is a must-have item on every energy efficient tissue machine - there will be a substantial development on the Yankee Hood in order to reduce media consumption (gas, steam, other heating media and electrical energy). This development will also mean the reduction of greenhouse effect gases such as NO_x and CO_x as it will use more efficient burners and optimised heat recovery devices and use most of the heat generated on different processes of the paper production process. Additionally, equipment and solutions that reduce the use of fresh water will be mandatory for every tissue mill."

Peng: "It is estimated that in the next five years, there will still be an annual demand for paper machine capacity of one million tons in China. The areas with the larger growth rate will be in the south of the Yangtze River, mainly concentrated in Guangxi, Hainan, Guangdong, and other places. Large-scale production of paper enterprises will gradually expand, production capacity will increase, and market competitiveness will also increase.

"Baosuo Enterprise Group took the lead in launching two sets of swords to adapt to future development: overall solutions and large-scale intelligent factories for paper enterprises. The former is the rationalisation of household paper equipment and the overall contracting of turnkey projects, while the latter is the application of digital information technology for daily production management including data, monitoring, remote maintenance, etc."

Vincent: "This is not an easy question to answer since the world now evolves at a quicker pace since before the pandemic in terms of technology. We believe that progress in the development of Artificial Intelligence (AI) technologies will help maximise overall production by enhancing troubleshooting capabilities. By unlocking data and using thorough algorithms, knowledge gained from one area of the

Shinji Goda

"THE OVERALL TRENDS FOR TISSUE MACHINE MANUFACTURING IN JAPAN ARE SEEING MARKET DEMANDS FOR HOUSEHOLD PAPERS BECOMING FURTHER COMPLICATED. OUR COMPANY IS THE ONLY MANUFACTURER OF BOTH TISSUE MACHINES AND CONVERTING MACHINES IN JAPAN, AND THIS YEAR WE HAVE ESTABLISHED A FRAMEWORK THAT ALLOWS US TO VERIFY THE QUALITY OF THE FINAL PRODUCT BY UTILISING OUR PILOT MACHINES. WE BELIEVE THAT NOT ONLY IMPROVING THE QUALITY OF THE PARENT ROLLS, BUT ALSO HOW TO ADD VALUE BY USING OUR FRAMEWORK WILL MAKE OUR PRODUCTS COMPETITIVE IN THE FUTURE."



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process can typically also be applied to optimise the overall machine performance.

"The operator no longer needs a deep understanding of the machine since adjustment recommendations can be made live on the DCS or another device in the control room. Even a new and unskilled operator can now run a tissue machine without knowledge of appropriate machine parameters.

"With the global labour shortage and the high turnover rates in the plants, AI, cyber security, and condition monitoring with smart sensors in an integrated approach or the digitalisation of the entire process will be a critical area of development for tissue manufacturers and OEMs. Andritz has made significant progress in machine automation and remote assistance (remOT), besides other developments mainly via our Metris Performance Centres, which will help improve the OEE of tissue producers on the paper machine and when converting jumbo rolls.

"The cost of energy trending up globally will also push tissue manufacturers to select different types of machine concepts to achieve their desired tissue quality, depending in which region they operate in the world. For example, Andritz PrimeLineTEX technology, which is optimised to produce close to structured tissue products using advanced dewatering and drying technologies, will allow tissue manufacturers globally to still consider making such tissue products without incurring the high energy costs that are typical for a conventional TAD machine concept.

"Trials at our PrimeLineTIAC pilot plant have demonstrated huge energy and fibre savings opportunities with a higher sheet quality than a conventional three-ply paper product. Andritz's commitment to keep developing technologies that provide

enhanced quality at lower energy costs will remain strong for the upcoming years."

Canelli: "Tissue machine manufacturing and technology are constantly evolving, and new developments are expected to continue in the next five years. Some of the trends that are likely to have the greatest impact on the production process include:

- **Increased automation and digitalisation:** Automation and digitalisation are likely to continue to play a significant role in tissue production, with more and more machines being equipped with advanced sensors and control systems that enable them to operate more efficiently and effectively. This can help to improve production speed, quality, and reliability, while also reducing costs and minimising waste.
- **Energy efficiency:** There is a growing emphasis on energy efficiency in tissue production as manufacturers look for ways to reduce their energy consumption and carbon footprint. This is likely to lead to the development of more advanced energy management systems that can optimise energy use and minimise waste, as well as the use of renewable energy sources such as solar and wind power.
- **Flexibility and customisation:** Manufacturers are under pressure to be more responsive to customer demands and to be able to produce a wide range of products quickly and efficiently. This is likely to lead to a greater focus on flexibility and customisation, with machines and equipment that can be easily reconfigured to produce different types of tissue products and to adapt to different production conditions.
- **Advanced Analytics:** With the integration of digital technologies

and sensors in tissue production, it will be possible to gather more data about the production process than ever before, enabling the monitoring and optimising of production efficiency, quality, and cost. This trend will help manufacturers to improve decision making, predict potential downtime, and identify opportunities for process improvement, which will optimise production performance and reduce costs.

- **Materials innovation:** Development of new materials and technologies that can be used in tissue production will continue to be an important trend. These materials may not be wood or recycled paper, which can help to reduce the environmental impact of the tissue production process.

"These trends are expected to continue to evolve and interact with each other in the next five years, driving further innovation and improvements in tissue production."

TWM/5: Are you seeing any slowdown in terms of tissue demand/supply globally?

Samuelsson: "In the long run we don't expect a slowdown overall, the tissue business has stable growth in the global market and there is still a need for conventional tissue lines like Advantage-DCT and IntelliTissue. However, we can also see an increased demand of higher tissue quality in China and Asia where the hybrid technology is a perfect match – high tissue quality and capacity at lower energy and fibre consumption.

"After Covid we also see an increase of tissue products in the health sector and usage of napkins and towel in some market areas. This health awareness is most likely here to stay."

Raffaelli: "Undoubtedly the Covid-19 pandemic has boosted global tissue demand in 2020, but the trend was the opposite in 2021 when the world saw a sensible reduction of volumes.

"In 2023 we expect to see a general slowdown due to the energy crisis, the war in Ukraine and the global recession.

"At the same time, China and Latin America will be key areas of a growth trend that is projected to continue in the following years. This trend will be driven by a higher sensitivity to hygiene habits developed during the pandemic, and by improved standards of living, which promote demand for premium quality tissue as we have witnessed in China.

"Sustainable solutions that combine

Roy Vincent

"WITH THE GLOBAL LABOUR SHORTAGE AND THE HIGH TURNOVER RATES IN THE PLANTS, AI, CYBER SECURITY, AND CONDITION MONITORING WITH SMART SENSORS IN AN INTEGRATED APPROACH OR THE DIGITALISATION OF THE ENTIRE PROCESS WILL BE A CRITICAL AREA OF DEVELOPMENT FOR TISSUE MANUFACTURERS AND OEMS. ANDRITZ HAS MADE SIGNIFICANT PROGRESS IN MACHINE AUTOMATION AND REMOTE ASSISTANCE (REMOT), BESIDES OTHER DEVELOPMENTS MAINLY VIA OUR METRIS PERFORMANCE CENTRES, WHICH WILL HELP IMPROVE THE OEE OF TISSUE PRODUCERS ON THE PAPER MACHINE AND WHEN CONVERTING JUMBO ROLLS."

environmentally-friendly processes with tissue quality demand will play an active part in this process."

Godá: "Our company predicts that products will be subdivided based on its purpose or use, at least in the Japanese market. As a result, the demand for facial tissues may be reduced to some extent."

"On the other hand, we think that there will be an increase in the demand for paper towels. As we become more conscious of our personal hygiene, we tend to focus mostly on the merits of disposable products again to prevent us from infections. We think that it will accelerate the product development more and more."

"As for paper towels, it is penetrating in households, and it will gradually and steadily increase production."

Santos: "So far, we haven't seen any slowdown on tissue demands lately. However, what we have seen over the past couple of years is that the number of small to medium size producers are being purchased by big groups or new players. This process has created some disturbance on the retailer tissue price with affects small and medium tissue mills that strive daily to keep their market with a reasonable profit."

"We have also noticed an increase on the number of inquiries for countries from the Middle East and Asia. Based on the fact that these areas house more than 65% of the world's population, we believe this trend will not only maintain but increase along with the consumption per capita."

Peng: "Affected by the global epidemic, the demand and supply of household paper will slow down for a certain period. This is an undoubted reality, and it is closely related to shipping, tourism, social activities, etc. In the past three years, it has affected all walks of life, not only in the household paper market."

"The needs of overseas developing countries or regions will be more obvious, in regions such as Southeast Asia, the Middle East, South Africa, Egypt, and the South American countries."

"The formation of paper enterprises will become a trend for large-scale development from papermaking, processing, and packaging to sales of finished products."

"Developing countries that rely on imported toilet paper will plan to build a new systematic and advanced household paper factory after overcoming local policy, capital, environmental and other problems. This progress will come soon."

Vincent: "We believe the overall tissue demand will for the most part follow the

Marcelo Marlon Silveira dos Santos

"SO FAR, WE HAVEN'T SEEN ANY SLOWDOWN ON TISSUE DEMANDS LATELY. HOWEVER, WHAT WE HAVE SEEN OVER THE PAST COUPLE OF YEARS IS THAT THE NUMBER OF SMALL TO MEDIUM SIZE PRODUCERS ARE BEING PURCHASED BY BIG GROUPS OR NEW PLAYERS. THIS PROCESS HAS CREATED SOME DISTURBANCE ON THE RETAILER TISSUE PRICE WITH AFFECTS SMALL AND MEDIUM TISSUE MILLS THAT STRIVE DAILY TO KEEP THEIR MARKET WITH A REASONABLE PROFIT."

global population growth, and yet we remain cautious with our forecast as we are uncertain how the economy will react in the years to come.

"In the past 20 years we have witnessed an annual growth on average of 3.6% and we believe this will remain very similar or slightly lower over the next seven years. Historically, China has been by far the highest growing region in the world, and this should remain the same in the years to come."

"In North America we could witness a potential supply change as the tissue consumers will become more conscientious of their environmental impact. North America should see a larger demand increase especially with environmentally-friendly and CO₂ footprint reduced tissue products, but we should expect a lower overall market growth in the next seven years."

"We also expect the Asia Pacific region to see growth with the hotel and restaurant tissue products AfH market. We also predict an increased production of facial and higher quality bath tissue in this part of the world as the population raises its demand for higher quality and premium products."

"We could also see an interesting growth in Africa, the Middle East, and Latin America, as the population increases boost the consumption of tissue products in the years to come."

Canelli: "Tissue products are essential in our daily lives, therefore it's a steady business. However, the demand for tissue can be affected by a variety of factors, including changes in population growth, economic conditions, and consumer preferences."

"In recent years, for example, there has been a growing trend towards single-use, disposable products, which has led to increased demand for tissue products. This trend is likely to continue as people are becoming more health-conscious and are looking for ways to reduce the spread of germs."

"Generally, the Covid-19 pandemic has increased the use of tissue products such as toilet papers and paper towels as people spend more time at home, and this has led to temporary shortages and price increases in some areas. This trend might not continue once the pandemic subsides."

"In terms of geographical distribution, the tissue market is mainly concentrated in developed regions such as North America and Europe. These regions have a high standard of living and well-developed infrastructure, which supports the growth of the tissue industry."

"Asia-Pacific and Africa are expected to be a key market for tissue products due to changing lifestyles and rising disposable incomes in the region. People are becoming more health-conscious and are looking for hygienic alternatives to traditional cloth or reusable products. This is resulting in a growing demand for tissue products such as toilet paper, paper towels, and facial tissues. In Africa, the population is projected to continue growing, and with it the demand for tissue products is also expected to rise."

"The demand for tissue products is expected to continue to grow in the next few years, driven by population growth, economic development and consumer preferences. Changes in consumer behaviour caused by the pandemic may also have a short-term effect on the market. However, overall trends tend to be stable, so it's expected that the market will continue to evolve, but at a steady pace."

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SPECIAL FEATURE:

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Africa	Confidential	Confidential	NA	New	2023	NA	NA
Argentina	Celupaper	Buenos Aires	5	New	2023	23,400	2.75
Bangladesh	City Group	Hoshendi	NA	New	2023	40,000	2.8
Brazil	Araucária	NA	2	New	2024	26,000	2.76
Brazil	Bracell Cellulose	Lençóis Paulista, São Paulo	4	New	2024	NA	5.68
Brazil	Bracell Cellulose	Lençóis Paulista, São Paulo	3	New	2024	NA	5.68
Brazil	Bracell Cellulose	Lençóis Paulista, São Paulo	2	New	2024	NA	5.68
Brazil	Bracell Cellulose	Lençóis Paulista, São Paulo	1	New	2024	NA	5.68
Brazil	Inpel	NA	2	New	2022	20,000.0	2.76
Brazil	Mister Paper	NA	2	New	2024	20,000.0	2.36
China	Asia Symbol	Guangdong	1	New	2022	25,000	2.8
China	Asia Symbol	Guangdong	2	New	2022	25,000	2.8
China	Asia Symbol	Guangdong	3	New	2022	25,000	2.8
China	Asia Symbol	Guangdong	4	New	2022	25,000	2.8
China	Asia Symbol	Guangdong	13	New	2022	NA	5.65
China	Asia Symbol	Shandong	34	New	2023	NA	5.65
China	Asia Symbol	Shandong	33	New	2023	NA	5.65
China	Confidential	Confidential	NA	New	2023	34,300	3.5
China	Guangxi Longpai Co.	Guangxi	1	New	2023	20,000	2.8
China	Guangxi Longpai Co.	Guangxi	2	New	2023	20,000	2.8
China	Guangxi Longpai Co.	Guangxi	3	New	2023	20,000	2.8
China	Hengan Group	Fujian	NA	New	2023	40,000	3.65
China	Hengan Group	Hunan	1	New	2022	30,000	3.6
China	Hengan Group	Hubei	NA	New	2023	40,000	3.65
China	Hengan Group	Shandong	2	New	2022	30,000	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	2023	NA	3.65
China	Hengan Group	Yunfu	27	New	2023	NA	3.65
China	Lee & Man Group	Guangxi	1	New	2022	20,000	2.8

PROJECTS SURVEY

PM SPEED (m/min)	SUPPLIER	COMMENTS
1,800	Toscotec	AHEAD 1.8 machine (TT NextPress shoe press)
1,300	Toscotec	MODULO-PLUS machine
2,000	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
1,900	Hergen	Crescent Former machine EVO 16
2,000	Andritz	PrimeLineTM W 2000 (ShoePress)
2,000	Andritz	PrimeLineTM W 2000 (ShoePress)
2,000	Andritz	PrimeLineTM W 2000 (ShoePress)
2,000	Andritz	PrimeLineTM W 2000 (ShoePress)
1,200	Hergen	Crescent Former machine Smart 12
1,300	Hergen	Crescent Former machine Smart 12 Eco
1,600	Baotuo	Crescent Former TM
1,600	Baotuo	Crescent Former TM
1,600	Baotuo	Crescent Former TM
1,600	Baotuo	Crescent Former TM
1,900	Andritz	PrimeLineTM W 2000 (ShoePress)
1,900	Andritz	PrimeLineTM W 2000 (ShoePress)
1,900	Andritz	PrimeLineTM W 2000 (ShoePress)
1,600	Valmet	IntelliTissue 1600
1,500	Baotuo	Crescent Former TM
1,500	Baotuo	Crescent Former TM
800	Baotuo	TAD
1,500	Toscotec	TADVISION machine (TAD)
1,800	Baotuo	Crescent Former TM
1,500	Toscotec	TADVISION machine (TAD)
1,800	Baotuo	Crescent Former TM
1,700	Andritz	PrimeLineCOMPACT M 1600
1,700	Andritz	PrimeLineCOMPACT M 1600
1,700	Andritz	PrimeLineCOMPACT M 1600
1,700	Andritz	PrimeLineCOMPACT M 1600
1,500	Baotuo	Crescent Former TM

The combination of life after the outbreak of Covid-19, the global energy crisis, and ongoing fluctuations across trades and raw materials, has meant that the last 12 months have been yet another extraordinary year for the global tissue market.

Yet while the impact on day-to-day life, pressures on individual tissue sectors, and the subsequent price and cost-of-living crisis are still unknown in the longer-term, the number of tissue projects in this year's Projects Survey is heartening, providing some certainty by showcasing the resilience and innovation of the industry. The annual Projects Survey is an accumulation of tissue capacity data collected across the global industry during this and previous years by TWM. Significant intel is gained from TWM's six annual Country Reports which in 2022 included in-depth interviews with tissue mills in Italy, Mexico, Poland and Romania, Thailand, Turkey, and France. Wide ranging news coverage throughout 2022 and into 2023 has also reported on the latest tissue machinery investments from across every continent. In many cases information and investment strategy have come from leading executives themselves.

While the survey represents a detailed snapshot of production strategies in all the major tissue regions, as always caution must be considered with the survey's findings due in large part to its sheer scope. The figures included here are based on the best information provided, and this has included 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. With that in mind, this year's annual Projects Survey notes another healthy figure: 100 tissue projects are listed as being added, ordered or in final planning stages during 2022, 2023, and 2024. This compares to the 157 tissue projects listed during 2021, 2022, and 2023, and the 146 tissue machine projects that were expected to come on stream or had already started-up in 2020, 2021 and 2022. In 2019, the survey noted 101 projects.

As is often the case, many of last years predicted start-ups have been delayed and are now planned for 2023, and 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. There are also a substantial number of confidential projects.

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
China	Lee & Man Group	Guangxi	2	New	2022	20,000	2.8
China	Lee & Man Group	Guangxi	3	New	2022	20,000	2.8
China	Lee & Man Group	Guangxi	4	New	2022	20,000	2.8
China	Lee & Man Group	Guangxi	5	New	2022	20,000	2.8
China	Lee & Man Group	Guangxi	6	New	2022	20,000	2.8
China	Liansheng Pulp & Paper	Zhangzhou	2	New	2023	NA	5.65
China	Liansheng Pulp & Paper	Zhangzhou	1	New	2023	NA	5.65
China	Liaoning Yusen	Tai'an	3	New	2023	34,300	3.5
China	Liaoning Yusen	Tai'an	4	New	2023	34,300	3.5
China	Liaoning Yusen	Tai'an	5	New	2024	34,300	3.5
China	Liaoning Yusen	Tai'an	6	New	2024	34,300	3.5
China	Libang Group	Hubei	1	New	2022	20,000	2.8
China	Libang Group	Hubei	2	New	2022	20,000	2.8
China	Libang Group	Hubei	3	New	2022	20,000	2.8
China	Libang Group	Hubei	4	New	2022	20,000	2.8
China	Libang Group	Hubei	5	New	2022	27,000	3.5
China	Libang Group	Hubei	6	New	2022	27,000	3.5
China	Sun Paper Group	Guangxi	1	New	2022	25,000	2.8
China	Sun Paper Group	Guangxi	2	New	2022	25,000	2.8
China	Symbol Sateri	Jiangxi	1	New	2023	25,000	2.8
China	Symbol Sateri	Jiangxi	2	New	2023	25,000	2.8
China	Yuen Fong Yu	Taiwan	10	New	2023	NA	3.65
China	Vanov Group	Sichuan	1	New	2022	25,000	2.8
China	Vanov Group	Sichuan	2	New	2022	25,000	2.8
China	Vanov Group	Sichuan	3	New	2022	25,000	2.8
China	Vanov Group	Sichuan	4	New	2022	25,000	2.8
China	Zhongshun C&S Paper Co.	Hebei	1	New	2022	30,000	3.5
Colombia	GrandBay Papelera Internacional	Pereira	5	New	2024	40,000	3.6
Croatia	Astrabel	Belišće	1	New	2023	NA	2.85
Confidential	Confidential	Confidential	NA	New	2022	50,000	3.46
Confidential	Confidential	Confidential	NA	New	2024	65,000	5.6
Confidential	Confidential	Confidential	NA	New	2023	65,000	3.6
Confidential	Confidential	Confidential	NA	New	2023	65,000	3.6
Confidential	Confidential	Confidential	NA	New	2023	75,000	5.6
Confidential	Confidential	Confidential	NA	New	2023	35,000	3.6
Confidential	Confidential	Confidential	NA	New	2023	38,000	3.5
Confidential	Confidential	Confidential	NA	New	2023	38,000	2.5
Confidential	Confidential	Confidential	NA	New	2023	38,000	2.5

	PM SPEED (m/min)	SUPPLIER	COMMENTS
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,300	Baotuo	Crescent Former TM
	600	Baotuo	Crescent Former TM
	2,000	Andritz	PrimeLineTM W 2000
	2,000	Andritz	PrimeLineTM W 2000
	1,600	Valmet	IntelliTissue 1600
	1,600	Valmet	IntelliTissue 1600
	1,600	Valmet	IntelliTissue 1600
	1,600	Valmet	IntelliTissue 1600
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,500	Baotuo	Crescent Former TM
	1,800	Baotuo	Crescent Former TM
	1,800	Baotuo	Crescent Former TM
	1,600	Baotuo	Crescent Former TM
	1,600	Baotuo	Crescent Former TM
	1,650	Andritz	PrimeLineCOMPACT M 1600 (ShoePress)
	1,600	Baotuo	Crescent Former TM
	1,600	Baotuo	Crescent Former TM
	1,600	Baotuo	Crescent Former TM
	1,600	Baotuo	Crescent Former TM
	1,800	Baotuo	Crescent Former TM
	2,200	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
	1,300	Andritz	PrimeLineCOMPACT S 1300
	2,000	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
	2,000	Valmet	Advantage DCT 200HS
	2,000	Valmet	Advantage QRT 135
	2,000	Valmet	Advantage QRT 135
	2,000	Valmet	Advantage ThruAir
	2,000	Valmet	Advantage ThruAir I35
	2,000	Valmet	Advantage eTAD 135
	2,000	Valmet	Advantage eTAD 135
	2,000	Valmet	Advantage eTAD 135

Notable points to include

Environmental projects have been accelerated. Increasing in the past 12 months almost more than any other are the number of tissue projects announcing ambitious sustainability targets. One positive, at least, to come from the ongoing energy crisis.

Some 46 projects are in China, again the largest number of start-ups in any country. However, the figure is substantially lower than last year's survey that expected 80 tissue machines to come on stream. This slowdown could be a result of ongoing overcapacity in the country. It is also important to note there are numerous other small confidential start-ups in China not listed here.

The Brazilian tissue market continues to go from strength-to-strength. While last year's survey noted just two tissue projects expected to come on stream, this year notes seven, six of which are expected to start production in 2024, and all of which are supplied by Andritz or Hergen.

Across the Middle East, one confidential project is also expected to start up, and Saudi Arabia has three new lines expected to come on stream during 2023 and 2024. Whilst last year Turkey looked robust with six large tissue machines coming on stream in 2021, or expected to in 2022 or 2023, this year just two projects are expected to start-up.

In Indonesia, Asia Pulp & Paper will be starting up three Valmet-supplied lines, whilst India's Gayatrishakti Tissue is starting up a Toscotec TM in 2024. Across Africa, one confidential tissue machine expected to come on stream in 2023, and Ghana also has one project in the pipeline.

During 2022, there have also been several further price hike announcements made. Effective on 21 March, the Navigator Company applied a 20% energy, logistics and commodities surcharge on the sales price of its tissue products to offset what it said was the significant raising of its input costs. At the time, it said the move was a result of "extreme uncertainty, with Navigator being exposed direct and indirectly to energy price volatility, significantly affecting its profitability".

In November, Essity implemented "significant price increases," and said that further increases will also be carried out: "We raised prices for our leading hygiene and health solutions by an average of 14.5% compared to the same period a year ago at the same time as we reported higher volumes in all business areas. Our price increases are offsetting the high-cost inflation with a delay of approximately two quarters," it said.

With the long-awaited opening-up of the global AfH market seemingly in full bloom, and an unprecedented boost to the At-Home market that seems set to stay, last year's conclusion that the central theme is "emphatically one of expansion" looks set to stay.

COUNTRY	COMPANY MILL	INVESTMENT	PM NO	NEW / REBUILD	START-UP DATE	CAPACITY CHANGE (tonnes/yr)	PM TRIM (m)
Confidential	Confidential	Confidential	NA	New	2023	65,000	5.6
Confidential	Confidential	Confidential	NA	New	2023	35,000	3.5
Confidential	Confidential	Confidential	NA	New	2024	34,200	2.75
El Salvador	Alas Doradas	San Salvador	NA	New	2023	35,000	2.8
EMEA	Confidential	Confidential	NA	New	2024	70,000	5.6
France	MP hygiène	Annonay	2	New	2024	38,000	2.8
Ghana	Triton	Triton	1	New	2023	23,800	2.75
Guatemala	GrandBay Papelera Internacional	Rio Hondo Zacapa	7	New	2023	70,000	5.5
Hungary	Vajda Papír	Dunaföldvár	4	New	2022	80,000	5.6
India	Gayatrishakti Tissue	Vapi, Gujarat	1	New	2024	35,000	2.85
Indonesia	Asia Pulp & Paper	APP OKI	2	New	2023	41,650	3.7
Indonesia	Asia Pulp & Paper	APP OKI	3	New	2023	41,650	3.7
Indonesia	Asia Pulp & Paper	APP OKI	4	New	2023	41,650	3.7
Japan	Confidential	Confidential	3	Rebuild	2022	15,000	2.5
Japan	Confidential	Confidential	3	New	2023	46,000	3.5
Japan	Confidential	Confidential	4	New	2023	32,000	3.6
Japan	Confidential	Confidential	6	New	2023	46,000	3.6
Latin America	Confidential	Confidential	NA	New	2023	30,000	2.8
Mexico	Papel San Francisco	Mexicali	NA	New	2024	30,000	2.8
Middle East	Confidential	Confidential	NA	New	2023	NA	NA
Oceania	Confidential	Confidential	NA	Major Rebuild	2024	NA	NA
Poland	Jack-Pol	Jack-Pol	2	New	2023	27,600	2.85
Romania	MG TEC Industry	Dej	2	New	2022	MA	2.85
Saudi Arabia	MEPCO	Jeddah	4	New	2023	65,000	NA
Saudi Arabia	Saudi Paper Group	Dammam	2	New	2023	30,000	2.85
Saudi Arabia	Saudi Paper Group	Dammam	5	New	2024	65,000	5.6
Sweden	Metsä Tissue	Mariestad	NA	New	2024	70,000	NA
Turkey	Eczacıbaşı	Manisa	5	New	2023	70,000	5.6
Turkey	Europap Tezol	Mersin	4	New	2023	40,000	2.92
Vietnam	Xuan Mai Paper	Ho Chi Minh City	2	New	2024	NA	2.85
Vietnam	Xuong Giang	Bac Giang	12	New	2024	NA	2.85
USA	ST Paper	Duluth, Minnesota	2	New	2022	NA	5.65

	PM SPEED (m/min)	SUPPLIER	COMMENTS
	2,200	Valmet	Advantage DCT 200TS
	2,000	Valmet	Advantage DCT 135HS
	1,800	Valmet	IntelliTissue 1800
	2,000	Valmet	Advantage DCT 100HS
	2,200	Valmet	Advantage DCT 200TS
	2,200	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
	1,600	Valmet	IntelliTissue 1600
	2,200	Toscotec	AHEAD 2.2L machine (TT NextPress shoe press)
	2,200	Toscotec	AHEAD 2.2L machine (TT NextPress shoe press)
	2,000	Toscotec	AHEAD 1.8 machine (TT NextPress shoe press)
	1,700	Valmet	IntelliTissue 1600
	1,700	Valmet	IntelliTissue 1600
	1,700	Valmet	IntelliTissue 1600
	1,000	Kawano Zoki	BF-15
	1,800	Kaw. Zoki/ Valmet	DCT135HS
	1,300	Kawano Zoki	BF-15 Towel
	1,800	Kaw. Zoki/ Valmet	DCT135HS
	1,800	Toscotec	AHEAD 1.8 machine (TT NextPress shoe press)
	2,200	Valmet	Advantage DCT 100TS
	1,500	Toscotec	AHEAD 1.5 machine
	NA	Toscotec	NA
	1,600	Valmet	IntelliTissue 1600
	1,900	Andritz	PrimeLineCOMPACT V (Steel Yankee)
	2,200	Toscotec	AHEAD 2.2L machine (TT NextPress shoe press)
	2,100	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
	2,200	Toscotec	AHEAD 2.2L machine (TT NextPress shoe press)
	2,200	Valmet	Advantage DCT 200TS
	2,200	Valmet	Advantage DCT 200TS
	2,100	Toscotec	AHEAD 2.2 machine (TT NextPress shoe press)
	1,800	Andritz	PrimeLineCOMPACT S 1800
	1,300	Andritz	PrimeLineCOMPACT S 1300
	2,000	Andritz	PrimeLineTM W 2000 (ShoePress)

100

Projects being added, ordered or in final planning stages during 2022, 2023, and 2024

157

Projects listed during 2021, 2022, and 2023

146

Projects listed during 2020, 2021 and 2022

101

Projects listed in 2019's survey

7

Brazilian tissue projects announced in this year's table.

3

Tissue projects announced in Saudi Arabia.

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 2023.

CHINA'S STATE OF THE NATION TISSUE REPORT: OVERCAPACITY A SERIOUS CONCERN AS MARKET COMPETITION AND INNOVATION INCREASE, WITH 'DUAL CARBON' GOALS EXTENDED

China's National Household Paper Industry Association has urged its companies to invest "rationally" in its annual assessment of the current status of the industry. TWM's report highlights the main points, and weighs its projections against wider industry trends.

Just how its tissue industry has been impacted by three years of extreme challenges is made clear in the 'China Tissue Pulse' report by China's National Household Paper Industry Association (CNHPA). Last year was a challenge as businesses tackled residual effects of the pandemic as well as international crises, pulp prices, historical high energy costs, production disruption, poor logistics, and an over-reliance on imports.

Profit margins were significantly reduced and accelerated the industry reshuffle. Enterprises strove to break through with advanced technologies, new products, strengthened brands and marketing innovation. Fierce market competition and more new projects resulted in more "staged overcapacity" becoming increasingly serious.

In its assessment CNHPA makes various calls for action, including: companies investing "rationally," government acting on tax and fee cuts; more green logistics channels; equipment enterprises to innovate and export; develop differentiated products; launch more energy-saving and carbon-reducing equipment and products and realise the collective development of the industry through production capacity cooperation and supply chain cooperation between enterprises. TWM presents a summary of the report's main points.

Part One: 78 tissue machines put into operation across the country

According to the data of the National Household Paper Industry Association (CNHPA), the total new capacity for the Chinese tissue market reached nearly 1.927 million tons in 2022. The new capacity is less than that of 2021 but already exceeds that of 2020 and 2019. A total of 36 companies in 16 provinces launched new capacity, while 78 tissue machines were put into operation in total. This compares to 2021, when 62 companies were reported launching new tissue capacity in 16 provinces in 2021 and 112 tissue machines were put into operation.

Domestic tissue machines dominated in the new capacity and were mainly

concentrated in large and medium-sized enterprises. The new capacity is mainly located in Jiangsu, Guangxi and Hebei. The main projects of major companies include: Gold Hongye, C&S, Lee & Man, Liban and Botare.

Major projects of top enterprises:

Rudong:.....	480,000tpy
Hebei:.....	30,000tpy
Jiangxi:.....	56,000tpy
Guangxi:.....	60,000tpy
Xiaogan:.....	25,000tpy
Jiangxi:.....	140,000tpy
Guangxi:.....	70,000tpy
Zhejiang:.....	120,000tpy
Hunan:.....	160,000tpy
Guangdong:.....	100,000tpy

Capacity investment plan of leading enterprise

In addition to the launched capacity, many new capacity expansion projects have been signed in 2022. The new capacity announced by top companies such as Hengan, Gold Hongye, C&S, Liban and Rain Forest and new companies to the industry such as Asia Symbol and Liansheng Paper that have signed up for tissue machines or have determined the tissue machine type totalled 2.785 million tpy.

Part Two: declining revenue capacity of industrial enterprises

Performance of listed companies (all figures for 2022):

Hengan: First half sales revenue of Hengan Group's tissue paper business increased significantly by nearly 25% to about 5.843bn yuan, accounting for about 52.2% of the overall revenue. The gross profit margin of the group's tissue business decreased to approximately 23.1%.

Vinda: First three quarters total revenue increased by 6.6% (8.8% at constant currency) to HK\$14,055 million, of which HK\$11,562m came from the tissue business.

C&S: First three quarters operating income (mainly tissue paper) was 6.114bn yuan, a year-on-year decrease of 2.56%, and the net

profit attributable to shareholders of listed companies was 275m yuan, a year-on-year decrease of 43.33%. From the operating data in quarterly performance reports released by Hengan, Vinda and C&S, their gross margins or net profits declined. This reflects to a certain extent the impact of the huge increases in pulp prices, disruptions in production, poor logistics caused by Covid-19, and weak consumer market demand and increasing market competition.

Small and medium-sized enterprises also saw a decline. In 2022 the overall start-up rate of tissue enterprises in the region was less than 70%, and was as low as 40% to 50% in June to August. The manufacturing enterprises were generally in a staged loss, and slowed down the project investment. Here too, the sharp rise in pulp prices, price inversion of pulp and paper, and overcapacity have made the year very difficult. In Baoding, for example, where small and medium-size enterprises are most concentrated, 2022 saw an overall start-up rate of paper enterprises less than 70%, and was as low as 40% to 50% in June to August. The companies were generally in a staged loss and slowed down the project investments.

Part Three: changes in raw material and product prices

According to data from Chinese customs, the price of imported pulp was generally on the rise in 2022, and from August to September 2022 rose to an all-time high in nearly 10 years. The average price of imported bleached softwood pulp and hardwood pulp reached about USD 990/ton and USD 805/ton, respectively, a significant increase of 29.6% and 41.7% from the prices of about USD 764/ton and USD 568/ton in February 2022, the lowest value of the year.

Non-wood pulp prices rose substantially

Due to the increase in the price of imported market pulp, the overall price of bamboo pulp and bagasse pulp also continued to rise. The average price of bleached bamboo pulp in Sichuan and bleached bagasse pulp in Guangxi rose from 5,300 yuan/ton and

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4,825 yuan/ton in January to 7,000 yuan/ton and 5,625 yuan/ton at the high point in October, up 32% and 17%, respectively. Tissue parent roll prices also rose. Bleached pulp tissue parent rolls produced in Hebei increased on average from 6,700 yuan/ton in January 2022 to 8,550 yuan/ton at the high point in October, up 27%, which is lower than the price increase of imported market pulp. The figures show the difficulty in passing rises in raw material price on to the end products. Business operations are under huge pressure, and zero profit and loss become common situation.

Part Four: product upgrade and innovation

Advances were concentrated in two production streams

The first developed differentiated products through new technologies and new equipment to improve the performance of products in use. For example, the launch of products with better bulkness through new tissue machine technology and converting machines. Mind Act Upon Mind launched the cloud series tissue, Vinda launched cashmere sensory series toilet roll, and Virjoy launched hot air through kitchen towels with the TAD technology.

Apply new technologies and equipment to improve product performance

Libang, Rain Forest, Golden Doctor and Botare have also launched newly upgraded 3D embossed tissue.

In addition, lotion tissue is also a relatively fast-growing product category in the past two years. In 2022, enterprises also continued to put emphasis on this product category and launched new products. For example: Mind Act Upon Mind, C&S, Hygienix, Babo launched soft lotion tissue, and so on.

The second aspect of product upgrade and innovation was the enhancement of cultural attributes and environmental protection concepts of products through brand marketing.

Brand positioning examples included:

- Vinda created a new IP "Lamb Weiwei".
- C&S joined hands with people.cn to create a new IP of CHINA Face, and launched a co-branded Chinese New Year gift box with people.cn.
- Hengan launched a new Jimmy series of Mind Act Upon Mind handkerchief tissue.
- Breeze launched tissues under two new IP.
- Hulijia launched the CQ-show toucan series and the peony series tissue.

Additionally, Virjoy launched zero-carbon

tissue, Breeze launched its first away from home zero-carbon jumbo roll tissue, and Babo launched the Ocean Protecting series handkerchief tissue.

Part Five: new equipment and technology

Imported high-end tissue machines were introduced into China to promote the upgrading of production capacity in the domestic market, the latest technology TAD technology included in that upgrade. Hengan introduced two more Valmet Hybrid tissue machines, mainly for the production of high-quality facial tissue and kitchen towels. Before that, Hengan had introduced two Toscotec TAD tissue machines, which are scheduled to be put into operation in 2023.

Vinda has successfully put four Valmet Hybrid tissue machines into operation to produce differentiated tissue products. At the same time, Andritz's TEX TAD-like tissue machine and Toscotec's INGENIA TAD-like tissue machine were also actively promoted.

Low-carbon equipment, automated equipment, and remote technology were also brought on stream:

- Qingliang launched the expert remote detection system.
- Hangzhou MCN improved the operating efficiency of headbox through an automation control system developed by the company.
- Toscotec introduced the inductive Steel Yankee Dryer that uses electrical induction instead of steam to dry paper, thereby reducing direct greenhouse gas emissions to zero.

Additionally, new converting machine technology in China includes:

- Baosuo launched the automatic draw-out facial tissue converting machine with the characteristics of energy saving, low consumption, high efficiency and low production costs.
- Dechangyu continued to work on embossing and printing solutions, and widened the use of its technology based on rich pattern design and technical solutions.
- One Paper launched the log saw cutter, which is capable of automatically measuring length and equalizing and suitable for plastic-pack facial tissue packaging, thereby greatly reducing waste.
- IMAKO launched the plastic-pack facial tissue converting line, which is capable of switching products sizes at will, and automatically packing and stacking with robots.
- OK Technology developed and launched

the facial tissue folding line specially designed to use with TAD tissue machine for Hengan, and also started up several converting machines with the max width in China for production of plastic-pack facial tissue, handkerchief tissue and hand towel.

- In December OK Technology was successfully listed on the A-share market, becoming the first listed tissue paper converting machines manufacturer in China.

Part Six: import and export markets

Tissue paper imports and exports in the first three quarters of 2018 to 2022

At present, output and product types meet the needs of consumers, while exports dominate with imports at a low proportion in the domestic market. In recent years the annual import tissue paper volume was between 28,000 to 50,000 tons, a relatively small number and has little impact on the domestic market. The first three quarters of 2022 saw volume and value reduced year-on-year to about 24,300 tons. Parent roll dominated, accounting for 83.4%.

In the same period, export volume and export value showed double-digit growth. Volume was 564,400 tons, up 19.46% year-on-year, and value was about USD 1.389bn, up 31.66% year-on-year. Export volume of finished paper accounted for 76.72% of the total export volume of tissue paper products. The export value of finished paper accounted for 86.91% of the total export value, and the proportion showed an upward trend year by year.

Sector variations show: the proportion of toilet tissue is decreasing, the proportion of handkerchief tissue and facial tissue is increasing, and the export volume is 191,000 tons, which exceeded that of toilet tissue for the first time in nearly three years, indicating that the structure of exported tissue continued to develop towards high-end level.

Part Seven: release and implementation of relevant standards

Certain national standards and group standards were released or started to be implemented in 2022, as well as the standards under revision. Among them, the group standard "Products with Craftsmanship — Tissue Paper", with the China National Pulp and Paper Research Institute (CNPPRI) taking the lead in drafting. The release of this standard has an important guiding significance in improving the quality of tissue products and meeting consumers' demand for consumption upgrading.

Newly released national standards include:

- GB/T40358—2021 Toilet Tissue Paper and Hand Towel—Specification for the use of recycled fibre, Issued on August 20, 2021 and implemented on March 1, 2022
- GB/T 20808—2022 Facial Tissue, Issued on April 15, 2022 and implemented on May 1, 2023
- GB/T 24455—2022 Hand Towel, Issued on July 11, 2022 and implemented on August 1, 2023
- GB/T 26491—2022 Toilet Seat Paper, Issued on July 11, 2022 and implemented on August 1, 2023.

Newly released group standards include:

- T/CTAPI 002—2022 Products with Craftsmanship — Tissue Paper, Issued by China Paper Association on April 21, 2022 and implemented on May 1, 2022
- T/CDZX 002—2022 Soft Moisturizing Facial Tissue, Issued on March 5, 2022 and implemented on March 30, 2022

Newly released industry standards

- QB/T 57422—2022 Natural Colour Pulp, Issued on April 24, 2022 and implemented on October 2, 2022

Standards that are being revised

- Kitchen wipes.

Part Eight: action towards the “Dual Carbon” goal

In September 2020, China put forward the development strategy of “Dual-Carbon Target”, striving to reach the peak of carbon dioxide emissions by 2030 and achieving carbon neutrality by 2060.

Tissue companies which have started to layout such developments include:

Hengan Group’s factories in many places have achieved solar energy in the whole plant, with an annual power generation of 2,000kWh and a carbon emission reduction of 8,688tpy. The steam, natural gas, water, electricity consumption per ton of paper is far lower than the industry average.

Hengan Group’s factories in many places have achieved solar energy in the whole plant, with an annual power generation of 2,000kWh and a carbon emissions reduction of 8,688tpy. The steam, natural gas, water and electricity of per tons of paper is far below the industry average.

All Gold Hongye Paper mills have currently obtained CFCC/PEFC forest certification. The company has taken the lead in launching zero-carbon tissue series and has been actively promoting the certification in green supply chain, green factory, and so on.

CNPPRI successfully organised the occupation training and occupational ability evaluation for carbon emission managers to promote green and low-carbon transformation development and help achieve the Dual-Carbon goal.

Part Nine: brand building and marketing channel innovation

Another development was the practice the National Strategy of “Increase Variety, Improve Quality and Innovate Brand”. CNPPRI actively built the brand cultivation service platform for the tissue paper and hygiene products industry, and carried out relevant work to evaluate “Products with Craftsmanship” in the industry.

Among them, products of Vinda, Breeze, C&S, Hygienix, Libang and Rain Forest listed in the first batch of “Products with Craftsmanship” in the industry.

- Compared with general products, products with craftsmanship are of superior quality, safer to use and better able to meet consumers’ needs for consumption upgrading.

Expansion of new marketing methods included:

- Mind Act Upon Mind made full use of resources on Douyin.
- Vinda and Meituan Youxuan created a super brand day and conducted cooperation on new product marketing with Global Leap.
- Breeze launched the “Green Breeze Discovery” consumer interactive activity.
- C&S launched a live online show in cooperation with Xinhua Net and Z-PIN.

Part Ten: current issues facing the industry – and thoughts

Co-ordinated actions needed to steer the industry through the challenges

In recent years China’s tissue paper capacity has been increasing at a faster pace. Although investment in new projects slowed down in 2022, the problem of staged overcapacity is becoming more serious. CNHPRIA reports that this has been followed by a continuing decline in operating rate. It expects 2022 figures will also show a fall. It urges companies to invest “rationally.”

In its conclusions, the CNHPRIA reports:

- Spiked raw material price and accelerated market competition.
- The market pulp used in China’s tissue paper industry is highly dependent on imports. Affected by the continued spread of global the Covid-19 pandemic and the international logistics, the

price of imported pulp hit a new record high in 2022.

- At the same time, due to overcapacity in the industry, fierce market competition, and a decline in market consumption caused by Covid-19, it is difficult to raise the selling price of products, profit margins of tissue manufacturers are significantly reduced.
- Impact of Covid-19 outbreaks: in 2022, due to the pandemic outbreaks the operation of manufacturing enterprises was seriously affected, and production disrupted. At present, with the further adjustment of the prevention and control policy, the resumption of work and production of companies has been improved and the logistics in various regions is gradually being restored.
- The operating pressure of equipment suppliers has increased.

Due to the impact of Covid-19 and overcapacity, domestic tissue companies slowed down their investment in new projects, resulting in a decrease in the orders of tissue machines and converting machines.

- At the same time, the problems facing the international market include high shipping prices, difficulties in offline communication between equipment suppliers and customers, and difficulties in timely arrival of project service personnel, which made it difficult to carry out orders.
- Calls for government action.

In November 2022, China National Pulp and Paper Research Institute and CNHPRIA actively reported the difficulties encountered by enterprises to relevant government departments and called for the introduction of tax and fee cuts, providing special loans and interest rate concessions, opening up green logistics channels, encouraging equipment enterprises to innovate and export. With the adjustment of pandemic prevention and control requirements and relevant policies, enterprises have gradually resumed their production and operation.

At the same time, the CNHPRIA also suggests that enterprises in the industry actively research, innovate and develop differentiated products to enhance brand competitiveness and avoid price competition, launch more energy-saving and carbon-reducing equipment and products, and realise the collective development of the industry through production capacity cooperation and supply chain cooperation between enterprises.

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