

TWM

TISSUE WORLD MAGAZINE

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AfH IS SURGING BACK

GLOBAL SALES EXCEED \$25BN...
AS THE MARKET UNDERGOES
WIDESPREAD CHANGE

Plus ...

Poland and Romania: Regional Report

Robust consumer-driven product economies are emerging
Velvet Care and Pehart Group talk to TWM

Barometer Issue: Special Report

Mills in North America and Europe report how projects
of a year ago progressed

Exit Issues

India: Projected 11% volume CAGR over 2020-2025

Technical Theme: Chemicals

Henkel's bio-based lamination adhesive
Kemira's new dust control method

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"The tissue market in Poland is rebounding... we are seeing a current growth rate on the level of above 15% y-on-y. The situation is the opposite with towels, which grew tremendously during the pandemic, and is now normalising and slowing down."

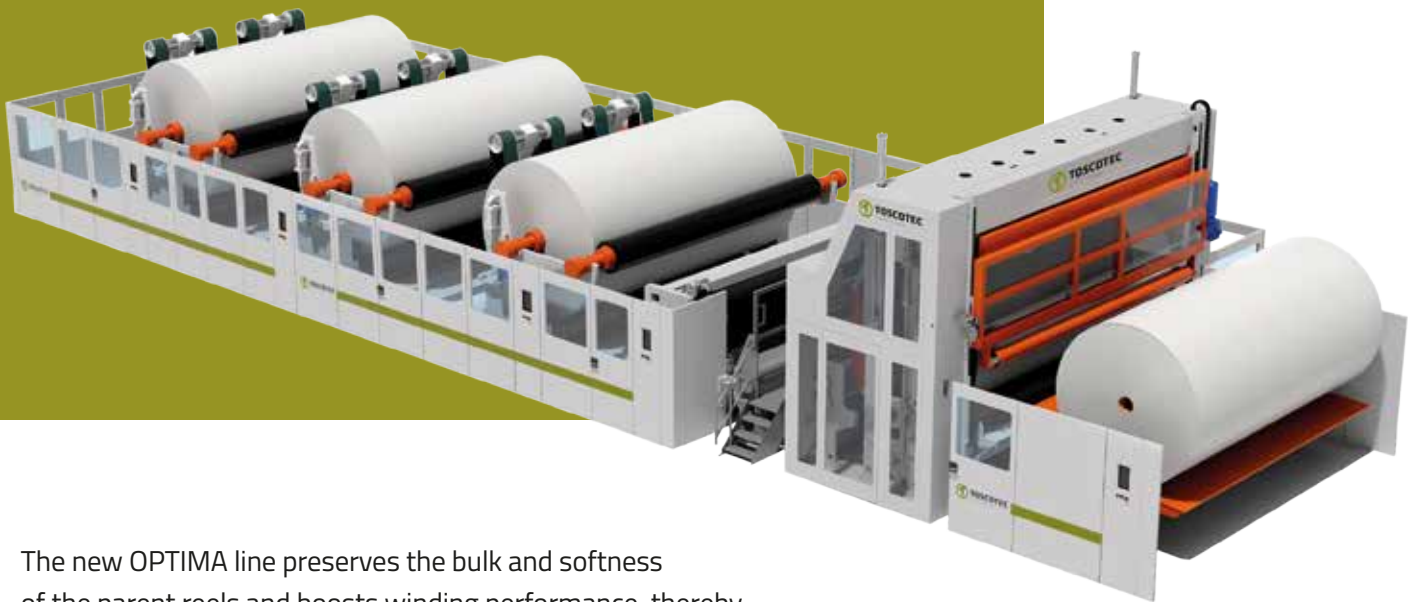
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Cover: An image emphasising the rebound of the AfH market following the outbreak of Covid-19 which had impacted global sales. Image by Contrast Creative, Manchester, UK.

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TISSUE WORLD MAGAZINE

is published bi-monthly. The subscription price is US\$400 per year for 6 issues. Subscription is free for qualified subscribers in the tissue industry.

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AFH TISSUE IS RECOVERING STRONGLY AS MARKET DIVERSIFICATION TAKES HOLD

Helen Morris

Senior Editor, Tissue World Magazine

Tissue's hardest hit sector during the pandemic is surging back. Global AfH sales reached \$25bn msp by Q4 2021, so will now be more still.

In TWM's MarketIssues, Euromonitor International's Liying Qian breaks down the sector's figures further: the boxed facial tissues market is worth \$2.3bn msp, paper tableware \$6.9bn, paper towels \$5.8bn, toilet paper \$7bn, wipers \$3.1bn. All 2021 figures.

A sustained return is not yet certain. The market will continue to change as it develops, and this comprehensive analysis examines a range of expected trends, not just in the immediate future, but projected ahead for 20 years. Growth trends will not be universal, and continental and regional variations suggest years of time lag.

Key points include: China, barring more recent events in Shanghai, essentially back to normal for now, while for the US and other regions not so until 2025; hygiene to be the main driver; most new growth potential in less mature developing regions "where a health-centric lifestyle shift, increased disposable income, rising urbanisation and improved institutional infrastructure will continue driving category growth".

Several of those trends are reaffirmed in ExitIssues, where evidence is growing of a huge potential growth market emerging. Sumit Khanna, Chief Executive of New Delhi-based Beeta Tissues, doesn't hide his "surprise" at various recent developments in the market there. He reports "a huge upsurge in demand for tissues" in schools, hotels and offices on the back of a renewed awareness of hygiene demands. And an intriguing concept, what he calls "revenge" tourism. This is a new determination, having been restricted for so long, to get out and travel.

Much of Euromonitor International's research was completed before the events unfolding in Ukraine and the subsequent further strains imposed on already existing stress within global economies, so growth conditions projected in the analysis must all be weighed in that context: a global recovery hinging on consumers' financial confidence at a time of dramatically increasing costs; the health of the foodservice and hospitality industries; continued virus control and hygiene product improvement.

That, at the present time, seems like a list of the areas of life under some measure of threat. Much effort has been put into imagining the much-anticipated post-pandemic 'new normal'. With a new element added to the 'perfect storm' of economic stress, that opportunity still seems a way off.

From a low base, Poland and Romania are developing a robust consumer-driven product economy

When TWM visited Poland in 2019 there was plenty of evidence of the consumer choice revival which began after the end of the Soviet years. That potential was showing real results.

Poland's overall real GDP was \$1,223bn in 2020, with a growth rate of 4.55% in 2019.

Romania's real GDP was \$556bn in 2020, with a growth rate of 4.2% in 2019.

The arrival of supermarkets and discount stores had a big impact resulting in changing trends which instigated a consumer shift from standard to economy tissue products. Disposable incomes were rising, with underdeveloped tissue categories springing to life.

Many new factors complicate the future in both countries, as TWM's Regional Report shows. Poland and Romania both share a border with Ukraine, costs are rising across the board and immigration levels are such that social structures are stretched. While inflation is squeezing incomes, on the population metric both countries have experienced an unprecedented level of population change.

For tissue, much will depend on which increasingly highly priced essential items consumers will spend dramatically reduced income on. All indicators suggest the market will be significantly different again in the coming years.

WITH GLOBAL AfH SALES AT \$25B IN 2021 (FIXED US EXCHANGE RATE, REAL VALUE, MSP), THE LOOMING RECOVERY WILL BE UNEVEN IN A POST-COVID-19 MARKET UNDERGOING WIDESPREAD CHANGE

A sustained return is not yet certain with businesses yet to recover fully from the pandemic. Liying Qian, Research Analyst, Euromonitor International*, examines short- and long-term global market trends in automation, product innovation, circular economy, CO2 emission-free production, consumer preferences and emerging growth regions.



Liying Qian
Research Analyst, Euromonitor International

The recovery of the global \$25bn msp AfH market (the figures in the report reflect data released in February 2022) brings opportunities as well as challenges. In 2021, the AfH boxed facial tissues market is worth \$2.3bn msp, AfH paper tableware \$6.9bn (combined napkins and tablecloths), AfH paper towels \$5.8bn, AfH toilet paper \$7bn, AfH wipers (paper and nonwovens) \$3.1bn.

A global recovery of AfH demand hinges on consumers' financial confidence and the health of the foodservice and hospitality industries, which are largely at the mercy of the state of virus control and any future global shocks due to new variants. In an uncertain environment, wipers (especially nonwovens) offer a great growth potential, given their cleaning and disinfecting efficiencies. Key findings are:

Heightened hygiene awareness, which will generate new user occasions and drives product improvements. Hygiene vigilance is fuelling tissue consumption and quality expectations across the globe leading to new products with better

cleaning properties and an improved user experience. Rising disposable incomes, urbanisation and a health-centric lifestyle shift in emerging markets will continue to present significant opportunities for greater AfH tissue penetration.

Structural changes in business, education and foodservice have squeezed tissue demand. Pandemic-accelerated structural shifts such as remote working, e-learning and food delivery, will recast the AfH landscape, and, depending on the extent and duration of these shifts as the pandemic develops, will weigh on AfH tissue demand in at least the short term.

Touchless technology and automation place additional pressure but also continue to open up new opportunities. As new technologies emerge to fill in gaps in the new touch-free, efficiency-hungry economy, tissue needs may slide, due to the lack of human presence. However, high-tech machines and devices also generate new applications for specialised, electronics-friendly wipes.

Expectations of sustainability have

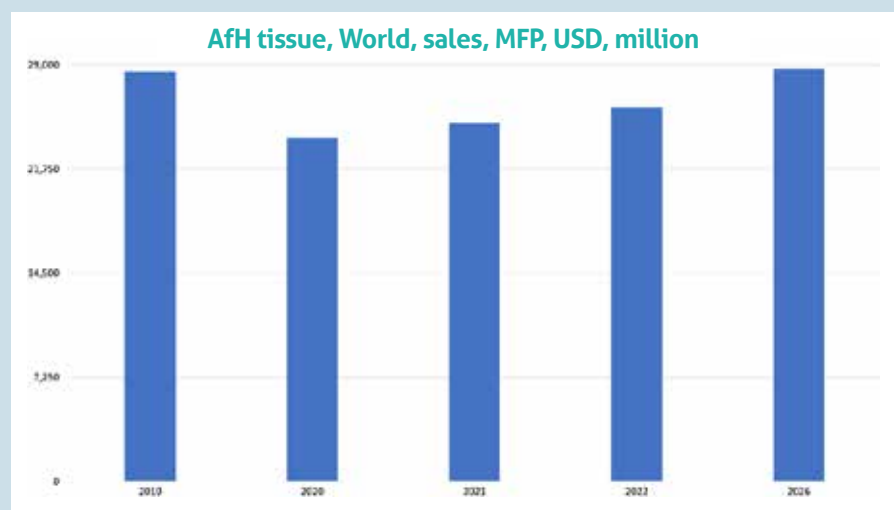


Figure 1: AfH tissue, World, sales, MFP, USD, million

AFH sales volume, by region, '000 tonnes, 2021/2026

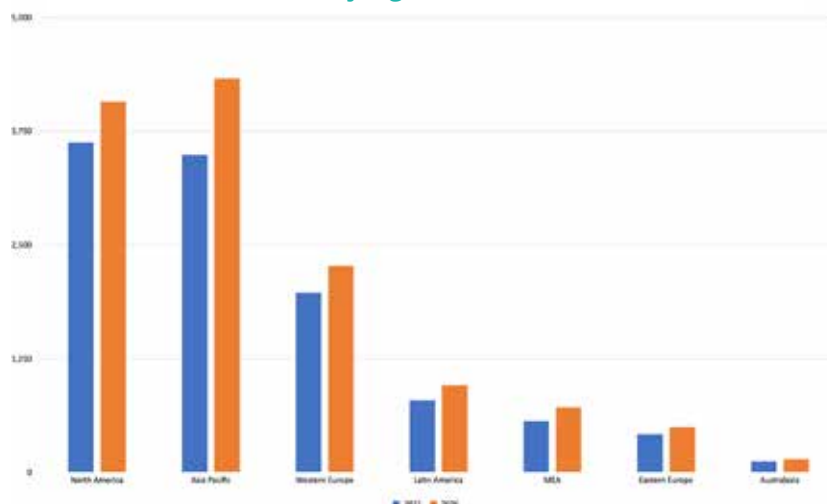


Figure 2: AFH sales volume, by region, '000 tonnes, 2021/2026

ushered in heightened demand for eco-friendly products: Rising dedication to more eco-friendly lifestyles and increasingly stringent regulatory moves have brought eco concerns further into the spotlight, forcing another sustainability reckoning. While AfH products are not subject to the same degree of scrutiny confronting the retail market, a wave of green movements is already shifting the AfH landscape.

Asia Pacific and North America lead AfH tissue's path to recovery

Recovery for a beleaguered AfH tissue sector may be a lengthy process given the combination of factors affecting the AfH environment. Global volume and value sales are unlikely to surpass 2019 levels until 2025.

Asia Pacific is expected to exceed the North American AfH tissue market in volume terms, with 33% of global volume sales by 2026. North America, on the other hand, will lead value growth, generating 38% of global msp value sales by 2026.

Uneven global recovery in 2021, with China outpacing the rest: Speed of economic recovery shapes spending potential and value growth

The pace of economic activity and employment recovery goes hand-in-hand with movements in consumers' and businesses' confidence and spending, consequently shaping the value performance of AfH tissue.

Developing markets offer significant growth potential

While the largest global markets such as the US and China still make up the lion's share of the AfH tissue market, most growth opportunities still reside in smaller, less mature developing markets where a health-centric lifestyle shift, increased disposable income, rising urbanisation and improved institutional infrastructure, from hospitality and manufacturing to healthcare will continue driving category growth.

India, which has a rather low global volume share despite its substantial population, is projected to grow in volume at an 10% CAGR over 2021-2026, outperforming many of its peers.

Thailand and Indonesia are also anticipated to see strong growth speed owing to significant unmet consumption potential in institutional sales, and an expected resurgence in domestic and international tourism.

Toilet paper drives consumption, while paper towels lead recovery

Toilet paper is the largest AfH tissue category in most regions and is forecast to account for 36% of global AfH tissue volume growth over 2021-2026. Asia Pacific will generate nearly half of that increase. North America remains an exception, where paper tableware will still account for 44% of the total AfH tissue consumption in 2026 and supported by the projected recovery of foodservice and hospitality industries.

Looking ahead, the recovery of AfH tissue products will be uneven, with paper towels expected to see the most significant rebound in the coming years, benefiting from the shift away from jet air dryers to 6,000 paper towels. Paper tableware, in contrast, is expected to see only a slow recovery, as displaced demand for in-restaurant dining due to safety concerns and weakened disposable incomes is unlikely to return quickly. Additionally, changing attitudes and actions related to disposable single-use items, including paper napkins, in the context of sustainability agenda can also low down the demand for paper tableware.

Cleaning and waste efficiency at the centre of product improvements

Prior to the pandemic, Kimberly-Clark (K-C) had already been engaging in the development of new products targeting the AfH segment. One of its more recent developments was the launch of paper towels in China with patented Airflex technology, which has proved popular among luxury hotels. The new line features improved water-absorbing efficiency and helps reduce the consumption of paper towels. In Mexico, its Kleenex hand towels made using aluminium chloralhydrate tout heightened cleaning efficacy for hospitals and offices.

In Finland, Tork Hylsytön WC-paperi offers a tubeless toilet paper that is designed to generate 82% less packaging waste.

Growing eco and health awareness has also bred a slew of dispensers that eliminate wasteful wipe usage and cross-contamination. Structural and mechanical improvements in High-Tech Conversions' new GRAB-EEZ ESD Safe Cleanroom Wipe Dispenser, for example, protect wipes from the outside environment. The dispenser has its double C-folded cleanroom wipes stacked inside the unit, which dispenses one wipe at a time, preventing unintended and wasteful wipe dispensing.

Wipers forecast more moderate growth following pandemic surge

In the context of an unprecedented pandemic, wipers marked the only bright spot within AfH tissue in 2020. Increasingly

LOOKING AHEAD, THE RECOVERY OF AFH TISSUE PRODUCTS WILL BE UNEVEN, WITH PAPER TOWELS EXPECTED TO SEE THE MOST SIGNIFICANT REBOUND IN THE COMING YEARS, BENEFITING FROM THE SHIFT AWAY FROM JET AIR DRYERS TO 6,000 PAPER TOWELS. PAPER TABLEWARE, IN CONTRAST, IS EXPECTED TO SEE ONLY A SLOW RECOVERY, AS DISPLACED DEMAND FOR IN-RESTAURANT DINING DUE TO SAFETY CONCERNS AND WEAKENED DISPOSABLE INCOMES IS UNLIKELY TO RETURN QUICKLY.

stringent hygiene requirements coupled with growing awareness of wipers' cleaning efficacy and speciality applications, will drive steady growth in wipers over 2021-2026. Latin America is forecast the fastest growth in wipers thanks to heightened cleaning expectations and growing product variety and availability.

Though the more cost-efficient dry wipers remain widely popular across institutional channels, pre-saturated wipers, especially the ones with enhanced sanitising and disinfecting features, have gained significant share. This has been seen particularly in healthcare settings due to their fast-acting and consistent performance during high-frequency cleaning.

Developed markets, such as Finland, Belgium, Austria, Canada and the US saw the largest share gain for wet wipers in the hospitals/healthcare channel in 2020. Most new launches in AfH wipers have been focused on improving cleaning capability against multiple pathogens for various user cases without harming users and the environment. For example, K-C Professional introduced Scott 24, the first pre-saturated wipers that disinfect and provide 24-hour surface sanitisation against bacteria, even after multiple touches, according to the company.

Opportunities and challenges through the lens of institutional channels

AfH tissue's 2021 \$25bn value consists of: 49% Horeca, 12% Public, 24% Business/Industry, and 15% Healthcare. AfH tissue's recovery therefore largely hinges on Horeca channel spending. Despite suffering the steepest decline during the pandemic in 2020, hotels, restaurants and catering services still make up the largest share of global AfH tissue sales, particularly paper tableware and boxed facial tissues, and will remain the key engine of the market's recovery.

Most notably, emerging markets such as Indonesia, China and India, which already generate more than two thirds of AfH tissue sales via Horeca, will present further opportunities as economic recovery and infrastructure improvements draw more leisure spending from domestic and inbound travellers.

DEVELOPED MARKETS, SUCH AS FINLAND, BELGIUM, AUSTRIA, CANADA AND THE US SAW THE LARGEST SHARE GAIN FOR WET WIPES IN THE HOSPITALS/HEALTHCARE CHANNEL IN 2020. MOST NEW LAUNCHES IN AFH WIPERS HAVE BEEN FOCUSED ON IMPROVING CLEANING CAPABILITY AGAINST MULTIPLE PATHOGENS FOR VARIOUS USER CASES WITHOUT HARMING USERS AND THE ENVIRONMENT.

Asian consumers to increase their already high savings ratio

The global savings ratio is forecast to be 17% of disposable income in 2040, up from 16% in 2020. Asians continue to be the biggest savers, as they are habitually worried about the costs of healthcare, education and pensions. The region's savings ratio is set to rise further to 26% in 2040, from 24% in 2020.

Despite its efforts to move towards a consumption-driven economy, China will still have the highest savings ratio among the world's major economies, as Chinese consumers are expected to save 36% of their disposable income on average in 2040.

Emerging middle class and digital-enabled elderly generate new spending

In 2040, emerging and developing countries will account for more than half of global income, driven by economic growth and reduced poverty, which will result in households exiting poverty to enter the lower-middle income segment (\$5,000 - \$15,000) and the middle-income segment (\$15,000 - \$45,000), as well as gaining more discretionary spending power.

Large rural to urban flows over the last 10-15 years have swelled the size of cities and boosted income and spending. This has been particularly the case in developing economies in Africa and Asia.

In 2040, people aged 65+ will account for 14% of the global population and account for a quarter of global income. Covid-19 has fostered digital adoption among older consumers and there is now little difference in the proportion of baby boomers using digital and that among their younger cohorts in more digital-forward categories such as travel.

Young consumers have notable spending strength

Despite the financial vulnerability and price sensitivity of many, Millennials and Gen Z account for significant shares in the high-income segments. In 2020, they made up 47% of social class A – the highest income social class. However, the widening income gap between these two groups due to the pandemic means there is no "one-size-fits-all" strategy when targeting these consumers given the diversity of young consumers in terms of their income levels, degree of price sensitivity across different groups, and any shifts in spending priorities which also differ.

Population aged 65+ years dominates the top income band

In 2020, 26% of people aged 15+ globally were on an annual gross income of less than \$1,500, but this proportion is set to fall to 15% by 2040, as the emerging middle classes continue to expand, especially in emerging and developing countries.

At the other end of the income spectrum, the population with an annual gross income of over \$250,000 will nearly double to 45m people globally in 2040. People aged 65+ will account for 17% of this income band in 2040 (up from 15% in 2020), making older consumers the predominant group in the top income band and therefore an important target for luxury/premium businesses.

Safety, ease and authenticity remain highly favoured travel features

After the highly disruptive year of 2020, consumers in 2021 continue to prioritise relaxation as well as safe destinations that adhere to new health and safety protocols. Younger consumers – Millennials and Gen Z in particular – appear more eager to travel in the post-pandemic world.

As a symbol of the interconnected world that we live in, global migration and travel have helped boost incomes in low- and middle-income economies via remittances. Greater mobility has changed the face of economies, societies, labour

DESPITE THE FINANCIAL VULNERABILITY AND PRICE SENSITIVITY OF MANY, MILLENNIALS AND GEN Z ACCOUNT FOR SIGNIFICANT SHARES IN THE HIGH-INCOME SEGMENTS. IN 2020, THEY MADE UP 47% OF SOCIAL CLASS A – THE HIGHEST INCOME SOCIAL CLASS.

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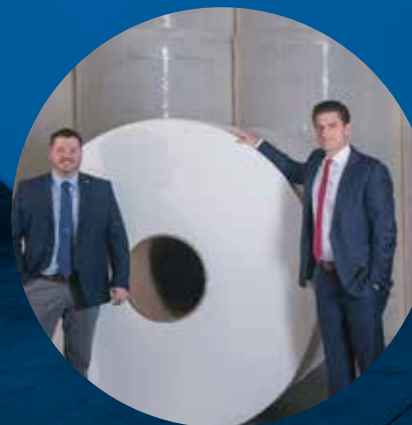


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BUSINESS TRAVEL IS ANOTHER AREA THAT WILL TAKE SEVERAL YEARS TO RETURN TO SOME FORM OF NORMALITY, WITH ZOOM AND REMOTE WORKING BECOMING A STANDARD FEATURE OF DAILY LIFE IN 2020. ACROSS ALL REGIONS THERE WILL BE A STRONG PERMANENT SHIFT TO WORKING FROM HOME, ESPECIALLY IN THE ADVANCED REGIONS OF NORTH AMERICA AND EUROPE.

and consumer markets. Immigration was the main source of population growth in developed countries between 2010 and 2020, making up 67% of population growth in these countries.

The pandemic has led to an unprecedented decline in the flow of people since 2020, slashing net migration to the US by almost half in 2021, for instance. The number of global outbound trips dipped by 73% in 2020. International travel is not expected to return to its pre-pandemic level before 2023.

Remote work practice saps business travel

Business travel is another area that will take several years to return to some form of normality, with Zoom and remote working becoming a standard feature of daily life in 2020. Across all regions there will be a strong permanent shift to working from home, especially in the advanced regions of North America and Europe.

Space reconfiguration caters to new mobile workers. Hotels' entry into the co-working market reflects a continued depression in global tourist traffic and a surge in remote work arrangements among many higher income workers, as well as the growth in casual freelance work. With more workers looking for space, there is real potential to use that traffic to drive post-work socialising and other spending on hotel properties.

Long road back for global foodservice

Besides travel and tourism, the health and prosperity of the consumer foodservice industry contributes heavily to sales of AfH tissue to the Horeca channel. The pandemic has dealt a heavy blow to consumer foodservice, especially eat-in occasions. The single biggest impact of the Covid-19 crisis on restaurant traffic has been the months-long disappearance of eat-in sales.

While full-service restaurants are set to remain the leading category for the foreseeable future, the pandemic is likely to cast a lasting pall over dine-in traffic, with a significant number of mid-priced convenience occasions likely to migrate towards delivery, takeaway and quick-

service formats, as consumers remain circumspect in terms of when and where they choose to congregate.

Proliferating "delivery-first" models replace many AfH meal occasions

The contraction in global outlet numbers seen in 2020 is likely to have a long-lasting impact, particularly with closures expected to continue in 2021 in markets such as the US and the UK. As in retailing, the global restaurant industry saw a substantial surge in delivery orders during the lockdown periods in the first half of 2020, with delivery spending as a percentage of overall foodservice spending estimated to have risen in 2020 as much as it had over the previous five years.

The trends towards delivery and takeaway continues post-pandemic. Euromonitor International Voice of Consumer – Digital Consumer survey indicated that in 2021 the proportion of consumers in the US ordering delivery weekly stood at 21.5% of respondents in 2021, up from 15.5% in 2020. In the UK, the number went from 15% to 17%, and in Germany - from close to 11% in 2020 to 15% in 2021.

While some of this will inevitably pull back as the pandemic eases and lockdowns cease, Covid-19 has only accelerated what has been a decade-long shift, and consumers making hundreds more delivery orders in a year are unlikely to return completely to old habits.

Workplaces and stores reopening aids business and public recovery

Toilet paper and paper towels make up the majority of AfH tissue consumption in the business/industry and public channels, accounting for nearly half of AfH tissue sales globally. The US, projected to be the largest services market in 2030, accounts for 37% of the tissue sales derived from these two channels. China, the second largest AfH tissue market after the US, recorded the largest absolute sales gain between 2015 and 2020 via business/industry and public channels. Moving forward, supply chain localisation and rising healthcare spending will drive the manufacturing sector in both countries, contributing to the rebound in the business/industry channel. Following subsequent lockdowns in China, further challenges in the recovery of demand in the country are expected.

While the reopening of workplaces will stimulate AfH tissue's growth in 2021 and beyond, prolonged work-from-home practices and long-term strategies in automation in the business/industry sectors may still prevent tissue consumption from reaching pre-pandemic levels quickly.

Pandemic era ushers in accelerated adoption of automation

As global companies seek to enhance supply chain efficiency and agility in a safety-wary, high-cost and labour-tight environment, investment in production automation technologies, from basic self-checkout to more sophisticated robots, is forecast to accelerate over the next five years. According to the Euromonitor International Voice of the Industry Covid-19 Survey, conducted in April 2021, 34% of manufacturing companies plan to increase investment in automation tools.

Production automation will be mainly led by industries with wide product portfolios and long supply chains. Industries such as household essentials, automotive, apparel and personal accessories are forecast to be among the leaders in production

AS GLOBAL COMPANIES SEEK TO ENHANCE SUPPLY CHAIN EFFICIENCY AND AGILITY IN A SAFETY-WARY, HIGH-COST AND LABOUR-TIGHT ENVIRONMENT, INVESTMENT IN PRODUCTION AUTOMATION TECHNOLOGIES, FROM BASIC SELF-CHECKOUT TO MORE SOPHISTICATED ROBOTS, IS FORECAST TO ACCELERATE OVER THE NEXT FIVE YEARS. ACCORDING TO THE EUROMONITOR INTERNATIONAL VOICE OF THE INDUSTRY COVID-19 SURVEY, CONDUCTED IN APRIL 2021, 34% OF MANUFACTURING COMPANIES PLAN TO INCREASE INVESTMENT IN AUTOMATION TOOLS.

GOING FORWARD, INDUSTRIES WILL UTILISE THESE TECHNOLOGIES TO BUILD SUPPLY CHAINS THAT ARE MORE EFFICIENT, WHICH WILL ALLOW RETAILERS TO FULFIL E-COMMERCE ORDERS IN A SHORTER TIME PERIOD.

automation, artificial intelligence and 3D printing.

Going forward, industries will utilise these technologies to build supply chains that are more efficient, which will allow retailers to fulfil e-commerce orders in a shorter time period. Retailers could use such technology to further boost their omni-channel presence and hyperlocal strategies. To execute these strategies, it is projected that retailers will develop micro-fulfilment centres that will reduce the reliance on a few warehouses and bring flexibility and agility to their operations. Overall, accelerated digitalisation will further boost digital trade and cross-border e-source.

E-commerce growth fuels automated fulfilment infrastructure

Grocery delivery provider Instacart's foray into warehouses in food delivery market aims to expedite the delivery process. In such fulfilment centres, with capacity for 10,000 to 50,000 items, the company will use robots to pull items from warehouse shelves rather than have workers manually do so. Partnering with technology company Fabric, the company expects to kick off early-stage concept pilots across the US and Canada over the coming year and beyond.

Electronics giant LG has launched an autonomous robot with disinfecting ultraviolet (UV-C) light for various US AfH settings such as schools, hotels, offices, restaurants and retail stores. The robot is able to move around tables, chairs and other furniture, irradiating a space's touchable surfaces in less than 30 minutes and disinfecting multiple high-touch areas on a single battery charge. Supervising staff are able to monitor progress via remote updates on smartphones or tablets.

Swiss company Tweag released a smart self-cleaning door handle – Touch 1. Every time the door handle is used, an internal sensor sends a signal to the printed circuit board (PCB), which will then trigger a small electrical engine inside the handle to power the external magnetic ring fitted with a disinfectant-impregnated disposable sponge. The magnetic ring will then move from the handle base to the end and back to the base within three seconds to spread the disinfectant across the handle. The handle is designed to be fitted easily to any standard door.

Automation evolution increases need for specialised wipes

Though industrial cleaning agents such as wet wipes are widely used for decontaminating AfH surfaces, many contain chemicals such as bleach, which are known to either damage or prove less effective for electronics and high-tech equipment. With automation adoption on the rise, the need for specialised cleaning products, including disinfecting wipes with high-performance properties, is greater than ever.

Manufacturers have ploughed money into new products to address such needs. In early 2021, Danish industrial group Fibertex Nonwovens allocated just over DKK600m to expand its production capacity of, among others, high-performance sanitising and disinfecting wipes for healthcare/medical applications in North America and Europe. The investment includes two high-capacity state-of-the-art lines based on spunlacing.

Metrex, a US infection-control products supplier for the healthcare industry, has released its new CaviWipe 2.0 surface disinfectant wipes that are effective against 42 pathogens. These multipurpose disinfectant wipes have a two-minute universal contact time for one-step cleaning and disinfection of hard, non-porous surfaces, including most medical device surfaces, in healthcare settings. Similarly, PDI, a provider of infection-prevention products for the healthcare and foodservice industries, launched Sani-Cloth Bleach Clinical Size Wipe, a 15x13cm disinfecting wipe designed for cleaning smaller medical equipment without generating unnecessary waste. Initially intended for disinfecting Covid-19 testing devices, the wipes will eventually be available for use for other healthcare purposes.

Northern Europe and Canada lead global sustainability ranking

The Environmental Sustainability Index gives an indication of a country's overall performance in environmental sustainability, highlighting regional and country-specific risks and opportunities. Canada and Northern European countries (Norway, Switzerland, Finland and Sweden) rank highest, with a strong performance in the Water, Energy, Pollution and Forest and Biodiversity pillars, ranking at the top among the 97 markets.

A number of emerging and developing countries in Asia Pacific and the

Middle East and Africa show the worst overall performances, closely tied to geographical, as well as economic factors and predispositions.

Although the low ranking of some of the fastest growing major economies could be cause for concern for businesses, it also offers opportunities for corporate investment in sustainability strategies.

The circular economy is key to making sustainability affordable

Traditional supply chains are designed to be linear, from origin to consumption. However, things are changing, with companies increasingly investing in circular business models that keep products in use. Nothing is wasted – everything is shared, reused, repaired or recycled.

Circular models are both convenient and sustainable, giving consumers access to sustainable products at affordable prices, something especially relevant in price-sensitive markets in Latin America.

Circularity opens huge opportunities to reconfigure businesses of all sizes. Opportunities exist not only for big companies; in fact, the most innovative enterprises are typically start-ups.

Circularity is strongly evident in packaging preferences

Considering FMCG industries' scale and the substantial use of packaging in their businesses, it is essential for them to consider transitioning to circular solutions to remain relevant and competitive.

Consumers around the world are showing a clear preference for packaging that is better for the environment. Greener solutions such as those that are recyclable, biodegradable and refillable are rooted in Latin American consumers' minds to a greater extent than in Europe and North America. There is, however, still a gap between what consumers want and the available solutions companies are offering, so players should prioritise sustainable packaging efforts, as is already happening in Europe, to win in Latin America.

It is, perhaps, not easy to prioritise sustainability in a recovering market such as AfH tissue. However, moving towards greener solutions, given the changes in consumer behaviour, is an opportunity in a brand repositioning era.

Pro-green movements in retail offers a foretaste of AfH shift

Though health-related properties remain most emphasised in marketing for retail wipes, including personal and household surface cleaning wipes, green attributes have grown in importance in recent years. Globally, the number of online retail wipes SKUs with "environmentally friendly"

and "biodegradable" product claims grew by 34% and 39%, respectively, in 2020, outstripping the 18% increase in total retail wipes SKUs online over the same period.

The expanding sustainable travel and tourism ecosystem requires all players, including AfH tissue providers, to recast value propositions. However, how to fulfil sustainability at the expense of margins remains a challenge facing all businesses.

The path to sustainable AfH tissue includes responsible material sourcing, waste-efficient manufacturing, usage optimisation, post-use recycling and composting.

Energy-efficient manufacturing curbs invisible waste

Essity's tissue production facility in Lilla Edet, Sweden, which makes Tork-branded tissue and other consumer tissue products, aims to become the world's first large-scale tissue mill with fossil CO₂ emission-free production by completely replacing natural gas with biogas, which is derived from biological waste. Having run several successful shorter tests of such emission-free operation at the Lilla Edet location, the company will now be able to do so for a longer period of time, and expects to apply such capabilities to other production facilities. Its objective is to reduce greenhouse gas emissions by 25% by 2023, compared with 2016 levels.

Kimberly-Clark's 2020 investment in a high-efficiency power and steam production facility for AfH tissue in Kentucky's Daviess County also demonstrates a commitment to reducing carbon footprint.

Sofidel Group has reached an agreement to purchase green electricity produced by energy business RWE's newly constructed wind farm in Italy. The long-term power purchase agreement (PPA) took effect in early April 2021 and will run until the end of 2030. This partnership is projected to fast-track Sofidel's progress towards its climate protection target, which is to reduce emissions per tonne of paper by 40% by 2030, compared with the 2018 base year.

Waste-efficient product design and usage tracking on the rise

Kruger Products' AfH division introduced a new 2-ply Micro-Max+ Small-Core bathroom tissue line in April, which features a smaller core and over twice as much tissue paper per roll as its 2-layer White Swan bathroom tissue roll. With 850 sheets in an 85m per roll, the new tissue is ideal for high-traffic commercial spaces, such as offices, healthcare facilities and restaurants. Small-Core not only limits waste by holding more tissue, it also allows for more effective packaging, logistics and storage.

Besides product design, smart technology

offers labour and waste efficiency associated with tissue consumption in the AfH environment. K-C Professional's smart rest room management system Onvation, launched in early 2021, is an internet-of-things (IoT) platform which includes sensors connected to K-C Professional Scott dispensers, along with a mobile dashboard providing real-time data that informs facility management of the usage and stock of toilet paper and paper towels. According to the business, such smart technology helps reduce product waste due to premature refills by up to 80%, and allows facility management to compare monthly and year-to-date product consumption pattern, optimising inventory planning.

Manufacturers shift focus from institutional to retail in Latin America

Latin America has been one of the regions most severely affected by the pandemic. Consumers have been forced to reconsider their primary needs and overall priorities in order to survive an exceptionally challenging period.

Consumers in Latin America are being more careful when examining the cost-value relationship of products, which is reducing brand loyalty. Private label in retail tissue was especially successful at winning market share in 2020.

K-C Professional: transitioning towards sustainable packaging

Breaking patterns in an industry traditionally dominated by plastic packaging, K-C Professional launched in 2020, through the Scott and Kleenex brands, greener institutional products in the Central America and Caribbean region. "100% recyclable packaging with at least 30% of recycled plastic" is the claim with which these products are labelled. The company plans to carry this out across its whole portfolio of products in 2021.

Recycling and waste management corporate commitments need to accelerate in order to meet sustainable goals, especially in Latin America, where only 4.5% of waste is currently recycled

(according to the World Bank) and where 1kg of waste is generated per capita each day.

Forge new paths to reach consumers as spending and socialising modes shift post-pandemic

The competition between home and elsewhere is likely to intensify, with long-term shifts towards remote work, e-learning and third-party food delivery, among others, recasting the post-pandemic reality. As consumers socialise across a wider range of environments with increased flexibility and spontaneity, the ability to create data profiles that capture consumers' socialising and entertainment habits, and adjust the product mix accordingly, will prove vital for AfH businesses.

Reassessing product lifestyles, from material sourcing to after-life management, will help facilitate a more sustainable AfH environment. Going green across the supply chain is essential for businesses to secure future growth as sustainability exerts a direct and growing long-term impact on company profitability and image. Internal investments and partnerships are among the common ways to reach green targets.

Meanwhile, as the definition of sustainability expands, companies also need to place people at the core, enhancing employees' wellbeing and building human capital.

**Disclaimer: 2021 figures are provisional and based on part-year estimates. Any impact from currency and/or exchange rate volatility is discounted. Values are expressed in constant terms to discount the impact of inflation.*

Much of the information in this briefing is of a statistical nature and, while every attempt has been made to ensure accuracy and reliability, Euromonitor International cannot be held responsible for omissions or errors. Analyses found in the briefings may not totally reflect the companies' opinions, reader discretion is advised.

THE COMPETITION BETWEEN HOME AND ELSEWHERE IS LIKELY TO INTENSIFY, WITH LONG-TERM SHIFTS TOWARDS REMOTE WORK, E-LEARNING AND THIRD-PARTY FOOD DELIVERY, AMONG OTHERS, RECASTING THE POST-PANDEMIC REALITY. AS CONSUMERS SOCIALISE ACROSS A WIDER RANGE OF ENVIRONMENTS WITH INCREASED FLEXIBILITY AND SPONTANEITY, THE ABILITY TO CREATE DATA PROFILES THAT CAPTURE CONSUMERS' SOCIALISING AND ENTERTAINMENT HABITS, AND ADJUST THE PRODUCT MIX ACCORDINGLY, WILL PROVE VITAL FOR AFH BUSINESSES.

NEWS IN BRIEF

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



The Zeus team: (L-R) Swanline Managing Director Richard Towers, Zeus Chief Executive Keith Ockenden, and Swanline Group Chief Executive Nick Kirby.

IRELAND

Zeus boosts packaging capabilities with €25m UK acquisition

Irish-owned global packaging solutions company Zeus has completed the acquisition of two UK-based packaging companies – Swanline Group and its sister company BoxMart – in a move worth more than €25m.

As well as strengthening the company's position in the retail, food, beverage and e-commerce packaging sectors, Zeus said their addition keeps it on target to achieve half a billion euro annualised revenue next year.

Forecasted annualised revenues for Zeus in 2022 are expected to exceed more than €400 million, with the combined total revenue of the two companies in excess of €30m.

Keith Ockenden, Zeus Chief Executive, said: "It is a significant day for Zeus as we continue our current investment strategy

with the acquisition of two very strong players in the UK packaging sector.

"As a combined entity, we have enhanced our reach and offering across the UK, with further opportunity to maximise efficiencies across our distribution and supply chains, whilst broadening our product and service offerings to our existing customers."

Specialist packaging company Swanline Group is a trade-only supplier of paper-based materials, print and conversion services to the packaging and point-of-sale sectors.

Headquartered in Stone, Staffordshire, it has four purpose-built sites housing large format infrastructure, screen and digital printing and converting operations, as well as extensive warehousing and distribution capabilities.

BoxMart is a packaging supplier also based in Shenstone, Staffordshire, offering UK-made gift, retail and e-commerce packaging.

GLOBAL

Double E Company acquires Daven Manufacturing; broadens reach on production floor

Double E Company has increased its critical converting components portfolio after acquiring Daven Manufacturing.

Daven joins Epoch, Appleton, Converttech, Schlumpf and Double E Europe as part of the Double E Group, which specialises in the manufacturing of custom-engineered, mission-critical components for the global converting industry.

Tom Pranka, Chief Executive of Double E, said: "The addition of Daven broadens our reach into the production floor, continuing our mission to deliver productivity and safety solutions that solve operational challenges throughout the converting industry."

Daven is headquartered in Fairfield, New Jersey, USA, and has a portfolio of standard and custom engineered products that will

add to Double E's existing line of critical converting products.

BTG boosts Industry 4.0 efforts with virtually connected sensors launch

BTG has announced that all its sensors are now supplied with the bCONNECTTM module, allowing them to be virtually connected and attaining all the benefits of Industry 4.0.

The company said that bCONNECT is an "edge technology, enabling application experts to have cloud-connectivity and remote access to diagnose problems, permitting near-immediate identification of measurement or calibration issues and enhancement of predictive maintenance functionalities".

With these capabilities, BTG is able to further increase the availability and capability of all its sensors. Dan Smith, Global Business Director for Process Solutions, said: "Reliable and available process measurement is vital to building any successful digital programme.

"This innovation further supports our customers' ability to extract value from digitalisation efforts".

BTG launches Yankee refreshment blade

BTG has introduced its PROClean™ Yankee Dryer refreshment blade into the tissue market.

The company said the blade is made of advanced composite material and is designed to quickly and safely clean hard organic coating from the Yankee surface and can be used in any sheet-off condition including at speed and higher temperatures.

It said: "Benefits reported include significantly reduced vibration, reduced edge build up, and less web break and



The MTC ITF Change: Körber Business Area Tissue's latest folding head.

sheet defects.

"Used regularly as part of a Yankee surface management programme it is an effective tool against Yankee chatter and will extend regrind intervals, especially when used with the complimentary VigilancePRO™ Yankee performance monitoring and PROfile™ blade holder service solutions."

Körber presents MTC ITF Change folding head

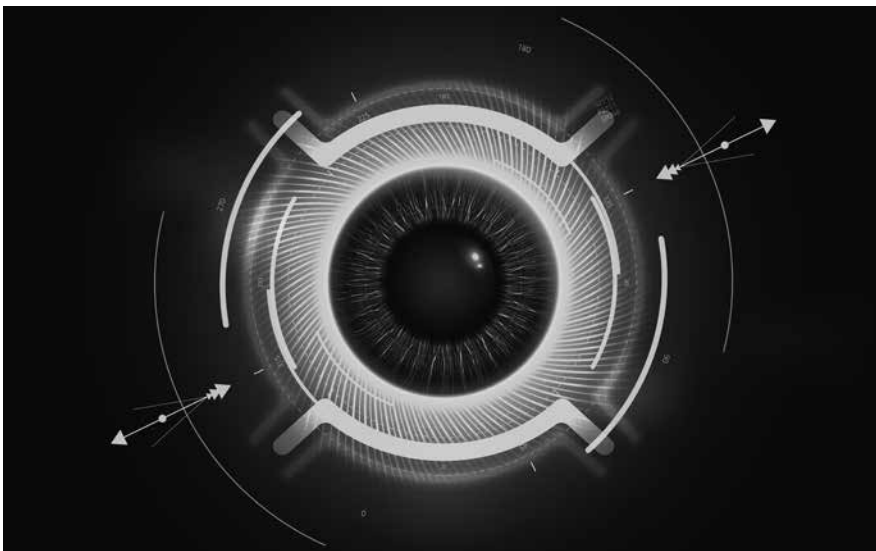
Körber Business Area Tissue has introduced its latest folding head capable of changing a product's cut off.

The MTC ITF Change is the company's latest machine used in the production of interfolded products where it can change the cut-off format of the product simply by replacing the cassette.

Körber Business Area Tissue said it is its first folding head capable of modifying the cut off of the product.

It said: "By replacing a single cassette it is possible to change the cut format in a simple, fast, and automated way without compromising the quality of the finished product.

"MTC ITF Change is the ideal solution for companies that need to develop interfolded sheets of different lengths without losing OEE."



Industry 4.0 boost: BTG sensors are now all virtually connected



Kruger's pulp boost: The Kamloops facility in British Columbia manufactures NBSK and unbleached softwood kraft pulp.

CANADA

Kruger confirms Kamloops pulp mill purchase; boosts NBSK and unbleached softwood kraft pulp capacity

Kruger affiliate Kruger Specialty Papers Holding has completed the acquisition of Domtar's pulp mill in Kamloops, British Columbia.

The Kamloops facility manufactures NBSK and unbleached softwood kraft pulp and will continue to operate as usual.

The mill's 320 jobs will be maintained and additionally, Kruger will maintain ongoing initiatives to continue modernising the plant. François D'Amours, Kruger's Executive Vice President and Chief Operating Officer, said: "Kamloops is a world-class facility and a natural fit for Kruger."

"Over the coming weeks we will focus on strengthening relationships with the mill's existing customers, suppliers, and business partners, as well as with the local community."

The acquisition will also enable Kruger to secure the supply of high-quality pulp for some of its paper mills, including those in Quebec, where the company is investing about \$1bn for the construction of two state-of-the-art tissue plants.

Zeus acquires Canadian distributor Agri-Flex

Irish-owned Zeus has acquired Canadian agricultural supply business Agri-Flex.

Established in 1995, Agri-Flex supplies crop packaging products and horticultural consumables to the Canadian agricultural market, with sales exceeding

\$14m per annum.

The acquisition marks the next phase of Zeus's €35m investment strategy, after it acquired Ireland-based Limerick Packaging in October 2021.

In February 2021, Zeus concluded a previous two-year long €40m investment programme, which saw it acquire seven companies including Austrian company Petruzalek, Dublin-based Essential Supplies and tissue manufacturer Aldar Tissues.

CHINA

Lee & Man Group to upgrade Jiangxi plant and increase production of high-quality products

Jiangxi Lee & Man Sanitary Paper Manufacturing has announced plans to upgrade its high-speed crescent paper machine to increase its production of high-quality products.

Supplied by Baosuo Enterprise Group's Baotuo division, the company will provide energy-saving upgrades for the plant's 5.6m, 2200m/min tissue machine.

According to the machinery supplier the project will include the improvement of product quality, reducing energy consumption, and improving the production environment.

The aim is to then respond to customer demand for higher-quality products produced with higher energy efficiency, reduced emissions and increased production.

Sun Paper boosts production capacity

Sun Paper has increased its production capacity after starting up key pulping process equipment at its new pulp mill Guangxi Sun Paper in Beihai.

Supplied by Andritz, the scope of supply includes a wet lap system with two production lines for a capacity of 1,120 admtd bleached hardwood kraft pulp, each consisting of a Twin Wire and a Heavy-Duty Press for pulp dewatering, a cutter-layboy, and a baling line.

According to Andritz, the wet lap system has the highest capacity ever installed in China.

The investment also includes a white liquor plant with a capacity of 10,500 m3/d comprising major recausticising equipment and an Andritz LimeKiln with a capacity of 950tpd.

USA

GP announces \$50m investment at Muskogee plant

Georgia-Pacific (GP) has announced it will invest \$50m to upgrade its Muskogee, Oklahoma-based bath tissue, towel and napkin manufacturing facility.

Updates at the 640-acre site will take place over the next three years and will add to equipment and will also include a new production line.

A GP spokeswoman told TWM: "The amount and upgrades referenced are an aggregate of several investment projects during the next two years. "We are not sharing any additional details about the projects."

FROM A LOW BASE, BOTH COUNTRIES ARE DEVELOPING A ROBUST CONSUMER-DRIVEN PRODUCT ECONOMY THAT INCLUDES INCREASING TISSUE CONSUMPTION APPROACHING THE EU AVERAGE

Fisher International's data does not yet attempt any assessment of the potential impact of the war in Ukraine on supply chains and energy costs across the region which includes Poland and Romania. It does, however, include objective speculation on the shorter-term prospects for tissue in those two countries.

Poland has a rich history detailing all the way back to the 10th century until it was partitioned by Russia, Austria, and Prussia in 1795. However, Poland regained independence after WWI in 1918, but then suffered greatly at the beginning of WWII with the invasion and occupation by Germany and initially the Soviet Union. Post-war, Poland was controlled by the Soviet Union until the "Solidarity Labour Movement" began to shake them loose from Soviet control.

Poland's transformation into an economic leader began with free elections in 1989, and now Poland is the sixth largest economy in the European Union (it joined in 2004) with a robust tissue business, including tissue mills and tissue equipment fabrication.

However, Poland's economy faces several challenges, including transportation infrastructure and a rigid labour code, which has resulted in more younger Poles

immigrating to other EU member states.

Lands in Romania, on the other hand, were held by the Turkish Ottoman Empire until 1859, which then united as Romania in 1862, and gained recognition of independence at the end of WWI. However, the Soviet Union occupied Romania after initially aligning with Germany, and The Soviet's domination under a local dictator continued for decades until the dictator was overthrown in 1989, and a non-communist government was established in 1996.

Romania joined NATO in 2004 and the EU in 2007. Economic growth rebounded from 2013 to 2017, driven by strong industrial exports and agricultural harvests, but was hampered by an aging population and immigration of skilled labour to other EU countries.

Poland's recent population trend is shown in the blue bars in Figure 1 (note that we will continue to use the blue colour to represent Poland and the yellow bars



Bruce Janda
Senior Consultant, Fisher International

to represent Romania). Poland's overall population is trending down at -0.26% in 2022 for a current estimated total of 38,093,101.

Romania's recent population, represented as the yellow bars in Figure 1, is trending down at -1.09% in 2022 for a current estimated total of 18,519,899.

Poland and Romania have been experiencing the slow rise of inflation over this study period. Figure 2 shows the relative inflation as an index of 100 for the base year 2010. Poland's inflation rate was 2.1%, and Romania's inflation was 3.8% in 2019.

Note that the yellow (Romania) index bars are outpacing the blue (Poland). These figures do not include the expected sharper inflation anticipated rates due to the 2022 global supply issues from Covid-19 and energy costs increases from the Russian invasion of Ukraine.

Figure 3 shows the trend of adjusted real GDP growth for Poland and Romania as GDP per capita that can be directly compared on the same scale. Romanians are slightly behind the Poles in personal purchasing power. Poland's overall Real GDP was \$1,223 billion in 2020, with a growth rate of

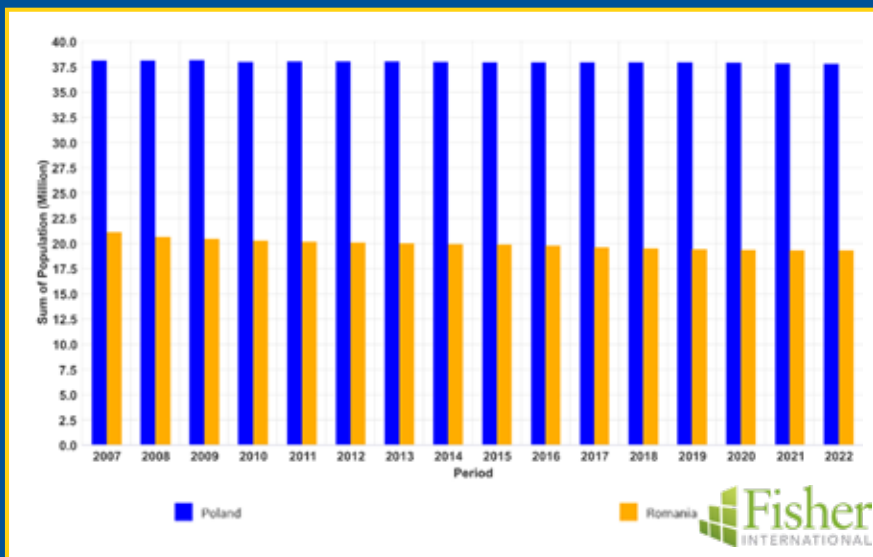



Figure 1: Poland and Romania Population Trend



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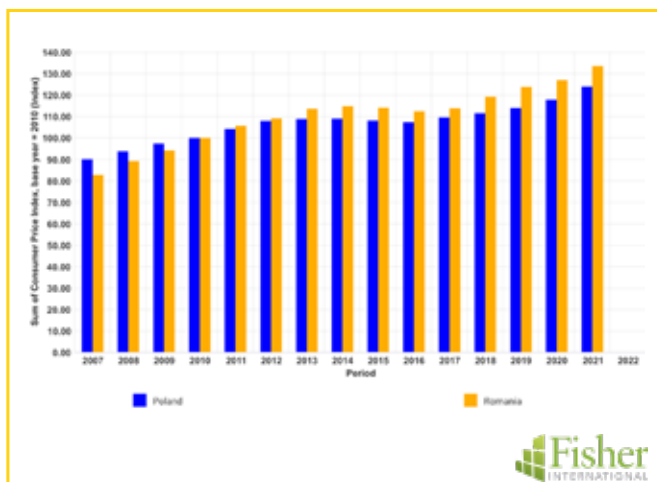


Figure 2: Poland and Romania Inflation Trend

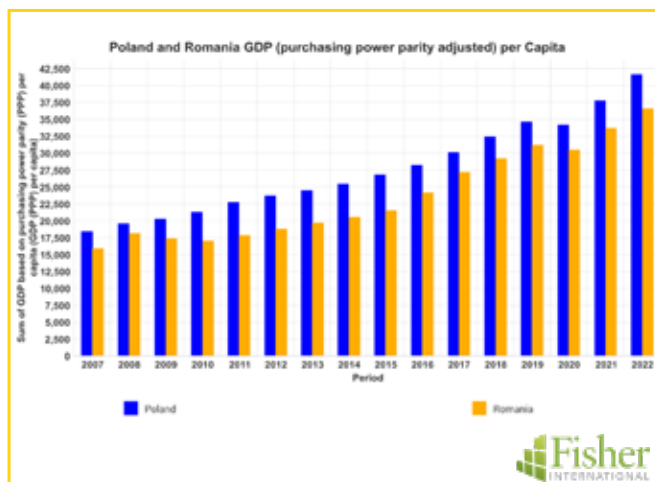


Figure 3: Poland and Romania's GDP (adjusted) per Capita

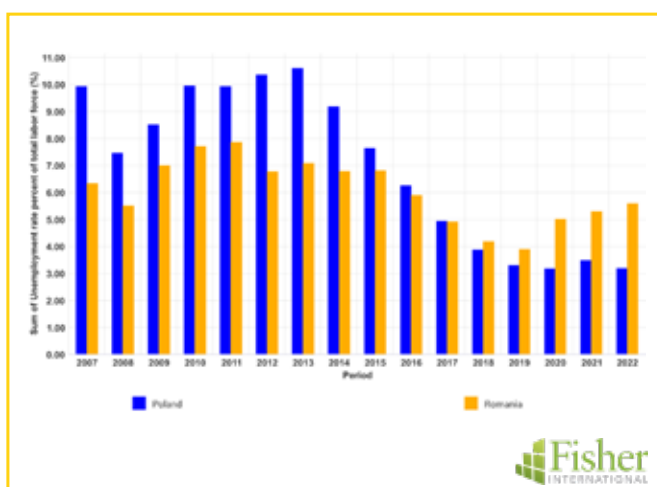


Figure 4: Poland and Romania's Unemployment



Figure 5: Poland and Romania Tissue Machine Count Trend

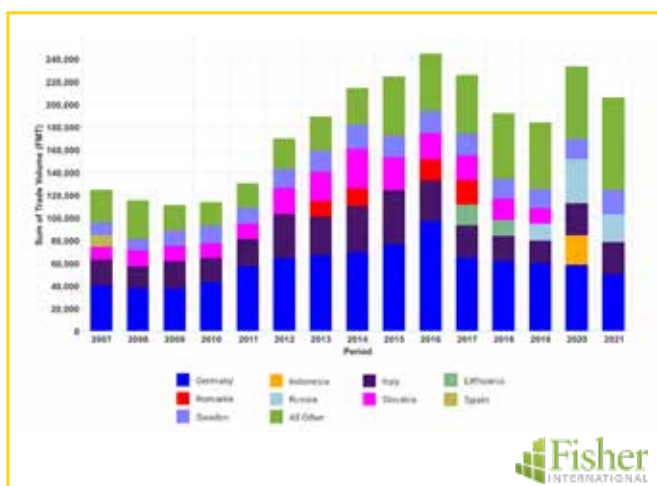


Figure 6: Poland Tissue Imports Trend

4.55% in 2019. Romania's real GDP was \$556 billion in 2020, with a growth rate of 4.2% in 2019.

The unemployment rate for both countries is shown in Figure 4. Both countries recovered from the Great Recession, but Romania has seen an upward trend in the past five years that has not affected Poland. Poland also reported unemployment of 10.8% youths (ages 15-24), while Romania is higher at 17.3%.

These economic statistics show relatively flat populations with rising per capita incomes. Poland appears to be ahead of Romania in industrial development. Still, both countries are starting from a low

POLAND AND ROMANIA HAVE BEEN GROWING AND UPGRADING THEIR TISSUE MACHINE FLEETS AS SHOWN IN FIGURE 5. POLAND HAS MADE THE MOST CHANGES BY ADDING FIVE MACHINES AND REMOVING 10 OVER THE PERIOD THE STUDY WAS CONDUCTED. THIS NET LOSS IN THE NUMBER OF MACHINE UNITS MASKS AN INCREASE IN TOTAL CAPACITY AS SMALL, OLDER MACHINES ARE REPLACED WITH LARGER, MORE MODERN MACHINES.

point in 1990 in developing a consumer-driven product economy that includes increasing tissue consumption. There is room to grow as domestic tissue consumption approaches the average per capita of the European Union.

Poland and Romania have been growing and upgrading their tissue machine fleets as shown in Figure 5. Poland has made the most changes by adding five machines and removing 10 over the period the study was conducted. This net loss in the number of machine units masks an increase in total capacity as small, older machines are replaced with larger, more modern machines.

POLAND'S TISSUE PRODUCTION IS ABOUT HALF CONSUMER BATH TISSUE AND A THIRD OF THE TOTAL CONSUMER TOWELS. COMMERCIAL HAND TOWELS MAKE UP THE NEXT LARGEST SEGMENT. POLAND IS WELL KNOWN FOR ITS INDUSTRIAL DEMAND FOR HAND CLEANING PRODUCTS.

Romania has added four machines while removing two over the same time frame. As a result, Romania tends to have newer yet smaller machines.

Poland's tissue imports are shown in Figure 6, with the top 10 countries shown as stacked bars. Germany is the leading supplier of imported tissue to Poland, but volumes decrease as Poland's tissue production increases.

Romania's tissue imports are comparable to Poland, with Germany as the key supplier, as shown in Figure 7. In addition, both Romania and Poland show limited sourced tissue from Indonesia in the last several years. Poland's tissue export trend is illustrated in Figure 8, and again, Germany is the largest trade partner. Poland's overall tissue export volume has grown beyond its tissue imports, making Poland a net tissue exporter.

Romania's tissue export trend is shown in Figure 9, with Hungary as the leading tissue customer. However, the volume is much more fragmented than the Polish tissue business. Nevertheless, Romania remains a net tissue importer.

Figure 10 provides a view of the Polish tissue business with capacity shares shown for each producing country. There are two companies with large shares that account for more than half of the capacity, three moderate share companies, and about 13 smaller share companies. These companies are locally based and include French, German, and Swedish companies.

Romania's tissue capacity is less fragmented, as shown in Figure 11, but one company has almost 50% of the total tissue capacity. In addition, there is at least one foreign-owned company (French) in Romania.

The majority of Poland's fibre comes from imported bleach kraft market pulp consisting of eucalyptus, northern hardwood, northern softwood, and southern softwood. Recovered papers make up less than a quarter of the total fibre furnish, as shown in Figure 12.

Romania's fibre sources are shown in Figure 13. Here, recovered papers make up slightly more than a quarter of the total fibre furnish. Kraft bleached market pulps include northern hardwood and softwood with tropical hardwoods other than eucalyptus.

Poland's tissue production is about half consumer bath tissue and a third of the total consumer towels. Commercial hand towels make up the next largest segment. Poland is well known for its industrial demand for hand cleaning products.

Romania's tissue production mix is shown in Figure 15. Consumer bath tissue makes up an even greater percentage than in Poland. Consumer towel is the second-largest product, but it represents a smaller portion of Romania's total. This suggests that Romanian consumer demand is slightly less advanced than in Poland. The amount of commercial bath tissue versus commercial towelling is surprising.

Poland also has some advanced tissue capability to make wet-texturised products. These are primarily focused on consumer bath and towelling, as shown in Figure 16.

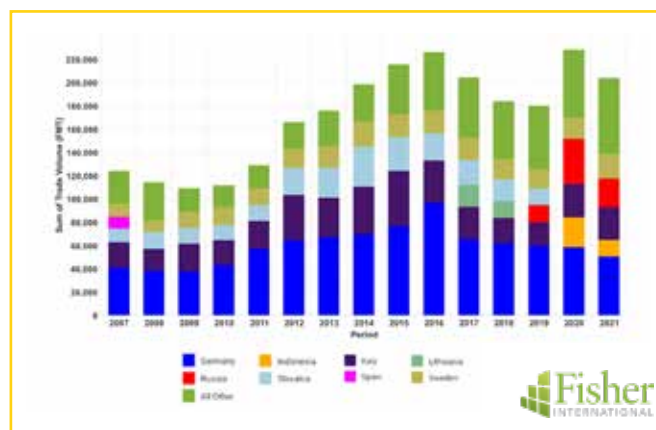


Figure 7: Romania Tissue Imports Trend

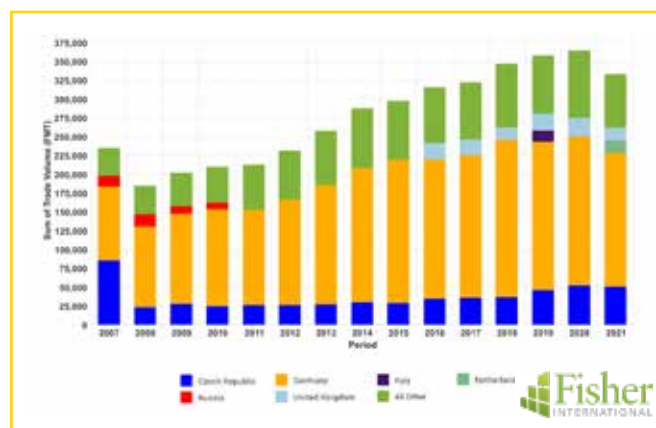


Figure 8: Poland Tissue Exports Trend

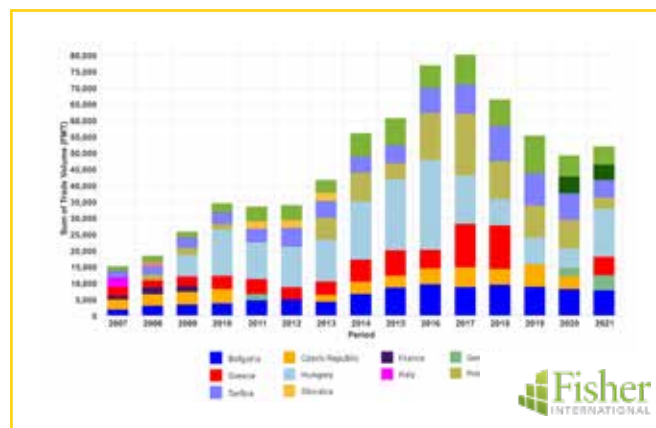


Figure 9: Romania Tissue Exports Trend

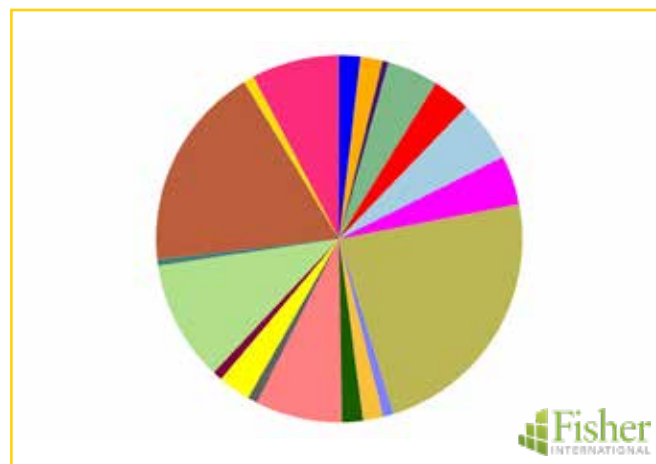


Figure 10: Poland Tissue Producer Capacity Share, mock-up

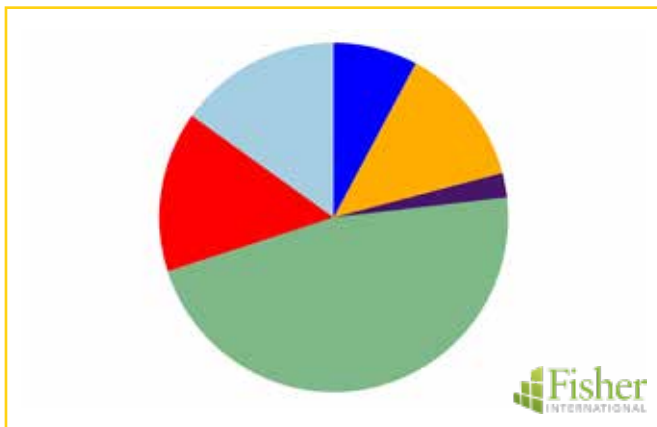


Figure 11: Romania Tissue Producer Capacity Share, mock-up

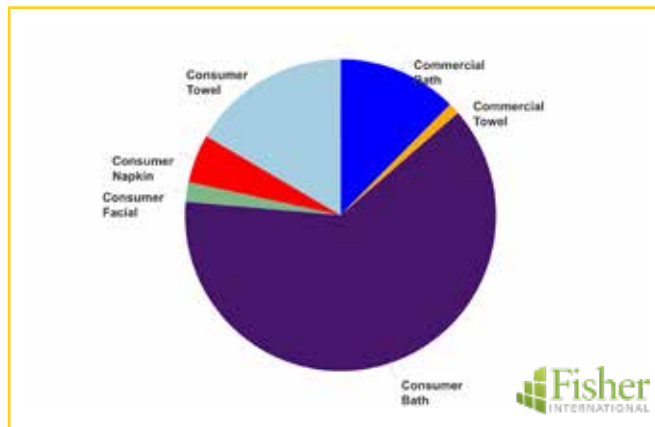


Figure 15: Romania Tissue Products

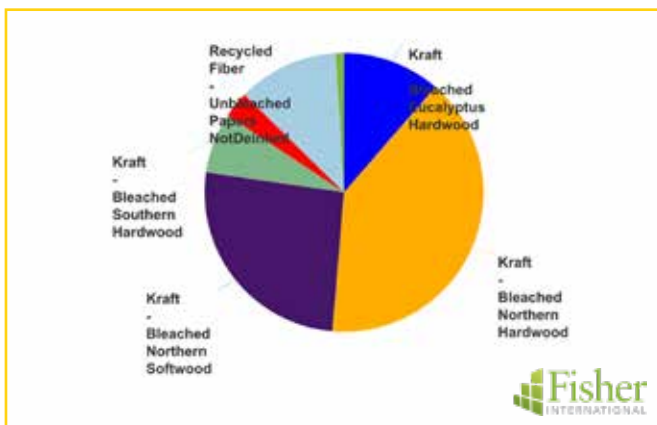


Figure 12: Poland Tissue Fibre Sources

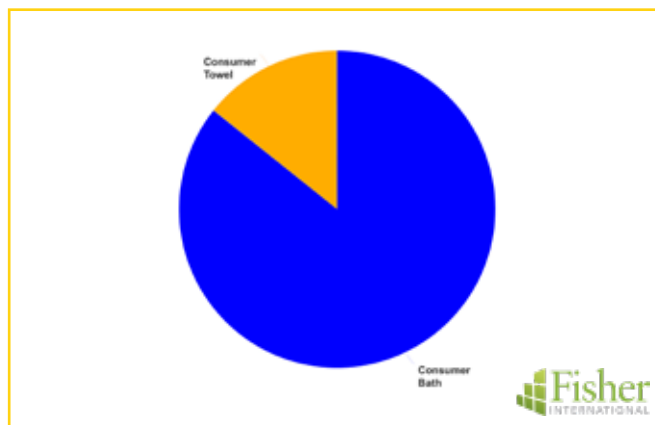


Figure 16: Poland Advanced Tissue Products

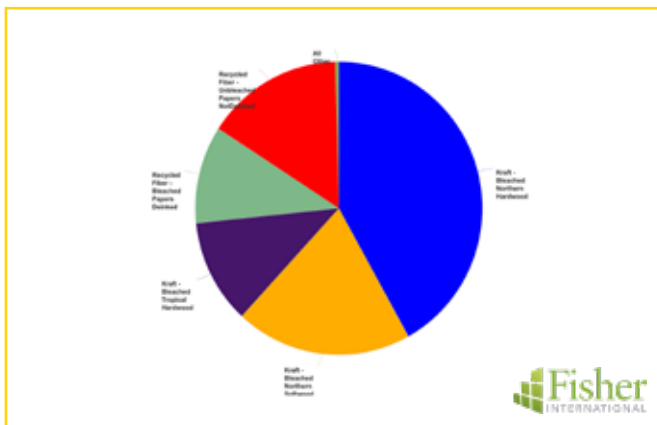


Figure 13: Romania Tissue Fibre Sources

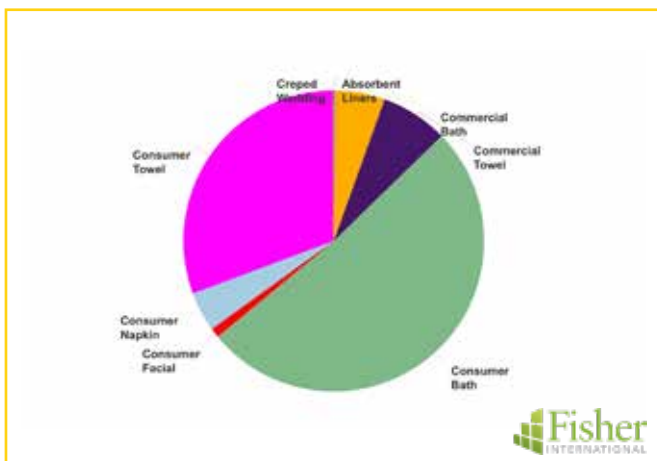


Figure 14: Poland Tissue Products

THE MAJORITY OF POLAND'S FIBRE COMES FROM IMPORTED BLEACH KRAFT MARKET PULP CONSISTING OF EUCALYPTUS, NORTHERN HARDWOOD, NORTHERN SOFTWOOD, AND SOUTHERN SOFTWOOD. RECOVERED PAPERS MAKE UP LESS THAN A QUARTER OF THE TOTAL FIBRE FURNISH, AS SHOWN IN FIGURE 12.

Figure 17 provides an assessment of the average tissue machine quality in Poland and Romania compared to several well-known tissue exporting and importing Western European countries and Turkey. The X-axis of the bubble chart shows the average tissue machine technical age, while the Y-axis shows the average machine wire width. This provides an idea of machine size, productivity, and quality.

The bubbles' size represents the relative total tissue production capacity for each country in the comparison. Turkey has the most modern and highest capacity tissue machines in the group. Whereas Romania's tissue machines tend to be relatively up to date, but are very narrow, indicating low capacity per machine. Poland's technology and size compare well with Italy, but at a significantly lower overall national capacity.

This comparative analysis is continued in Figure 18, showing the average total cash cost of production per tonne for the same group of countries with no significant overall advantages. These total costs are relatively equivalent but show substantial differences in the cost components. Turkey has high virgin fibre import costs, most

AS TISSUE IMPORTS CONTINUE TO EXCEED ITS EXPORTS, ROMANIA'S TISSUE MANUFACTURING SECTOR CAPACITY IS LESS THAN THE TOTAL TISSUE DEMAND. POLAND'S TISSUE MANUFACTURING IS MORE ADVANCED, INCLUDING NEW ADVANCED TISSUE TECHNOLOGY FOR TEXTURISED TISSUE AND IS ABLE TO SUPPORT NET TISSUE EXPORTS. POLAND ALSO HAS MORE INVESTMENT FROM INTERNATIONAL TISSUE-MAKING COMPANIES, AND POLAND'S FRAGMENTED TISSUE MARKET SUGGESTS THAT THERE IS ROOM FOR INDUSTRY CONSOLIDATION.

likely due to currency exchange costs; the United Kingdom's energy costs are about twice the cost per tonne of the others; France and Germany show high labour costs; Germany uses more recovered and recycled fibre in tissue; and both Romania and Poland have lower labour costs but are still higher than Turkey.

As Poland and Romania's tissue businesses look west to the rest of the European Union, carbon emissions per tonne will become an increasing concern.

The FisherSolve Next Carbon Benchmark model allows the evaluation of a product or site by both cradle-to-gate and gate-to-gate carbon emissions. It also provides the direct calculation of Scope 1, 2, or 3 emissions used in many carbon accounting regulations. Figure 19 shows the Scope 2 carbon emissions of each comparison company as that is the most significant difference between them.

France has the lowest Scope 2 emissions due to its carbon-free nuclear power. Romania is in the middle of the group, but Poland is an outlier due to coal's heavy power grid use. This is expected to become a significant factor hindering the growth of Poland's tissue exports to other EU markets.

Poland and Romania have grown their domestic tissue consumption and production over the past two decades as the countries developed free and market-based economies. However, they are both losing populations due, in part, to the departure of skilled workers and young people moving to other EU countries. Both countries have room to grow the consumer use of tissue products At-Home and AfH.

As tissue imports continue to exceed its exports, Romania's tissue manufacturing sector capacity is less than the total tissue demand. Poland's tissue manufacturing is more advanced, including new advanced tissue technology for texturised tissue and is able to support net tissue exports. Poland also has more investment from international tissue-making companies, and Poland's fragmented tissue market suggests that there is room for industry consolidation.

Other than the enormous carbon footprint of Poland's tissue manufacturing due to grid power generation, both countries' tissue manufacturing should be viable for the future as they look for continued integration with the European Union.

However, none of the factors discussed or data used in this analysis take the most recent events impacting the global economy into account. The continued global supply constraints and rapidly spreading inflation will influence tissue operating costs.

The Russian-Ukraine conflict puts both Poland and Romania on the front-line regarding risk to their economies and energy

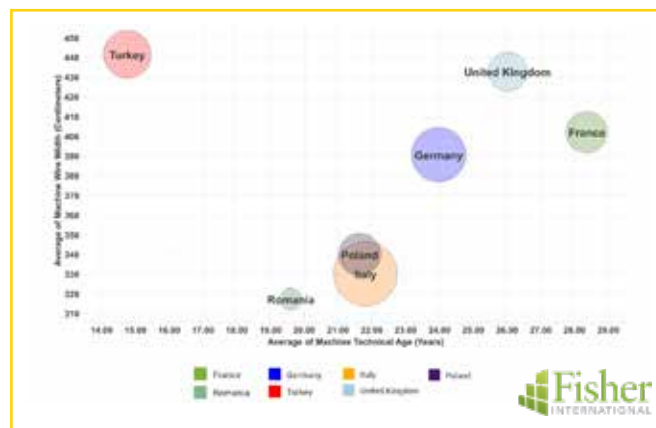


Figure 17: Poland and Romanian Tissue Machine Average Quality

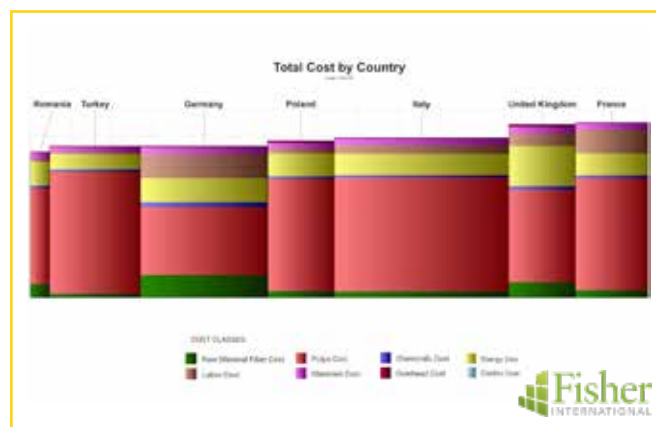


Figure 18: Tissue Machine Cost Benchmark

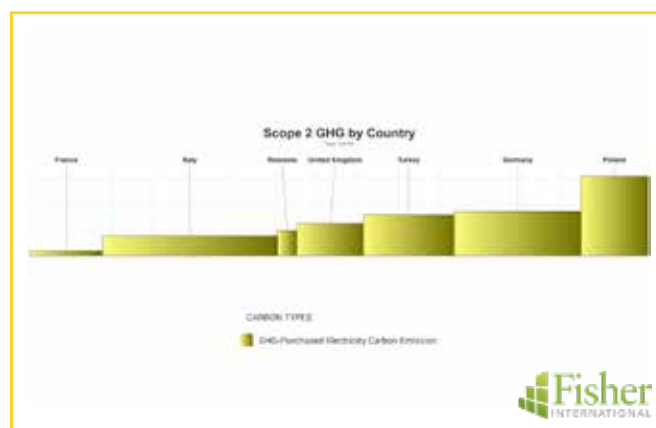


Figure 19: Tissue Machine Scope 2 Carbon Dioxide Emissions Benchmark

supplies. Energy prices have spiked across Europe, and while Poland has access to ocean LNG shipments, Romania is landlocked.

Both countries will need to look for adaptations to on-site and purchased energy supply to manage cost and carbon emissions versus the rest of the European Union.

Analysis of competitive position requires specifics on tissue producers and individual machines. This article presents a static summary of Poland and Romania's tissue industries today.

Fibre prices, exchange rates and environmental regulations will change, providing some participants with advantages and new challenges. In addition, Poland and Romania's tissue mills will continue to change hands and consolidate, and neighbouring countries may invest in tissue-making capacity, affecting Poland's and Romania's imports and exports.

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RETAIL TISSUE IN POLAND AND ROMANIA – FUTURE PREDICTIONS FOR AN UNPREDICTABLE ENVIRONMENT

Two countries sharing many similarities, and as with the rest of Europe facing the many uncertainties for consumers and manufacturers in the years ahead. Euromonitor International's Senior Research Analyst Per Brandberg forecasts how the region's tissue market will take on a rapidly changing economic climate.



Per Brandberg
Senior Research Analyst,
Euromonitor International

It is difficult to imagine that there has been a more volatile time to discuss forecasts and prospects for tissue (and any other FMCG category, for that matter) in Eastern Europe than right now. Personally, I have previously struggled with the concept that the medium-term horizon is typically five years, but now forecasting more than five months ahead seems like folly, and for good reason. For Poland and Romania, there is much to link them to each other as well as to the broader EU in terms of the pressures they are facing and the slew of "known unknowns" impacting consumers now and likely well into the future.

Inflationary pressures

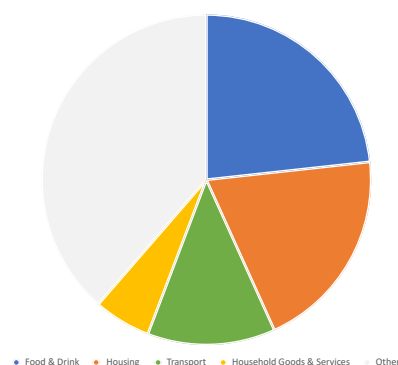
Embedded economy-wide inflation is the long-term risk, already set to run to 8% for 2022 (at the time of writing) in Romania and 7.5% in Poland over the same period.

While these are not the highest figures in the region, they are relative to the economic situation found on the ground. In Poland 2022 inflation levels are well above anything that has been experienced since 2000, before accession to the EU.

We know this is both significant now and unlikely to evaporate in 2023, according to central bank sources. For consumers, the impact of general price inflation, rising fuel prices and the impact of the Zloty's falling value on import pricing is having a significant effect on consumption and the destination of disposable income. These factors force choices for many households; faced with what the Polish central bank describes as the "absolutely brutal" increase in food prices, choices around household expenditure rationalisation will logically follow.

On an expenditure basis, the situation in Romania looks potentially more severe given the higher proportion that food makes up of average expenditure, meaning consumers will be pushed to commoditise within food expenditure and beyond into other categories, which is an area which will necessarily impact retail as well as institutional (AfH) tissue category sales. Consumers economising, making do and displaying wholesale retreat from some retail categories is how FMCG experience inflation.

% Consumer Expenditure by Key Categories, Poland 2021



Source: Euromonitor International

Rapid demographic change

Both Poland and Romania have also experienced a profound demographic change because of the ongoing war in Ukraine, which is significant for tissue category performance as it is intrinsically linked to population and income.

While inflation is squeezing incomes, on the population metric both countries have experienced an unprecedented level of population change. Both have taken in a huge number of refugees: Poland, for example, is estimated to have taken some 2.5m, which represents 6.5% growth in its population in just a few months. For Romania, 750,000 refugees represent a 4% population surge over the same period.

This is an unprecedented level of change, and while it does expand the consumer base for core tissue categories like toilet paper, it also has a counter influence on national consumption as it also has its own influence on demand for housing and therefore cost. This is true of the recent growth in demand but also comes against a background of higher interest rates associated with economies trying to get to grips with inflation.

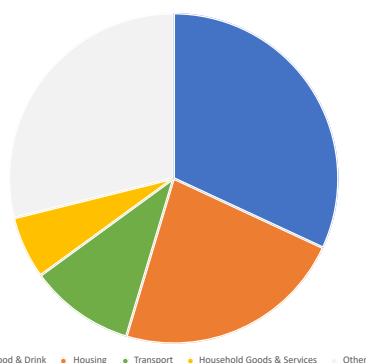
This is a complex situation, and no-one has any reliable idea as to how long any of it will last or its longer-term impact on either economy, employment, and the very real threat of recession and even stagflation in the wider European economy. Although earlier predictions tracking consumption as it relates to income will continue to be a reliable indicator of relative tissue consumption in more "normal" times, such is the level of disruption that any downward impact on overall disposable income levels is very likely to have a more pronounced downward influence on tissue consumption in both volume and value terms, although households will necessarily look to mitigate this.

Disposable income and per capita tissue consumption: a balance of income and consumer confidence

The wider socioeconomic situation does not bode particularly well for tissue products to live up to the longer-term optimistic outlook we had in autumn 2021. Indeed, the tissue industry, like others, has its own set of inflationary pressures. Heavy on raw material, transportation and processing energy costs, the tissue industry is exhibiting strong inflationary pricing pressures in 2022 in both Poland and Romania, which is expanding faster than the economy-wide consumer price inflation.

THE WIDER SOCIOECONOMIC SITUATION DOES NOT BODE PARTICULARLY WELL FOR TISSUE PRODUCTS TO LIVE UP TO THE LONGER-TERM OPTIMISTIC OUTLOOK WE HAD IN AUTUMN 2021. INDEED, THE TISSUE INDUSTRY, LIKE OTHERS, HAS ITS OWN SET OF INFLATIONARY PRESSURES. HEAVY ON RAW MATERIAL, TRANSPORTATION AND PROCESSING ENERGY COSTS, THE TISSUE INDUSTRY IS EXHIBITING STRONG INFLATIONARY PRICING PRESSURES IN 2022 IN BOTH POLAND AND ROMANIA, WHICH IS EXPANDING FASTER THAN THE ECONOMY-WIDE CONSUMER PRICE INFLATION.

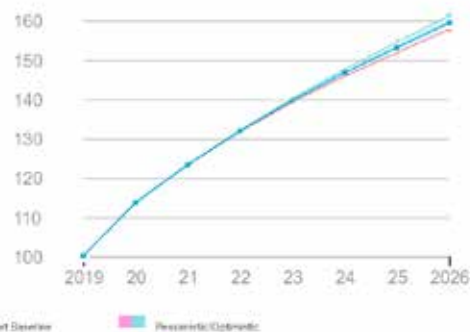
% Consumer Expenditure by Key Categories, Romania 2021



Source: Euromonitor International

Retail Volume Sales, 2019 - 2026

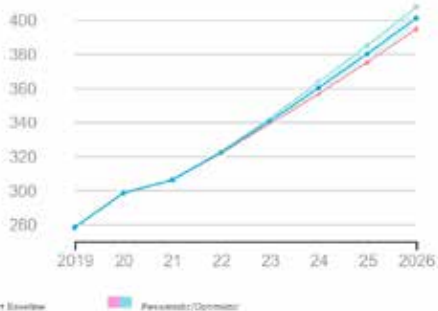
Romania - Retail Tissue



Source: Euromonitor International

Retail Volume Sales, 2019 - 2026

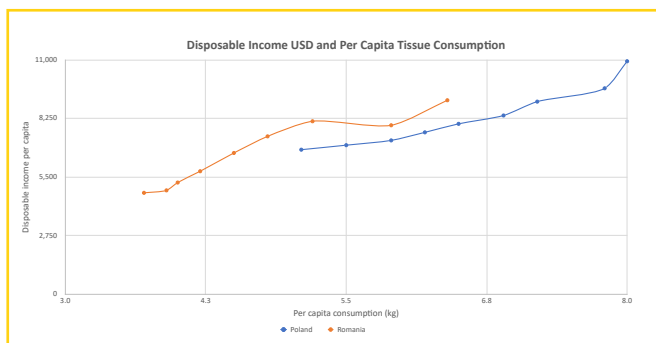
Poland - Retail Tissue



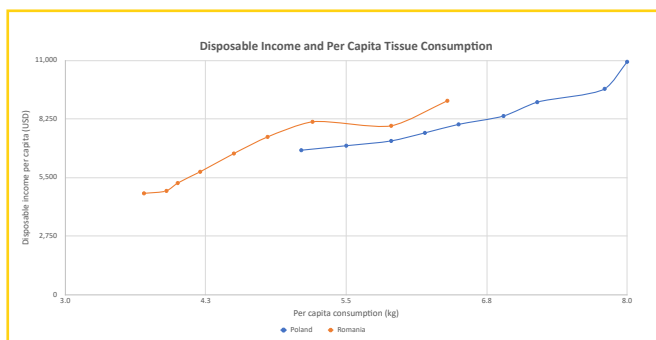
Source: Euromonitor International

Tissue-specific price rises

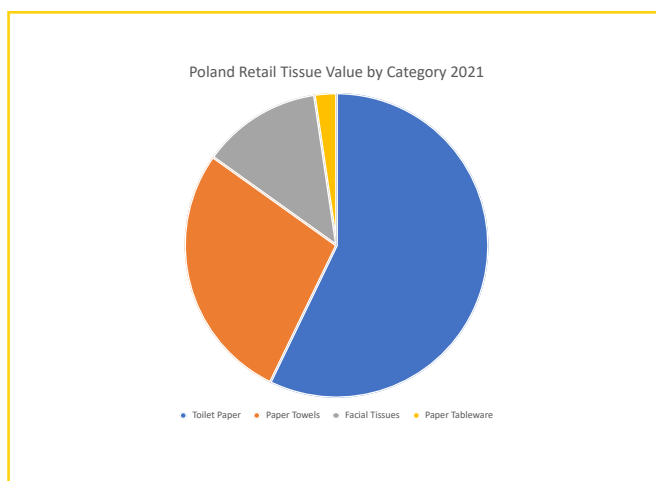
Looking at retail tissue products in Poland, the median price grew on average by 20% from the beginning of the year until 16 May 2022, according to Euromonitor International's Via pricing database. Looking further into this growth spike, some of the biggest brands within retail tissue in Poland are exhibiting strong growth in median prices across the board, with Velvet (a leading 20% market value share, 2021) witnessing 15% median price growth and Regina (second positioned with an 11% market value share, 2021) experiencing 10% median price growth so far in 2022.



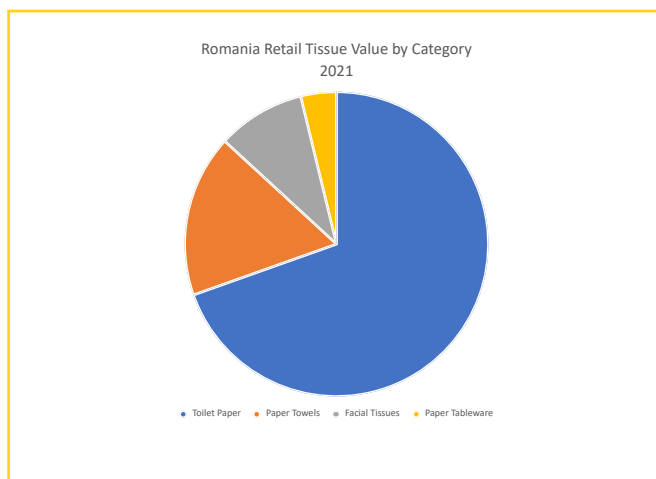
Source: Euromonitor International



Source: Euromonitor International



Source: Euromonitor International



Source: Euromonitor International

THE NEXT STEP FOR HOUSEHOLDS IS TO WEIGH THE VALUE-TO-COST RATIO FOR THESE PRODUCTS, LIKELY PRECIPITATING A MOVE DOWN IN PRICE SEGMENTS FOR PRODUCTS WHERE IT IS POSSIBLE (WHERE THERE IS AVAILABILITY) AND REASONABLE TO DO SO. THE MARKET RESPONSE TO THIS CHALLENGE WILL BE CRITICAL IN DETERMINING WHICH DIRECTIONS CONSUMERS TRAVEL. WHILE ATTEMPTS TO ABSORB PRICE INFLATION WITHIN MARGINS MAY HAVE SOME POSITIVE INFLUENCE ON MAINTAINING PRICES FOR THE SHORT TERM, IT APPEARS THIS RESPONSE HAS ALREADY BEEN BREACHED.

Although we do not have similar, comparable data for the Romanian market, our local analyst identifies similar double-digit value growth for major brands.

However, as products like toilet paper can be seen as a rather essential product, it will still be an item that consumers will purchase on a regular basis. There is little evidence from the financial crisis era of 2008 that consumers cut down on toilet paper volumes during a crisis; rather, they look to trade down or purchase in bulk to achieve better pricing. That said, categories outside of core toilet paper will likely be more exposed to emerging consumer thriftiness. This is reflected in "uncertainty" levels connected with key retail tissue categories, with lower levels exhibited by toilet paper compared to any other category, this in part due to the levels of substitution possible.

Trading out and category exposure

The next step for households is then to weigh the value-to-cost ratio for these products, very likely precipitating a move down in price segments for products where it is possible (where there is availability) and reasonable to do so. The market response to this challenge will be critical in determining which directions consumers travel. While attempts to absorb price inflation within margins may have some positive influence on maintaining prices for the short term, it appears this response has already been breached.

For retail tissue, and toilet paper, there is a wide offer of private label brands in most markets, with private label occupying a 21% global market share of retail tissue sales in 2021. Comparing Poland and Romania against other leading European tissue markets illustrates that, although present, private label potentially has some way to develop. Indeed, we can highlight the Spanish market as historically one to take into account, a market that, pre-financial crisis, had relatively low levels of private label activity but now leads even Germany in terms of its market presence. This is more significant given that only 10% of grocery sales are accounted for by discounters, similar to levels found in both Poland and Romania.

The place of purchase is also something that tends to be reconsidered when times are tight, with consumers looking for savings through bulk purchases in hypermarkets or discounters to press the price even lower. In Poland, these trends are already a part of the market landscape, with private label and discounters being popular avenues for consumers even before the pandemic times. The channel has well-established players such as Biedronka that enjoy a widespread network of outlets throughout the country,



Source: Euromonitor International



Source: Euromonitor International

UNDOUBTEDLY, RETAIL TISSUE IS IN FOR A DIFFICULT PERIOD OVER AT LEAST THE COMING YEAR OR TWO IN BOTH THE POLISH AND ROMANIAN MARKETS, BUT ALSO FURTHER AFIELD AS MANY OF THE TRENDS DISCUSSED IN THIS ARTICLE ARE EUROPE-WIDE AND INTERNATIONAL. CONSUMERS WILL MOST LIKELY HAVE TO RATIONALISE THEIR EXPENDITURE, MEANING THAT TISSUE CATEGORIES BEYOND TOILET PAPER WILL NECESSARILY BE AFFECTED BY A COMBINATION OF TRADING DOWN, TRADING OUT AND SUBSTITUTION.

reaching a high number of consumers. During the pandemic, many Polish consumers opted to shop locally with higher frequency rather than going to the hypermarket and purchasing in bulk, leading to further strengthening of the discounters channel.

As for the private label presence within tissue products in Poland, that too has been a popular trend for years before the pandemic. In 2021, 46% of the market value is occupied by private label sales, with Biedronka's private label being the most popular.

Looking to Romania's tissue market environment instead, there is significant room for expansion for both private label and the discounters channel within the tissue space. In 2021, an 11% value share was occupied by private label brands in Romania, while 17% of value sales were attributed to the discounters channel. As the situation worsens, through higher inflation and the rising cost of raw materials, the opportunity arises for players in Romania to target these areas as consumers are expected to move towards the lower-priced formats soon.

Conclusions, all things considered

Undoubtedly, retail tissue is in for a difficult period over at least the coming year or two in both the Polish and Romanian markets, but also further afield as many of the trends discussed in this article are Europe-wide and international. Consumers will most likely have to rationalise their expenditure, meaning that tissue categories beyond toilet paper will necessarily be affected by a combination of trading down, trading out and substitution. Even though populations have swelled in both countries, this increase is unlikely to mitigate what we expect to be declining volumes for paper towels and paper tableware, for example, but realistically it will not be until later in the year before there is a firm understanding of what the mechanics of the market now look like.

What happens in the central toilet paper category will be the most significant factor, however. Looking at what is possible from the Spanish financial crisis experience, it is possible even without a huge discounters channel that a wholesale shift towards private label will occur, which is a threat to average unit prices. The question for tissue brands is differential in terms of pricing: what can major brands do to either absorb price increases or introduce budget-format products quickly to insulate brand equity from what will be an inevitable spike in interest for private label products in tissue products but also in FMCG more generally?

All the evidence suggests that when we come back to report on this region for Tissue World Magazine in two or three years, the market structure will be very different from what we saw in 2021.

46%

Market value occupied by private label sales in Poland in 2021

20%

Median price of retail tissue products growth in Poland from January 2022 - May 2020

15%

Median price growth of the Velvet brand so far in 2022

10%

Median price growth of the Reginabrand so far in 2022

POLAND'S TISSUE MARKET LEADER SEEING DYNAMIC POST-PANDEMIC GROWTH

Velvet Care has achieved a series of firsts in production capacity, workforce levels, turnover, quality and its Eco Agenda 2025. Wanda Ciesielczuk, Production and Technical Director, talks to TWM Senior Editor Helen Morris.



The Velvet brand: it has been in business for a quarter of a century

Polish branded tissue market leader Velvet Care – operating from a site of industrial production that started in 1897 – has “development written into its DNA”, Production and Technical Director Wanda Ciesielczuk tells TWM from the company’s Klucze-based tissue plant. “We’ve just started up TM8 at the end of 2021, as well as balancing the converting and manufacturing capacity,” she says. “In 2022, organic grow will continue in the converting area, and in the second half of 2022 we will be busy starting up new lines for rolled and folded products.”

All lines, Ciesielczuk adds, are “state of the art technologies” that mean the business can continue to introduce new product features and “really eco products” into the market. “Automatisation is also one of the key elements that we are looking for in all new investments as it allows us be more effective and cost competitive,” she explains.

This continuous investment and expansion are reflective of the company’s ever-evolving 125 historic years of production. TWM first visited the company

THIS CONTINUOUS INVESTMENT AND EXPANSION ARE REFLECTIVE OF THE COMPANY’S EVER-EVOLVING 125 HISTORIC YEARS OF PRODUCTION. TWM FIRST VISITED THE COMPANY IN KLUCZE, LOCATED AN HOUR’S DRIVE NORTH-WEST FROM KRAKÓW, IN 2019. AT THAT TIME, CIESIELCZUK HAD RECENTLY OVERSEEN THE START-UP OF THE COMPANY’S 5.56M VALMET-SUPPLIED TM IN MARCH 2018, AND NOW LATTERLY THE START-UP OF TM8, THE SITE’S SECOND VALMET-SUPPLIED ADVANTAGE DCT LINE WHICH STARTED UP ON 18 DECEMBER 2021.

in Klucze, located an hour’s drive north-west from Kraków, in 2019, and was warmly greeted by Ciesielczuk – who oversees production across the whole mill – as well as Plant Manager Marek Ściążko (who has now retired), and Vice President and Finance Director Rafał Curyło. At that time, Ciesielczuk had recently overseen the start-up of the company’s 5.56m Valmet-supplied TM in March 2018, and now latterly the start-up of TM8, the site’s second Valmet-supplied Advantage DCT line which started up on 18 December 2021.

The impressive 40+ hectare Klucze site was established in 1897 while tissue production started-up in 1976 and the business Velvet Care establishment in 2013. During our 2019 interview, the colleagues discussed how the business has a long history of firsts: doubling its workforce in five years, tripling production capacity, more than doubling converting capacity and increasing turnover from €121m to €150m in a year.

Annual growth figures in 2019 were at 20%. In 1997, it also became the first



Production boost: the start-up of TM8 in December 2021 has increased the site's production capacity to 150,000tpy

THE INVESTMENT WAS DICTATED BY THE ORGANIC GROWTH AND ACQUISITION THAT OCCURRED IN 2020: VELVET CARE PURCHASED MORACELL, A FAMILY-OWNED MANUFACTURER OF PRODUCTS FOR PERSONAL AND HOUSEHOLD HYGIENE BUSINESS HEADQUARTERED IN ŽABČICE IN THE CZECH REPUBLIC.

company to introduce high-quality tissue products to the Polish people with the launch of its Velvet brand. And still in 2022 it is the "indisputable leader" in the Polish tissue market.

Now in June 2022, the company is celebrating another milestone with the start-up of TM8, the plant's second Valmet-supplied Advantage DCT line. The machine adds more than 60% production capacity meaning the company now produces 150,000tpy and has a converting capacity of 145,000tpy, producing high-quality tissue at an operating speed of 2,200m/min.

Ciesielczuk discusses the "tenderness and pride" she feels following its start-up, adding that it is the result of over two years of hard work: "It was a great challenge, realised in difficult times of the pandemic, but ended in a spectacular success. We now have another modern tissue machine in Klucze."

The investment was dictated by the organic growth and acquisition that occurred in 2020: Velvet Care purchased Moracell, a family-owned manufacturer of products for personal and household hygiene business headquartered in Žabčice in the Czech Republic. At the same time in Klucze, in response to increases in demand for tissue products the company started-up new

converting lines and established its finished goods as FSC, PEFC, ISO, BRC, IFS-certified.

"The tissue quality is the key element," she says. "Based on that, the decision of a second tissue machine was obvious. Velvet Care has a good cooperation with financial institutions based on the first TM project from 2018 which was delivered on time and in budget.

"This made the investment decision easier. While the tender process was open for all tissue machine suppliers, Velvet Care's technical requirements – especially for quality, productivity and water, gas, electrical energy consumption – were high. Valmet met all the requirements based on that and TM8 was started-up on 18 December 2021."

It is the second Valmet tissue machine installed, and Ciesielczuk says that while the type of machine and stock preparation is similar, the company introduced some small modifications based on the TM7's operation learnings that allowed it to start the machine smoothly and improve the productivity. "The installation went by the book, and the intermediate tests were completed only two weeks after the first roll were winded."

The company is now present in the AfH, At-Home/consumer and private

label markets and Ciesielczuk says the business has "vast development plans": "We are definitely the strongest in the consumer market, we certainly feel like an expert there.

"Velvet Care is the owner and producer of Velvet branded products – the number one hygienic paper products producer in Central and Eastern Europe, and also one of the leading private label producers in the region. Therefore, we have a stable position in the consumer market and have developed solid foundations for further business growth there.

"The Velvet brand has been in business for a quarter of a century. We entered the market in 1997 and for 25 years we have put great care into providing soft, hygienic and convenient products for nearly every household in Poland. In responding to day-to-day needs in the modern world, over time, we have developed environmentally-conscious efforts that became the key indicator of Velvet's future – all implemented and fine-tuned in line with the principle – we act today with tomorrow in mind!"

The AfH business is the company's "youngest child", she adds, "so our development pace in this category is the most dynamic". More generally, when it comes to tissue trends, she adds that at the moment the market is "going through a big change": "The macroeconomic situation in the world and in the region strongly influences paper categories. First of all, rising production and transport service costs force shelf price increases, and often these are the first significant rises in the last few years.

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Additionally, the shortage of raw materials – mainly cellulose – is also causing a shortage of goods on store shelves. Both of these factors influence change in consumer behaviour, but it is still hard to say which of these trends are permanent. Lastly, there are still some changes in the market caused by recovering from the pandemic situation."

Following the impact of Covid-19 on the AfH market, the projections for its recovery are promising: "AfH is one of the strategic pillars of our business," she says. "Despite some turbulences on the whole market caused by Covid-19 we are still growing our AfH sales. Now, in the period of category recovery after the pandemic slowdown, we are even speeding up and outpacing other businesses."

After analysing consumer and market trends, Ciesielczuk says the company "strongly believes" that AfH will continue to represent a promising opportunity and it will further explore this segment. "We are putting all necessary priorities and investments behind that segment," she adds.

As for the Polish tissue market at large, the dynamics of the entire category of paper hygiene are positive – currently about 5%. "This is largely caused by rising shelf prices. The sales volume is also growing, although the increase is not that big for the time being. Dynamic changes in the market environment and the recovery from the pandemic indisputably affect market trends. Some segments that were decreasing during the Covid period are now dynamically growing, such as tissues in boxes and hankiechiefs, while the paper towel category which had been gaining ground during the pandemic is now slowing down a little."

Over the past few years the company has also seen a shift in sales to higher quality segments with more layers, bigger rolls, and a decline in economic products. This consumer trend still continues but the company expects that the current large price increases in the paper market may slow it down and temporarily cause bigger interest in more affordable, economic products.

A key growth opportunity remains the sustainable production of environmentally-friendly products. The company has created 'Eco Agenda 2025' – a map of the ambitions it has set for its organisation in the coming years.

The aim is to strive for more progress, but to achieve it in a responsible way with



Increased demand: the business is experiencing the rebound of the Polish tissue market following the pandemic

respect for the environment. "The first target is for all products launched to rely on eco-friendly technological solutions, packaging and raw materials," Ciesielczuk says. "From the establishment of Velvet Care in 2013 until the end of 2019 we have reduced the amount of plastic used in our production processes by 17%. From the time of announcing our Eco Agenda at the start of 2020 until the end of 2022, we plan to reduce this amount by another 20%."

"Moreover, by 2022, Velvet Care will introduce plastic packaging with 30% recycled content. In the coming years, we will take further steps to reduce the amount of plastic used in our products and production processes."

Environmental, Social, and Governance (ESG) criteria also play a role in the Velvet Care development strategy. Ciesielczuk says: "The company's modernity and responsibility manifest itself not only in the measures used to achieve its goals or meet legal and formal requirements. Any business with a responsible approach to its mission should also bring wide-ranging benefits to all stakeholders, ensuring sustainable development for itself and the environment in which it operates."

The second pillar is organisation: "100% of the cellulose used in Velvet Care's production processes come from fully renewable forest resources issued with internationally recognised certification. Our objectives are to significantly increase the plant's energy effectiveness and reduce our water consumption. Already now, the water required for the production processes is used several times in an almost closed water circuit."

"Since 2013 we have reduced water consumption by over 40% and we continue in our efforts to limit this consumption

further, while increasing the effectiveness of our water treatment processes."

She adds that in the future, the business also plans to use renewable energy sources and the latest technologies for energy recovery from production processes: "Since 2013, the company has significantly reduced the emissions of harmful gases generated by the boiler plants in our factory."

"We have reduced SO2 emissions by 69%, NO2 emissions by 52% and CO2 emissions by 32%. We continue to improve the capacity of our machinery and simultaneously reduce greenhouse gas emissions."

Last but not least, the third pillar of the Eco Agenda 2025 is inspiration, and Velvet Care aims to support making responsible purchases by inspiring change in the behaviour of buyers: "We strive to encourage consumers to rationally plan their shopping and to choose products and distribution channels that reduce the environmental impact of transport. We also commit ourselves to providing tools and products designed for facilitating rational shopping planning."

After the pandemic, Ciesielczuk adds that she is still seeing an increase in gross sales of tissue and towel products locally. "We are definitely seeing that the tissue market in Poland is rebounding after the pandemic. Currently we observe an acceleration of its dynamics and are seeing a current growth rate on the level of above 15% year-on-year Moving Annual Total (MAT)."

"However, the situation is the opposite when it comes to towels – this is a category that has grown tremendously during the pandemic, and it is now normalising and slowing down in pace. The paper towel category in Poland is currently experiencing

"WE ARE DEFINITELY SEEING THAT THE TISSUE MARKET IN POLAND IS REBOUNDED AFTER THE PANDEMIC. CURRENTLY WE OBSERVE AN ACCELERATION OF ITS DYNAMICS AND ARE SEEING A CURRENT GROWTH RATE ON THE LEVEL OF ABOVE 15% YEAR-ON-YEAR MOVING ANNUAL TOTAL (MAT). HOWEVER, THE SITUATION IS THE OPPOSITE WHEN IT COMES TO TOWELS — THIS IS A CATEGORY THAT HAS GROWN TREMENDOUSLY DURING THE PANDEMIC, AND IT IS NOW NORMALISING AND SLOWING DOWN IN PACE."

*Wanda Ciesielczuk,
Production and Technical Director, Velvet Care*

rises of around 2% year-on-year MAT.

She adds that the results in both categories are "a direct derivative of the fact that consumer decisions, after a time of huge turmoil caused by Covid, are now returning to a more predictable path. Currently, the overall consumer market is mainly influenced by increases in shelf prices (resulting from extensive high prices of raw materials and services). This may result in greater interest in economic products and a decline in the pace of development of more expensive, premium segments."

Despite the many fluctuations and changing dynamics, the company remains robust, and its key strategic principle of growth remains unchanged: "An important element of our company's strategy is to maintain sustainable development and integration of environmental, social, and governance (ESG) with the overall company strategy," she adds. "Recently, taking into consideration the many complex and challenging social and economic situations, we have placed even greater emphasis on further diversification, supply chain and cyber security. We will continue to concentrate on increasing the scale of our business, its profitability, suppliers, and diversification of revenue streams."



“WE ESTIMATE THAT ABOUT 40% OF ALL PAPER SOLD ON THE SHELF IN ROMANIA IS PRODUCED BY PEHART GROUP – WE WON’T STOP THERE.”

With roughly half the per capita consumption rate of Germany and France, the Transylvania, Romania-based company’s extensive investment programme is targeting home growth, as well as international expansion where it is already present in 18 countries. General Manager Gabriel Stanciu talks to TWM Senior Editor Helen Morris.



Strengthening its presence: the company has prioritised technologies that increase quality to a premium level and are also environmentally-friendly

“Our business strategy is twofold,” Pehart Group General Manager Gabriel Stanciu explains from his tissue plant in Sebeş, southern Transylvania, Romania. “To increase our production capacity in the local market by strengthening the position of our brands in large chain stores by continuously increasing the quality of our products, and to expand our presence in external markets by expanding into new countries.”

This is no mean feat in the current climate but in 2022 alone the business has done just that. Plans to continue investing in its development in the local market have been announced along with machinery investments, green energy, all of which

“OUR BUSINESS STRATEGY IS TWOFOLD. TO INCREASE OUR PRODUCTION CAPACITY IN THE LOCAL MARKET BY STRENGTHENING THE POSITION OF OUR BRANDS IN LARGE CHAIN STORES BY CONTINUOUSLY INCREASING THE QUALITY OF OUR PRODUCTS, AND TO EXPAND OUR PRESENCE IN EXTERNAL MARKETS BY EXPANDING INTO NEW COUNTRIES.”

has strengthened its presence across the wider European tissue industry: “We have invested in technologies that increase the quality of our products at a premium level and are also environmentally-friendly,” he says. “It’s been key for us, and we have seen Pehart grow beautifully from

an entrepreneurial business into a solid company that is continuously evolving and looking for new opportunities.”

Stanciu does not intend to stop there; there are impressive plans to diversify the current product portfolio and to invest in further production lines and storage

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TISSUE WORLD MAGAZINE

*Pehart Group General Manager
Gabriel Stanciu*



“WITHIN THE SOUTHEAST EUROPE REGION WE ARE LOOKING AT INTERNATIONAL EXPANSION FOR OUR BRANDS AND WE ARE ALSO CONSIDERING OPPORTUNITIES TO DEVELOP NEW PRODUCTS AND STRENGTHEN NEW MARKETS. THROUGHOUT ALL OF THIS, ONE OF OUR MAIN GOALS CONTINUES TO BE ENERGY EFFICIENCY, INCLUDING THE SEARCH FOR FEASIBLE SOLUTIONS FOR THE INTRODUCTION OF GREEN ENERGY.”

capacity. “We want to continue to invest in the most modern technology,” he says. “Although, as never before, this year we did review some budgets in the challenging context of inflation and energy crisis. However, within the Southeast Europe region we are looking at international expansion for our brands and we are also

considering opportunities to develop new products and strengthen new markets. Throughout all of this, one of our main goals continues to be energy efficiency, including the search for feasible solutions for the introduction of green energy.”

Pehart Group is currently one of the largest paper producers in Southeast

Europe and is present with its household and industrial products in 18 central, eastern, and southern European countries: Poland, Czech Republic, Slovakia, Hungary, Croatia, Slovenia, Serbia, Bosnia and Herzegovina, Montenegro, Bulgaria, Macedonia, Ukraine, Greece, Cyprus, Israel, the Republic of Moldova and Germany. It operates from two factories, the Sebeş plant and also a site in Dej, Cluj County, producing a total of 100,000tpy of tissue paper and a finished products processing capacity of over 75,000 tonnes.

Some 70% of the entire quantity of household and industrial products are sold in Romania and its brands include Pufina, Alint and Altessa. Pufina, Stanciu says, is the second brand of household paper in Romania, and in March 2022 recorded an increase in value in the household paper market compared to the previous year of 16% (according to Nielsen Retail Audit). It also ensures the production for a large part of the own-brand products of retail chains, selling private label products, jumbo rolls and large paper rolls for industrial customers and its own consumption.

Over the past six years investments have totalled €36.2m and modernised its two facilities. Most recently in 2021 it started-up a Körber Group-supplied Constellation line in Sebeş, a €10m investment that aims to increase the company’s presence in Romania and abroad. “The new production line uses innovative, advanced, and environmentally-friendly technologies that optimise operational efficiency,” he says. “The glue used to bond the paper can be replaced with water by the revolutionary and 100% eco-friendly Aquabond technology. Moreover, the line uses an innovative embossing system with heated cylinders, which gives the paper roll volume and firmness. This means that the finished product is finer and more resistant.”

In April 2022, the business launched a new line of premium two- and three-layer facial napkins for its Pufina and Alint brands as well as for private labels products, an investment worth €2m. “The napkins are premium quality and produced on a fully automated line, from the first to the last production process. The packaging comes in different sizes and shapes, are recyclable and adapt perfectly to the most varied requirements of customers.”

Pehart is also already exporting jumbo rolls and finished products and Stanciu adds he wants to increase the company’s

presence in neighbouring countries, investing in developing its Pufina brand across the borders.

As one of the largest providers of private label products for home consumption in Romania, the business is continuously working "with most of the large retail chains present in Romania", producing toilet paper and kitchen towel products.

It doesn't directly work in the AfH "for now," he adds. "Only through our retail partners, so Covid-19 has had little impact for us here in this sector. However, in the tissue private label market we are seeing a lot of growth year by year, but still not with such a rapid rhythm as we expected years ago. We have noticed an increase in quality for some of the private label products and a higher variety of products offers in this sector. Romanian consumers are definitely looking to buy good quality products which they know and trust, such as branded products."

However, he believes private label products will continue to grow in popularity in the Romanian market, and in response to that the company will continue to diversify its product portfolio: "There is still a place for trusted, good quality brands and private label products in the Romanian market if the products offer a good ratio of price and quality."

The Romanian market is "clearly growing in both volume and value", and while the tissue market doesn't generally undergo too many transformations as it is "a common good," as prices have risen the quality of the products that customers are looking for has also increased: "About 90% of the market is made up of toilet paper and kitchen towels and we see that the napkin and handkerchiefs segments have fallen in the pandemic. We expect the market to continue to grow from now on, because there is still a big difference in consumption between Romania and other countries. Referring to consumption per capita and Romania is almost half compared to countries such as Germany or France."

For the immediate future the business will continue to focus on its key strategies. "We are the largest producer of paper products for household and industrial use in Romania and also the largest producer of industrial paper rolls in Southeast Europe. Our focus will remain here, as well as the continuous adoption of sustainability as one of our core values, and not just as a global trend."

He adds that the business has taken on a complex set of environmental,



"WE ARE THE LARGEST PRODUCER OF PAPER PRODUCTS FOR HOUSEHOLD AND INDUSTRIAL USE IN ROMANIA AND ALSO THE LARGEST PRODUCER OF INDUSTRIAL PAPER ROLLS IN SOUTHEAST EUROPE. OUR FOCUS WILL REMAIN HERE, AS WELL AS THE CONTINUOUS ADOPTION OF SUSTAINABILITY AS ONE OF OUR CORE VALUES."



The production line in Sebeș: new ways are being road-tested

social, and governance (ESG) goals that have become part of the company's development strategy: "Environmental protection is manifested by the sustainable development of activities and processes and a responsible procurement policy. We care for natural resources and focus on the most efficient use of resources, even renewable ones."

New ways will also be road-tested: packaging made of a combination of paper and bioplastic, or replacing the adhesive with water in the process of gluing paper are two examples Stanciu mentions. "In addition to the classic ways, we are also using them on the new production line in Sebeș. Achieving a balance between increasing productivity and lowering our carbon footprint is another measure in line with our care for the environment. Pehart produces tissue paper and finished paper products only from a fibrous mixture of cellulose from softwoods, hardwoods and eucalyptus without any addition of recycled material or mechanical fibres. The packaging is made of low-density

The Pufina brand: the second brand of household paper in Romania



"DURING THESE TURBULENT TIMES IN OUR REGION IT IS DIFFICULT TO MAKE ACCURATE PREDICTIONS. HOWEVER, WE ARE SELLING HIGH NECESSITY PRODUCTS, SO WE DO PREDICT AN INCREASE IN VOLUME FOR BOTH TOILET PAPER AND MOSTLY FOR THE KITCHEN TOWELS IN THE REGION."

polyethylene, recyclable plastic, and the support tube is made of recyclable and biodegradable cardboard. The new products from the Pufina Natura range further prove our concern for the environment, through their compostable and biodegradable packaging."

To reduce CO2 emissions, Pehart Group has also carried out a pre-feasibility study for the installation of a photovoltaic park and the production of green hydrogen by electrolysis. "We want to create facilities for storing the green hydrogen produced to be used as fuel in a cogeneration plant mixed with natural gas," he adds.

The challenges of operating through the pandemic have also resulted in some positives for the business. "We had to rethink the way the work is carried out so that we can be sure that a coherent flow of production can be maintained, while ensuring distance and compliance with other safety rules," he says. "The Covid-19 pandemic presented us with various challenges at the company level and, at least at the beginning, we had to find solutions to several types of problems.

"Employee safety was our number one priority. Specialists in the paper industry are hard to find and we generally train them, so the health of our staff is a very valuable resource."

Another challenge in the first months after the pandemic began were the "extremely high market demand", which

he says was "an artificial necessity, caused more by panic". "What it taught us was that it was necessary to reorganise production and logistics to cover the high consumption of that period. Our factories in Sebeș and Dej have worked at full capacity to meet market requirements."

And for the future growth of tissue in the region? "During these turbulent times in our region it is difficult to make accurate predictions. However, we are selling high necessity products, so we do predict an increase in volume for both toilet paper and mostly for the kitchen towels in the region. We have also seen an increase, especially on the towel market, which developed during the last few years and an increase of higher quality toilet paper (the market moved from 1,2 layers toilet paper towards higher quality 3 and even 4 layers paper)."

"And we remain focussed on our strategy. We aim at covering large parts of the paper market in Romania and the region and we will continue to constantly invest in sustainable technologies that generate premium quality products. Our paper machines never stop, so production works non-stop.

"We are close to full capacity, but we estimate that we will reach the maximum by the end of this year. We've been investing heavily in paper processing capabilities lately and it is paying off. Currently, we estimate that about 40% of all paper sold on the shelf in Romania is produced by Pehart Group - we won't stop there."

EFFECTIVE DUST CONTROL USING STRENGTH RESINS AND RELIABLE DUST MEASUREMENTS

By Kemira Chemicals' Lucyna Pawlowska, Principal Specialist, Applications & Marketing, Pulp & Paper, Americas, and Vladimir Grigoriev, Director, Applications & Marketing, Pulp & Paper, Americas. A TWM report.



Lucyna Pawlowska
Principal Specialist, Applications & Marketing, Pulp & Paper, Americas



Vladimir Grigoriev
Director, Applications & Marketing, Pulp & Paper, Americas

Abstract

Dust and lint in tissue negatively impact operational safety, machine productivity and tissue quality. One approach to reducing tissue dust is the use of dry strength resins (DSR) combined with lower refining. To support the dust control program implementation, Kemira has developed a unique and reliable test method utilising an image-based instrument, KemView Dust Analyser. A combination of an effective DSR and an ability to quantify dust are two critical factors for a successful dust control program. In this article, we review our dust control programmes and demonstrate their effectiveness with industrial case studies.

Introduction

A high amount of dust is generated in production of tissue paper, especially premium bath and facial tissue made with eucalyptus fibres or tissue produced with recycled fibres.

Both eucalyptus fibres and recycled fibres are relatively short and poorly bound to the sheet surface. The largest amount of dust is formed during the creping process, especially if creping is performed at a low sheet moisture (2%-4%) in order to increase tissue softness. Dust is also formed during slitting, rewinding, converting and embossing.

The mitigation of dust formation is a significant challenge for tissue producers. High levels of dust negatively affect safety and productivity in tissue mills and converting plants. Dust creates hazardous conditions that can lead to fires and explosions, and workers who are exposed to tissue dust can become allergic to it. Excessive dusting can reduce machine productivity due to frequent clean-ups, unexpected shutdowns and equipment or instrumentation failure. Finally, consumer's dissatisfaction about a tissue product can arise if tissue leaves lint residue on

consumer's skin or dust accumulates around tissue dispensers.

Tissue makers use various tools to mitigate dust. Most commonly, mills use dust collection systems for dust removal from air and from the tissue machines and converting equipment surfaces. Dust removal systems ensure a safe environment in the mill and converting facility. However, mechanical removal does not reduce the dust present in the final tissue product.

There are chemical solutions that can be utilised to minimise dust in tissue and also to reduce dust formation during creping and converting process. One of these solutions is the application of synthetic dry strength resins.

Application of dry strength resins

Dry strength resins (DSRs) are typically used in the wet end to treat pulp stock. Their primary function is to increase hydrogen bonding between cellulose fibres and make the sheet stronger under dry conditions.

DSR helps bind loose cellulose fibres to the tissue sheet and makes the sheet surface stronger and less prone to linting. The increased strength due to DSR can further allow for reduction of fibre refining, minimising fines generation and reducing dust.

The selection of DSR depends on the tissue grade and desired tissue properties, as well as on the furnish type and the wet end conditions. Kemira offers various types of synthetic resins for dust control: FennoRez products based on glyoxalated polyacrylamide (GPAM) and FennoBond products based on solution polyacrylamide (SPAM) that can be cationic, anionic or amphoteric. [1]

FennoRez GPAM products develop both dry and wet strength, therefore their application is suitable for the production of premium bath tissue or for the production of napkin, facial or towel grades. GPAM

Strength additive	Charge	Dry strength	Wet strength	Typical grade
FennoRez GPAM	Cationic	Yes	Ultra-temporary	Bath tissue (toilet paper)
			Less temporary	Napkin, facial, towel
FennoBond SPAM	Cationic	Yes	No	Bath tissue
	Anionic	Yes	No, but can improve performance of wet strength resin	Towel, industrial wipes
	Amphoteric	Yes	No	Any grade

Table 1: Typical strength additives used for dust control in tissue production

resins can be designed to provide a desired wet tensile decay rate. For premium bath tissue, GPAM resins are selected that provide wet tensile strength that decays rapidly after the tissue is exposed to water. The rapid wet tensile decay of bath tissue is necessary for a quick disintegration in the septic system.

For other grades, e.g. facial, napkin and towel, GPAM resins with a lower wet tensile decay are more suitable. These type of resins can even replace permanent wet strength resins, at least in the away from home (AFH) towel grades. [2]

FennoBond SPAM resins help develop dry strength without any contribution to wet strength. Cationic SPAM resins are applied in the production of AFH bath tissue and occasionally in the production of napkins. Anionic SPAM resins are mostly used in the production of towel grades with high wet tensile targets. Anionic resins not only enhance dry tensile strength, but also improve retention and

performance of permanent wet strength resin by providing additional negative sites on fibres. Amphoteric SPAM resins are useful in furnishes of high conductivity and alkalinity, and they can be used for any tissue grades.

The increased dry tensile strength due to DSR can also be traded off for additional benefits by reducing refining. Lower refining results in a lower fines load and therefore a lower dusting potential. Furthermore, lower refining leads to other highly valuable benefits such as improved retention, increased dewatering, higher sheet bulk and softness and a reduced load on the fibre recovery systems.

KemView dust analyser

Kemira has developed a reliable and quick test method that quantifies dust coming from the tissue sheet, either a base sheet or converted product. This method utilises an image-based instrument, KemView Sheet Structure Analyser [3]

Type of Dust Particles	Particle Size
Fibers	> 60 µm
Fines	15-60 µm
Ash/Starch	< 15 µm

Table 2: Classification of Dust and Lint Particles by KemView Analyser.

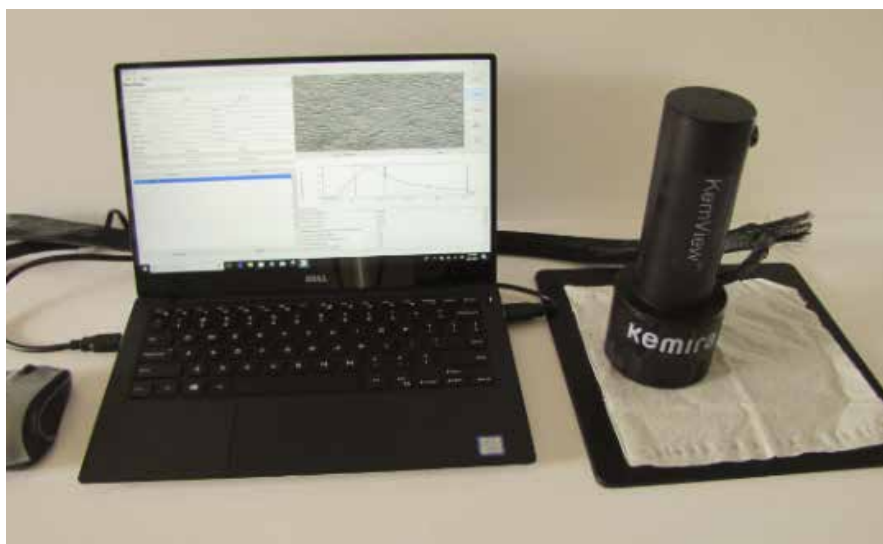


Figure 1: KemView Analyser includes a portable optical device and proprietary analytical software. It can be used to evaluate creped sheet structure, quantify free fibre ends or measure dust collected from a tissue sheet.

FENNOREZ GPAM PRODUCTS DEVELOP BOTH DRY AND WET STRENGTH, THEREFORE THEIR APPLICATION IS SUITABLE FOR THE PRODUCTION OF PREMIUM BATH TISSUE OR FOR THE PRODUCTION OF NAPKIN, FACIAL OR TOWEL GRADES. GPAM RESINS CAN BE DESIGNED TO PROVIDE A DESIRED WET TENSILE DECAY RATE.

whose capabilities were recently expanded to also quantify dust on the tissue sheet. In this test, the dust present on a tissue surface is transferred to a black felt, using Kemira's proprietary method.

Then the KemView Analyser is placed on the top of the felt and the image of the black felt surface with the transferred dust on it is analysed by KemView software. The data is expressed in a number of dust particles per cm². Dust particles are categorized according to size as specified in Table 2.

The KemView method also provides insight into the tissue sheet structure by quantifying the number of crepe bars, pinholes and free fibre ends, roughness of the surface and sheet marks formed by wire or an embossing pattern. The sheet structure parameters reflect the level of the Yankee coating adhesion during the creping process and the effect of wet-end chemicals, especially strength resins, on the coating and ultimately dusting.

Usually, very high Yankee coating adhesion can lead to excessive dust formation, tight crepe structure (large number of crepe bars), low surface roughness (low height of crepe bars), and a large number of pinholes and free fibre ends.

The KemView dust analysis can now demonstrate directly how the application of dry strength resins during the tissue production affects dust and lint formation, while the KemView sheet structure analysis demonstrates how Yankee coating and functional wet-end chemistries, including strength resins, affect the sheet structure and quality.



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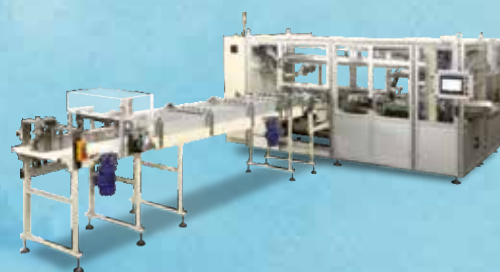
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Case studies

Case study 1: reduction of dust on structured tissue machine

A structured tissue machine producing At-Home (AH) bath tissue experienced an excessive formation of dust. This machine has a three-layer headbox, and 100% Kraft hardwood fibre was used in the top and bottom layers, while refined Kraft softwood was used in the middle layer. During the production of bath tissue, the mill utilized wet-end softener to improve tissue handfeel and enzyme to increase strength in the middle layer. The application of softener reduces overall tensile strength, while the application of enzyme, if not managed properly, could lead to increased fines content in the short loop. Both of these applications, as well as the use of weaker fibres in the top and bottom layers, could contribute to excessive dusting during the creping process.

Kemira proposed application of a unique high solids GPAM resin to improve bonding of fibers and fines to the sheet, and thus reduce dust formation. Another objective was to impart temporary wet strength to the sheet, typically desired for premium bath tissue grades.

The strength resin was applied at a dose ranging from 0.5 to 2.5 lb/tonne on a solids basis. The parent roll samples prepared with different doses of strength resin were analysed on the Yankee side and airside using KemView Analyser. The analysis showed almost twice as much dust on the Yankee side than on the air side (Fig. 2), which is not surprising since the Yankee side is exposed to the aggressive action of a creping blade. As the strength resin

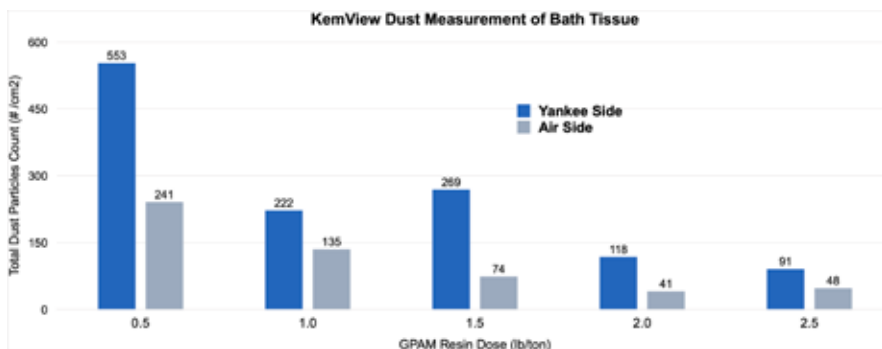


Figure 2: Dust reduction on both Yankee side and air side resulted from the GPAM resin application.

dose increased from 0.5 lb/tonne to 2.5 lb/tonne, the sheet dry tensile increased, which allowed for reduction of softwood fibre refining. The combination of a higher dose of strength resin and reduced refining resulted in a tissue dust reduction by 84 % on the Yankee side and by 80% on the airside. In addition to a substantial decrease in dust, a significant machine speed increase was obtained.

Case study 2: reduction of dust in production of “strong and soft” bath tissue

A tissue producer set a goal to produce a strong and soft bath tissue grade with low level of dust and lint. Kemira’s GPAM resin was already applied on this structured tissue machine utilizing eucalyptus and Kraft softwood fibre. To minimize dust, Kemira proposed an increase of the strength resin dose from 5 to 7 lb/tonne. Fig. 3 shows that this approach resulted in 68% less dust measured by the KemView test and 9% higher dry tensile. The increased dry tensile allowed for a reduction of fibre refining and a further dust reduction. This case study clearly demonstrates that a stronger tissue releases less dust. Reduced fibre refining also helped maintain

the desired tissue softness. Overall, an increased dose of GPAM resin allowed the tissue maker to reach their target of soft and strong bath tissue with a low amount of dust.

Conclusions

Dry strength resins (DSR) are highly effective for dust control in tissue. Strength gained due to DSR also allows for reduction in refining, which can lead to a further decrease in dust and additional benefits such as tissue softness and bulk, increased dewatering and improved retention. The implementation of a DSR-based dust control program can now be more successful when supported by the unique KemView Dust method. This new method allows for quick and reliable quantification of dust and other structural features in the produced sheet, providing real-time insight into the dust potential during chemical trials or other process changes on the machine.

This article was written for TWM by Kemira Chemicals’ Lucyna Pawlowska, Principal Specialist, Applications & Marketing, Pulp & Paper, Americas, and Vladimir Grigoriev, Director, Applications & Marketing, Pulp & Paper, Americas.

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Acknowledgements

The authors would like to thank Harold Goldsberry for his contribution to the case studies and valuable discussions.

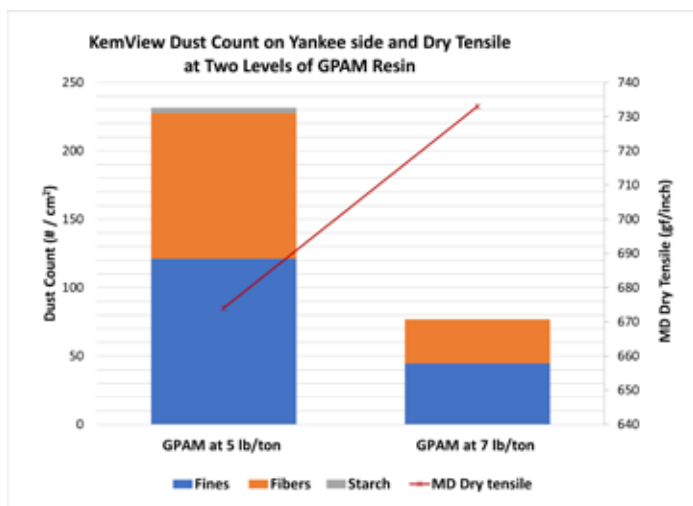


Figure 3: An increase in the GPAM resin dosage resulted in a significant dust reduction, including a reduction in loose fibres, fines and starch particles, while MD dry tensile increased, allowing for a decrease in refining and a further dust reduction.

HENKEL LAUNCH BIO-BASED LAMINATION ADHESIVE FREE OF PRESERVATIVE AND PLASTICISER

The Aquence LAM E9500 ECO targets the reduction of Scope 3 CO₂ emissions and boosting safety and cost efficiency. Eilyn Meneses Villabona, Senior Market Strategy Manager EIMEA – Consumer Adhesives Henkel, explains. A TWM report.



Henkel's bio-based lamination adhesive: free of preservative and plasticiser, in action



Eilyn Meneses Villabona
Senior Market Strategy Manager EIMEA,
Consumer Adhesives, Henkel

Henkel is always working on being ahead of the curve when it comes to emerging consumer trends that will define our future. And perhaps few trends are as urgent in 2022 as the need for sustainable processes and operations.

This trend is only increasing as consumer awareness of climate change grows and accelerates demand for sustainable

products. Today, 61% of consumers are worried about climate change, but they also believe they can make a difference with their buying decisions. Some 67% of consumers have sought to make a positive impact on the environment through everyday actions. Little wonder that sustainability continues to be one of the greatest drivers for innovation.

The whole tissue industry is looking at what this means for the value chain and all of us will recognise this as an opportunity to do our part in driving positive change. Moreover, in an industry defined by tough competition and price pressure, sustainable solutions provide an opportunity to add value and differentiate products.

Henkel's latest product – the Aquence LAM E9500 ECO – will help manufacturers reduce their carbon footprint while offering increased safety and cost-efficiency measures. This sustainability-grade adhesive for lamination is the latest innovation in a range of Aquence water-

based adhesives and additives dedicated for tissue and towel production.

It represents a new level of sustainability-focused grade. Unlike purely fossil-based polymer adhesives, it is made with bio-based raw materials and provides customers with a natural and sustainable solution that helps to bring down their Scope 3 CO₂ emissions. As a preservative- and plasticiser-free adhesive, the new product also helps manufacturers ensure a safer working environment.

Aquence LAM E9500 ECO also demonstrates that taking more sustainable paths need not be cost-prohibitive: it can be diluted at very high ratios, ensuring low cost in use. Due to such breakthrough innovations in technologies and processes, there has never been a better time to rise to the sustainability challenge.

This article was written for TWM by Eilyn Meneses Villabona, Senior Market Strategy Manager EIMEA – Consumer Adhesives, Henkel.

BAROMETER ISSUE: SPECIAL FEATURE

In 2021, TWM interviewed tissue mill executives in North America, China, Southeast Asia, Germany, Brazil and the Middle East for the magazine's Country Reports. Here, we revisit a selection of the leading companies to see what has changed.

ADVANCES IN GERMANY: THE FIRST PACK OF STRAW PULP TISSUE PRODUCTS

In August 2021, Donato Giorgio, President Global Supply Chain and member of the Executive Management Team, Essity, spoke in detail to TWM about his plans for a circular economy, tissue from wheat straw, and a dual strategy of private label and brands.

"This is the future, and we believe this is what the world needs," Italian-born, Germany-based Giorgio said at the time.

In June 2022, his plans and action have been realised. The very first pack of Essity's straw pulp products hit market shelves in Germany. The high-quality toilet paper - under the company's Zewa brand - is made with 10% straw from its SEK 400m integrated tissue plant in Mannheim plant in Germany.

It is one of a kind, and the plant is now producing pulp based on alternative fibre taken from plant-based agricultural by-products - wheat straw. Essity - consumer tissue's second global player - has "become the first to launch a complete branded toilet paper range with alternative fibres," he says now.

The process has also gained wider significance for its localised potential. If the initiative is rolled out globally, other by-products located close to sites could be involved. Essity has secured the rights to a new proprietary technology to produce what Giorgio says is a sustainable alternative pulp from wheat straw, and the



Straw pulp: A packshot of Essity's brand new Zewa toilet paper made from straw

process is expected to reduce the use of water, energy and chemicals, while the by-product of the integrated pulping process can also be refined and used as a substitute for oil-based chemicals.

It is, he adds, a project that could change the course of the tissue industry's future.

Elsewhere, in October 2021 Essity also announced a project at its AfH mill in Mainz-Kostheim that aims to be the first CO₂-free paper machine with green hydrogen. Natural gas will be successively replaced by green hydrogen on the site's largest paper machine during ongoing production. Essity's investment in the pilot project amounts to EUR 4m. Following installations and the re-build of the paper machine, the company

will then gradually add green hydrogen to its energy supply. It is planned to run the drying hood of the paper machine on 100 percent green hydrogen by autumn 2022.

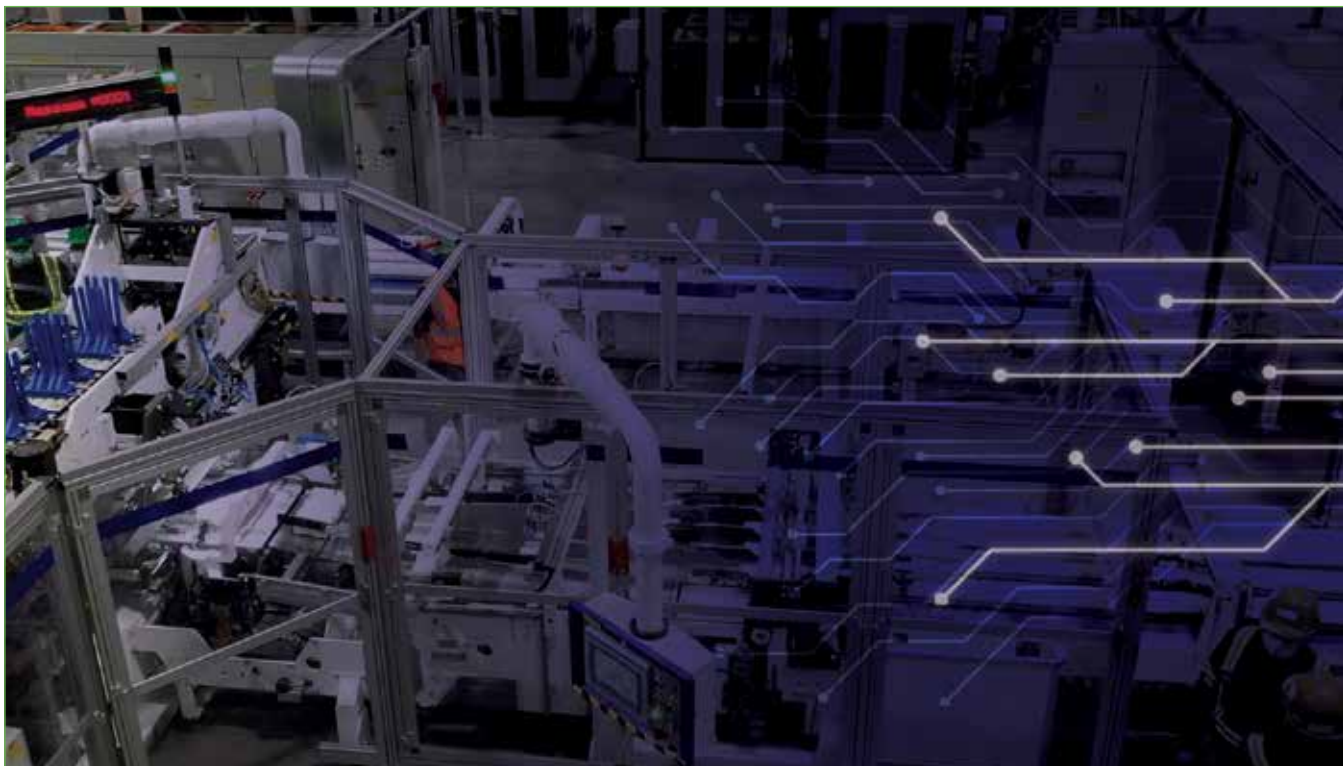
Magnus Groth, President and Chief Executive, Essity, has said about the project: "We will be the first in the world to use green hydrogen for tissue production. We are creating a sustainable process that is setting a new benchmark for the industry".

As of June 2022, the project is progressing, and installations have now been put in place so that the H₂ tests can start after summer.

Essity is also progressing with establishing a private label division for consumer goods tissue products. In Germany, its mills in Neuss (Düsseldorf) and Kassel have become part of the private label division, and an allocation of production volumes between branded and private label sites is starting now and will be finished in 2024.

And across all of its mills across the world, the business said that in light of global uncertainties with gas supplies, all sites are looking into measures to ensure the company can continue to deliver essentials tissue products.

IN JUNE 2022, THE VERY FIRST PACK OF ESSITY'S STRAW PULP PRODUCTS HIT MARKET SHELVES IN GERMANY. THE HIGH-QUALITY TOILET PAPER - UNDER THE COMPANY'S ZEWa BRAND - IS MADE WITH 10% STRAW FROM ITS SEK 400M INTEGRATED TISSUE PLANT IN MANNHEIM PLANT IN GERMANY. IT IS ONE OF A KIND, AND THE PLANT IS NOW PRODUCING PULP BASED ON ALTERNATIVE FIBRE TAKEN FROM PLANT-BASED AGRICULTURAL BY-PRODUCTS - WHEAT STRAW. ESSITY - CONSUMER TISSUE'S SECOND GLOBAL PLAYER - HAS "BECOME THE FIRST TO LAUNCH A COMPLETE BRANDED TOILET PAPER RANGE WITH ALTERNATIVE FIBRES," HE SAYS NOW.



Above: Kruger Products' \$25m artificial intelligence project will be installed at its Sherbrooke, QC plant

KRUGER PRODUCTS: "CRITICAL" WEEKS SAW CAPACITY BOOST, AS CONSTRUCTION SCHEDULE CONTINUES A PACE

In February 2021, Kruger Products Chief Executive Dino Bianco was discussing over a Teams call from the company's Canadian headquarters how the company's 'dynamic 2020' was continuing into 2021 with an imminent major start-up and planned future expansion. "The next few weeks will be critical just making sure we can keep everything on plan well," he said. "But we are targeting the first quarter for start-up."

As of June 2022, Bianco has given an in-person talk at the Tissue World Miami Conference in March 2022, and the company's new 70,000tpy TAD line is now well up and running at its Sherbrooke, Quebec-based facility.

The site is also set to double capacity, and Kruger Products is constructing a double width Light Dry Crepe (LDC) tissue machine with a capacity of at least

THE TOTAL ESTIMATED COST OF THE SHERBROOKE EXPANSION PROJECT – WHICH ALSO INCLUDES THE PREVIOUSLY ANNOUNCED ADDITION OF A BATHROOM TISSUE CONVERTING LINE TO THE EXISTING TAD SHERBROOKE PLANT, AND A NEW PLANT THAT WILL HOUSE A FACIAL TISSUE CONVERTING LINE WITH THE DOUBLE WIDTH LDC TISSUE MACHINE – HAS INCREASED FROM \$240M TO \$351.5M.

60,000tpy, instead of the previously announced 30,000tpy LDC tissue machine.

The Canadian tissue market is "seeing even greater opportunity for growth", Bianco says, especially in the paper towel category where Kruger Products has its SpongeTowels brand. "These

factors lead us to go for TAD technology so we can continue to grow our branded SpongeTowels line in Canada, and our private label TAD supply in the United States."

The total estimated cost of the Sherbrooke expansion project – which also includes the previously announced addition of a bathroom tissue converting line to the existing TAD Sherbrooke plant, and a



Above: The company's Bonterra range of tissue products

new plant that will house a facial tissue converting line with the double width LDC tissue machine – has increased from \$240m to \$351.5m.

"The additional capacity will allow us to accelerate the growth of our business and continue to provide our customers across North America with high quality tissue products in Canada and the USA," Bianco says.

The construction schedule remains the same, with the bathroom tissue converting line and the facial tissue converting line commissioned in 2022 and 2023 respectively, while the LDC tissue machine is expected to start up in 2024.

The business has also announced a \$25m artificial intelligence (AI) project will be installed at its Sherbrooke tissue plant. It will implement a digital twin of the site's supply chain using real-time data augmented with AI capabilities to boost the plant's operational efficiency.

By leveraging AI, Kruger Products said it will be able to optimise its entire supply chain, from the procurement of raw materials to customer delivery.

Bianco said: "After investing \$575m to build the most advanced tissue plant in Canada, Kruger Products is proud to push innovation even further with this \$25m ground-breaking AI project, bringing total investments to \$600m for the plant. Using AI to boost efficiency will also improve our overall performance in terms of sustainability and help us serve our customers and consumers even more efficiently."

The company has also launched its Bonterra range of tissue products into the Canadian market. It says the range is "an innovative and sustainably focused line of household paper products. As sustainability continues to become a greater priority for Canadians, Bonterra is offering them our new, more environmentally conscious option to meet their needs while doing something small, but impactful at the same time."

Rolling out to stores nationwide, Kruger Products said the brand is an environmentally-focused range of At-Home bath tissue, paper towel, and facial tissue were created "to inspire Canadians to purchase more products made from responsibly sourced materials in plastic-free packaging".

The range is made from 100% recycled paper with FSC-certification, wrapped in plastic-free packaging (recyclable paper wrap and cores for bathroom tissue and

paper towels, and recycled and recyclable cartons and sleeves for facial tissue), has carbon neutral manufacturing - and is Canadian made.

The range includes Bonterra Bath Tissue, Bonterra Paper Towels, and Bonterra Facial Tissue.

WEPA: 36,000 TONNES CAPACITY BOOST AND VIRTUAL SHOWROOM START-UPS

As Europe's entire retail business was impacted following the outbreak of the pandemic, and panic buying challenged the supply chain, WEPA was – as Group Chief Executive Martin Krengel put it during our interview in August 2021 – able to "assert ourselves as a reliable partner and successfully fulfil the demand of our customers. We will keep working to pursue our vision to be the most sustainable and agile first-class partner for personal and professional hygiene solutions," he said.

Krengel went on to discuss how the pandemic had raised the demand for sustainable and innovative hygiene products, and how he believed it would also help power future tissue growth.

In September 2021 the company started-up its Toscotec-supplied AHEAD 2.2S tissue machine at its Piechowice site in Poland. Following a year of construction, the first run of paper was produced on 27 September and processed into toilet paper.

The plant had an annual production capacity of 36,000 tonnes and increased total capacity at the site to 70,000 tonnes of raw paper per year – which is processed into toilet paper, kitchen paper, paper towels and cleaning rolls, among other products. The site primarily produces for the Professional market in addition to production for the Polish Consumer market. The new paper machine is designed to produce hygiene paper products from 100% recovered fibre.

Krengel says now that with this investment "the WEPA Group strengthens its competitive capability as the third largest European manufacturer in the

hygiene paper market. With a total of 21 paper machines, the group has a production capacity of approximately 780,000 tonnes per year."

Sustainability will continue to play an essential role, and Krengel adds: "We are the number one player for recycling qualities in Europe with more than 35 years of experience and we have further invested into the technology of recycled paper fibre preparation. Recycled fibres are ideal for the production of hygiene papers, as the products cannot be returned to the cycle after use."

The company has also made advances by strengthening its service offering with the implementation of its Virtual Showroom of its Professional business unit. WEPA states that the Virtual Showroom is "new and absolutely unique" in the hygiene industry.

"The new development elucidates the product portfolio of the two WEPA brands Satino by WEPA and BlackSatino for commercial customers in the virtual space, offering a wealth of information as well as innovative services at the click of a mouse, anytime and anywhere. This is an ideal creative solution to keep customers and partners informed and to stay in touch."

Products are staged in a spatial environment as in a real bathroom exhibition, but digitally and interactive. The showroom on the screen can be explored, product information and informative videos are revealed with the click of a mouse and individual exhibition areas can be accessed via a site plan: visitors experience industry solutions, an education area and stagings on topics such as "touchless washrooms" and "sustainability".

Each product can be added to a notepad with a click, which simplifies subsequent orders.

SUSTAINABILITY WILL CONTINUE TO PLAY AN ESSENTIAL ROLE, AND KRENGEL ADDS: "WE ARE THE NUMBER ONE PLAYER FOR RECYCLING QUALITIES IN EUROPE WITH MORE THAN 35 YEARS OF EXPERIENCE AND WE HAVE FURTHER INVESTED INTO THE TECHNOLOGY OF RECYCLED PAPER FIBRE PREPARATION. RECYCLED FIBRES ARE IDEAL FOR THE PRODUCTION OF HYGIENE PAPERS, AS THE PRODUCTS CANNOT BE RETURNED TO THE CYCLE AFTER USE."

INDIA: IMPROVED MANUFACTURING CLIMATE AND INFRASTRUCTURE, RISING URBANISATION AND INCOME, HYGIENE AWARENESS AND SURGE IN TOURISM SEES NEW LEVELS OF TISSUE GROWTH

Despite its low global tissue volume share compared with its substantial population, India is projected to grow in volume at an 11% CAGR over 2020- 2025* – outperforming most peers. Here, Sumit Khanna, Chief Executive of New Delhi-based Beeta Tissues, a leading manufacturer and trader of tissue paper in India, discusses the key trends across the country.



Sumit Khanna
Chief Executive, Beeta Tissues

When I last wrote for Tissue World Magazine in 2016, India was preparing for an expected surge in tissue demand. Under the dynamic leadership of Prime Minister Narendra Modi, the country was poised for a substantial leap forward. Regional tissue growth rates were already reaching 20-25%, and the new one-party government was clearing away restrictions on manufacturing and allowing international players to enter the market.

Now in 2022, a lot of that potential has been realised. Due to rising disposable incomes, improved institutional infrastructure and rising urbanisation in India, tissue consumption is growing like never before.

This is especially the case in the hospitality and health care sectors following the outbreak of the pandemic, while it's not yet possible to say the same for the corporate sector at this time.

What we are seeing is that the kitchen towel market has increased substantially, while the growth in the m-fold towels category is marginal. There is also a high increase in the e-commerce sector following the outbreak of Covid-19.

Projections for future growth

India is now projected to grow in volume at an 11% CAGR over 2020- 2025, as per a recent report by Euromonitor International. Despite the consistent retail inflation occurring, the consumer tissue market continues to grow as households paid greater attention on cleaning and sanitation after the outbreak of Covid-19.

There has since also been a resurgence in domestic and international tourism which has boosted tissue demand further.

How the AfH market has responded to the pandemic

After the decline in consumption for AfH tissue and hygiene in the last two years, this year seems promising. Schools, hotels and offices are opening up again and there

is a huge upsurge in demand for tissues in this sector.

To my surprise, the hospitality sector has also really picked up due to 'revenge travelling'! As people are emerging from the pandemic they want to travel anywhere and everywhere, big or small, just to indulge!

Private label has grown only slightly in the past few years

I have observed that every year more and more supermarkets are attracted to getting into the private label market, and to my surprise many of them try and then fail. I personally feel that Indian consumers enjoy buying a branded product more than going for a privately labelled one. However, there are a few private label tissue brands that are doing well in India.

Changing tissues players

After the pandemic, many new players are emerging out of nowhere in retailing and in housekeeping business, but they are struggling to survive due to high competition and continuous price increase.

Pulp pressures, inflation

Due to the constant increase in the price of raw materials there has been tremendous pressure on the converters.

With much more than 50% increases in raw materials, the overall costs of investments have got higher. And with such low market sentiments, expansion plans have also slowed down this year as the converters are more worried about the margin of profit.

I feel there is too much confusion regarding the consistency of prices and sales and profitability for the converters.

Sumit Khanna is the Chief Executive of New Delhi, India-based Beeta Tissues, a leading manufacturer and trader of tissue paper in India.

**According to a recent report by Euromonitor International.*

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