

Tissue World

Magazine

A WARM WELCOME TO

**Tissue
World** | Istanbul

20-21 November 2024

The independent news
provider for the global
tissue business

TÜRKİYE

The regional tissue powerhouse poised to accelerate again

Plus

MARKETISSUES

How tissue thrived in a unique decade of volatility

WORLD NEWS

Updates from 11 countries

TECHNICAL THEME: CONVERTING

Growth is steady and the demand is there

DISTRIBUTION: SPECIAL FEATURE

'Bespoke answers' in warehouse automation

EXITISSUES

Metsä Tissue to increase UK's self-sufficiency in
production by over 30%

CONSUMERSPEAK

US socialite Walter Haynes judged Europe's tissue decadence



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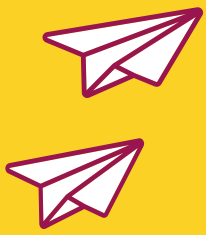
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IN THIS ISSUE...



03

FRONTISSUES

In a decade of unprecedented economic turbulence, Turkish tissue saw strong growth, a slowdown, and now expansion again.

04

MARKETISSUES

How tissue survived and thrived in a decade of volatility. After unprecedented turbulence in world economics, the industry – focussed on Europe - has shown "broad margin improvement." AFRY Management Consulting examines the evidence.

08

NEWS IN BRIEF

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

12

COUNTRY REPORT: TÜRKİYE

Economic headwinds set to check Türkiye's average capacity growth projection of 8.15% by 2027. Analysis by ResourceWise.

16

COUNTRY REPORT: TÜRKİYE

Entrenched hygiene routines, rising population, expanding middle class, urbanisation, unmet potential ... underpinned by the country's projected above average 3.1% rise in GDP. Report by Euromonitor International.

20

OPERATIONS REPORT: HAYAT KIMYA

After a supply surplus slowdown the time is right for expansion, says Turkish tissue powerhouse Hayat Kimya. TWM met Şahin Civelek, Global Tissue Production Director.

27

OPERATIONS REPORT: LILA KAĞIT

Tissue giant Lila Kağıt pioneers expansion in eastern Türkiye as overcapacity expected to stabilise. General Manager Alp Öğücü spoke to TWM.

34

TISSUE WORLD ISTANBUL

Our guide to Tissue World Istanbul's November 2024 exhibition and conference.

36

OPERATIONS REPORT: ESSEL PULP AND PAPER INDUSTRY

PM3 is the latest advanced addition for Türkiye's pioneering market leader. Bülent Can, Converting Manager, spoke to TWM.

42

CONSUMERSPEAK

Intrepid traveller Walter Haynes gave his verdict on the most imaginative toilet rolls of them all. Here, step-granddaughter Kathleen Kavet recalls the unique collection of samples from leading hotels left to her in her step-grandfather's estate.

44

CONVERTING: TECHNICAL THEME

TWM interviews the world's leading tissue converting machinery suppliers to report on their latest technical innovations.

52

DISTRIBUTION: SPECIAL FEATURE

Automation can become a roadblock – that's why it needs a roadmap. Report by William Nelson, President at E80 Group North America.

56

DISTRIBUTION: SPECIAL FEATURE

Infinity Machine & Engineering Corp. expands into warehouse automation offering bespoke answers for customers' unique requirements. Gregory Sense, Marketing Coordinator, outlines the company's latest pioneering launch.

59

EXITISSUES

New Metsä Tissue plant will increase UK domestic tissue production by 30%. Mika Paljakka, Senior Vice President UK/Ireland, spoke to TWM.

64

AD INDEX

Cover: Image showing how Türkiye - after a decade of unprecedented economic turbulence - is now poised for rapid expansion once again.

Image by Stefano Vuga, Founder, PurplePrint Creative, Spain/ Italy, www.purpleprint.eu



PULP & PAPER

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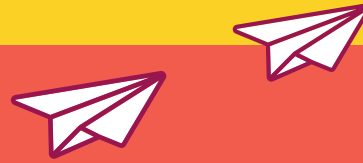
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In a decade of unprecedented economic turbulence, Turkish tissue saw strong growth, a slowdown, and now expansion again

Helen Morris, Senior Editor, Tissue World Magazine

EDITORIAL HEADQUARTERS

Informa Connect
240 Blackfriars Road, London, SE1 8BF, UK
Tel: +44 (0)20 7017 5000

Group Director
Chris Edwards: chris.edwards@informa.com

Senior Editor
Helen Morris: helen.morris@informa.com

Event Director & Publisher
Gerry Dunphy: gerry.dunphy@informa.com

Executive Director
Chris Kilbee: chris.kilbee@informa.com

CEO
Margaret Ma Connolly:
margaret.connolly@informa.com

ADVERTISING ENQUIRIES

Europe & North America
Silvio Arati
T: +39 02 4851 7853
sarati@studioarati.it

South and Central America
Selma Ugolini
T: +55(11)99904 5350
selma@gova.com.br

China, Hong Kong & Macau
Pinky Zhang
T: +86 020 3895 1630
Pinky.Zhang@informa.com

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Please send address corrections to:
Informa Connect
240 Blackfriars Road, London, SE1 8BF, UK
Tel: +44 (0)20 7017 5000
info@tissueworld.com

Subscription online at
www.tissueworldmagazine.com

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A 20-year projection for CAGR at 8.1% by 2027 is still on track. The last few of those 20 have seen a slowdown from roughly 10% growth, with fewer activated or planned projects. But it is a very Turkish slowdown ... "maybe just 6-7% capacity increase" according to Şahin Civelek, Hayat Kimya's Global Tissue Production Director, who features in *Operations Reports*.

All the signs are that a new wave of investments is imminent, even set against a key issue of Chinese-like overcapacity – hence high export levels – and a national economy which itself looks anything but stable.

The last full year national balance sheet shows GDP growing by 4.5%, pushing the economy past \$1trillion for the first time. An average 3.1% rise is projected up to 2027, compared to 1.6% for Western Europe.

Yet the country is suffering hyperinflation. 2023's average was 53.9%. Such are the contradiction which seem to beset this geographically important nation. A plus for tissue is a large friendly sector which powers that GDP growth ... strong household consumption, which constitutes 60%. TWM's extensive *Country Reports* captures the energy and excellence which has driven these companies into leading positions across the Middle East, Europe, and North Africa – and export to five continents.

They are scanning the horizon again. Şahin Civelek refers to a coming "counterbalance" in investment in three to four years: "We couldn't invest more with the supply and demand ... that's why we couldn't expand or jump into new countries. But now, the time is here! In the next few years, there will be good news."

TISSUE'S CRITICAL TURNING POINT – OR A NEW ERA ALREADY UNDERWAY?

MarketIssues states: "At first glance it might seem that the tissue industry is on its way to a critical turning point. In fact, data suggests that it has navigated this turbulent environment very strongly, and seems to be in solid shape." The "critical turning point" results from accumulated disruption against what are euphemistically called 'economic headwinds.' The 2008/9 crash, the Covid pandemic, soaring energy prices, extreme geopolitics.

AFRY Management Consulting's analysis takes a European focus which can be broadened out globally, and shows that the ten months of 2024 have seen a broad tissue market recovery with total demand of 5.5%. AfH's recovery played a major role.

The "solid shape" includes best practise in hitting decarbonisation targets in the decades up to 2050, cost efficiency, innovation and quality across brands and private label, meeting customers' increased hygiene concerns, solving a deficiency in skilled personnel, and AI.

HOW TISSUE SURVIVED AND THRIVED IN A DECADE OF VOLATILITY

After unprecedented turbulence in world economics, the industry – focussed on Europe - has shown “broad margin improvement.” AFRY Management Consulting’s Hampus Mörner, Manager, Christoph Euringer, Senior Principal, and Tino Mäkelä, Consultant, examine the evidence.



Every year since the beginning of this decade has brought surprises and unexpected events resulting in persistent volatility for the global tissue markets. This volatility, never seen before, first manifested in hoarding, followed by collapsing AfH demand, occasionally soaring energy and fibre costs, shifting consumer behaviour, depressed consumption, and intensified competition.

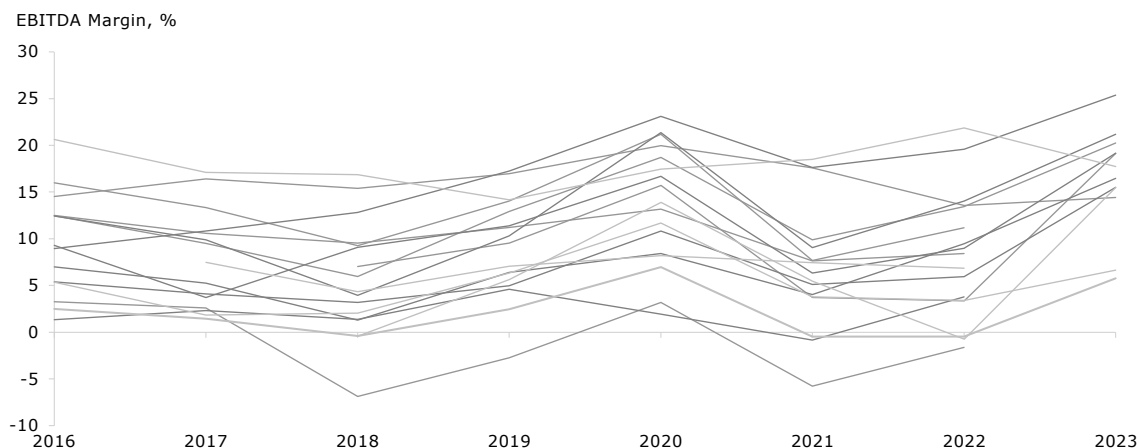
At first glance, an instant reflection might be that tissue industry is on its way to a critical turning point. In fact, data suggests that it has navigated this turbulent environment very strongly, and seems to be in solid shape.

Figure 1 illustrates the evolution of EBITDA margin for a significant amount of tissue producers in Europe. Taking from this, there is little that would suggest that the industry is heading to any critical point – rather the opposite, in fact – a broad margin improvement was observed during the last year. So, what are the key events that the industry seems to have tackled so well, and what learnings and reflections can be done moving forward?

Volatile energy and fibre costs: Energy and fibre are the most crucial inputs when producing any paper product, and their cost development has been on a rollercoaster ride. As an example, German and Italian gas prices were up by 160 –

PROFITABILITY

Figure 1. EBITDA margin evolution selected European tissue manufacturers



Source: AFRY based on publicly available company filings

450% respectively in 2022 (year-on-year). At the end of 2022 energy price outlooks were sky high and a significant burden for any energy intensive industry, but, luckily, prices started to come down in early 2023. Although long term price outlooks point towards a more stable situation than two years ago, there are many uncertain factors.

While energy prices were exposed to an unseen dynamic, pulp is a cyclical commodity. For virgin fibre pulp, publicly listed gross price indices were at rock bottom when the pandemic started in early 2020. Like other commodities, it remained low and flat throughout most of the year only to surge when economies and supply chains sparked up in early 2021. Since then, consecutive 'all time high' levels have been registered with a few short breathing moments e.g. H2 2023. If putting the last year's price movements in a longer historic context, it is apparent that pulp prices have become more volatile where cycles tend to be steeper and shorter.

It is worth noting that price discounts have continued trending upwards. A significant factor fuelling this volatility is China's expanding presence as a pulp end-use market, currently accounting for over 40% of global demand. Moreover, market dynamics in this region diverge significantly from those in the Western world, e.g. more speculative buying, shorter contract periods, recurring negotiations and aggressive inventory management, with less focus on working capital.

Changing consumer behaviour and demand recovery: Inflation above the target

of 2% in most countries has been the default for the last three years. A result of disrupted supply chains and rising energy prices due to geopolitical events. With reduced spending power, consumers tend to think twice about what finally goes into their shopping basket.

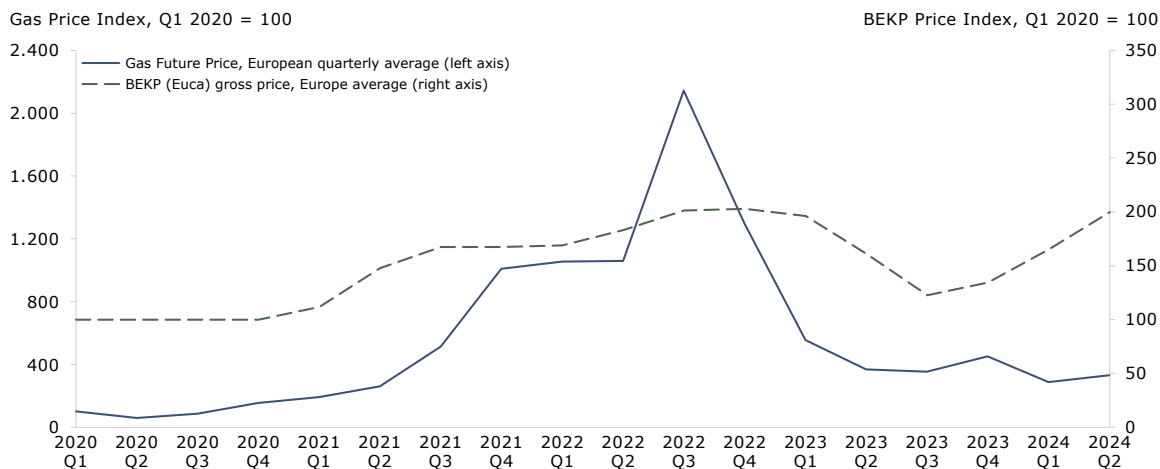
Of course, articles considered 'a must have' enjoy some protection (e.g. toilet paper) that other articles do not (e.g. napkins). The market has observed continuously raised penetration

With reduced spending power, consumers tend to think twice about what finally goes into their shopping basket.



INPUT PRICES

Figure 2. Input price variations 2020-2024



Source: Dutch TTF (quarterly average), FOEX PIX, AFRY

of private label in consumer tissue. Still it has not been growing above trend or perhaps as strongly as many would have expected despite the inflationary pressure which is now coming down. This indicates that brand loyalty has stood up well against inflation.

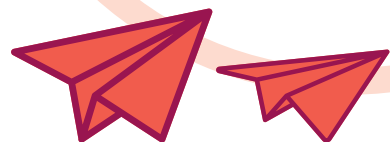
While overall consumption of tissue decreased in 2023, actual consumption data for the first half of 2024 already indicates a broad recovery in total

demand of ~5.5% (Figure 3), owing much to the AfH segment.

Notable tissue capacity pipeline: For any outside observer there would appear to be a massive project pipeline of new tissue capacity in Europe, which to some extent is correct. Currently there are numerous projects announced totalling over 1.2m tonnes of capacity of which many are to be found in Western Europe, and in particular the UK and France. However, a closer look reveals that numerous projects are still short of a formal investment decision (Figure 4). About 200,000 tonnes of new capacity is currently decided, while around 1m tonnes belong to any of the categories still to be confirmed (planned and intended).

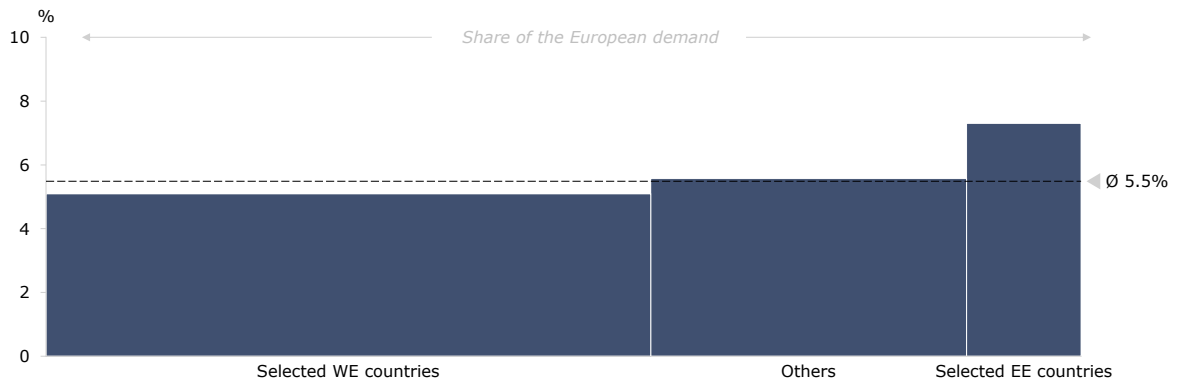
Current supply and demand can be considered balanced, but a hasty entry or an overabundance of projects materialising could easily destabilise markets. What is clear is that the continent seems to be moving more towards self-sufficiency and that finding room for volumes originating from the outside may become more challenging. Still, there is a sizeable amount of cost-efficient capacity with established routes into Europe, ready to take on the competition. Regardless of where the production will take place, the importance of cost competitiveness will only increase.

Currently there are numerous projects announced totalling over 1.2m tonnes of capacity of which many are to be found in Western Europe, and in particular the UK and France.



H1 2024 DEMAND

Figure 3. AFRY 2024 preliminary demand forecast (Europe)

**TISSUE JUMBO REEL DEMAND CHANGE EUROPE
H1 2024 (Y-o-Y)**


Source: AFRY sector analysis and trade data

Future competitiveness will be built on multiple pillars and being cost efficient is key, but is not the only important factor.

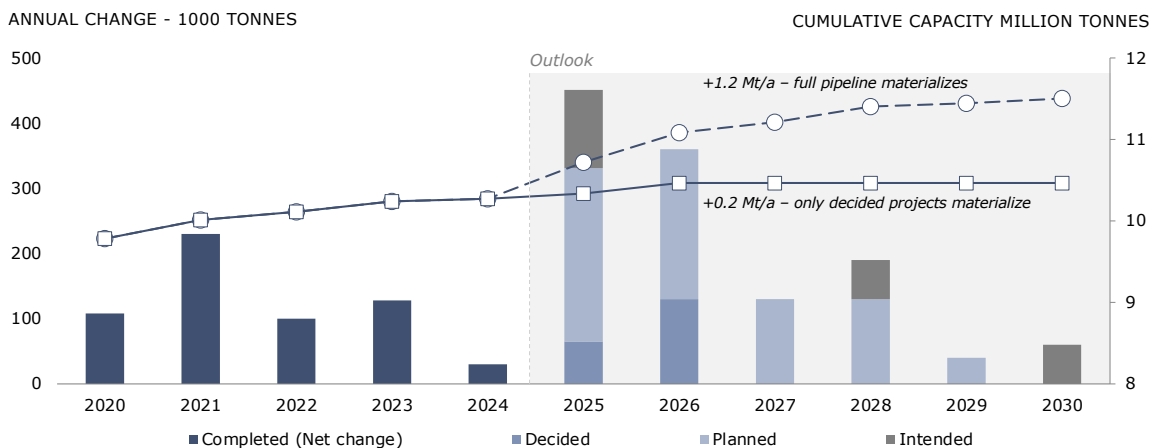
For institutional buyers as well as retailers, the sustainability impact of tissue becomes more relevant – for their own reporting needs – due to new legislation on green claims, but also to satisfy their own brand building efforts.

Furthermore, as the decarbonisation of the European energy system is progressing and machinery suppliers are providing multi-fuel and fully electric tissue machines, the bar is about to rise.

Shifting the buying criteria of customers – not necessarily yet the consumers – is about to create an actual competitive advantage for the European industry, and from the mid to long term perspective, this may well protect European producers from low-cost imports that may benefit from lower sustainability standards in fibre, health and safety, or fuel choices.

SUPPLY - TISSUE PRODUCTION CAPACITY CHANGES

Figure 4. Tissue capacity project pipeline, Europe (Not including start-up curves). Russia & Belarus excluded



Sources: AFRY Smart. Note: Not considering start-up curves. Excl. Russia & Belarus

NEWS IN BRIEF

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



Mr. Lütfi Aydın, Global Tissue Production Director at Hayat Kimya, has passed away

Mr. Lütfi Aydın, one of the doyens of the sector. He achieved numerous successes in the tissue production sector for 41 years, and in Hayat's tissue production activities and many projects for nearly 20 years. Our esteemed Global Director Lütfi Aydın has left deep traces in all of our hearts, not only with his dedication to his work and superior competencies, but also with his kind personality and leadership. He has guided and trained many people and has contributed greatly to the success of our company today. As the Hayat family, we will continue to keep all his efforts alive."

SOUTH KOREA

APP TO ACQUIRE SOUTH KOREA'S MONA LISA, SSANGYONG C&B, AND MSS GLOBAL

Indonesia's Asia Pulp & Paper (APP) has signed a contract to acquire South Korean tissue manufacturers Mona Lisa, Ssangyong C&B and MSS Global from Morgan Stanley Private Equity (MSPE), in a move said to be worth 400bn won (\$292m).

MSPE had purchased the two companies for 250bn won in 2013. It has now announced an agreement with APP to sell a 100% stake in MSS Holdings, the major shareholder of Monalisa and Ssangyong C&B. The deal is yet to be finalised.

The tissue manufacturers produce toilet paper brands including Mona Lisa and CODI.

AMERICA

GP COMPLETES \$550M GREEN BAY EXPANSION

Georgia-Pacific (GP) has boosted production of its Brawny and premium private label paper towel offerings after completing a \$550m expansion at its Green Bay Broadway plant. The investment includes the installation of a TAD paper machine supplied by Valmet, and three converting lines with PCMC as the main converting supplier.

The lines will be used to produce Brawny paper towels and other premium private label brands for the retail market.

TÜRKİYE

"ONE OF THE DOYENS OF THE SECTOR": HAYAT KIMYA GLOBAL TISSUE PRODUCTION DIRECTOR LÜTFİ AYDIN PASSES

Mr. Lütfi Aydın, who dedicated over 41 years to the tissue production industry, with nearly 20 years as the Global Tissue Production Director at Hayat Kimya, passed away on 23 September.

Having joined Hayat Kimya in 2004, Mr. Aydın oversaw the expansion of the company's tissue business across Türkiye, Russia, Iran, and Egypt.

The company said: "We are deeply saddened by the passing of our esteemed Global Director

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GERMANY

WEPA BOOSTS PRODUCTION WITH CRESCENT FORMER UPGRADE

WEPA has completed a Toscotec-supplied technological rebuild at its site in Giershagen. Toscotec rebuilt the wet end section of the machine from Tisco Former into a Crescent Former configuration, including mechanical drive system replacement, as well as modification of the machine frame and vacuum system. The supplier said the project has achieved "a substantial improvement in machine run-ability and ease of maintenance."

Frank-Peter Folcz, Mill Manager WEPA Giershagen, said: "As with previous projects, this project was also characterised by good cooperation, preparation, and a successful implementation."

GLOBAL

SBTi VALIDATES ESSITY'S NET ZERO GREENHOUSE GAS EMISSIONS TARGETS

Essity has announced its targets to reach net zero greenhouse gas emissions by 2050 have been validated by Science Based Targets initiative (SBTi). The validation applies to all near and long-term targets in Scope 1, 2, and 3. The roadmap has been developed as part of the U.N. Global Compact's "Business Ambition for 1.5°C". Magnus Groth, President and Chief Executive of Essity, said: "Climate change is one of the defining issues of our time, and Essity has made a firm commitment to achieve net zero emissions by 2050. Our progress is driven by a sense of urgency throughout the organisation, together with a strong innovation focus, and collaboration with customers, partners, and suppliers."

The company's long-term target is to achieve net zero emissions across the value chain no later than 2050.

INFINITY LAUNCHES WAREHOUSE AUTOMATION DIVISION

Infinity Machine & Engineering Corp. has diversified its product offering after launching a line of warehouse automation solutions. The line features a palletiser, pallet conveyor systems, and seven different models of Automated Guided Vehicles (AGVs).

Gregory Sense, Marketing coordinator, Infinity, said: "Combined with Infinity's comprehensive line of tissue packaging solutions, Infinity customers can now have every process after the log saw completed by integrated machinery from a single supplier."

He added that the AGVs offered can perform a range of warehouse operations, across a variety of industries. The fleet includes: a small, AMR-style AGV, four fork truck models including an outrigger model with a small turning radius, a narrow-bodied

model that can manoeuvre throughout a warehouse, a single double vehicle that can transport two pallet stacks at once, and a forklift designed specifically for Over The Road Trailer loading and unloading.

Two AGVs designed for parent roll transport, a cradle style vehicle, capable of omnidirectional travel, and a counterbalanced clamp vehicle, are also offered. Sense added: "The Infinity pallet conveyor systems boast a wide range of conveyor sections that ensure that the pallet sorting process is streamlined. Each line of conveyor can be customised to the unique requirements of the customer's operations."

The conveyor sections include pallet squaring units, pallet destacking/restacking units, pop up transfers and pallet rotating conveyor.

The palletisers are made up of modular sections that can be arranged into a range of layouts.

UKRAINE

KYIV CPM INCREASES CAPACITY WITH TT SYD STEEL YANKEE INVESTMENT

Tissue manufacturer Kyiv Cardboard and Paper Mill (Kyiv CPM) has boosted its production capacity after investing in a Toscotec-supplied TT SYD Steel Yankee Dryer and a TT Hood system. The machinery will replace an existing cast iron dryer cylinder and Yankee hoods on PM2 at the company's Obukhiv mill, south of Kyiv. Start-up is planned for 2025. According to the supplier, compared with the existing cast iron Yankee the TT SYD will "significantly reduce PM2's energy consumption and guarantee higher operational safety," and the TT Hood and burner system will "considerably optimise the Yankee hoods' energy consumption."

UNITED KINGDOM

ESSITY INVESTS IN PRIMEDRY YES FOR STUBBINS

Essity has invested in an Andritz-supplied PrimeDry YES (Yankee Eco Steam System) to be installed at its plant in Stubbins, England. The machinery supplier said the system "significantly reduces the boiler's gas consumption, overall energy costs, and CO2 emissions." With start-up is scheduled for the fourth quarter of 2024, the PrimeDry YES generates high-pressure steam, providing up to 25% of the steam required for the Yankee by utilising exhaust air from the Yankee hood. Phillip Kenyon, Organisation Improvement Manager at Stubbins mill, said: "The state-of-the-art PrimeDry YES perfectly meets our requirements for energy saving, thermal recovery and overall machine efficiency optimisation."

Within the UK, Swedish-headquartered Essity has five manufacturing sites.

CHINA

LIANSHENG PULP & PAPER STARTS-UP COMPLETE PULP MILL

Liansheng Pulp & Paper has started up an Andritz-supplied kraft pulp mill at its plant in Zhangzhou, Fujian Province. The machinery supplier said the mill is the largest kraft pulp mill in China, and started-up on schedule and is now ramping up production. Last year, two Andritz-supplied tissue machines including stock preparation and automation systems started-up at the Zhangzhou mill. The scope of supply for the pulp mill included the chip handling plant, the complete fibre line equipped with Compact Press wash press technology, and the chemical recovery systems, including China's largest HERB recovery boiler to maximise energy generation from the recovery process.

NOVA TISSUE CO. BOOSTS EFFICIENCIES WITH £1.5M INVESTMENT

Tissue converter Nova Tissue Co. has increased its production facilities after investing £1.5m in an OM1 Bundler supplied by Infinity Machine & Engineering Corp. and a rewinder line supplied by Valmet. The machinery will be installed at the family-run company's Oldham-based plant in North West England. Khurram Iqbal, Director of Nova Tissue Co., said: "This £1.5m investment represents a significant step forward for Nova Tissue. The cutting-edge additions are set to revolutionise the way we operate, significantly boosting efficiency and product quality while enabling more sustainable operations."

He added the Infinity-supplied OM1 Bundler is "a next-generation packaging machine that will streamline our bundling process, delivering precision and speed."

It will also enable further reductions in LDPE (low-density polyethylene) packaging.

INDIA

OPIL PARTNERS WITH BTG GROUP FOR DIGITAL TRANSFORMATION

Orient Paper Industries (OPIL) has entered into a partnership with BTG Group to oversee a digital transformation that will be rolled out in phases over the next few years. The project includes the implementation of BTG's advanced instrumentation and Model Predictive controls across multiple unit operations, starting with OPIL's bleach plant, lime kiln, tissue machines and a mill-wide dataPARC system. BTG said the partnerships aims to optimise manpower utilisation, reduce operational costs, and enhance productivity and quality.

SLOVENIA

DUNI GROUP ACQUIRES STAKE IN TABLETOP PRODUCT CONVERTER SETI

Sweden's Duni Group has boosted its tabletop product converting capabilities after acquiring a 70% stake in Slovenia's SETI. SETI is based in Kranj and is a converter for standard and customised high-technology tabletop products such as napkins, table covers and coasters in airlaid and tissue. It has been a customer of Duni Group's airlaid tissue business for several years, and the merger now further consolidates Duni Group's position in dining solutions in Europe.

CANADA

KRUGER ANNOUNCES \$32.4M INVESTMENT IN KAMLOOPS

Canada's Kruger Inc. is to diversify its product portfolio after investing \$32.4m in its Kamloops pulp mill. The move means the company can implement innovative technologies and expand into fast growing markets, with "new technology will make next-generation specialty pulps." Kruger Inc. said the pulp will be made with "significantly less chemicals", and the "ultraclean pulp grades will target fast growing markets in North America and Asia."

FRANCE

MPH1865 STARTS-UP TM WITH AN ENTIRELY ELECTRICAL AIR SYSTEM

MPH1865 has started up a Toscotec-supplied AHEAD 2.2 tissue machine at its Annonay mill, which is said to be the world's first high-speed line operating with an entirely electrical air system. Supplied on a turnkey basis, PM2 has a sheet trim width of 2.8m, a design speed of 2,200m/min, and a production capacity of 38,000tpy. The scope of supply includes a TT NextPress shoe press, a TT SYD Steel Yankee Dryer, a stock preparation system featuring two complete lines (one for virgin wood fibres and one for waste paper designed for PM2 and PM1), as well as a machine broke line. Toscotec has also supplied its patented TT SAF DD system (Short Approach Flow with Double Dilution). Part of a €75m investment, MPH1865 said the machine is the first high-speed tissue line in the world to operate with an entirely electrical air system with three stages of heat recovery.

Laure Miribel, MPH1865 Deputy Chief Executive, said: "PM2 is the first mill in the world equipped with hybrid hoods that allows us to stop using gas in the paper drying process. After this additional machine, we will be able to produce up to 38,000 tons of mother reels to manufacture all types of professional hygiene hand towels."

ECONOMIC HEADWINDS SET TO CHECK TURKIYE'S AVERAGE CAPACITY GROWTH PROJECTION OF 8.15% BY 2027



Will growing exports, upgrades on mills, on-site costs and low carbon energy be enough to offset rising again inflation? Analysis by Bruce Janda, Senior Consultant, ResourceWise.

As a major exporter, the Republic of Türkiye continues to be of significant interest in the global tissue business. This column has reviewed Türkiye about every two years since at least 2018. This year, we are adopting the new preferred spelling as requested by the country. However, the legacy English spelling in maps and computer-generated charts within this report has not yet been updated.

A recurring theme in the last three reports highlights Türkiye's location, culture, and history as vital to trade and the development of the tissue industry. Positioned at the crossroads of Southeastern Europe and Southwestern Asia, the country borders the Black Sea, the Aegean Sea, and the Mediterranean Sea. As a result, Türkiye has served as a historical bridge in trade between regions and cultures. This position also provided a treaty obligation to control warship entry to the Black Sea during the Ukraine war.

During the pandemic, domestic inflation emerged as a concern, but it significantly accelerated during the recovery phase. While the low exchange value of the lira was identified as a positive factor for export pricing, the resultant cost of imported virgin pulp used in most exports remains a concern. Figure 3 shows updated details of the inflation trend.

Figure 1 shows Türkiye's central location and tissue production sites. There are 14 tissue mills marked as non-integrated or recycled integrated. These sites are owned by one of ten private domestic producing companies.

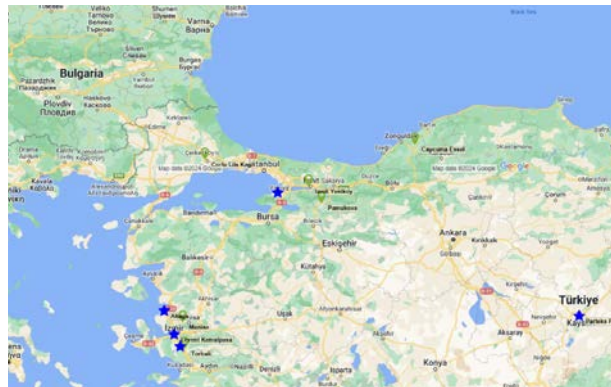


Figure 1: Türkiye Tissue Mills

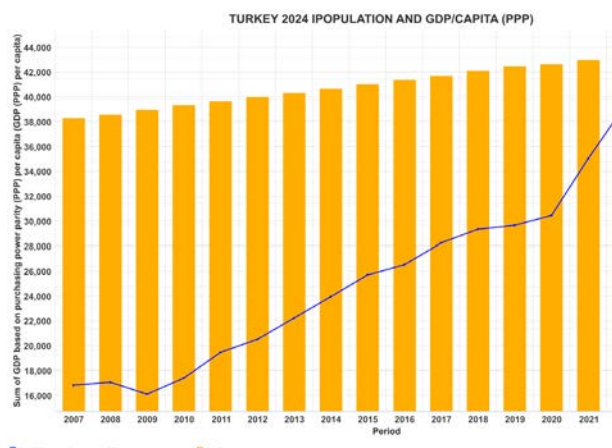


Figure 2: Türkiye Population and GDP/Capita (PPP)

Türkiye's population continues to grow at a slow, steady rate, estimated at 0.61% in 2024, ranking 139th in the global population growth rate. Real GDP per capita, as expressed by purchasing power parity (PPP), is ranked 71st in the world. Real GDP is growing at about 4.52% (2023). The detailed trends for population and GDP/capita (PPP) are shown in Figure 2.

Inflation concerns expressed in this column in 2018 and 2020 now seem like minor blips compared to the situation reported in 2022, as illustrated in Figure 3. Inflation was estimated at 53.9% in 2023, down from 72.3% in 2022. However, inflation appears to have increased again to about 60% so far in 2024. Unemployment has hovered around 10% over the past three years. These trends should provide significant headwinds for further domestic tissue consumption and may affect the business climate for support of export-focused business investments.

Figure 4 illustrates Türkiye's tissue import trend, while Figure 5 shows the export trend. In 2023, Türkiye's tissue exports exceeded imports by about 28 times, demonstrating its commitment and capability to the tissue export business. Although imports slowed until 2023, this blip is insignificant compared to the rate of exports. Germany and Russia provided about two-thirds of the tissue imports in 2023. This is the first time Russia has shown up as an exporter in this trend. Egypt, Greece, Iran, Italy, Japan, Saudi Arabia, and Sweden have been frequent tissue sources of Türkiye's imports.

Türkiye's tissue exports began to grow in 2011 and have continued to do so through 2023. The United Kingdom is its largest customer, accounting for 30-35% of the total export volume since 2020. Greece is the next most significant customer, with Bulgaria, Iran, Ukraine, and the United States as notable customers over the trend period. Of considerable note is the growth of the "all other" category from about 30% to 68% in 2023. This growth in customers with volume shares under 8% represents a significant diversification in the customer risk for Türkiye's producers.

The development of tissue production capacity supported this net trade growth. The waterfall chart in Figure 6 shows the change in the number of operating tissue machines. The net number of tissue machines increased by 13 from 2007 through the 2027 forecast. A wider and faster machine often replaced a smaller, less efficient machine. In addition, numerous capacity improvements were made to existing machines. The net result is a cumulative average growth rate (CAGR) of 8.1% from 2007 forecast through 2027. However, the announced capacity changes from 2025 through 2027 have a CAGR of only 1.36%. Only one new machine is expected to be introduced during this period. Although, potential competitors have more projects coming, such as Saudia Arabia or lead customers in the United Kingdom.

Figure 7 summarises tissue finished product production versus fibre sources used. Consumer bath is the most significant grade, more than the

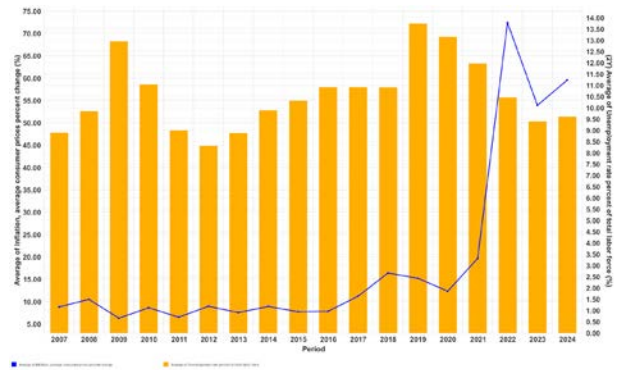


Figure 3: Türkiye Inflation and Unemployment)

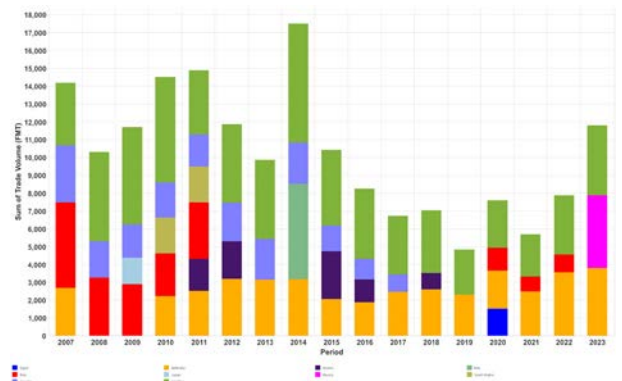


Figure 4: Türkiye Tissue Imports

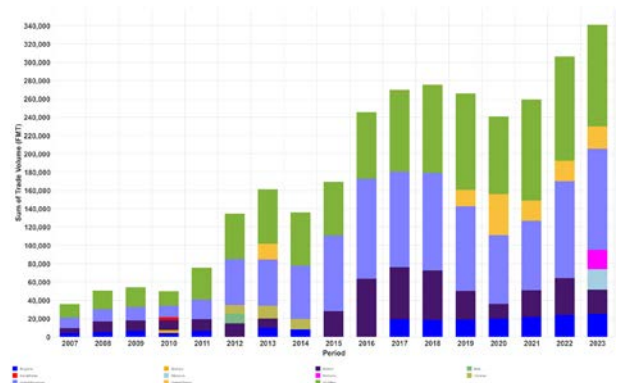


Figure 5: Türkiye Tissue Exports

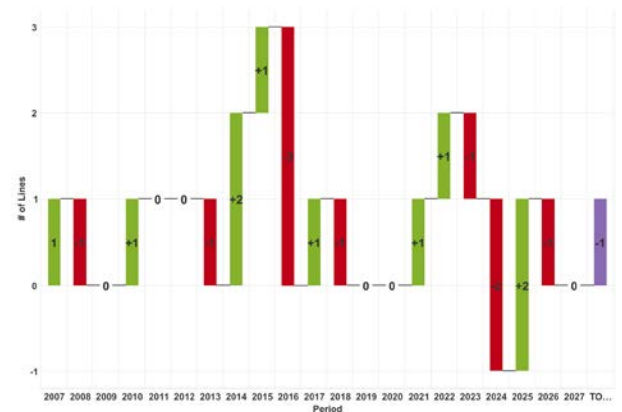


Figure 6: Türkiye Tissue Machine Count Changes

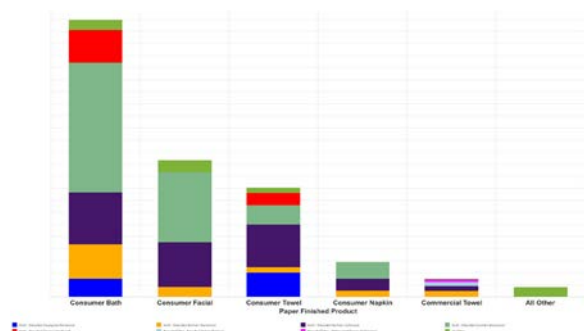


Figure 7: Türkiye Tissue Machine Products and Fibre Sources

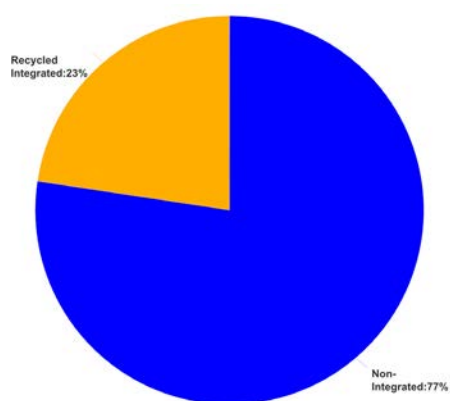


Figure 8: Türkiye Tissue Mill Site Integration

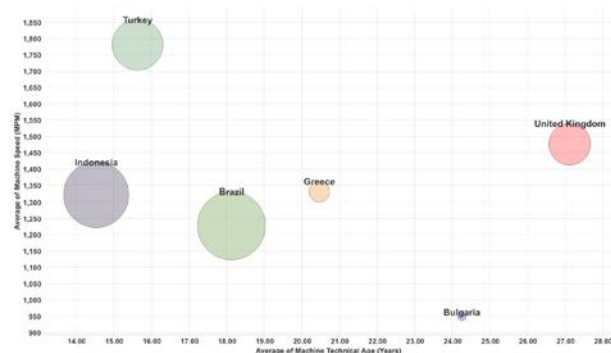


Figure 9: Türkiye Tissue Machine Quality

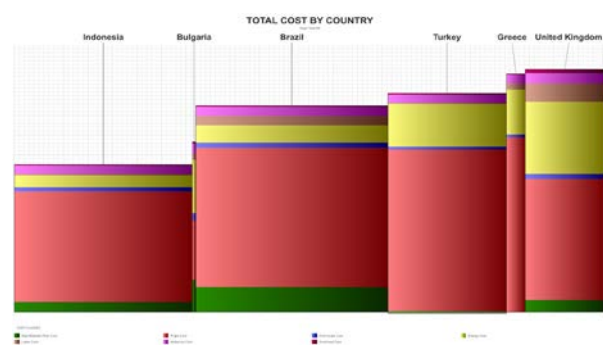


Figure 10: Türkiye Tissue Average Cash Cost

subsequent two grades combined. Eucalyptus and tropical hardwood used in this grade suggests a focus on softness and possibly exports. All consumer grades use southern and northern bleached softwood pulps for strength and bulk generation. Recycled fibre tends to be used to produce commercial towelling.

Figure 8 shows the site types categorized by fibre integration. Less than a quarter of the tissue production sites have some recycled fibre integration, and no virgin fibre integrated sites exist.

A comparative analysis of tissue-producing countries was conducted using Türkiye's tissue trade partners. This set includes Brazil, Bulgaria, Greece, Indonesia, and the United Kingdom. This comparison set allows for a review of the United Kingdom's current tissue fleet as of Q2 2024. Brazil and Indonesia were chosen as representatives of growing tissue exporting industries. The United Kingdom is the largest customer.

Figure 9 presents a comparative analysis, with the X-axis showing the average technical age of machines in each country and the Y-axis displaying the average tissue machine line speed. The size of each bubble reflects the total production capacity of each country. Türkiye's tissue fleet ranks as the second newest, just behind Indonesia. However, the country's machines operate at much higher speeds, indicating notable productivity advantages.

Figure 10 compares the same countries alongside Türkiye but this time focusing on the average cash cost of producing a ton of tissue. The height of each bar indicates the production cash cost for each country, while the width represents their relative tissue capacity. The coloured segments within each bar illustrate the costs involved, including raw fibre materials, market pulp, chemicals, energy, labour, materials, overhead, and any credits.

Türkiye has the third highest production costs among the group. A comparison of the colour-coded bar stacks reveals significant differences, particularly in energy expenses faced by Türkiye's mills along with Bulgaria and Greece. The United Kingdom has the highest relative energy costs, consigning it as the highest-cost tissue producer. Indonesia and Brazil enjoy relatively low energy costs. The disruption and realignment of energy costs due to the Ukraine war have affected global tissue production costs.

Türkiye also has lower fibre integration than any other country except Greece. The bottom stack bar shows the cost contribution from either recovered paper or wood materials. Instead, Türkiye contributes much more to average costs from purchased and imported pulps. Its mill integration is also shown in Figure 8.

A snapshot of the average tissue machine and mill viability is shown in Figure 11. In this case, the cost of the bar height is determined by viability factors, where cost is only one of the eight factors considered. The legend shows these factors as capital required, cost, grade risk, internal company risk, competitiveness,

size, technical age, and tons per unit trim. Türkiye has the best viability score, followed by Indonesia, which is positioned at the lower end of this set. Bulgaria and the United Kingdom show significantly higher risk scores at the right-hand end of the chart. Bulgaria's score is driven by its old and slow tissue machines. The United Kingdom appears to be in the process of upgrading its tissue fleet.

Figure 12 displays carbon emissions per finished metric ton, explicitly focusing on emissions from tissue machines on-site and excluding pulp production at integrated sites. Scopes 1 and 2 emissions were chosen as they are most likely to be included in a carbon analysis by potential consumers and governments. The colours stacked in each bar represent the source of each emission. The two key areas are fossil fuel consumption on-site for power and heat during tissue drying and the fossil fuel content of electricity grid production.

Due to its significant use of coal, Türkiye suffers from the highest on-site carbon emissions, followed by the United Kingdom and Greece. However, the carbon content of the electric grid is slightly higher than that of the UK. Türkiye also has a carbon penalty from on-site electricity sales to the grid. This reduces the tissue production cost but adds more carbon to the atmosphere. Bulgaria and Indonesia have a very high carbon content in their electric grids. Brazil is a low-carbon leader in both on-site emissions and the electric grid.

The domestic tissue business in Türkiye appears to be slowing its expansion in the post-pandemic and European war periods. Fewer new projects are scheduled to come online in the next three years. Türkiye is suffering from strong inflation, which must affect both energy and imported pulp costs. The country depends more on the global pulp market than other tissue-exporting powerhouses like Brazil and Indonesia. Their newer integrated virgin mills also provide lower cost and low carbon energy on-site. Even integrated recycling mills tend to support more efficient and extensive power sources.

Although the country's tissue business ranks well in viability in Figure 11 due to the quality of its tissue assets, the risk appears to be growing in this current high-inflation and high-cost energy period for their operating model. Still, Türkiye retains its strategic geographic location for trade and cultural links to the Turkish regions of western Asia. The UK remains its largest tissue export customer and will probably continue to source significant quantities even as the UK replaces older domestic capacity.

Specific details about tissue producers and individual machines are needed to analyse the competitive position. This article provides a static summary of the current tissue industry in Türkiye. Fluctuations in fibre prices, exchange rates, and

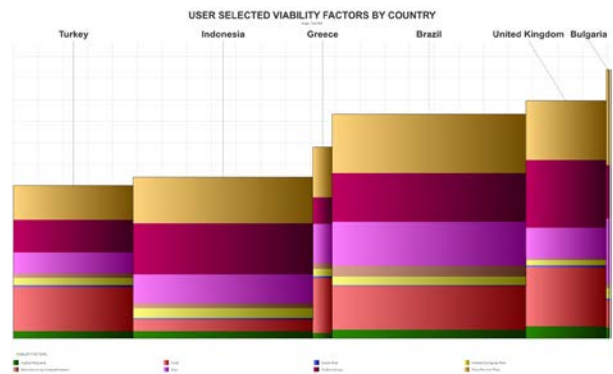


Figure 11: Türkiye Average Tissue Machine Viability

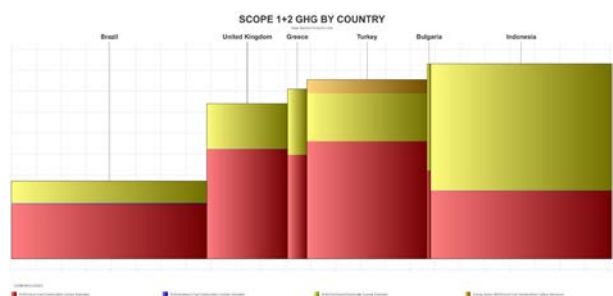


Figure 12: Türkiye Scope 1 and Scope 2 Carbon Emissions per Ton

environmental regulations will introduce advantages and challenges for participants. Furthermore, tissue mills in Türkiye will continue to change ownership and consolidate, and neighbouring countries' investments in tissue-making capacity may impact imports and exports.

The domestic tissue business in Türkiye appears to be slowing its expansion in the post-pandemic and European war periods. Fewer new projects are scheduled to come online in the next three years.



TÜRKİYE IS GETTING ITS TISSUE FUNDAMENTALS RIGHT

Entrenched hygiene routines, rising population, expanding middle class, urbanisation, unmet potential ... underpinned by the country's projected above average 3.1% rise in GDP. Report by Euromonitor International's Lying Qian, Industry Manager for Tissue & Hygiene.



Despite tight financial conditions and high inflation, the overall tissue demand in Türkiye shows resilience in 2023 and near future thanks to essentiality and lack of substitution. Both retail and AfH tissue saw stabilising volume growth from previous years' fluctuations to a single-digit percent that's above pre-pandemic norm.

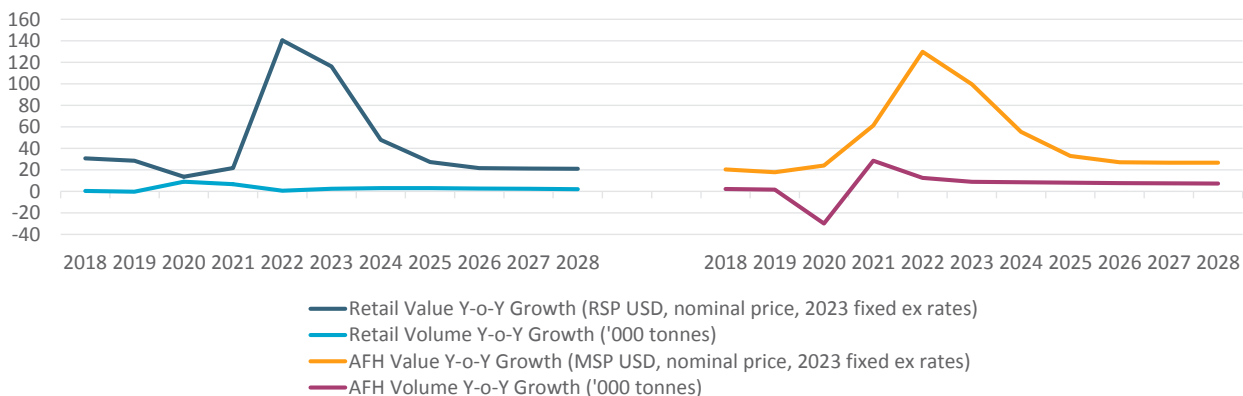
More specifically, retail tissue demonstrated a slightly accelerated low-single-digit volume growth in 2023 from a period of destocking in previous years, supported by bulk purchases ahead of significant price increases in mid-2023, increased

promotional campaigns by manufacturers and retailers and population growth-induced need.

AfH tissue on the other hand saw slightly moderated high-single-digit-percent growth from more drastic recovery period of 2021 and 2022, thanks to increased patronage of restaurants, cafés, retail establishments and entertainment centres.

Moving forward, as high inflation continues to moderate and economic development gradually recovers, volume growth will continue to stabilize in the range of single-digit, while nominal value growth in USD set to soften to lower double-digit.

Turkey Retail vs AfH Tissue: Nominal Value vs Volume Y-o-Y Growth 2018-2028*
% y-o-y growth



Source: Euromonitor International Tissue and Hygiene annual research, published February 2024 Note: data for 2024-2028 is forecast

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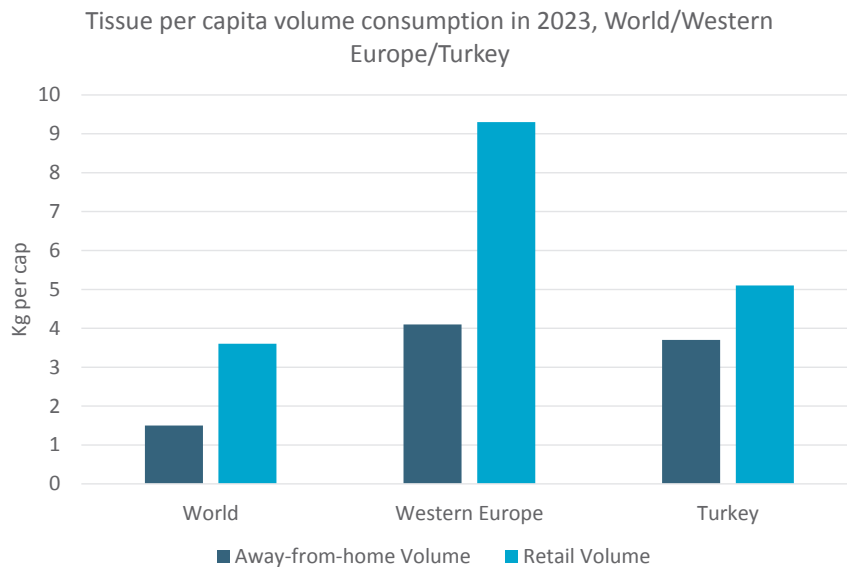
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Source: Euromonitor International Tissue and Hygiene annual research, published February 2024

POSITIVE OUTLOOK OF FUNDAMENTALS SERVE KEY GROWTH PILLARS FOR TÜRKİYE'S TISSUE DEMAND

Much of its positive tissue outlook is built on the daily essentiality of tissue goods' nature, entrenched hygiene routines, and, more importantly, still below-region per capita penetration and positive fundamentals such as urbanisation, and an expanding middle class. Population levels too are set to remain positive with growth up to 2040 mainly driven by natural change as births continue to outweigh deaths.

Economically, following real GDP growth slowdown in 2023 and 2024 per projection, Türkiye's economy is forecast to expand at a CAGR of 3.1% in real terms over 2023-2028, surpassing the Western European average of 1.6% and indicating potential for significant future economic development.

With all being said, persistent macroeconomic and structural issues, such as rampant inflation, local currency devaluation, sluggish productivity growth and low employment rates, are among key weaknesses in Türkiye's economy, which will underpin sustained price sensitivity across the bulk of the economy and underscores the importance of value.

In 2023, the country ranked 17th in Western Europe for average gross income, despite a significant increase in per capita disposable income. High inflation and income disparity remains a challenge, as the richest 20% of the population holds nearly half the total income.

COST PRESSURE STRENGTHENS PRIVATE LABEL'S DOMINANCE AND INTENSIFIES COMPETITION

The depreciation of the Turkish Lira, rising costs associated with importing raw materials and finished products, and the VAT increase from 8% to 10% further exacerbated cost challenges for

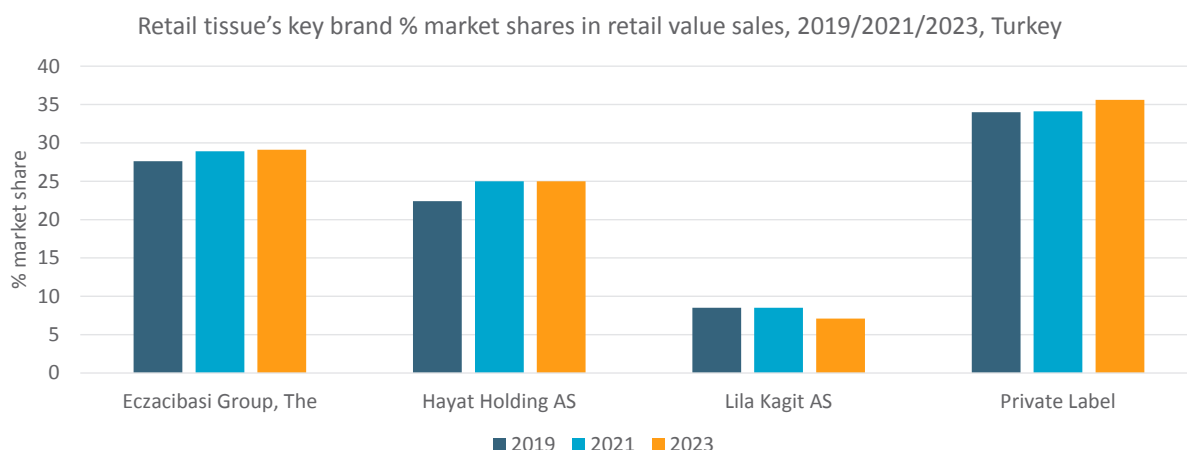
manufacturers and consumers alike. Down trading behaviour has contributed to rising private label's collective market dominance, whose market share grew from 34% in 2019 to 36% in 2023. Its growth is also supported by the dominance of discounters in the country's grocery retailing landscape and their rapid expansion of their store networks.

Discounters are expected to strengthen their position as a preferred distribution channel for retail tissue products in Turkey. Moreover, leading discounters such as BIM and 101 have strategically focused on promoting their private label products, capitalising on the growing popularity and consumer demand for these offerings. As a result, discounters are poised to further increase their market share by leveraging their extensive reach and the appeal of private label products, driving growth in retail tissue.

For market players, growth is a balancing act of navigating cost challenges effectively while ensuring continued product attraction and competitiveness. Strategies such as cost optimisation, supply chain efficiencies, and product diversification are key to mitigate the impact of price increases and maintaining profitability in the face of evolving market dynamics.

Additionally, fostering partnerships with retailers and exploring innovative pricing strategies could help manufacturers mitigate the effects of VAT increases on consumer demand, ensuring sustained growth in retail tissue despite prevailing challenges.

For top players targeting higher-income consumers - such as Eczacıbaşı and Hayat Kimya - added health benefits and durability which are key to communicate differentiated value propositions. Both companies have unveiled new offerings aimed at attracting consumers with higher disposable incomes, such as Eczacıbaşı's Selpak Extra Antibacterial Protection Shield toilet paper, boasting advanced antibacterial properties and Solo Bamboo-Enhanced Toilet Paper with enhanced durability.



Source: Euromonitor International Tissue and Hygiene annual research, published February 2024

VERSATILITY AND DURABILITY UNDERSCORE PAPER TOWELS' LEADING GROWTH PROSPECT AND BROADER INNOVATION

Among retail tissue products, paper towels are predicted to emerge as the most dynamic category in terms of volume growth. This trend can be attributed to the increasing recognition of paper towels as essential household items. Versatile in their usage, paper towels find applications in both kitchen and bathroom settings, often replacing traditional napkins and boxed facial tissues. The multi-functionality of paper towels enhances their appeal to consumers, driving higher demand and contributing to robust volume growth in this category.

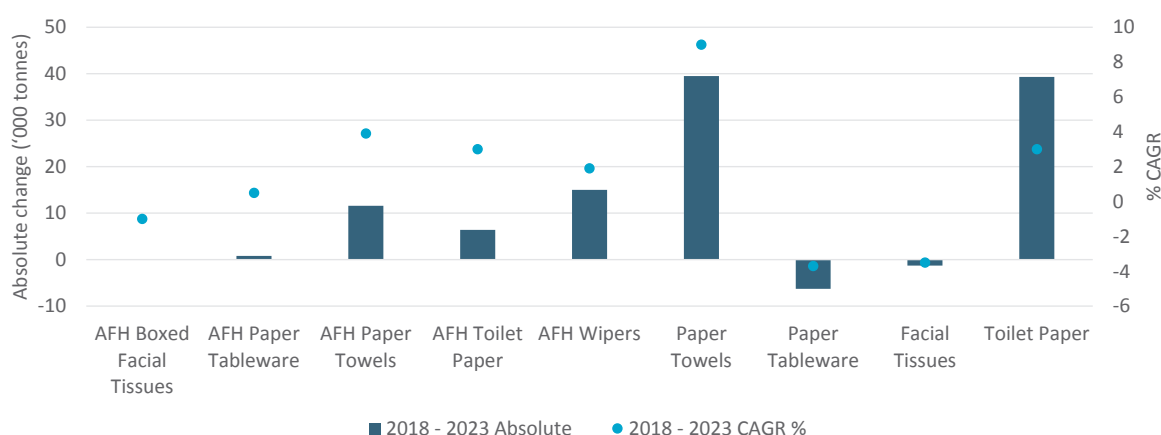
STIMULATED AFH TISSUE SALES WITH THE RISE OF ON-TRADE AND RETAIL ESTABLISHMENTS

In the near term, the AfH tissue demand is shaped by the diverging forces that include - on the positive side, resumption of pre-Covid-19 lifestyles and

recovery of Türkiye's tourism and the hospitality sector, which is responsible for a good bulk of AfH tissue consumption; and on the cautioning end, cost-cutting and digital transformation offers to reinforce convenience and affordability of services and business profitability.

In the projected period, AfH sales of tissue products are expected to witness a notable increase, propelled by the anticipated growth in the number of on-trade and retail outlets. As the economy gradually recovers and consumer confidence rebounds, there will likely be a resurgence in the hospitality and retail sectors, leading to a higher demand for tissue products in public settings. Moreover, heightened awareness and emphasis on health and hygiene, particularly in light of recent global health crises, are projected to drive greater demand for tissue products through AfH channels. The emphasis on cleanliness and sanitation is expected to persist, further fuelling the demand for tissue products across various establishments.

Turkey: retail and AfH tissue volume growth by category, 2018-2023



Source: Euromonitor International Tissue and Hygiene annual research, published February 2024

AFTER A SUPPLY SURPLUS SLOWDOWN THE TIME IS RIGHT FOR EXPANSION, SAYS TURKIYE'S TISSUE POWERHOUSE HAYAT KIMYA

The market leader across the Middle East, Eastern Europe, and Africa is planning more state-of-the-art technology, a rebound to premium products, and new production sites in new countries. TWM Senior Editor Helen Morris met Şahin Civelek, Global Tissue Production Director.





Production boost: Hayat Kimya's brands include the Papia range of toilet papers, paper towels, napkins.

Driving across the magnificent waters of the İstanbul Boğazı (Bosphorus Strait) from the centre of the city's bustling old town, alongside the Sea of Marmara and onto İzmit - where TWM is visiting Hayat Kimya's Kocaeli tissue plant to meet Şahin Civelek - offers great insight into just how much Türkiye and its tissue industry have developed since our last report in 2022.

Now, as then, the region is at once modern and traditional, with a thriving business and industrial scene, full of life with its vast volumes of cars, motorbikes, and boats, as locals, businessmen, and tourists jostle for space. During TWM's September 2024 visit, İstanbul seemed even more vibrant and busy, and the symbolism of its internationally significant waterway taking on a new importance. The İstanbul Boğazı divides the geographical sides of the country, connecting the Black Sea to the Sea of Marmara, forming one of the main continental boundaries between Asia and Europe. An impressive 41,000 vessels of all sizes pass through annually, among them 8,000 tankers carrying 145m tons of crude oil. The Strait remains a vital means of connection for the region's transport, trade, and tourism.

In İzmit, TWM is warmly greeted by Şahin Civelek, Hayat Kimya Global Tissue Production Director, who has been at the company for 20 years and took on his latest role just a year and a half ago, having previously worked on the converting side of the business. Before a tour around the facility – Hayat Kimya's first tissue plant, established 20 years ago in 2004

- Civelek explains how his previous responsibilities were to control and check all the company's global products, and how his new role involves looking over his own and other's responsibilities.

Speaking in excellent English he says: "It requires you to be multifunctional. The market has seen many changes over the years, so it's very important to listen to others and take a place among decision makers. We look at exactly what we are saying that will drive another's decision, so it's important to select the words carefully to help others make the right decision. In my role now, I ask many questions to learn and understand every alternative possibility."

In the past decade alone, Türkiye's tissue industry has changed rapidly, picking up the pace of investment at home and export abroad. The past few years capacity increases show that clearly: In 2021, six tissue machines were either started-up, announced, or scheduled to start-up between 2021, 2022 and 2023 (Aktül Kağıt, Eczacıbaşı, Essel, Europap Tezol (delayed until 2023 start-up), Hayat Kimya, Lila Kağıt). In 2023, just the one tissue machine (Europap Tezol) was started up - a quick and significant drop in investment.

Is the Turkish market in a state of overcapacity?

"Yes, there is overcapacity in tissue production. Türkiye's tissue production capacity is around 1.400,000tpy and 750,000tpy of this amount is consumed in the local market, so currently there is excess tissue production capacity of 650,000tpy. At Hayat, we have always managed this process with the following logic in all countries; we consume 80-85% of our tissue production in our converting

plants and then sell the remaining tissue papers to other converting companies. However, we manage these transitions with special activities, sometimes by prioritising private label products. Then we manage to keep both the consumer market and converting companies in our hands."

During the past 10 years, Hayat Kimya has become renowned for its rapid investments in Türkiye and abroad: "Over this timeframe, the market has been consuming more and more tissue, and so there has been a lot of increase in demand that we have reacted to," he says. "But during the past three or so years, in Türkiye the tissue investment announcements have slowed down, especially during the Covid years. While supply is now much higher than demand - not only in Türkiye, in other countries also because many investments have started up right after Covid - it will counterbalance in three to four years' time. And so, we are certainly considering this period for new investments. We couldn't invest more with the supply and demand ... that's why we couldn't expand or jump into new countries. But now, the time is here! In the next few years, there will be good news."

Hayat has been expanding organically home and abroad for twenty years, identifying potential markets. This current reassessment of that strategy has put more emphasis on investments in existing campuses: "Our investments showed us that there is high demand for high quality main reel and finished goods. We understand consumer needs and meet our demands with our investments."

Today, the company is one of the leading global companies in the FMCG sector, the largest tissue manufacturer in the Middle East, Eastern Europe, and Africa, and the world's fourth largest baby diaper manufacturer. In Türkiye it produces 270,000tpy across four tissue production lines, and it also has five tissue sites outside of Türkiye, as well as two more tissue machines in the construction phase, one in Russia and one in Egypt. Once they are up and running the company will have 11 tissue machines across Türkiye, Iran, Egypt, Russia, as well as a converting plant in Nigeria.

Does it plan to export more, and invest in other countries? "We are exporting jumbo rolls to Europe, USA, UK and Middle East. Our sales are distributed well among the regions, and we are following a diversified strategy," he says. Because of sanctions towards Russia, Hayat is currently unable to export there: "The Russian market is also big and what we manufacture there is consumed locally. So even if there weren't sanctions against Russia, we would sell anyway into the domestic market."

Iran, he adds, is also still unfortunately on the sanctions list: "What we manufacture in Russia is consumed locally, but in Iran we are unable to increase our production capabilities because of the sanctions. So, for the time being, we have stopped all investments in Iran. If the sanctions are lightened, we will start with additional capacity increases there. The Iranian people have the culture to consume toilet paper, they are accepting what we are providing them and consuming quickly."



Organic growth: over the past two decades, Hayat has grown by expanding investments in Türkiye and abroad

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Investment potential: the company has started to look at alternative countries for paper machines and also a converting site

Growth strategy is uppermost for Civelek: "All the possibilities need to be presented in front of you. This is my biggest responsibility, because if you drive the management's decision the wrong way, it can cost a lot. That's why we are careful with the necessary steps. This is not a new approach for us, we try and increase this ability amongst our teams. We are also very organised, and we have a deep knowledge. These are the main pillars of Hayat."

Hayat's ethos, built over the years, has reinforced its status across the various markets, he says: "Hayat holds either the number one position, or, at the lowest, the second position in each of its markets," he says. "In Russia, Iran and Egypt, we are number one. In Türkiye, we are also number one. Sometimes, during the year, we are number two. We have a very tough competition in Türkiye. But in terms of market share, we are number one here."

The company's brands include the high-quality Papia, and it is also increasing its economic brands as well as its private label offering. It classifies its brands according to the consumers, covering all the market sectors, for all consumer types.

"We have a strong team, and our management is very supportive of our decisions," he says. "Our investments accelerate because of this culture. The owner of Hayat is always buying state-of-the-art technologies - this is always a must. Whatever the sector requires in terms of technology, we buy it. If it's improved or developed later, we improve what we have and adapt to our existing capacity. Not only in Türkiye, in Iran and Egypt too. These countries also have the highest speed lines - in the consumer sector, production speed is very important because at the

same time, it would cost you more if it wasn't running at the highest speed. We believe that a slow and cheaper line is more expensive."

Within the local market, Civelek adds that when compared to 10-15 years ago, consumers are now requiring thicker products: "A lot of 3ply, and the share of 3ply in our production is more than 60%. This means they are focussing on water absorption and also thickness of the paper, and that's why we started manifesting some of our kitchen rolls from 2ply to 3ply, and for toilet paper too."

Hayat is also famous for its innovate "6ply toilet roll", which it launched in 2011: "It doesn't have a common usage in the market, but still a minority of our customers are asking for this. It showed that if something different was to be done in the market, it must be done by Hayat. It was our reputation, and in that sense, it reached its target. We learned many lessons from 6ply production, and we are still one of the few 6ply manufacturers globally. While it's a very minor part of our production, everyone knows that Hayat is a 6ply producer. So as marketing, it was clever - a global message that we can do anything."

Within Türkiye, the tissue market has grown continuously since the day Hayat entered the sector in 2004: "When we start challenging in the tissue sector 20 years ago, tissue consumption in Türkiye was at 1.5 -1.8kg per person per year levels. Now, the consumption has reached 8.5 – 9.0kg per person per year. The market has grown by 10% on average each year until this year. That's rapid growth. This year, we will also see growth again, we see this from our sales. Maybe not 10% levels, but a 6-7% capacity increase."

The basis weight of the paper is also lower by 10%, he adds, and so if the market is increasing by 6%, with the previous basis weight, the market would be increasing in terms of tonnage by more than 10%: "It means people are consuming more tissue, but because of the low basis weight of the paper, the increase can't be calculated as high as in the past. After all, in parallel with the economy, consumers prefer the economic products if they cannot afford the premium one. As a result, we are seeing more and more that tissue is used for cleaning purposes."

The share of private label products in Türkiye is increasing year-on-year, and the quality is also improving: "Whilst the brands are still dominant here, the share of private label has certainly increased, and in another 10 years I can say the share of private label will be higher than for branded in general within the country. The industry is going in that direction, like in European countries. It is following European market tendencies, so what's happening in Europe will be happening here in 10-15 years or so."

The quality of the private label products is good, he adds: "They are really asking us for high quality products. But we and the others are not giving the premium quality for private labels, only the medium level qualities. The premium belongs to our own branded products like Papia. Our competitors are doing the same thing."

For further expansion, the company is currently negotiating with some industrial zones to buy land for the future and waiting for their decision before making an investment in three to four years' time. Another reason Hayat is aiming to increase its number of production facilities in Türkiye and the region is to provide better freight costs to the supermarket chains, Civelek adds. "More or less everyone is manufacturing at the same cost level, so only the freight cost is becoming important. We have a co-generation system and that is giving us a cost advantage for energy consumption, as well as our water plant, where from the sea we are supplying our own water and consuming it in our paper production. We are the first company here to use sea water in paper production. This is also good for our sustainability as it helps us respect fresh water sources, which are very limited. We follow an energy-efficient approach in our production facilities which we call 'produce locally – consume locally'."

Sustainability – "one of Hayat's philosophies" – also means the company is lowering its energy supply from fossil-based sources: "We have declared a percentage, but it's not yet been shared with the press," he says. However, one aim is to reach a certain level and to lower the fossil-based energy-based sources before 2050. Hayat has been using solar energy at its Mersin plant in southern Türkiye since 2023: "We have looked for renewable energy options such as solar energy and we are now the

first company here to use solar energy in paper production, and currently provide 10% of the daily energy needs of our Mersin factory. Now, we want to implement solar energy systems to our other factories by increasing the yield and taking these learnings to other sites. This is the main target for our company - to lower our fossil-based energy use, to reduce our dependence on fossil fuels."

The business is using an AI programme developed to manage its energy needs by considering the grid, solar energy and a Cogeneration system: "Now, AI is in the learning phase and in the near future AI will manage our complete system logic."

He adds: "Hayat aims to be the most energy-efficient producer in the sector by making improvements in all its processes to enhance energy productivity. We are committed to developing the most efficient methods through our own engineering studies and focusing on the implementation of the latest global technologies. We use a technology called trigeneration, which converts natural gas into electricity, heat, and cold water for use in our production processes, achieving energy efficiency rates of up to 85%. With a single energy input, we meet all the energy needs in the production processes and administrative operations of our smart factories."

Are local consumers asking for sustainable tissue products? "A small majority do care about sustainably, but for most the price is more important because of the economic situation here."

One trend he says he was a little surprised to see was the recent interest in colourful and fragrant products, which has increased in rolled products: "I wasn't expecting to see such high demand for scented products!" he says. "In Türkiye, and also in Russia, only the density is different. The Turkish like more density compared to the Russian consumers. It's a fresh scent for the bathroom. So many of our products are manufactured like this now."

Due to problems in Türkiye's economy, the company is seeing "a significant increase" in demand for economic group products: "The Turkish tissue market's demand trends have shifted from the premium to the medium and economical segments, and a low basis of the paper. Previously we were manufacturing 17-18gsm, and now it's 15-16gsm. The share of our premium quality product had been 35%, and now this rate decreased to 28%. So it has affected our tissue production capacity in terms of tonnes. At the end of the day we are manufacturing the same amount of paper, and we believe the market will rebound in time and go back to mainly premium products. We do see this as a temporary period and from the beginning of next year, the product mix will get structured as it was in the past subject to economy power."

Post-pandemic, tissue has returned to pre-Covid levels: "During Covid it was terrible, but the

pandemic caused various changes in consumer behaviour. There was an increase in demand for tissue products due to concerns and restrictions, leading to a tendency to stockpile. During this period, there was a temporary increase in consumer habits. However, as time passed, people's shopping behaviour has gone back to normal and thus tissue purchases returned to normal levels. The consumer market is still good, and the AfH market has now gone back to pre-Covid times. There was also an increased demand for alternative products such as hygiene products and dry/wet wipes. These trends are expected to continue in the future, as hygiene and cleanliness remain important factors. Market conditions, general public health awareness and other factors may also continue to influence consumer habits."

Türkiye is now experiencing "a serious demand" in the AfH market: "There has been a significant increase in demand especially for V Fold and Z Fold product groups. In these product groups, the share of economic products has increased too. By revising our machines as per the new needs, we covered the needs very quickly. As companies, we must provide ways to understand our consumer and to integrate innovation and technology into our DNAs to meet our needs."

Hayat will soon launch a soft pack V-fold product into the market: "These are becoming popular and being substituted with napkins, while rolled products are still dominant, claiming 75% of the market. Napkin and handkerchief products are not so common, although the napkins market is stable but not increasing."

Towards the end of 2024, its latest tissue machine investments in Russia and Egypt will be completed and running into production simultaneously, meaning all 11 TMs will be in production: "Now the work of feasibility is in the pipeline for two more countries that have come to a certain stage," he says. "It has reached a certain level to the studies and is progressing positively. Soon we will announce two new tissue plants in two more countries – in Africa and the Far East and our territory. We have not yet decided and are preparing feasibility studies for some countries. They are showing positive figures and now we are making a deep dive into the financial figures. The countries will be disclosed with our industry towards the end of this year or by latest beginning of next year. This is our regular investment policy. So now we start looking for alternative countries, not only paper machine but also a converting site, and in one country will be a base and feed the other sites with a converting plant."

"We have been monitoring innovation since day one in the business and kept on upgrading machinery as well as continued investments in

the 'smart factory' infrastructure in all of our production premises. The infrastructure provides a common platform where the factories 'speak to each other', which enables precise recording of raw material management, momentary follow up on the production efficiency and intervention.

The company's marketing strategy for the next two years will be global: "We take our actions in parallel with these strategies. According to these, we started to revise/upgrade our machines. We have determined our strategies by taking into account the expectations of consumers and sectoral tendencies. Very detailed U/A research was conducted in all countries. This is a great opportunity because we are already ready for the future."

As for the difficulties, he says that cost increases in production inputs and the shortage of competent technical staff are the most serious problems of the coming period for production companies: "Companies that control their costs in the most accurate way will be one step forward. Thanks to our very competent and strong technical team, we achieve to keep our production costs as minimum by running our machines in the most efficient way."

"The tissue sector is always very dynamic, and in some countries is a sector where competition is very high. We are market leaders in almost all of the countries we are. As Hayat Kimya Tissue Department, we exist in four countries, and we see the expectations and market differences between countries very clearly. We think globally and act local."

Türkiye is now experiencing "a serious demand" in the AfH market: "There has been a significant increase in demand especially for V Fold and Z Fold product groups."



TISSUE GIANT LILA KAĞIT PIONEERS EXPANSION IN EASTERN TÜRKİYE AS OVERCAPACITY EXPECTED TO STABILISE



General Manager Alp Ögücü explains the key choices now facing the industry as its dynamic expansion is poised to move into its next phase. Report by Senior Editor Helen Morris.

On 17 May 2024, against a backdrop of overcapacity, fierce competition, and quick changing consumer trends, Turkish tissue giant Lila Kağıt announced its next strategic leap forward: a TL3bn tissue facility located in Erzurum, north eastern Türkiye.

Speaking now for TWM's September/October Türkiye Country Report, Alp Ögücü, General Manager, explains the logic behind the investment: "We are a big country, and the investment in Erzurum – to a different geographical location from our current facilities, which are almost 2,000 kilometres away – is very strategic. We want to reach our current customers' markets from that region, and we expect that being located in Erzurum will help us to grow in a healthy and strong way."

Within the Turkish tissue market, the location of competing tissue mills is mostly in the western or middle regions, with none in the east. The new location and TL3bn site will service both the home regional market and neighbouring export markets including Georgia, Azerbaijan, and Iraq.

The plant will be the first tissue paper facility in the Eastern Anatolia and Eastern Black Sea region, with 100,000m² of construction being carried out on 160,000m² of land. Converting facilities are expected to be operational in 2025,

and the jumbo roll paper production line aimed to be started-up in 2027. A machinery supplier is yet to be announced. Once up and running it will produce toilet paper, paper towel, napkins, and handkerchiefs, manufacturing Lila Kağıt's Sofia, Maylo, UltraBerrak, Nua brands as well as private label products. With an annual capacity of 35,000 tons, it will boost Lila Kağıt's total production capacity to 306,000 tons.

Originally founded as the Lila Tissue Factory by entrepreneur Abdullah Ögücü in 2006, Ögücü – the son of current Chairman Orhan Ögücü – took on the role of General Manager in 2014. Within that time, he has overseen the growth of the business, and the company's annual paper production gross capacity of branded and private label finished products is currently 271,000tpy. Lila Kağıt is also one of the largest roll paper producers in Europe and the Middle East among fully integrated facilities, and, significantly, in 2024 Q2 it exported 73% of its total revenue to 81 countries across five continents.

Give overcapacity in the Turkish market, why the decision now to invest in yet more? The internal market, Ogucu says, is not growing as it used to: "The market had started to see double digit market size increases in early 2003 to 2005, and this growth rate continued until 2012. There was a small stumbling block around that time and then



Lila Kağıt's Ergene Factory in Western Türkiye: the company aims to grow in tonnage, but also with brands, private labels, export markets, the local market and AfH, and the consumer products market

until 2016 it continued. After that, growth here has not been as it was, and today we can call it almost a flat line, rather than the inclining line that we were used to. Now, we have almost more than double the capacity installed compared to the local market."

The country is now at a stage where the export tonnage has gone above domestic sales: "This has happened for the first time in 2024 – and it has happened monthly. It is now a record high export situation."

Ogucu reflects on the fluctuations of the market. 2015-2016 had "a lot of noise." 2021 was also "a bit crowded." Now, he's not surprised that it looks like being quiet for some time ahead: "The new tissue capacity records according to the National Paper Association is currently around 1.4m tons. With our new project start-up in 2027, and maybe some upgrades, this may reach up to 1.5m tons. So, unless there's a surprising last-minute event, it

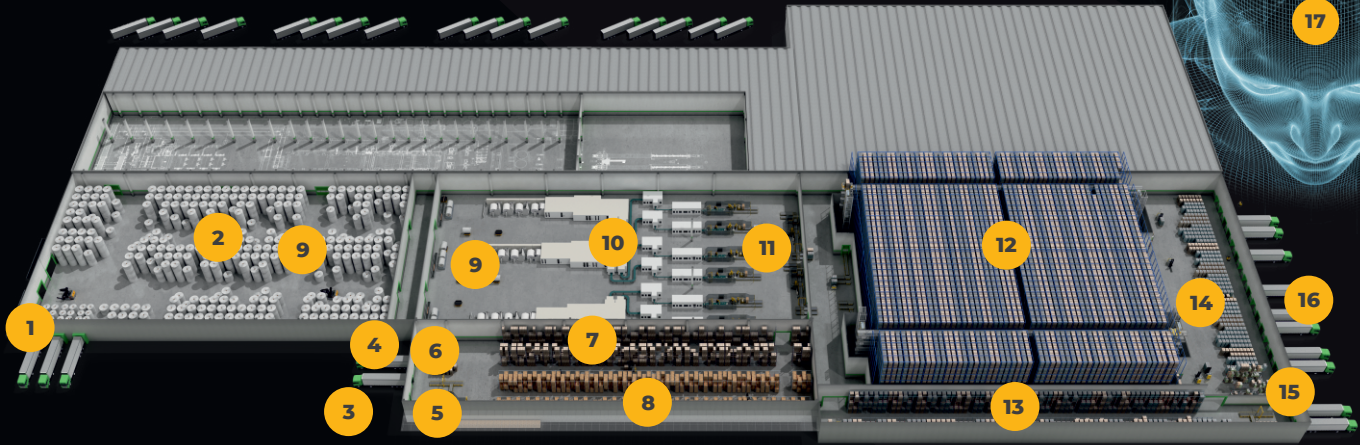
looks like it's going to be quiet for the next three to four years, which is a key reason why we invested now in 2024."

Overcapacity is "a key challenge" for the industry: "We have too much capacity, and not that much consumption locally. Türkiye is exporting to many markets, as we are, and we are the leader in that area. Since there will be new projects locally for the time being, this will influence our production and it may also influence our market share abroad."

He expects supply side stability to return, as well as see growth in the local regional markets. Does he have plans to increase the export percentage once the Erzurum site comes on-stream in 2027? "It's not easy to comment on that, because we are currently already selling to Georgia, Iraq, Armenia, Azerbaijan, all the ex-CIS countries over there. But yes, we will be increasing our sales to those countries, that's the plan. But also increasing local



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7 PACKAGING / RAW
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STORAGE

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WITH PACKAGING MATERIALS

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sales is another perspective. So I don't think the number will change that much – approximately 25% of our sales will remain for the domestic."

Within the Turkish tissue market, Ögücü adds that, as with many others, one unfortunate trend they are seeing more and more of is the issue of desheeting, which is causing a growing clash between branded products and private label products. This has happened more in the past two to three years, since the market growth started to slow down: "We are definitely seeing a reduction in the number of sheets. It is a trend that I believe happens all around the world, and which paper manufacturers hate. It's against any efficiency issue. From whichever perspective you look at it, unfortunately it's not helping. From an ecologically sustainability perspective, it's not good, and if you look at it from an efficiency perspective cost per piece, cost per kilo, it's also not good."

It started within the branded part of Lila Kağıt's market: "In this market, when you look if GDP per capita is not growing, then you would expect that the private labels are gaining market share. But this is the opposite of that happened in the past three to four years."

Why is this happening to such an extent now in 2024? "Because the desheeting started. In the private labels division, the SKU range is quite static, so because the customers are giants, they cannot list many numbers of private label SKUs. So they have to go for the most important one, and the brands are now fighting with private label regarding decreasing the number of sheets."

Brands, he adds, with the help of inflation, were able to get back market share: "This is something that Western countries are not that used to. Now, consumers in Türkiye have started buying in big bulk packs and that has helped the brands to sell more against private label, because private labels are generally in smaller packs. A standard for a small size grocery item. These facts have helped the brands to gain market share, but they are not in the best interest of the consumer or the producer. It just adds a small advantage at first when you are dealing with the customers, but that's just for a short-term period."

Do you forecast this trend to continue in the next few years, and how is Lila Kağıt adapting? "It looks like we are at the final stage of the desheeting issue, hopefully. But we cannot estimate with a very clear picture what exactly is going to happen between private label and brands here in Türkiye. There are many different criteria going on all at the same time. It's not only the usual 'marketing trends', but the macroeconomic effects are severely impacting this matter."

"We are definitely seeing a reduction in the number of sheets. It is a trend that I believe happens all around the world, and paper manufacturers hate. It's against any efficiency issue."



Furthermore, he says there is the competition between big retailers, and this has affected the market as some retailers have chosen to act more on their private labels, whilst others choose to act more with brands: "The profitability of the retailers also has an effect on this, so it's not very easy to say, 'it's going continue that way or the other way'. All we can do is be prepared for both eventualities."

As the company is exporting three quarters of its whole production abroad, how important is sustainability for the business? "Sustainability is an issue that is not just important to us because of our values, but also because of the standards that we must obey – our customers' demands, mainly in the western markets, for example."

The company is working on a new programme in the run up to the EU's Carbon Border Adjustment Mechanism (CBAM) – a carbon tariff on carbon intensive products imported into the European Union – that comes into effect in 2030. "This will be relevant for the entire paper sector and means that anyone what wants to export to Europe will have a very high standard of carbon emission limits. If these aren't met, there will be an extra tax or penalty, and we're getting prepared for that well in advance of its introduction."

In preparation for CBAM, the business is working with an advisory group, not only limited to Türkiye, but also internationally: "It's not only about environmental issues – it's the full programme, environmental, social and governance. The targets are going to be quite tough, so we will be trying

to achieve results that are going to be – hopefully – a first in Türkiye. And not only that, but also probably at the highest level in our business sector worldwide.”

He says the company’s efforts will also include addressing climate change diversity, human rights, equal opportunity, water and energy management topics that are the most common in tissue industry: “The aim is to approach them in a braver way. A way to positively disrupt. That’s why I can tell you some solid facts. Right now, we have already built 12,5 megawatts or capacity of solar power panels on our roof in our current facility and we have also promised to reach 50 megawatts of solar power plants. We have also already obtained the licences and declared our investment programme for this. So that has started, and that’s something solid and concrete that’s already going on.”

Following Covid-19, how has the AfH market rebounded? “Well, this had both similar effects like we see in the world, but also some separating

parts. To start with, obviously Türkiye has quite a large population, almost reaching 90m people now. The AfH market is roughly estimated to be 20 – 25% of the whole tissue market. During Covid in 2020, it just stopped for three to four months. There were a lot of effects for schools, airports, tourism. But then in 2022, “the revenge”, as they say, happened. Shopping or revenge tourism, and the AfH market was quite alive in 2022.”

However, he adds the AfH market has also not been immune to the issue of desheeting and the GSM reduction: “Again, something tissue producers don’t like, and unfortunately this is taking place. This is not in the best benefit of the consumer or the customer because if you go and get a weak towel in the restaurant, I don’t think everyone is going to get one towel. And since no one is looking at that time, people just pull two more towels as one is too weak. You cannot follow that consumption level, and also we cannot prevent it from happening by ourselves.”



Export potential: Lila Kağıt is one of the largest roll paper producers in Europe, and in Q2 2024 exported 73% of its total revenue to 81 countries across five continents

Another issue, he says, is that inflation has “a great effect” on local consumption: “Most restaurants, schools, airports, when they want to cut costs, paper is usually one of the items at the top of the list. So the desheeting or GSM decrease helps in that aspect as the prices are not increasing as much, but not in the most transparent way.”

Tourism’s part in AfH levels has also not returned as expected: “The interest rate here is over 50%. And since it’s quite high, the spending levels are decreasing, so people’s wages, the cost of tourism, restaurants, hotels, it’s quite high in foreign currency. This past year, the country is much more expensive than it was in the past two to three years.” The attractiveness of the Turkish tourism market for foreigners is not as it was.

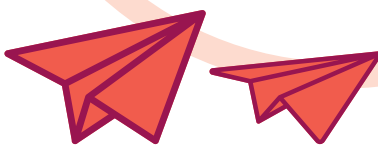
“Three years ago, everything was so cheap, to an extent that it was undervalued at that time. You could have a coffee anywhere in Europe and probably pay €3-4 for a big cup, and then to compare that, if you came to Türkiye it was half the price for the same cup of coffee. Now it’s the opposite, it’s €4-6 euros. It’s very expensive. But the reason is that the Turkish lira is at its top value compared to the past five to six years, that’s the problem. We should have a devaluation of the Turkish lira and then it will be back to normal.”

Following the Erzurum investment, would the company ever consider a tissue plant abroad? “That’s something we cannot comment on at this time. But it looks like as of today, the Turkish market – both in terms of consumption and production – is at a level where it’s not going to be healthy to invest anymore. The sound way for Turkish producers looks like that there should now be further investments in where tissue is going to be consumed.”

How has the business reacted to pulp price volatility? “Volatility is a challenge that we have to adapt to. And we have to accept at this point because in the past, the changes of either increase in price or decrease would happen over a longer period. But now it’s happening very fast and then turning the other way again, quite fast. The amplitude of the wave is again not small, and also the frequency is not long either. So, this is now the market trend and we have to adapt to it.”

Öğücü also notes the logistical cost differences, competition against China: “And who knows what’s going to happen in Panama if the channel is going to be open or not. Or what’s going to happen with the war in Ukraine or Palestine. They all have effect, petroleum prices, natural gas prices. Or port closures or strikes. As we have a business where three quarters of our full production is international, everywhere is a market, and so we

“Three years ago, everything was so cheap here. You could have a coffee anywhere in Europe and pay €3-4. If you came to Türkiye it was half the price for the same cup of coffee. Now it’s the opposite.”



must follow all the markets. The most important thing about pulp is that it should increase or decrease equally in every continent. This is my main comment. We are not treated equally. They say we are equal, but we are not. I think it would be fair to say that the pulp producers should not be part of the competition between let’s say regions.”

Now in 2024, the company is four times its initial capacity from when it first started to produce paper in 2007. And it’s still planning to grow. The aim is now solely to grow in tonnage, but to also grow with brands, private labels, export markets, the local market and AfH, and the consumer products market. “We will not just grow in terms of volume, but also in sustainability programme, in governance issues, IPO. Numbers can only explain the basic facts about growth, but we are also trying to prove growth with something other than numbers,” he adds.

Another issue is that of getting – and keeping – employees with the right skill sets. “This is a worldwide issue, but a bigger issue in our local markets. In 2005 when we were completing the business plan for this area, there were only three probably tissue producers in Türkiye and the total tonnage was about one tenth of today. Maybe 12-14%. So in less than 20 years, it has become eight to 10 times bigger. So many new companies and also many present companies have been increasing their capacities with new lines. This requires a lot of new people, although the automation level is increasing still, more skilled people and also faster lines that are more complicated. The skill level is



Production boost: current annual paper production gross capacity of branded and private label finished products is 271,000tpy, with a further 35,000 tons coming onstream with the start-up of the company's Erzurum site in 2027

an issue and keeping the same people is another issue. It's easier to build new capacities, but educating and keeping the skilled people within the companies is much harder."

In terms of AI and digitalisation, how are tissue mills taking advantage of this? "There's a lot more can be done. The limit to this is the dark factories that this can go through. And it looks like we will reach there soon. Ten years ago we did not have robots running in our plants. Well, now we do. Ten years ago we would not think about AI working for us. Now we do. In many other areas, we are adapting to this."

Looking ahead 10 years, he sees the industry, since it requires a lot of space, a lot of load, a lot of internal logistics, having much more robotics. But the issue is ROI: "That's the first criteria to make that investment. Today we are using AI, mainly in office works. But soon it will be more. In data analysis, most probably it will be used first. To correct the big data and to find anomalies, and also to suggest the best decision in optimisations, or for example the usage of chemicals, or some setups that will be used. But in four to five years, I will be able to clearly say – we have moved on to another phase."

"Ten years ago we would not think about AI working for us. Now we do. In many other areas, we are adapting to this."



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Our agenda kicks off with a deep dive into Türkiye's evolving trade landscape post-COVID. Keynote speakers include Orhan Ögücü, Chairman of **Lila Kağıt**, who will discuss Türkiye's growing geopolitical and trade position, and Tugba Erdogan from **Hayat Kimya**, providing a comprehensive market overview with insights into costs, CO2 emissions, and regulatory impacts.



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ESSEL PULP AND PAPER INDUSTRY'S PM3 IS THE LATEST ADVANCED ADDITION FOR TÜRKİYE'S PIONEERING MARKET LEADER

İzmit-headquartered Essel Pulp and Paper Industry can reel off a list of achievements ... 100% pure cellulose and recycled jumbo rolls, Türkiye's widest and highest capacity tissue PM, fully closed-loop automation, production targets exceeded, and exports to 60 countries. TWM Senior Editor Helen Morris spoke to Bülent Can, Converting Manager.



Investments in high-tech factories: the company has recently commissioned "Türkiye's newest and highest-quality recycling deinking system", and a treatment plant that supports zero-waste production at the business' Çaycuma facility (pictured)

"From the outset until today, we are committed to using the most efficient and advanced technology," says Bülent Can, Converting Manager of Türkiye's Essel Pulp and Paper Industry. It has been a key strategy for the business since Co-Owners Cumhuriyet Esen and Abdurrahman Esen entered the tissue market in 2011. Most recently, Essel Pulp and Paper Industry has invested in a Toscotec-supplied AHEAD 2.2L which came

onstream as PM3 at its site in Osmaniye in 2021. "We chose Toscotec due to the company's strong expertise and comprehensive support services," Can adds. "And, as a result, we have commissioned the country's widest and highest capacity tissue paper machine. We produce all types of tissue paper semi-products, and PM3 also reached a milestone after the line exceeded its guaranteed production target of 270tpd in 2022, reaching 290.5tpd."



Converting investment: launched simultaneously with PM3 at facilities in Zonguldak, Çaycuma (pictured) and Osmaniye, they are one of the company's "key investments"

Geographical location was key for this investment and Can says the company decided to invest in this region – located in the south of Türkiye near Syria's border, and the Turkish hub of Mersin – because a substantial section of its target market is the Middle East, Iraq, and Syria.

Two Futura converting lines - launched simultaneously with PM3 at the facilities in Çaycuma and Osmaniye – are one of the company's "key investments", geared towards end consumers: "The line operating in conjunction with PM3 has significantly boosted production there," he says. "Both of Essel's factories are among the few in Türkiye that can truly operate in a fully closed-loop production system."

Digital automation is also advancing. Can says the Futura machines, for example, feature a fully automated process, from packaging to automatic stretch wrapping. "Products are packaged and stacked without any manual intervention, and we also have a software system in place that allows us to track all production processes, from semi-finished to finished products. This means we can monitor our products from the main machine, starting with the cellulose, all the way to the finished product stage."

As of October 2024, the company's total production capacity is 140,000tpy - 30,000tpy on

PM1 at Çaycuma, 35,000tpy on PM2 at Osmaniye, and 75,000tpy at the company's PM3 in Osmaniye. Some 60% of the company's products are now exported to five continents.

Within the Turkish tissue market, Can says recent trends are closely linked to shifts in consumer behaviour and global tendencies: "Sustainability, hygiene, and digitalisation, in particular, are playing a decisive role in shaping the market. As is well known, hygiene products experienced a surge in demand globally due to the Covid-19 pandemic, surpassing pre-pandemic levels. According to 2020 data, the global tissue paper market was valued at \$20.86bn in 2021 - these figures are expected to expand at a compound annual growth rate (CAGR) of 3.3% until 2028." In 2024, the global tissue paper market size was valued at \$85.81bn in 2023. Between 2024 – 2032, a CAGR of 5.2% is expected, resulting in a market valued at \$118.1bn in 2032. According to Statistica, Toilet Paper holds the largest market volume, amounting to US\$113.80bn in 2024.

Within Türkiye, Covid-19 caused "significant changes in paper purchasing habits," he says. "In the early stages of the pandemic, concerns about hygiene led to a sudden surge in demand for hygiene products such as toilet paper, paper

towels, and tissues. This resulted in empty shelves and stock shortages in supermarkets. However, as the pandemic continued and hygiene habits became ingrained, this sudden surge in demand returned to normal levels. Despite this, consumers remained sensitive about hygiene and adopted a more conscious approach to using paper products. The demand for high-quality and hygienic products increased, and there was also a growing interest in environmentally-friendly and recycled paper products."

Over the past four years, machinery investments have reflected that increase in demand: "Further investments at paper mills in southern Türkiye over the past few years have been steadily boosting the region's economic value. As Essel, with the 75,000-ton capacity the Toscotec-supplied PM3 that we commissioned at our existing facility in Osmaniye in 2021, we made a significant investment not only for the region but also for the country. Being the Türkiye's widest and highest-capacity tissue paper machine, this facility is just one of the Esen family's steps towards managing the current global raw material and energy crisis well, with state-of-the-art products and environmentally-friendly approaches."

Türkiye's AfH market, he adds, experienced a decline during the pandemic but is now showing signs of recovery with the normalisation process.

The revitalisation of the tourism sector, in particular, he adds, is positively impacting the market. Retailers are also increasingly gaining market share with their own private-label paper products, and Can says this trend intensifies competition while offering consumers more choices.

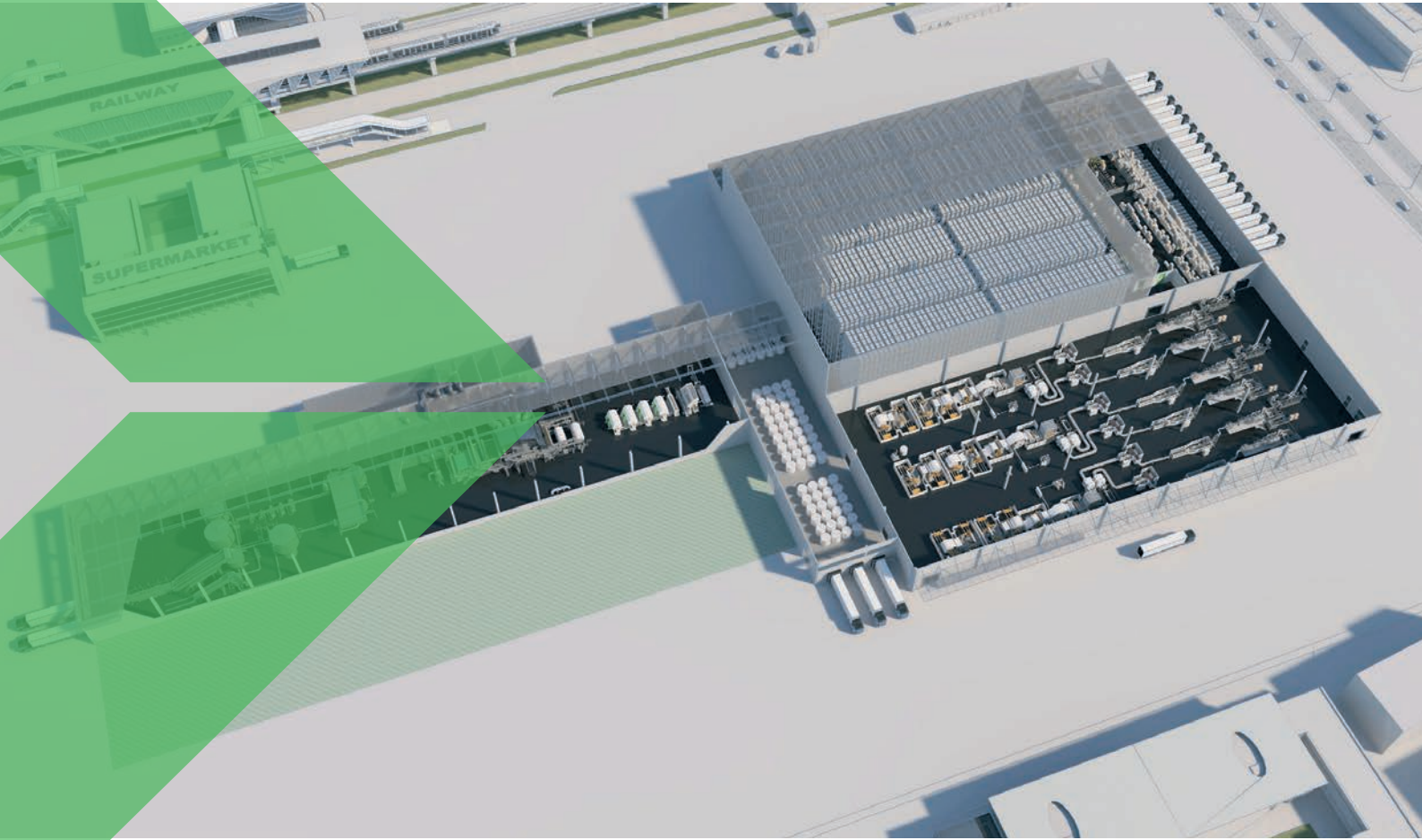
Specifically for Essel, in line with growth objectives in the local market, the business is reaching wider audiences by launching new products and responding to new tissue trends. It has strengthened its collaborations with chain stores, which means it can "connect with more consumers nationwide while effectively utilising various sales channels." This has led to the launch of the Aqua Bambu family of toilet paper, paper towels, and facial tissue products, which he says offers extra softness thanks to its puffy layers and bamboo fibres. The Drop Natura range consists of toilet paper, paper towels, and napkins, and is produced entirely from recyclable materials, and Aqua pocket tissues are also among the company's new products.

Consumers, Can adds, are increasingly showing growing interest in environmentally-friendly and recycled paper products: "This is encouraging manufacturers to adopt more sustainable production methods and products. Demand for certified products, such as those with the FSC



Advancing in digital automation: the company's Futura machines feature a fully automated process

Driving tissue innovation forward



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label, is also on the rise. For Essel, in the past year our growth strategy in the local market has undergone a sustainability-focused transformation. We no longer solely prioritise profitability, but also our environmental and social impact. We are investing in increasing the use of recycled raw materials, improving our energy efficiency, and reducing the environmental impact of our products throughout their lifecycle. In this way, we aim to meet the evolving expectations of our customers while contributing to a more sustainable future. Our priority moving forward is to transform all our existing factories, both old and new, into environmentally-friendly ones."

In line with this commitment, he says the company is sourcing 100% pure cellulose from FSC-certified forests: "Our goal is to achieve both social, economic, and environmental sustainability whilst providing high-quality tissue paper products to the Turkish and global markets." Investments in high-tech factories across Türkiye are also key, and the company has recently commissioned "Türkiye's newest and highest-quality recycling deinking system" and a treatment plant that Can says supports zero-waste production at the business' Çaycuma facility. "We now produce and deliver to consumers products made from 100% recycled paper, without any manual intervention. Our treatment plant, which performs both organic and chemical treatment, is also the first and largest of

its kind in the Çaycuma Organised Industrial Zone. This plant ensures that the water discharged from our deinking system complies with the regulations of the Ministry of Environment. We designed this treatment plant in such a way that more than 60% of the water can be reused, investing €1.5m in this treatment system alone."

Growth targets for 2024 within Türkiye include enhancing the efficiency of existing facilities and invest in environmentally-friendly production technologies: "This will enable us to meet the growing demand while reducing our carbon footprint."

In international markets, the main goal is to expand its strategic partnerships and export network: "Currently, we export approximately 60% of our products to over 60 countries. Exports are heavily concentrated in the Middle East and African markets, and the US is also an important market for Turkish manufacturers, but high container prices are currently a disadvantage. Elsewhere, in Europe paper production is shrinking due to high energy prices and costs. We aim to gain a competitive advantage through our sustainable and innovative products. In the first nine months, exports have risen to \$80m. In 2024, our production capacity reached 30,334 tons in the first quarter and 60,258 tons in the second quarter."

Increased export will remain a vital for the business: "We are currently observing some



Production boost: a Toscotec-supplied AHEAD 2.2L came onstream as PM3 at Essel's site in Osmaniye in 2021

overcapacity in the Turkish paper market. This situation intensifies competition and puts pressure on prices. However, we are implementing various strategies to overcome this challenge. Primarily, we are focusing on gaining a competitive advantage by differentiating our products and creating added value. We invest in innovation and R&D efforts to develop products that better meet the needs of our customers and offer them unique benefits."

Additionally, he says the company places great importance on efficiency and cost optimisation initiatives: "By continuously improving our production processes and utilising our resources more effectively, we are reducing our costs and enhancing our competitiveness. Our sustainability efforts also set us apart from our competitors. Our Drop Natura brand, made entirely from recyclable materials, is the perfect example of this. As Essel Pulp and Paper Industry, today we are a world leading manufacturer of 100% pure cellulose and 100% recycled jumbo rolls for toilet paper, facial tissues, napkins, and paper towels.

He adds the local market may also see more merger and acquisition activity in the coming period. "However, we believe that such transactions should be managed carefully to ensure they do not negatively impact the competitive environment or harm consumers."

An increased demand for recycled paper is also being seen, a consequence of the energy crisis: "The energy crisis has caused significant changes in the paper market, affecting both producers and consumers. As paper manufacturers, we have taken several steps to increase our energy efficiency and manage costs in response to this crisis. We focused on reducing energy consumption by optimising our production processes and investing in energy-saving technologies. This can be seen as a positive development, both in terms of saving energy and conserving natural resources. For consumers, changes have also been observed as people have started to prefer recycled paper products due to environmental concerns and cost factors. Their preference for more durable and long-lasting paper products to reduce costs is also a notable trend."

There is a "moderate increase" in the gross sales of paper and towel products in the local market: "The market isn't completely stagnant, but it's not experiencing rapid growth either. Consumers are leaning towards softer, more absorbent, more durable, and environmentally-friendly tissue papers. Therefore, innovation and product development are vital for companies in the sector. It's essential for tissue paper manufacturers to develop strategies focused on innovation, sustainability, and efficiency, and to evaluate new market opportunities."

Consumers, he says, are increasingly making more conscious choices, especially when it comes to sustainable products: "This presents a significant



"Geographical location was key for this investment," Bülent Can, Converting Manager, Essel Pulp and Paper Industry

opportunity for us. We anticipate a growing demand for products made from recycled or sustainably sourced raw materials. Therefore, we are investing in making our production processes more environmentally-friendly and expanding our range of sustainable products. We have also observed that consumers' expectations for hygiene and quality are increasing. In line with this, we are prioritising R&D efforts to improve the performance and user experience of our products."

And the key opportunities and challenges for the year ahead? "First and foremost, I want to express our optimism for the future of the paper industry. While there are challenges, advancements in areas such as sustainability, innovation, and digitalisation are creating new opportunities for our sector. We will continue to grow and develop by seizing these opportunities.

"Absolutely a growing environmental awareness is driving a surge in demand for sustainable and recycled paper products. This presents a significant growth potential for Essel, given our investments in eco-friendly production processes and products. Moreover, the fact that we source most of our raw materials from domestic sources provides us with a crucial advantage against global supply chain disruptions, further bolstering our sustainable growth."

US SOCIALITE AND INTREPID WORLD TRAVELLER WALTER HAYNES CHOSE THE MOST SENSITIVE AND DECADENT TOILET ROLLS OF THEM ALL

Colorado-based step-granddaughter Kathleen Kavet recalls the unique collection of samples from leading hotels left to her in her step-grandfather's estate.



During the 1920's through to the 1960's, my step-grandfather Walter Haynes travelled to various countries and regions around the world. He had a great love of adventure and meeting new people, and during his time as an intrepid mid-century traveller he came across one "every-day" item that could record time and memories like no other: toilet paper!

Thus, the Haynes Collection, by curator W. Sylvester Haynes, was created.

Walter started a scrapbook, of sorts, of samples of toilet paper taken from different countries, mostly during the 1920s and early 1930s. I received this book as part of his estate – he died in mid-1970. Each tissue sample has the place of origin as well as a pithy comment by Walter. (The book might be useful to someone researching the history of toilet paper – it is still available, and the samples are well preserved).

He documented the locations where he collected the samples and added comments. His travels took him from Mexico's Hotel Victoria in Oaxaca, to the Hotel del Paseo in Mexico City, and the Schloss Fuschl in Austria.

In Germany, after visits to Bayerischer Hof Hotel in Munich and the Park Hotel in Stuttgart, he noted the "really inspired variety and originality" of their toilet paper.

Further travels and loo roll snippets were from Harbour Heights in Bournemouth, England, the Ritz Hotel in London, England's Ripon Spa Hotel and the White Swan Hotel in Alnwick, the Royal & Savoy in Lausanne, Switzerland, and the Baur au Lac in Zurich. Here, he noted: "At first glance there seems little to choose between the great hotels of the world. Is originality about to disappear?"

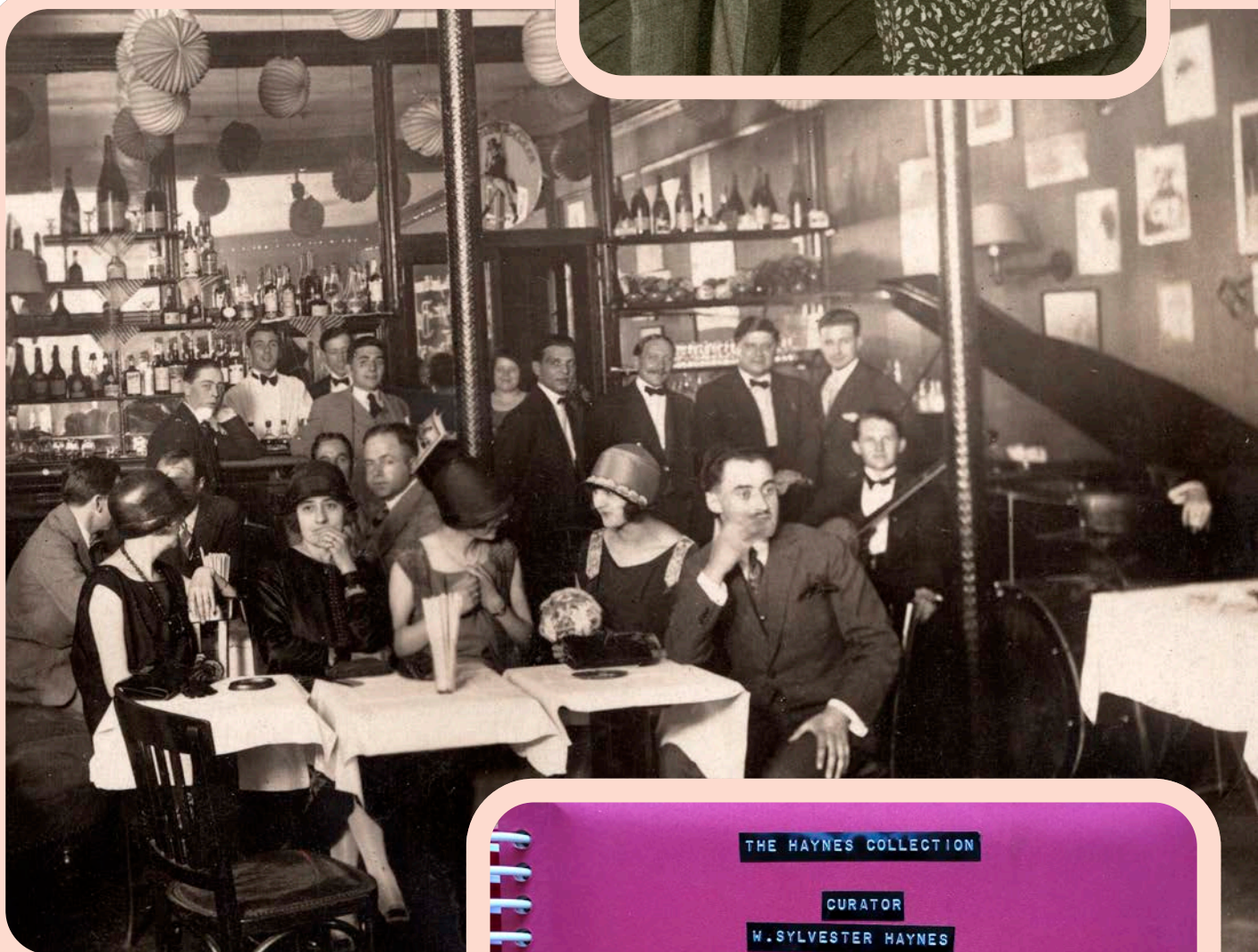
Having toured the top hotels of Europe ... he claimed: "Witness the great imagination and sensitivity which has gone into the variety here. The Irish are supreme!"



Elsewhere, a green leaf embossed print on one sample caught his eye: "Jim Doubleday Special: or, "how decadent can you get?""

In the end, it was Ireland that claimed the top spot for innovation and originality. Having toured the Dunraven Arms, Adare, Bishop's Palace, Cashel, the Airport Motel in Shannon, Ashford Castle in Cong, County Mayo, and the Royal Hibernian Hotel, Dublin, he claimed: "Witness the great imagination and sensitivity which has gone into the variety here. The Irish are supreme!"

Scenes from Walter Haynes' hotel odyssey: playing his banjo in a Paris salon in 1925; right, with his wife Robina on an ocean voyage in a.1935; and below, Walter's album.



THE HAYNES COLLECTION

CURATOR

W. SYLVESTER HAYNES

GROWTH IS STEADY AND THE DEMAND IS THERE – AS COMPANIES ANTICIPATE AND RESPOND TO EMERGING MARKET TRENDS

Six leading converting machinery companies weigh their progress and options for their near – and long-term development. A TWM report.

TWM/1: WHAT EVENTS IN 2024 HAVE HAD THE BIGGEST IMPACT ON YOUR BUSINESS AND HOW ARE YOU DEALING WITH THEM?

Cristian Giuliani, Vice President Global Hygiene Engineering, BW Converting: "Several scenarios have impacted the economic context of our market, companies, and customers: record-high interest rates, rising energy costs, and growing geopolitical tensions. The European Union's economy has been hit by the ongoing Russia-Ukraine war, with increasing energy prices straining businesses.

"Additionally, uncertainty from the Hamas-Israel conflict and potential new fronts has slowed growth in the MENA region, particularly in neighbouring states. The US election campaign is also adding market uncertainty. Despite these challenges, our group's solid foundation, long-term growth strategy, and focus on people enable us to invest in technology, people, and growth.

"To meet evolving market demands, it is crucial for our companies to diversify and expand product offerings, creating innovative, efficient solutions tailored to customer needs."

Sergio Tonarelli, Chief Sales Officer, Futura: "It will come as no surprise that conflict and related energy price spikes have created uncertainty in the market. The cost of borrowing has soared and the run up to the US election is usually a quiet time for decision-making too. But the market continues to grow at up to 3% per year and that calls for greater capacity. Yes, companies are holding back on projects, particularly when relying on external capital, but the demand is there to justify investment.

"There is evidence of a switch from super premium to lower grades because while consumers will continue to buy tissue and towel they need, they will find cheaper solutions when their household budgets are squeezed."

Nicola Romagnani, Marketing & Product Manager, Gambini: "High energy cost prices and decarbonisation are increasingly affecting paper production in Italy. The importance of investing across European borders has been even more obvious in this situation. Already operating in the United States since 2017, we have taken a big step to consolidate our presence in Latin America, as well.

"Our purpose is to spread technologies that can lower production costs and the use of resources, with even better results in terms of quality and performance of the finished products, while offering at the same time a closer assistance to our local customers. It was a big bet but we are now ready to start with a new production facility in Joinville, Brazil."

Vladimir Tchernichov, Area Sales Manager, Maflex: "Working globally, various macroeconomic and industry-specific factors have impacted our business. Recently, on one hand we have seen rising costs in raw materials, logistics, and travel in general, which have affected Maflex globally. We responded by optimising our supply chain, selecting strategic suppliers, and implementing more agile logistics solutions. High-value partnerships, such as the one with Rockwell Automation – we recently became a Gold OEM Partner – ensure the constant availability of key components for Maflex systems which guarantee continuity.

"On the other hand, we have noticed some slight investment apprehension in the American markets, likely tied to the upcoming US presidential elections. While we wait for the political landscape to become clearer, we continue to support our clients through joint analyses and future project planning. Our approach remains proactive, tackling challenges with flexibility and a strong customer focus."

Marco Calcagni, Sales & Marketing Director,

Omet: "2024 has been a year marked by several global challenges and market dynamics that have had a significant impact on the tissue industry, and consequently, on our business at OMET."

"Rising borrowing costs, inflation, and raw material price hikes—especially in pulp and energy—have increased operational pressures. To support our customers, we've focused on optimizing our machines for greater efficiency, helping them reduce waste and energy consumption."

"The demand for sustainability is another significant trend. We've prioritised R&D to deliver eco-friendly technologies that minimize environmental impact. Despite market uncertainties, including conflicts in the Middle East and in Ukraine and political elections, OMET continues to diversify its presence and offer innovative solutions to help clients navigate these volatile times."

Simone Barsanti, Strategy and M&A Director, Valmet, Tissue Converting business unit:

"Following the acquisition by the Valmet Group, the Tissue Converting and Tissue Making Business Units have initiated a process of exchanging expertise, focusing on end-to-end projects aimed at improving the flow of information from paper making to converting, and vice versa, in order to enhance process performance and the quality of the final product."

TWM/2: WHAT FORECASTS DO YOU HAVE FOR ADVANCEMENTS IN THE CONVERTING SECTOR USING AI IN THE NEXT FEW YEARS?

Giuliani: "In general, generative and predictive AI will rapidly accelerate their presence as indispensable tools for efficiency. Predictive AI advancements are making significant strides in uncovering hidden operational challenges and opportunities. These tools can analyse vast amounts of data from multiple sources across the production line and identify patterns and anomalies that would be impossible for human operators to detect in real-time."

"Generative AI is advancing at a rapid pace and can augment operations by transforming human-machine interactions. For example,

"Our group's solid foundation, long-term growth strategy, and focus on people enable us to invest in technology, people, and growth."

Cristian Giuliani,
Vice President Global Hygiene Engineering,
BW Converting

generative AI will certainly be utilised to create intuitive, conversational interfaces that allow operators to interact with machinery using natural language. These interactions will include real-time, context-aware instructions, troubleshooting guides, and even predictive maintenance schedules.

"BW Converting has strategically positioned itself at the forefront of this AI revolution. The SmartTouch platform is set to evolve into a comprehensive AI-driven system, seamlessly blending predictive analytics, generative AI, and our advanced model-based and adaptive control systems."

Tonarelli: "AI is integrated in our strategy. There are some areas where humans are fallible, such as prioritising and interpreting large data sets, and AI simply ensures more efficient outcomes. While we will increasingly use AI to analyse the market, our main application of the technology is via machine learning (ML)."

"We are already using data generated by our machines to enable automatic setting. It is also important that we do not treat processes as islands but as integrated parts of a value chain. So data from upstream – the tissue machine or even the pulp mill – can be used to optimise the performance of the converting line. Anticipation of moisture levels is a perfect example."



"Since the inception of Futura we have been working to eliminate unnecessary processes and this continues to be our approach."

Sergio Tonarelli,
Chief Sales Officer, Futura

"We need to consider everything which can influence the process. Core lamination is significantly affected by temperature and humidity, for example, and ML takes the guesswork out of setting the glue parameters.

"We also apply ML to ensure that maintenance is predictive and therefore preventative. We can even use it to make fundamental design changes to our machines. If there is something, revealed by ML, that can be improved by going back to the drawing board we will be the first to do it.

"Thanks to ML/AI we are already making machines which are more efficient and for which the operator's role is being redefined. We think of it as social sustainability in an age in which the baby-boomers are retiring, and recruitment and retention is a challenge.

"We started this journey when we introduced Andromeda in 2015 to eliminate unnecessary manual work. The next step is a "lights-off" facility where operators supervise from a control room outside the machine hall while key variables are tracked and controlled via intelligent cameras.

"Our vision is based on the fact that the capital expenditure (capex) aspect of investing in a machine lasting 20 to 25 years is less significant than the operational expenditure (opex). If the technology specified requires a workforce two or three times larger due to its lack of automation,

this is still going to be killing margins 10 years down the line when the capex is diminished in its impact."

Romagnani: "AI is developing differently for each industry, and we should understand the direct impact on our own. We believe in innovation, which is already clearly visible inside our converting lines and all our systems. We can assume that AI will mainly integrate into the technology department and, under human supervision, bring further innovation and performance.

"We hope it will help waste fewer resources, optimise processes and ease us in the testing phases, especially to have more reliable data in less time. We do not believe it would take work away from anyone: optimising a procedure, for us, means having more time to think about the next innovation."

Tchernichov: "The use of AI in the industrial and machinery sectors is rapidly growing and opening up new opportunities. Predictions point to advancements in three main areas: production optimisation, predictive maintenance, and automation and line flexibility.

"With our ever-evolving PEGASO supervision system, we are improving the collection and analysis of production data to identify inefficiencies in real-time, thereby increasing operational efficiency. The implementation of AI will also play a key role in predictive maintenance, allowing us to anticipate failures and optimise equipment lifespan.

"Finally, AI-based solutions will enable machinery to quickly adapt to production needs, offering greater flexibility and speed in configuration changes."

Calcagni: "OMET has already embarked on an innovation journey by integrating artificial intelligence into its solutions, as demonstrated by the implementation of our SFERA platform. This advanced technology not only enables predictive machine maintenance but also extracts and converts production data in real-time, directly integrating it into customers' IoT systems.

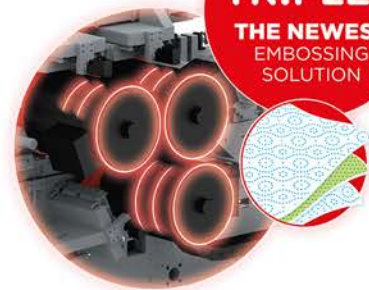
"Looking ahead, we foresee AI playing an increasingly central role in the development of the converting sector. Our customers are increasingly demanding smarter and more autonomous machines, minimising the need for highly specialised operators. This trend will be a key driver for the evolution of our technologies in the coming years."

Barsanti: "At Valmet Tissue Converting, the use of artificial intelligence is already an established part of internal processes. Building on the experience gained, we are working to implement this technology in our converting, packaging, and folding lines to support operators in every

YD-PL450SE Non-Stop Rewinding Line



Toilet roll, Kitchen towel, Maxi roll
ALL IN ONE LINE



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Tissue Machine



Converting Machine



Packing Machine

phase of their activities and to increase the OEE of production facilities.

"Thanks to the recent integration of FactoryPal, a joint venture by Valmet and Körber – fully consolidated to Valmet – we will further strengthen Valmet's offering of advanced Industrial Internet solutions and digital services to support customers in the tissue industry. "FactoryPal, in particular, is making a significant impact in the manufacturing sector with its AI-driven digital product, optimising production processes, improving efficiency, and driving sustainable growth. FactoryPal's software empowers tissue mill teams to operate seamlessly by generating and leveraging high-quality data, combined with a state-of-the-art user experience and advanced artificial intelligence.

"Acting as a trusted AI co-pilot on the shop floor, FactoryPal's mission is to help factories run smarter by providing real-time insights and predictive analytics for data-driven decision-making."

TWM/3: WHAT TECHNICAL INNOVATIONS HAVE YOU RECENTLY INTRODUCED INTO THE MARKETPLACE, AND WHAT TRENDS WERE SHAPING THIS DEMAND?

Giuliani: "In response to evolving market demands, the BW Converting tissue equipment line-up includes several key innovations, all driven by the growing need for sustainable operations and enhanced efficiency.

"The CS Centre Driven Unwind stands out as an industry-leading unwind solution. It significantly reduces energy consumption while improving web handling. One of its key features is the highly automated roll change process, which minimises the need for operator intervention, thereby increasing overall operational efficiency.

"The Omnia Embosser Laminator allows for simple steel pattern roll changes and eliminates the need for hydraulics, making it both more user-friendly and energy efficient. It also supports water lamination processes eliminating the need for lamination adhesive. SmartStore technology allows for seamless automated roll changes.

"The Paragon Rewinder is another key innovation. This advanced rewinder is designed to maximise the intrinsic sheet characteristics. These include softness, strength, and bulk. It achieves this while maintaining high operational speeds, increasing both product quality and production efficiency while enabling a larger operational window.

"BW Converting patented Invisible O coreless technology, now available with higher cycle rate, is the only platform available on the market to produce coreless consumer rolls of high quality, reducing waste and supporting our customers' sustainability goals.

"These technologies position converters to meet the dual challenges of environmental responsibility and market competitiveness. By focusing on energy and fibre efficiency, automation, and product quality and diversification, we're helping converters adapt to a marketplace that increasingly values sustainability alongside traditional metrics of product performance and cost-effectiveness."

Tonarelli: "Since the inception of Futura we have been working to eliminate unnecessary processes and this continues to be our approach. As an example, we realised we could remove the separate tail sealer and achieve its function during winding. Then we found a way to eliminate trim from the logsaw and achieved further simplification.

"Today we are doing the same in packaging and palletising through our group company Plusline. By combining the bundler with the layer former, a line can produce bundles or display-ready pallets without any module on the line resting idle for large parts of the day. The need for both bundled products and display-ready pallets is the reality,

"Water is something innovative that was never used before in the converting process. Therefore, we are still finding out all its never-ending benefits."

Nicola Romagnani,
Marketing & Product Manager,
Gambini

so this is a smart way to make it work efficiently. And when the packaging and palletising process is fully integrated with converting in a seamless process from a single supplier source, that is what we call seamless efficiency: we with Plusline are already there."

Romagnani: "We have introduced Wet Embossing, which is a truly revolutionary innovation. This kind of embossing keeps finding new applications, the latest one being the C-TAD Punta-calda.

"As its Italian name suggests, it is a textured product with a considerable thickness, greater than that obtained with a common point-to-point system, achieved also through heat and reachable at the speed of 600m/min. With this new application of AirMill, we are therefore able to cover all the Latin American market with a technology as flexible as the one they need, but one which can help save money and be more sustainable."

Tchernichov: "'Meeting Your Needs at Every Turn' reflects Maflex's commitment to addressing specific needs. In a global context where demands are increasingly diverse, we see a constant: the need to quickly adapt to market dynamics. This is why the work we are doing on the PEGASO intelligent supervision system is crucial for our customers. The ability to collect a vast amount of production data will provide valuable insights to maximise performance and make the best use of the most important resource: time."

Calcagni: "There have been significant developments with the new XV Line for napkin production, a machine that is revolutionising the market. This solution boasts extremely high production capacity and exceptional efficiency, thanks to its innovative and unique concept within the industry.

"The trends that have influenced this innovation are primarily linked to the growing demand for advanced automation, energy efficiency, and production flexibility, which are increasingly required by customers to reduce operating costs and enhance the sustainability of their operations."

Barsanti: "For Valmet, sustainability is one of the core values guiding the development of Tissue Converting products. Following the launch of solutions such as Solid and glue-less products in the early 2000s, our portfolio has recently been enhanced with cutting-edge technologies, including the Bio Pack Plus system for paper packaging and the ECOre system for producing coreless rolls that can be integrated into brownfield operations. This range of solutions enables our customers to enter the market with sustainable products."



TWM/4: WHAT AREAS OF R&D, INNOVATION, AND ENVIRONMENTAL EFFORTS ARE NEXT?

Giuliani: "BW Converting continues to build on a solid foundation of equipment. We are continuing to focus on enabling value creation and sustainability by optimising product fibre and energy efficiency. Energy efficient bulk generating techniques will allow converters to meet the challenges that are presented to them driven by market cost, consumer demands, and environmental commitments.

"The continued evolution of the "smart machine" is also at the top of our innovation roadmap, with some of these technologies hitting the market very soon to delight our customers.

"Another important area BW Converting is focused, is the study of the new combinations of sustainable pulp fibres (including the plant-based ones) in the tissue paper and the effect that those have on the converting line performance and component life and on the finished product itself."

Tonarelli: "We stick to the principle that innovation never stops and there is always another horizon to reach. Is it possible to replace knives? They are a source of contamination and a safety challenge. As we move forward new technologies are made available to the industry. So we should always dream what is apparently impossible and leave no stone unturned in the quest for doing

things better. Safety is our top priority and will be at the core of everything we strive to achieve."

Romagnani: "We are constantly working on the Research & Development side. We have an entire plant dedicated to this, with a full-width pilot line of 2,850mm. At the TissueHub we keep investigating Wet Embosser AirMill and its possible applications.

"Water is something innovative that was never used before at this stage of the process. Therefore, we are still finding out all its benefits. So far, they have proven to meet key requirements of environmental care and energy saving. We are continuously trying to exploit the never-ending possibilities of the Wet Embosser, to help increase results, while lowering our industry footprint on the planet."

Tchernichov: "Our Research & Development department is constantly pursuing improvement at all levels of our technologies. This is a cross-cutting effort that goes beyond specific projects. The team is particularly focused on all the electrical components of our lines to optimise energy efficiency.

"Our goal is to reduce energy consumption without compromising performance by using high-efficiency motors and energy recovery

systems. We aim to continuously raise the standards of our lines, proactively and sustainably addressing environmental challenges."

Calcagni: "The new XV Line has been developed with a strong focus on environmental impact. This machine not only delivers high performance but also achieves exceptional energy savings: it consumes only one-fifth of the energy compared to traditional machines that produce around 50% of its output. Our future Research and Development efforts will continue to focus on technologies that combine production efficiency with environmental sustainability, aiming to further reduce resource consumption and improve the ecological performance of our solutions."

Barsanti: "Continuing the historical trend of innovation in our roll, fold, and packaging segments, our R&D departments are also focusing on differentiating the characteristics of the finished product while ensuring the same quality and performance. This approach involves a more efficient use of raw materials and a focus on reducing energy consumption."

TWM/5: WHAT IS THE KEY ISSUE YOUR CUSTOMERS ARE FACING IN 2024-2025 AND HOW ARE YOU SUPPORTING THEM?

Giuliani: "One of the most prominent trends we're observing is the continued growth in private label branding. This shift has created an ever-increasing need for product differentiation, particularly in embossing patterns and other distinctive

characteristics. Converters are under pressure to create unique, eye-catching products that stand out on shelves while maintaining cost-effectiveness. The Omnia Embosser Laminator armed with SmartStore directly addresses this need. Its design allows for quick and simple steel pattern roll changes, enabling converters to change patterns with minimal downtime and word class safety. This flexibility is crucial in an environment where product diversity is key to market success.

"The ongoing difficulty in finding and retaining skilled operators continues to be a significant hurdle for many in the industry. Our approach to this challenge is twofold: we're designing equipment that requires less manual intervention and developing intelligent systems that can support less experienced operators. We are also continuing to build on the SmartTouch platform to provide contextual, real-time guidance to operators, effectively flattening the learning curve and reducing the reliance on extensive experience. This technology will make complex operations more accessible and reduce the impact of staff turnover.



"The expectation for world class support is also recognised. BWCS is actively evolving our global customer service model with our Accelerate team. This dedicated group of experts provides unparalleled support and driving to a "follow the sun" 24/7/365 model, ensuring that no matter where our customers are located or when issues arise, expert assistance is always available. The Accelerate team leverages a powerful combination of seasoned technician experience and an increasing arsenal cutting-edge AI technology. This synergy allows for rapid issue resolution to minimise downtime."

Tonarelli: "The tissue industry faces a potential skills gap for demographic and attitudinal reasons. We see our role as being the partner that can support customers, not only through the Futura Academy to help educate the next generation of operators, but we can be more embedded with our customers to monitor machine condition, leveraging ML/AI to the full, and intervene when appropriate to maximise operational efficiency not only on day one, but for the lifetime of the line."

"We also need to constantly revisit the perceived "limits" of production on behalf of customers. If the 600m/min status quo became 900/1000m/min at the same level of efficiency, this means 20 – 30% more product from the same number of operators in the same timeframe."

Romagnani: "Climate change is bringing increasing attention to everything related to sustainability, and this is reflected in the needs of our customers and their respective clients. Both in terms of the finished product and in terms of production processes."

"Thanks to the PatternLab, inside TissueHub, we are able to search how we can help our customers address the specific needs they have and test together what results to achieve and how, always focusing on improving the way we affect the environment."

Tchernichov: "In the past two or three years, we haven't encountered specific issues or individual challenges, but rather noticed a shared trend among our customers: a growing focus on maximum production flexibility and the reliability of production lines. This trend is well established and will continue to drive and influence the market. Customers need to adapt their plants to meet increasing demands, optimising production times and maximum flexibility."

Calcagni: "One of the main challenges our customers will face in 2024-2025 is optimising operational efficiency in an increasingly complex production environment. We are supporting our clients by developing advanced solutions for machine control and production management,



simplifying all the necessary operations involved in using our machines.

"This approach addresses the growing need for automation, allowing companies to maintain high productivity levels with more streamlined processes and reduced dependence on highly specialized operators."

Barsanti: "Valmet Tissue Converting has customers worldwide, each with different realities and needs depending on their geographic area and market segment. However, the rising costs of energy and raw materials, coupled with the challenge of retaining skilled labour, are the main challenges our customers face on a daily basis."

"We are focusing on solutions that reduce the use of raw materials and energy consumption by enabling tests on pilot lines for paper making and converting. Additionally, we are developing new digital solutions that simplify operator activities through data exchange across the entire process, allowing for the automatic setting of the line based on the received information."

AUTOMATION CAN BECOME A ROADBLOCK – THAT’S WHY IT NEEDS A ROADMAP



Intelligent software platforms and hardware must supplement the widest supply chain context to maintain optimum manufacturing efficiency. Report by William Nelson, President at E80 Group North America.

In my 20+ years of experience in the automation industry, I've seen many companies latch on to another company's ideas hoping to take advantage of a trend and revenue opportunity. Most of these adventures fail. Why? Could it be the ideas being copied do not form part of a company's DNA, there is no fertile intellectual property base to grow from, there is not a solid platform of experience gained through years of successes and difficulties? Automation isn't about just building hardware.

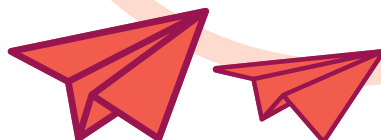
In past articles, we have established what we have been able to execute so far:

- Just about any function in material handling can be automated cost-effectively.
- Automation systems allow managers to focus on productivity, efficiency, and maintenance.
- Automation systems do multiple tasks in an orchestrated way 24/7/365, delivering goods to the right place at the right time.
- Intelligent software platforms create robust decision-making structures that are as adaptable as they are repeatable.
- Automation systems that are scalable, meaning they can grow and evolve as a plant changes over time.
- Safety developments that go even beyond the regulation's standards, and low-noise operations, enhance the workplace experience.

Doesn't everyone require the same essential functions as above?

We move input materials in, feed raw materials to production, efficiently manage inventory and ship finished goods out. Yet the challenge isn't in identifying what to do. Instead, it's in knowing

"The challenge isn't in identifying what to do. Instead, it's in knowing how to do it. This is where suppliers' experience, expertise, and capabilities come into play."



The top half of the advertisement features a dark red background. On the left, there is a large circular graphic composed of several concentric rings. The innermost circle is a solid dark red and contains the text "TAD+®" in white. A thin white line extends from the right side of this inner circle, pointing towards a circular inset on the right. This inset shows a close-up, slightly blurred image of a white cross-shaped pattern on a textured, greyish surface.

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Target market: E80's range of Laser Guided Vehicle Systems (LGVs) include models specifically designed for tissue operations

how to do it. This is where suppliers' experience, expertise, and capabilities come into play.

First-time experimenters with automation may decide that an A-to-B repetitive task may be ripe for automation because it's easy to execute and costs very little, but this can create future roadblocks if automation is not considered in a global context.

Consider it the equivalent to bolting a rewinder to your plant floor without any regard to where the parent rolls are coming from or the location of your future packaging lines. You just wouldn't do it.

But what if we take this case one step further? What if we think about a future in which we manage all the material flows employing multiple types of automation?

I am talking about in-coming raw materials, line supplies, finished goods warehousing, and trailer loading as a desired future state of your plant. What if that allows a combination of disparate vehicle types to work collaboratively within a single area, like bees around a hive, while still ensuring the safest of all work environments?

What if all these simultaneous functions could be managed from a control room, PC or tablet?

MACHINE-SELLERS AND SYSTEM SUPPLIERS

In essence, we've learned to separate the machine-sellers from the systems providers.

The DNA of a system provider reveals itself very quickly through the questions raised, the unique

skill-sets of its people, and most particularly the array of its products. In reality, automation is a SOFTWARE play based on an in-depth understanding of what key factors are difference-makers. As the saying goes, "you don't know what you don't know" and this is often the case with automation. But to an educated eye, what good looks like is very obvious. To put this in context, what if I were to tell you I could save you 20 seconds per operation over 7,500 operations per day over 365 days per year. Would that proposition interest you?

THINK BIG – DIG DEEP

Even if you do not plan on total automation in the short term, you can develop an automation roadmap that will allow you to coordinate all the functions of your plant – those automated and those not.

This is possible through an integrated software platform that interfaces with plant ERP, all production systems from third parties, manual operations, and warehouses. In essence, the decisions regarding the necessary actions to: feed lines, pull products, manage warehouses and ships so they are all coordinated by one brain capable of determining priorities from hundreds of scenarios, while directing the vehicle assets to interact efficiently among themselves.

To name just a few benefits of an integrated system composed of smart decision-making software and vehicle management:

- System throughput guaranteed tied to meaningful KPIs.
- Single durable interface for performance monitoring, adjusting, and troubleshooting.
- Scalability to grow and adapt the system to changing requirements without complicated coordination and contracting of multiple vendors.
- Safety improvement due to ground-breaking technology integrated into system functionality.

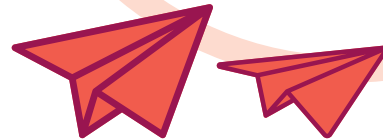
E80 Group calls its software platform SM.I.LE80. It has evolved over many years of cumulative experience where orchestrated system performance management has opened exciting efficiency and flexibility opportunities that have increased performances that multiply year-over-year due to the durability of an integrated system approach.

IT TAKES AN ECOSYSTEM

Your return on safety, customer satisfaction, and productivity really depends on how you automate – and with whom.

Choose the right partner willing to dig in and get to know your business, the partner that has the experience to guide you through your process requirements, the capability to simulate your flows with the highest accuracy.

“Your return on safety, customer satisfaction, and productivity really depends on how you automate – and with whom. Choose the right partner willing to dig in and get to know your business.”



Last but not least, choose a supplier that stands by its solutions with an overall system guarantee – and KPI's from end-to-end that has automation in their DNA.



Intralogistics flow: LGVs handle the finished goods to the warehouse area

INFINITY EXPANDS INTO WAREHOUSE AUTOMATION OFFERING BESPOKE ANSWERS FOR CUSTOMERS' UNIQUE REQUIREMENTS

Palletisers – pallet conveyor systems – and seven models of AGVs – Gregory Sense, Marketing Coordinator for Green Bay-headquartered Infinity Machine & Engineering Corp., outlines the company's latest pioneering launch into the global T&T markets. A TWM report.



In the years following the Covid-19 pandemic, the fragility of the global supply chain was exposed, highlighting vulnerabilities in the availability of qualified labour, inventory management, and production efficiency.

Among the facets of the supply chain most susceptible to failure are warehouses. Labour intensive warehouse operations have been suffering from intense labour shortages as the current workforce continues to age. Shifting consumer purchasing habits have also led to an increased demand for warehouse workers, causing operational costs to balloon for qualified help.

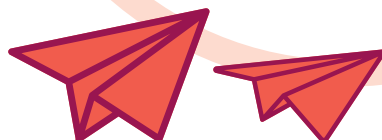
Even fully staffed warehouses are exposed to breakdowns in inventory management, as one small error can affect distribution processes downstream, resulting in lost time and lost revenue.

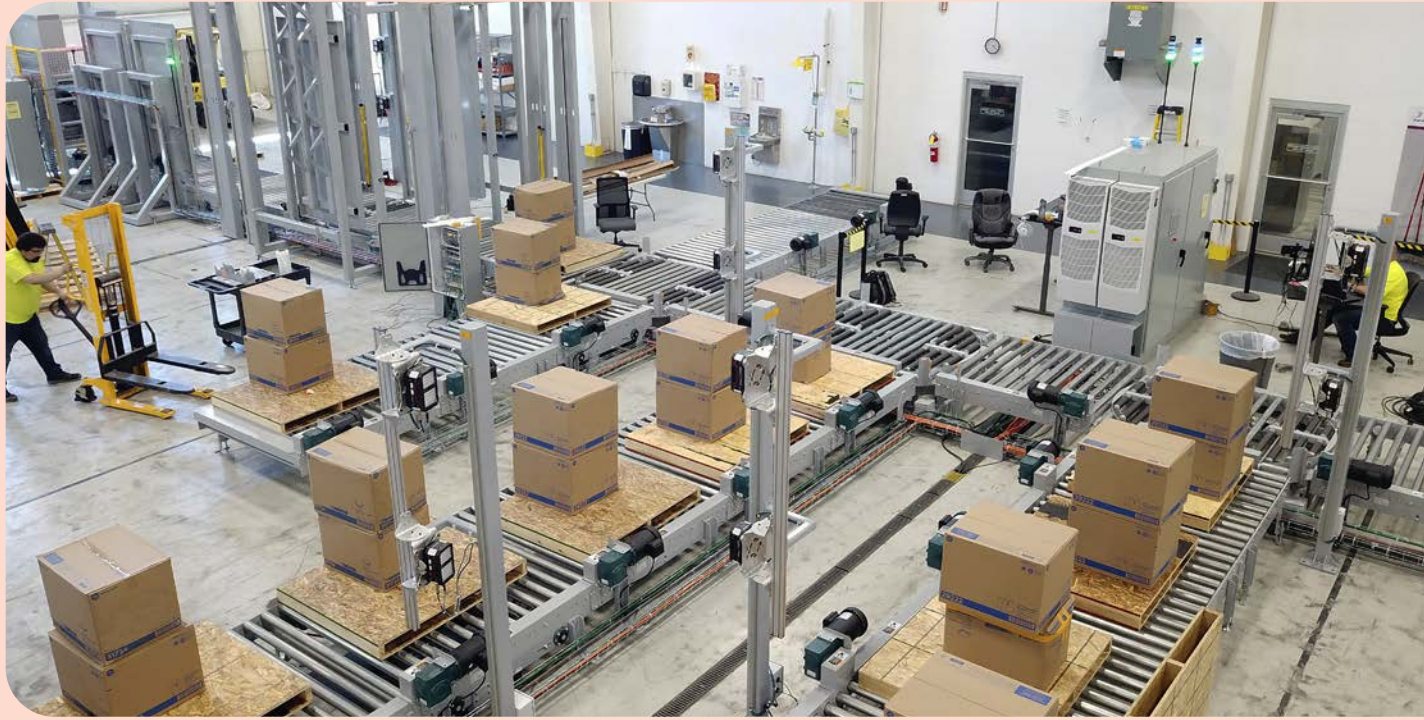
Despite exposure to these liabilities, warehouse operations have been relatively slow to embrace automation, while automation is already widespread in assembly and packaging processes.

This lukewarm reception to automation is largely due to the perceived complexity of implementing automated systems. Warehouses often handle a variety of operations, making a

one-size-fits-all solution nearly impossible to find. After all, every warehouse has a unique set of constraints and limitations, to effectively implement warehouse automation, the customer needs to have a seat at the table.

Labour intensive warehouse operations have been suffering from intense labour shortages as the current workforce continues to age.





Infinity's pallet conveyor systems: they include modular units such as pallet dispensing units, pallet squaring units, and rotating transfer conveyors

At Infinity Machine & Engineering Corp. we have successfully designed and built automated solutions for tissue packaging across our 20 years history, providing over 2,500 units of machinery to customers across six continents and over 25 countries.

We did not become the industry's premier manufacturer of automated tissue packaging machinery by offering one size-fits-all solutions. Valuable customer insight is at the heart of every

machine we build. Driven by the needs of our customers, we have continued to explore how to further streamline their operations. This has led us to expanding Infinity beyond tissue packing, we are bringing our first-class engineering, unparalleled build quality, and customer centric philosophy into warehouse automation.

Our line of warehouse automation solutions includes palletisers, pallet conveyor, and Automated Guided Vehicles (AGVs). All of which are designed to work seamlessly with our existing catalogue of machinery.

The palletising lines we offer are made up of modular sections that can be arranged into countless different layouts to accommodate production requirements as well as facility limitations. Fully servo, fully automatic stretch wrapping is available on Infinity palletisers, as is integrated labelling, and slip sheet placement. Our palletisers also feature vacuum or servo gripper end effectors, giving our customers the versatility to be able to stack cases, bundles, and DRP.

Similar to Infinity's palletisers, our pallet conveyor systems are also built to the needs of the customer, with modular units such as pallet dispensing units, pallet squaring units, and rotating transfer conveyors. These units of conveyor can be configured to sort pallet stacks as they can be scanned and automatically transferred to different loading areas.

The company expands beyond tissue packing: Infinity has diversified into warehouse automation



Our pallet conveyor also features robust backstops designed for interactions with forklifts. The extensive range of conveyor sections we offer ensures that the pallet organisation process is more efficient and built to your needs.

The seven self-driving robots designed by Infinity are built to handle unique applications that cover a wide spectrum of warehouse operations. Infinity AGVs have the versatility to seamlessly operate in a variety of sectors such as tissue, as well as food and beverage.

FETCH is a small Autonomous Mobile Robot that can be equipped with multiple different attachments to handle a variety of load types. It can be equipped with a case conveyor, lifting mechanism, or robotic arm.

Infinity's roster of AGVs features two vehicles designed for raw material handling. The CB39RC is a counterbalanced vehicle with a fully articulated clamp arm that boasts a 3,900kg lifting capacity. The vehicle features a first of its kind clamp from Cascade, which adjusts clamp force based on the load's characteristics. Our raw material handling fleet also boasts the CT45CVR, an omnidirectional cradle vehicle with a built-in conveyor, capable of hauling 4,500kg.

The remaining AGVs on Infinity's roster are different variations of autonomous forklifts, each designed for unique finished goods and vital supply handling applications.

Our fleet features two standard counterbalanced forklifts – the CB16FK, a narrow chassis AGV with

a 1,600kg lift capacity, and the CB25SD, a single-double variant capable of lifting two pallet stacks at once with a 2,500kg lift capacity. Both AGVs feature highly efficient electric actuators that reduce the vehicle's power consumption and can be further customized to suit different applications.

We also offer the TL22FK, an AGV designed for loading and unloading Over The Road (OTR) trailers, intermodal containers, and refrigerated containers. The vehicle's fully electric fork truck enables a wide range of side shifting, allowing the vehicle to travel down the centre of containers despite the constrictive environment.

The RG25K is Infinity's nimble outrigger model forklift with a small turning radius and a 2,500kg lift capacity. The vehicle's unique fork design allows it to pick up cylindrical loads horizontally, enabling increased flexibility when storing materials.

Infinity's expansion into warehouse automation enables our customers to streamline their entire packaging, end-of-line, and warehouse operations with integrated machinery from a single supplier. By leveraging our expertise in automation and engineering, we are set to revolutionise your warehouse with innovative, customisable solutions.

This article was written for TWM by Gregory Sense, Infinity Machine & Engineering Corp.' Marketing Coordinator.



The CB39RC, one of Infinity's AGVs: a counterbalanced vehicle with a fully articulated clamp arm that boasts a 3,900kg lifting capacity

METSÄ TISSUE'S NEW UK MILL WILL INCREASE SELF-SUFFICIENCY IN TISSUE PAPER PRODUCTION BY MORE THAN 30%

Continuous supply of high-quality fresh fibre pulp will be shipped into east coast port of Hull, says Mika Paljakka, Senior Vice President UK/Ireland, as the Metsä Group proposes its first UK production site. Report by Senior Editor Helen Morris.

In September 2023, Finnish-headquartered Metsä Tissue, the tissue paper business of Metsä Group, announced that its new UK-based, multi-million-pound landmark investment – which it says will be the UK's "largest tissue production capacity" plant – will be located in Goole, Yorkshire.

The 240,000tpy plant is being revved up in stages across the next decade, and once up and running it will serve both the local professional and consumer markets. Crucially, it will also reduce the 45% of tissue products Metsä Tissue says are currently imported into the UK and Ireland annually, increasing the UK's self-sufficiency in tissue paper production by more than 30%.

At the time of the announcement, Metsä Tissue Chief Executive Esa Kaikkonen explained that the location of the plant in the Humber region would provide "a crucial gateway to the whole of the United Kingdom, and the region's ambitions to bring cutting-edge green technology." The move would also bring the UK and Finland together "through combining the sustainable raw material of fresh wood fibres grown in the Nordics, with world-class local production of quality tissues in the UK."

Why did the company choose the UK for its investment? The reasons are very logical, Mika Paljakka, Senior Vice President UK/Ireland, says: "Metsä Tissue is very strong in Finland, the Nordics, Central and Eastern Europe. In the UK, traditionally we have not been that big, since we have never had any production here. And as a market, the UK is one

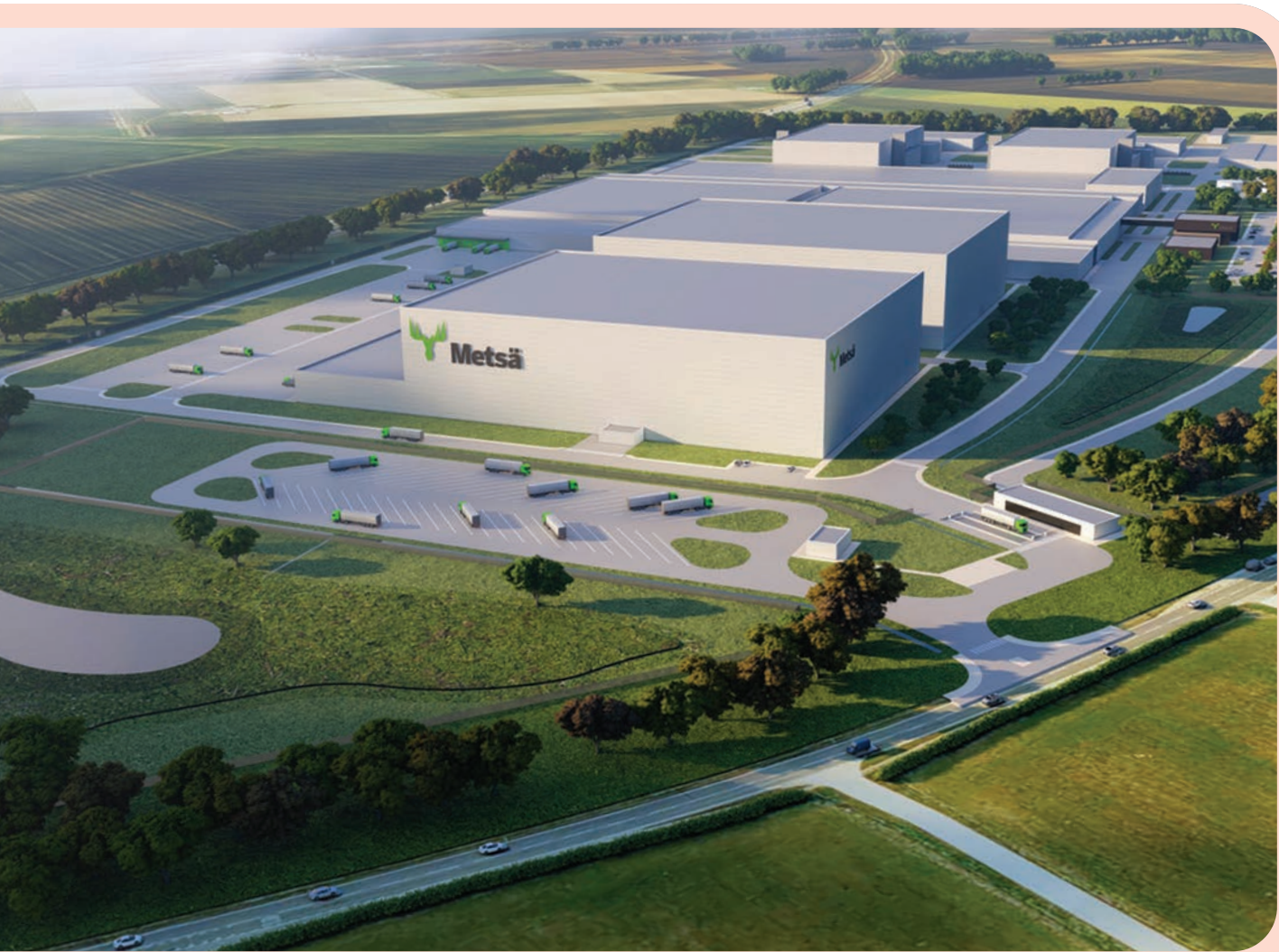
of the top five consumers of tissue paper products in Europe. Consumption is very high."

The second reason is that the UK market for tissue is around one million tonnes of consumption: "Out of which, the UK is Europe's largest net importer of tissue raw materials and finished goods. 45% of consumption is imported. That's a significant number."

The essence of the imported products he says, is that they are mainly coming from "less-sustainable supply chains." As an example, he details pulp being produced and then transported from the southern hemisphere, exported to Southern Europe to produce the base paper, and then exported on to the UK: "So the carbon footprint of that supply chain is rather nasty. One of our primary targets is to replace that part of the imported supply chain."

By comparison, in Finland Metsä Group has reliable access to high-quality fresh fibre pulp, which will then be shipped to neighbouring Hull in the UK and transported to the plant. "We can then produce the final goods in the UK and distribute them to local customers, and that means there is a reduction in the carbon footprint for transportation to the UK."

The UK's national target is to be carbon neutral by 2050, while Metsä Tissue's target is for all products to be manufactured from fully fossil-fuel-free raw materials by 2030, and for all its mills to operate without the use of fossil fuels by 2030. "We aim to replace almost half of the imported products with local British production, using fresh fibre pulp as



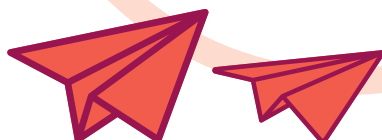
Metsä Tissue's mock up of its 240,000tpy plant in Goole, UK: the site is being ramped up over the next decade

the main raw material from sustainably-managed forests in the Nordics," Paljakka says.

How will the company achieve that in Goole? "When we have the whole operation up and running, by replacing imported products we can increase the share of domestic production. We can also help our customers with their sustainability targets. Metsä Group's parent company, Metsäliitto Cooperative, owns over a half of Finland's private forests. Our owner-members manage their forests sustainably from one generation to the next, creating a solid foundation for the development of profitable and responsible business. We use high-quality wood raw material primarily from our owner-members' forests. Together we increase the value of the Finnish forests while respecting nature. So we have good access to high-quality, slow grown, PEFC and FSC-certified Nordic fresh fibre. That means we can say that sustainability is one of our strategic cornerstones."

Finland has the highest level of PEFC and FSC certification level in Europe, he says: "It's over

"When we have the whole operation up and running, by replacing imported products we can increase the share of domestic production."



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"The UK is Europe's largest net importer of tissue raw materials and finished goods. 45% of consumption is imported. That's a significant number."

**Mika Paljakka, Senior Vice President
UK/Ireland, Metsä Tissue**



80% for example in PEFC certifications. In Finland, having a certificate as a forest owner means you must have a rolling 10-year maintenance plan for your forest land and an outcome of that is that a well-treated forest grows faster. Overall, the annual harvesting is 70m cubic metres of wood and the growth of forests is around 100m cubic metres annually. So the amount of wood is increasing in Finland."

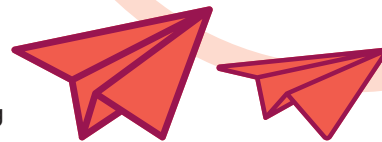
While no machinery supplier has yet been mentioned for the Goole site, the company is now spending its time preparing the local planning permit. Metsä current presence in the UK market is 100% Professional customers and it is planning for the start of operating with Consumer customers. "When the whole operation is up and running, we will have a good coverage in both categories".

He also stresses he hopes the site will be positive for the local people and the UK as a whole: "We have held public hearings and have had an open house policy. Anyone can come along to hear about our plans. We want to share all the information and be transparent. At the end of the day, the positive impact for the local economy is rather big but it's natural some people who live nearby are worried. With open communication and sharing everything honestly takes at least part or even all those worries. Metsä Tissue wants to be a good local citizen, operating there and offering employment opportunities for hundreds of local people."

Life, he adds, is "not always sailing in a back wind: there are challenges". "I think the biggest challenges we are facing is that historically, people in the United Kingdom have a common view that recycled products are better. Metsä is all for recycling, but not for tissue paper products because we believe that recycled paper is best utilised in products that do not require that high hygiene standards, like the outer transportation boxes. Furthermore, whatever you are producing with recycled raw material, its availability is going down, its quality is going down, and the price is going up, and remember that we have good access to Northern fresh fibre. So Metsä Tissue has made a strategic decision to concentrate on fresh fibre-based tissue paper products. Using fresh fibre is more sustainable as well because when using recycled fibre products one must have an energy- and water-intensive deinking operation to get rid of all the ink, which in tissue production is vitally important because the product has to be hygienic. Recycled fibre should be used just when it makes sense commercially and functionality."

The other issue for the UK market he says is hot air dryers: "Despite scientific evidence showing that paper towels are more hygienic for drying hands than hot air dryers, our 2024 Katrin survey showed

"Paper towels are sustainable. All our supply chains in the UK will be replacing this imported, non-sustainable raw material. It will be a good thing for the UK."



that in Great Britain, people are less likely to prefer drying their hands with paper towels than other nationalities. 52 % of those surveyed in the UK preferred hot air dryers compared to an average of 27 % in all other countries surveyed.

Recently a lot of European-headquartered companies have been investing in tissue facilities in the UK. Does he think the UK will increasingly attract more investment from the continent? "I think it comes back to the question of the imported products. And at the same time, awareness of the sustainability performance of companies is increasing. Today, people say that sustainability is important, but do people know what it exactly means. What does it mean in the performance of an individual mill, or the performance of a whole company?"

How Metsä does what it does, he adds, and how it deals with its customers, is included in the company's sustainability targets: "What is greenwashing, and what is not greenwashing? The UK has a high consumption of tissue papers and a large share of imported products. This is alongside a backdrop of increasing awareness of sustainability performance. When you look at the base line in the UK, and its tissue paper production, most of the local production facilities are 20 or more years old. Investments are needed for modern, high-quality tissue paper manufacturing. By removing old, non-efficient, non-sustainable capacity and investing in high performing and energy efficient production, the companies are supporting and helping the UK as a nation to work towards achieving carbon neutrality earlier than 2050."



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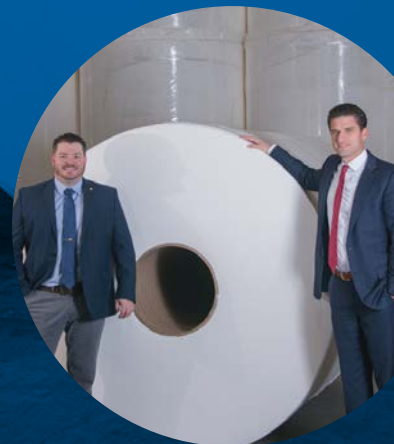


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