September/October 2025 | Issue #5

Tissue World

Magazine

The independent news provider for the global tissue business

MEXICO

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Tissue's key border issue

CONVERTING: TECHNICAL THEME
Business landscape evolving rapidly

MARKETISSUES
Road to full net zero

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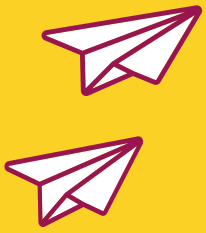

Cover image: Mexico's tissue industry surge - how the country's vibrant companies are facing the challenge.

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

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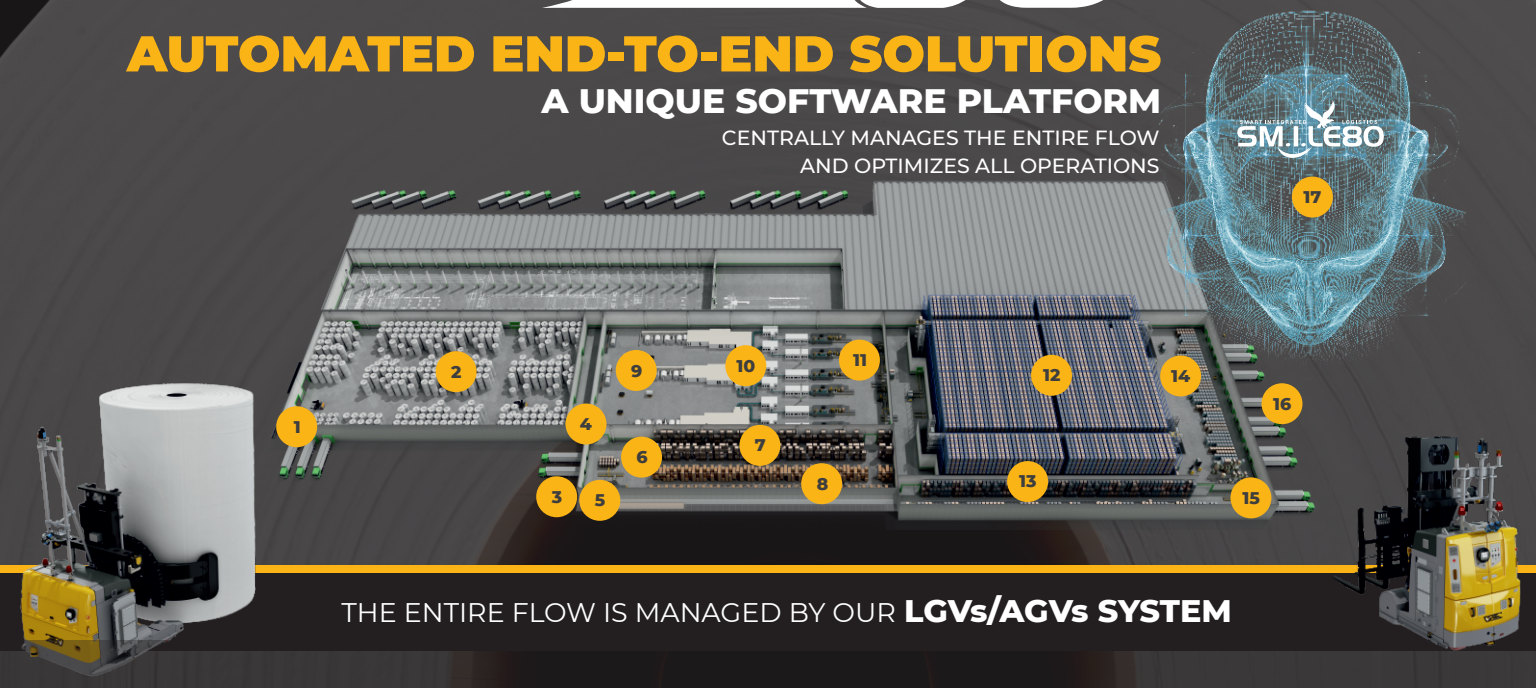

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Mexico's tissue industry surge is bringing its own problems... as companies vie for a share of the expanding market

Helen Morris, Senior Editor, Tissue World Magazine

TM9 came online in July last year. TM10 is due Q1 2026 at Papel San Francisco's Mexicali mill. With capacity reaching 270,000 metric tons per year, converting is being stepped up: a well-timed plant in Querétaro, central Mexico, also launches in Q1.

Many innovative ideas are firing up the expansion, not least catchy green marketing slogans like "Save Money While You Save the Planet."

For Juan José Helú, Sales & Marketing Director, the market is more competitive than ever: "Many companies are dealing with overcapacity and are aggressively pursuing sales in an increasingly tight market, which has driven down prices and profitability for both retailers and suppliers."

Nationally, the figures are high end: retail tissue value sales are set to grow at a current value CAGR of 6%, best performer being paper towels up 8%; domestic consumption is approaching 16kg pp, well above most of Latin America. One 'problem' for Mexico is its northern neighbour, the largest tissue value market in the world, and the reason why its exports out-perform imports 2:1. Tissue laden trucks roll freely over that border, an agreement which remains under review at the time of writing.

TWM's coverage of the China National Household Paper Industry Association's (CNHPIA) assessment of the industry in 2023 carried the official response to "staged overcapacity" becoming more serious. It urged companies to invest "rationally" to ward off the continuing decline in operating rate. TWM's *Country* and *Operation Reports* examine how Mexico's vibrant companies are facing the challenge.

CONSUMER PRIORITIES ARE CHANGING WORLDWIDE: HOW TISSUE SHOULD RESPOND

Even as a third of global consumers are concerned about finances, they also weigh their choices with personal and environmental health.

In 2025, 62% of consumers worry about climate change, and 61% of them actively try to make a positive environmental impact through their daily actions. *Euromonitor International* reports that for the industry in such a complex market clearly defined product positioning and effective messaging about specific benefits are essential.

HOW FAR CAN THE DRIVE FOR A NET ZERO MILL GO?

They already exist, partially. Conditions have to be right, as with Essity Kawerau utilising geothermal energy. Sources in one region will power transition, but will be unavailable in others.

AFRY Management Consulting's *MarketIssues* offers a detailed examination of the multitude of issues and choices facing manufactures, each of whom "will need every site to look at a combination of activities, and that each case will be different and unique."

The complete net zero journey - decarbonise whilst maintaining competitive position - will range across the entire value chain, from pulp and chemical supply into the home, office and HORECA … from source to use.

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DRIVING TOWARDS THE FULLY DECARBONISED TISSUE MILLS OF THE FUTURE

Net zero tissue manufacture is possible, and already being realised by a few mills, at least some of the time. AFRY Management Consulting's Kate Gush, Manager, and Julianna Torvelainen, Analyst, examine the technologies and conditions which are advancing the green, and economic, case.

Papermaking is an energy intensive industry, accounting for 6% of global industrial energy consumption and 2% of global CO_2 emissions [source: Renewable and Sustainable Energy Review, 2022]. The energy used is split between heat and power.

Power: As a rule, the lower the grammage of paper produced, the more water is required in the process. The lightweight nature of tissue means there is a lot more water to move, and remove, per tonne of paper produced compared with other standard grades. This, and the lower levels of integration to pulp compared to other standard grades, means that tissue manufacture (on a standard Dry Crepe Tissue [DCT] paper machine) typically requires around 1.5 times the electrical energy to produce one tonne of paper than grades such as newsprint or containerboard.

Heat: Most standard paper grades consume almost all their thermal energy in the form of steam heating the drying cylinders. Tissue, however, uses a significant portion of its thermal energy in direct heating of air to the hoods (~60% of thermal energy

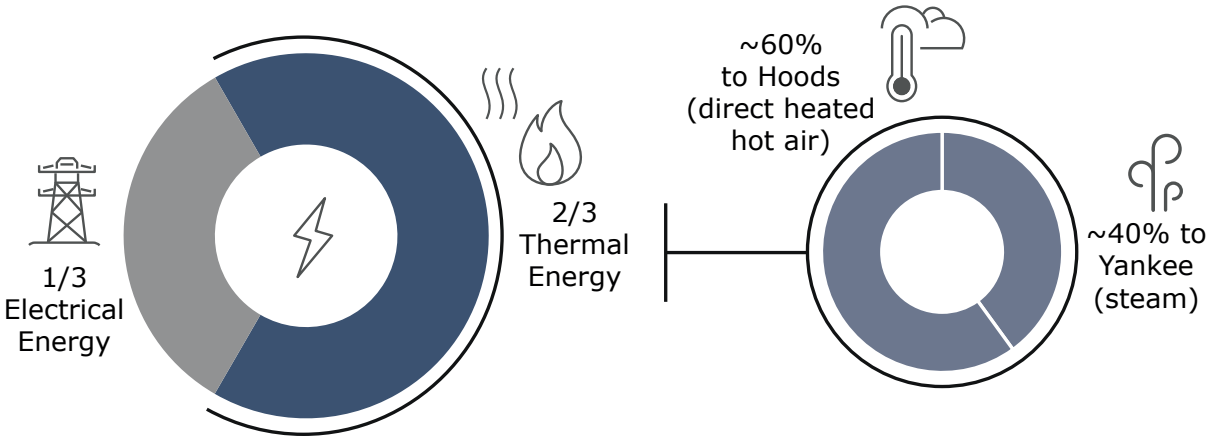


Figure 1: To show energy split at a high level for a dry crepe tissue machine.

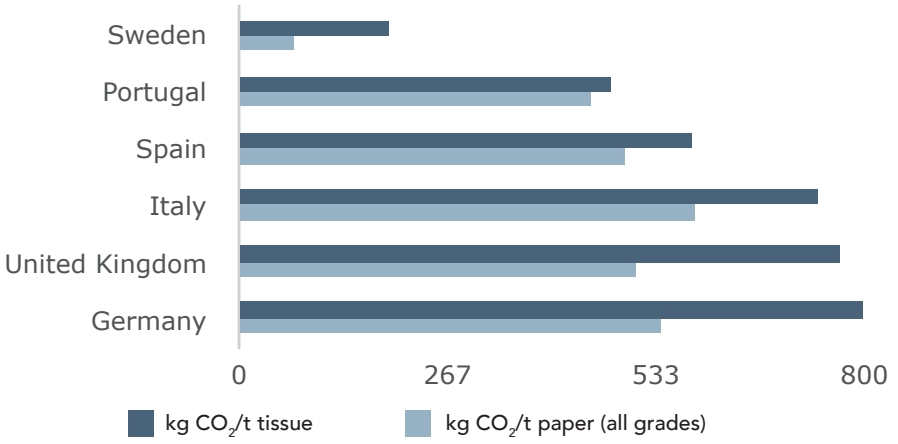


Figure 2: Chart shows the fossil CO_2 emissions for selected European countries for paper vs tissue production.

In all cases, tissue is, on average, a higher emitter of fossil CO_2 than other standard grades. In countries with high renewables penetration, and biogenic fuel availability, emissions from all paper grades are lower than those with greater reliance on fossil fuels in the grid network and on site.

Figure 3: Map shows fossil CO_2 emissions per tonne of tissue produced as an average, by continent.

At this very high level, we can see that North America is the highest overall emitter of Fossil CO_2 per tonne of tissue produced. This is driven by higher overall energy requirements of processes here (e.g. the prevalence of Through Air Dried (TAD) tissue, which uses around a third more energy overall than a Dry Creped Tissue (DCT) machine – however, up to 40% less fibres) and the fossil carbon intensity of heat and power generation in the US.

in the hoods Vs ~40% for the Yankee steam) – as illustrated in Figure 1. For the hoods, the fuel source must be clean burning, so as not to contaminate the sheet, and must be capable of combusting at a very high temperature – typically 400°C and above. This means that directly burning standard Biomass, for example, is not an option for this portion of the heat energy.

The combination of these factors means that tissue machines typically consume around 1.5 to 2 times the total energy per tonne of paper produced, compared with grades such as graphics, newsprint and containerboard.

Taking a global average, fossil CO_2 emissions are around 30% higher per tonne of tissue produced, compared with an average from all paper grades. The amount of fossil-based CO_2 emissions is influenced by factors falling into three main categories – paper machine & process technology; fuel for heat generation and electrical power generation. This means that fossil CO_2 emissions can vary greatly site to site, and that in each case the most efficient route to decarbonisation will be unique.

TISSUE MACHINE AND SITE TECHNOLOGY

Reduce: The term "decarbonisation" has become ubiquitous in recent years. However, many of the concepts supporting this journey to net zero have always made good business sense.

As a starting point, the focus on energy efficiency should be an essential part of every-day mill activity. This means continuous maintenance and improvements in, for example: Process control; correctly sized equipment; well-maintained insulation; avoiding over-drying the web at the reel; appropriate lubrication; and simplifying processes, to name a few.

Re-use/recycle: Large quantities of "waste" heat energy are a side effect of tissue production. Some of this can be re-used – either on-site where lower temperature heating is required (such as pulp dilution, or tissue machine wet end shower water), or off-site feeding into in district community heating for example.

Considering pinch-points on site – in case of further excess heat energy, this heat can be brought to a higher temperature level using thermo-compressors and heat pumps if needed and economically justified.

Technology solutions: Tissue manufacturing technology is advancing constantly, with some big leaps in energy optimisation in the past few years. For example: Novel fabric and machine configurations to optimise drainage at the wire; shoe presses to dewater efficiently whilst preserving bulk; stainless steel Yankee driers for reduced drive energy and increased heat transfer; and blower type vacuum pumps to reduce our energy use and improve vacuum control to increase our dryness entering the Yankee.

In a handful of mills, even more radical approaches are investigated. Electrification using e-boilers is tried and tested, and now e-hoods have been installed in a handful of mills. There's even the possibility of induction-heated Yankee cylinders in the near future. Decarbonisation can be driven further still, by concepts such as carbon capture to get rid of hard-to-abate fossil CO_2 emissions, alternative fuel use such as green hydrogen, and green energy storage batteries on site.

FUEL SOURCE FOR HEAT GENERATION

Paper mills integrated to pulp mills have the possibility to benefit from waste heat and biomass from the pulping process. However, with some notable exceptions, tissue mills are not usually integrated to pulp mills – which means they must provide their own heat energy to supply the two main users on site – most usually this will be in the form of steam for the Yankee drier, and hot air for the hoods.

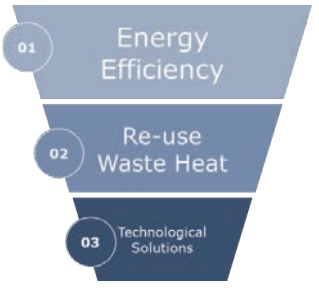
Traditionally, this has been accomplished using natural gas (or other fossil fuels in some cases) – in gas boilers for steam production, and gas burners to heat hood air directly. Here, there are several pathways to decarbonisation.

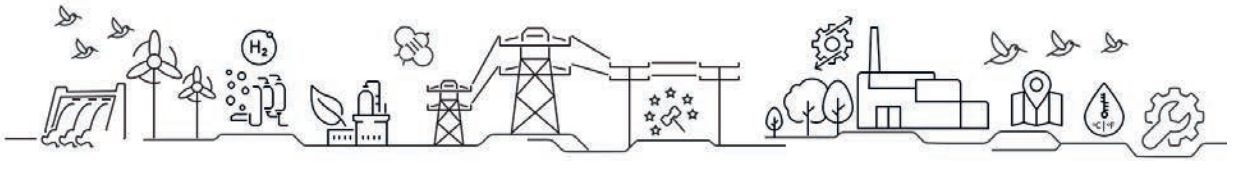
Alternative Fuels: With steam generation, there are many options. It may be possible to exchange fossil fuel for a biogenic fuel, such as biomass or biogas. A future option may be the use of green hydrogen. The viability of these options will be very dependent upon the location of the mill and local infrastructure and availability.

With hoods, the fuel must be clean burning, and of a high enough quality to provide clean, high temperature (>400°C) air. At present, this precludes the direct use of biomass for this duty. However, pilot trials have begun to investigate gasification of biomass, which would enable its use in the hoods as well as boilers.

Technological solutions: As well as considering alternative fuels for heat generation, electrification of tissue production can be realised. For steam production, equipment such as e-boilers can replace gas boilers and generate steam of a suitable temperature and pressure for the Yankee cylinder.

For the hot air to the hoods, electricity can also be considered. E-hoods are capable of heating air to a temperature suitable for normal production. We even see some tissue machine hoods that are steam heated – however, the lower temperatures reached (<200°C) impacts production capabilities significantly in these cases. Carbon capture and storage for hard-to-abate emissions could be a future option for tissue mills, but it should be noted that currently the regulatory and infrastructure prerequisites (transport and storage) and the conditions for a business case are not yet fulfilled.





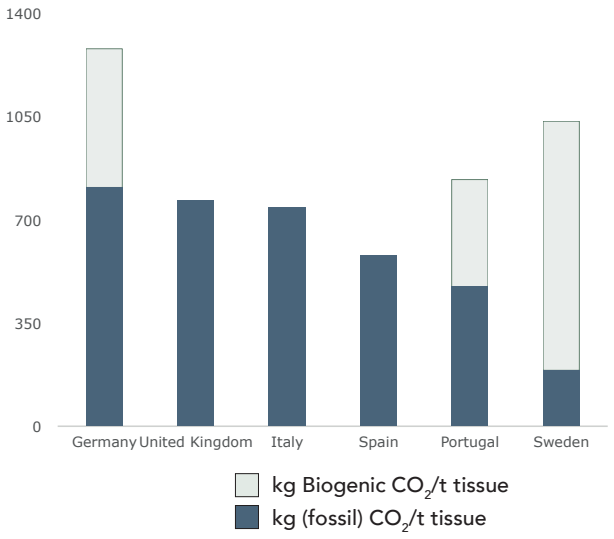


Figure 4. Chart shows total CO_2 emissions per tonne of tissue produced as an average, by selected country, split into fossil and biogenic origin.

The potential for biogas and biomass to be used in papermaking is highly variable geographically.

For example, in the UK, there is no biomass or biogas utilised in tissue making due to lack of availability. In Italy, biogas is prioritised for use in the decarbonisation of the transport sector and is not currently available to tissue.

Sweden and Germany are more likely to have biomass for thermal and possibly power generation too, due to pulping and forestry operations. Biomass has a higher CO_2 coefficient than gas, contributing to the higher total emissions value in these cases.

ELECTRICAL POWER GENERATION

As with heat generation, tissue mills do not generally benefit from integration to chemical pulp mills – which could provide at least some of the electrical energy required.

The scale of tissue mills, which tend to be smaller than other paper grades such as containerboard and newsprint mills, means tissue often relies on grid supply, or sometimes on-site Combined Heat and Power (CHP) plants, run on natural gas.

Technology solution: Decarbonising this electrical generation can be done with net zero fuels (as with heat generation), renewable generation such as solar, wind and hydro, or carbon capture technologies – although most frameworks recommend reporting this as a removal in parallel to an emission, rather than a net zero claim.

As with heat generation, tissue mills do not generally benefit from integration to chemical pulp mills – which could provide at least some of the electrical energy required.

The carbon intensity of the national grid supply across Europe, for example, varies greatly. However, for any electricity used on site which is fed from the grid network, emissions can be controlled (allowing for price per unit, and hourly variability) with Purchase Power Agreements (PPA's) – ensuring 100% renewable energy supply through sourcing contracts where available.

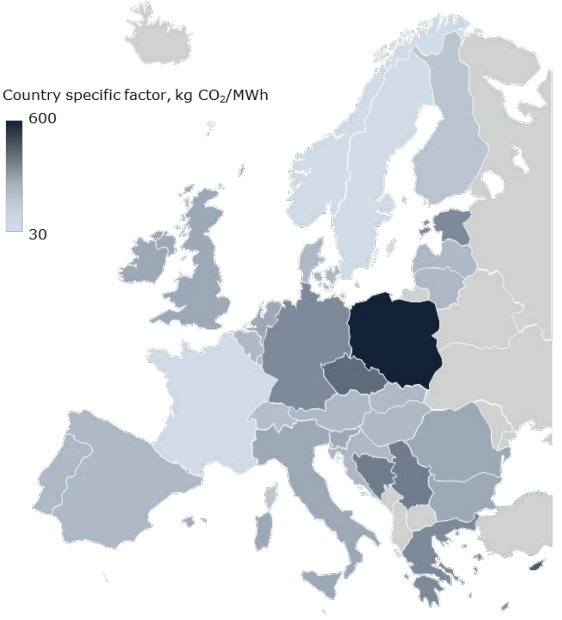


Figure 5. To show the large variation in fossil CO_2 emission intensity of grid networks across Europe.

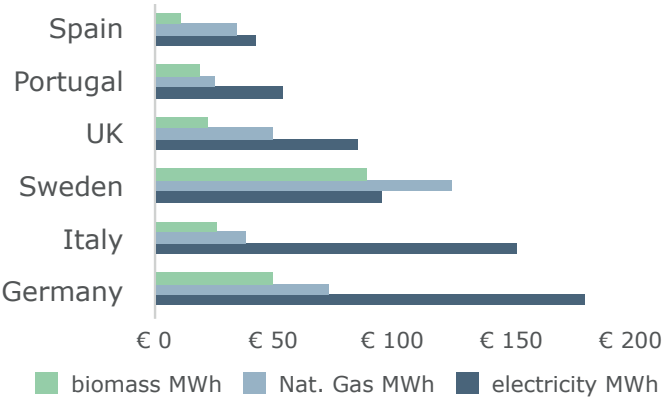
The Nordics and France are at the lowest end – with Sweden getting >90% of its electricity from renewable generation and nuclear power, and France relying heavily on nuclear power.

Poland operates many power stations using carbon intensive fossil fuels (coal), leading to a far higher fossil CO_2 emission loading than other European countries.

Figure 6: Average unit pricing of fuel in selected European countries.

Grid electricity and other fuel prices vary a lot around Europe. Sourcing PPA's across borders provides the possibility of acquisition of electricity at near-zero emissions.

What is not shown here, is the hourly variability in prices for electricity – most notably in countries with high solar and wind generation potential, which can hit negative pricing during high points in the summer in daytime.



Some locations will lend themselves to the use of renewable energy for on-site generation – however, in cases where this is a good option, there is another factor to consider. Many renewable electricity sources are variable – some more predictably than others. For example, we know that the sun will not shine at night, whilst it is less clear which days will be windier than others, far in advance. Whether predictable or not, the variability in supply is inherent with many renewables, and is not something we can match in our production processes.

Whether onsite, or purchased grid renewables, this variability in availability (and price) means other technologies should be considered alongside renewables. For now, this is mostly to come from fuel derived electrical generation, but moving forward, more can be covered via battery storage or demand side management for example.

Whether predictable or not, the variability in supply is inherent with many renewables, and is not something we can match in our production processes.

HOW LOCATION IMPACTS CHOICE

Geographic location will have a big influence on what is possible, and what are the most efficient pathways to a net zero future.

Globally, there exists high level variation that will have a big impact on the likely carbon intensity of a site. But even at a country, or regional, level there are big disparities from local climate, infrastructure, legislation, and public attitudes.

INTEGRATION AND SCALE:

Any regions which favour suitable chemical pulp production are more likely to have integrated (and larger capacity) tissue mills – which can be beneficial in terms of energy generation requirements.

CARBON INTENSITY OF GRID ELECTRIC:

Locations which have historically had lower cost and more secure supply of fossil fuels are sometimes at a disadvantage in terms of infrastructure and local knowledge of renewables and biogenic fuel supply. This can impact the availability of net zero electricity through affordable contracts. Likewise, environmental attitudes towards wind farms and hydro-electric damns will have an influence on this too.

ALTERNATIVE FUELS – BIOGENIC:

When considering alternative fuels – this cannot be thought of in isolation from the location. A reliable source of biogenic fuels, for example, is much easier to source in a region of high availability – but is also impacted by local government policy with regards the priorities for that fuel (e.g. in Italy, the transport sector is a priority for decarbonisation this way).

ALTERNATIVE FUELS – HYDROGEN:

Green hydrogen availability will be very dependent upon local infrastructure – both in terms of its manufacture but also pipe networks and distribution systems. Countries that have supported the development of hydrogen infrastructure through

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	SWEDEN	GERMANY	IBERIA	ITALY	UK
Grid:	>90% renewables, robust network	High emitter of Carbon compared with the rest of the EU	Highly supplied by renewable energy, highly variable price on an hourly basis	One of the highest unit prices in the EU, network unlikely to be able to respond quickly to new demands	"supercharger" policy will reduce costs for industry for an undefined time
Biomas/ Biogas:	More available than many other EU countries, high competition for use. Only around 20% of CO_2 emissions in tissue are fossil origin	Around two thirds of the CO_2 emissions from tissue are from fossil fuels	Around 80% of the CO_2 emissions from tissue are from fossil fuels	Currently focussed on decarbonising transport, not readily available for industry. Currently almost all CO_2 emissions from tissue are from fossil fuels	Not readily available Currently almost all CO_2 emissions from tissue are from fossil fuels
Hydrogen:	Well positioned for the future, however, currently focused on Steel Production	Ambitious infrastructure development plans, plans rely on importing ~70% of Hydrogen needs in the future	Has potential, due to high proportion of renewable energy generation	Has plans to support this as a future route to decarbonisation, to be able to supply 18% of industrial energy needs by 2030	This is a key focus of support and offers financial incentives to producers and users that is 15-20 times greater than EU countries
Example mill:	Essity Lilla-Edet mill: First tissue Mill to produce net zero CO_2 emissions during normal production (using renewable electricity and Biogas)	Essity Mainz-Kostheim: Trialled the use of green hydrogen in place of natural gas (boilers and hoods)	Fortissue: Is able to run at full speed as a fully electrified mill		K-C Northfleet to become the first UK mill to have Hydrogen supplied, followed by K-C Barrow

Figure 7: Table to compare decarbonisation options in selected European countries.

increased tariffs and related policy (e.g. the UK) or are planning investments in infrastructure (e.g. Germany) throughout, are more likely to encourage this as a route to decarbonisation locally. This can be particularly relevant to tissue manufacture, given the high quality and clean burning required for hood heat.

LOCAL CLIMATE AND WEATHER CONDITIONS:

Areas with more solar energy, or access to hydro, wind, tidal or geothermal energy lend themselves more to local renewable energy generation. But also, in areas with abundant renewable energy supply, the possibilities for manufacturing green hydrogen are also higher. With abundant renewable energy come two main considerations – the possibility to electrify the hoods and boilers (or the Yankee cylinder itself), and how to mitigate the inherent variability of electrical supply and cost.

PUBLIC OPINION AND TASTES

The attitude and tastes of the public must be considered too. In North America, for example, the prevalence of TAD, which creates a specific sheet feel, contributes to an energy use per tonne that is notably above average.

In Nordic regions, typically consumers have turned away from recycled tissue products – whereas in Germany the acceptance of a less treated recycled fibre (even brown recycled cardboard fibres in some cases) is higher, making the recycled paper option less energy intensive and more sustainable.

Fully electrified	Fortissue	Portugal
	MPH1865, Annonay	France
Biogas	Essity, Lila-Edet	Sweden
Green hydrogen	Essity, Mainz-Kostheim	Germany
Geothermal	Essity, Kawerau	New Zealand

Figure 8: Example mills.

The table shows examples of tissue mills around the world who have fully decarbonised the thermal portion of their energy requirements for at least some of their normal production, or who have tried novel approaches (Essity Mainz-Kostheim have run this as a trial only).

CONCLUSIONS

We see examples that prove it's already possible to operate a tissue mill as net zero for at least some of the time, as long as zero emission electricity is available. However, these are the exceptions rather than the rule.

What is clear is that a net zero future for tissue manufacture will need every site to look at a combination of activities, and that each case will be different and unique – just look at Essity Kawerau utilising geothermal energy, something not available to most.

Every country, region, and mill are different, and far greater depth is required than can be discussed here. We must also remember the bigger picture.

When aiming for "net zero", looking solely at the mill level will give you part of your answer (scope 1 and 2 emissions). However, a complete "net zero" journey considers the entire value chain – starting from pulp and chemical supply and ending at the use of the products at customers (scope 3 emissions).

MEXICO: SET FOR SIGNIFICANT HOME AND EXPORT TISSUE GROWTH … BUT CAN IT SURVIVE CURRENT TRADE TENSIONS?

With uncertainty following a major tissue deal, and trade agreements under review, ResourceWise's Senior Consultant Bruce Banda analyses Mexico's rise in the North and South American industry.

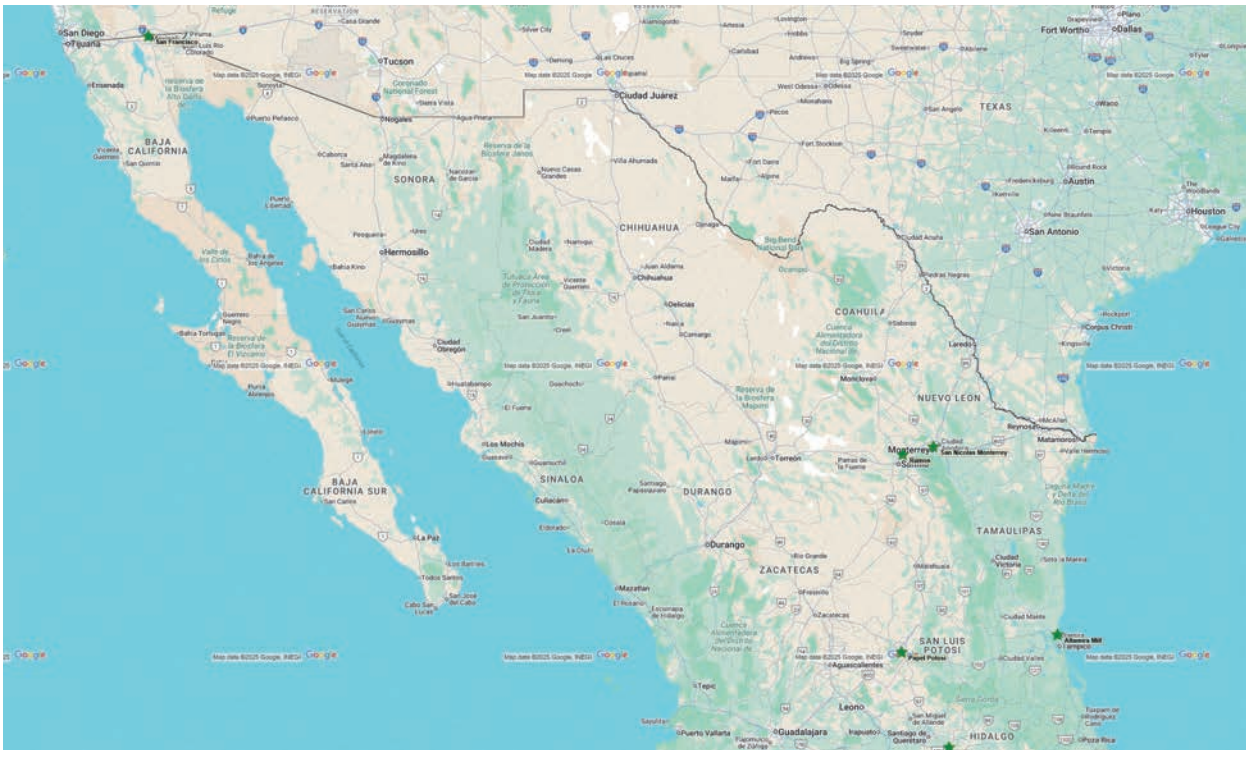

Figure 1: Mexico Tissue Locations

This column last reviewed Mexico's Tissue Business in 2022, when we noted that two decades of the North American free trade agreement had resulted in Mexico building a significant export-based tissue business with advanced technology and capability to compete for the American private tissue business. Mexico remains America's second-largest trading partner, following number one Canada.

Eight more Mexican tissue machines have come online since that report. Mexico has a domestic tissue market with a wide range of performance targets. Most domestic tissue is focused on economy brands, but specific high-income areas in Mexico City see ultra-premium tissue products like those in the American market. At the same time, American tissue exports to Mexico continue to grow.

Domestic tissue consumption is estimated to be approaching 16kg per person, well above most of

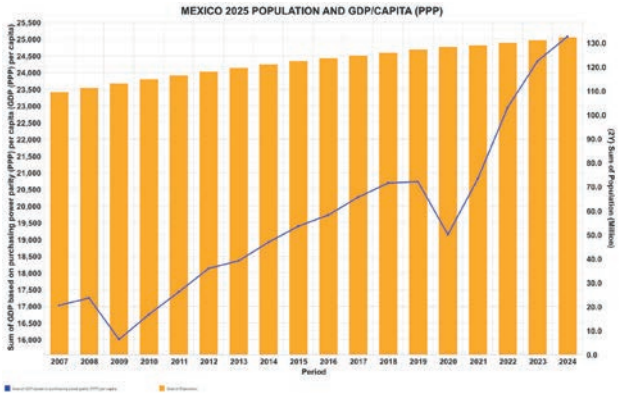

Figure 2: Mexico Population and GDP/Capita (PPP)

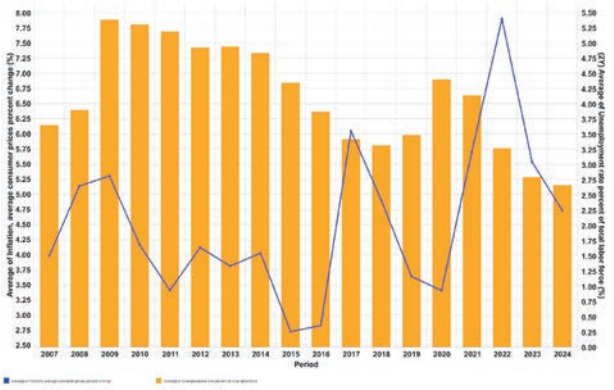

Figure 3: Mexico Inflation and Unemployment Trend

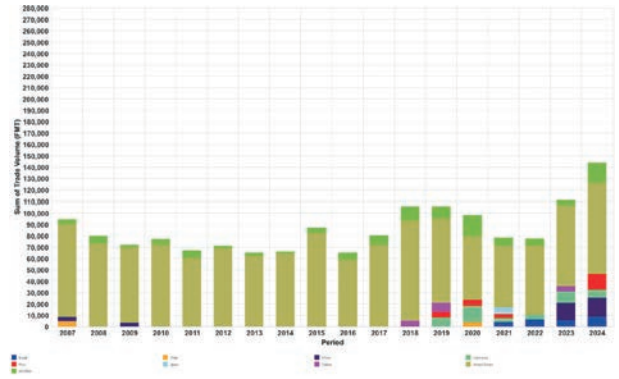

Figure 4: Mexico Tissue Imports Trend

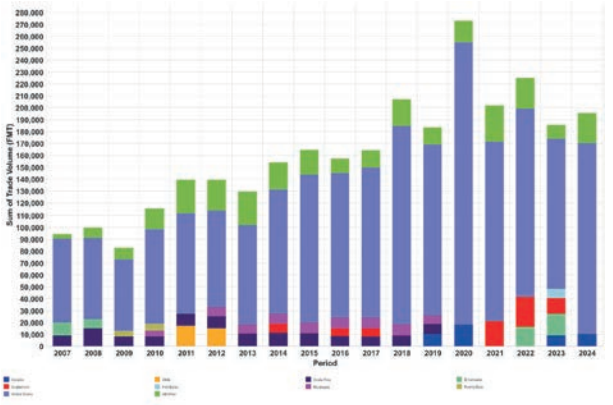

Figure 5: Mexico Tissue Exports Trend

the rest of Latin America. Mexico remains subject to currency variability and raw material costs. Continued development of the domestic tissue business and diversification of tissue export countries will be critical to the continued growth of Mexican tissue production.

Mexico's tissue production facilities are illustrated in Figure 1. Many are integrated with recycled fibre, though none are linked to virgin fibre. Several facilities are located near the United States border, which grants them access to free trade under the USMCA agreement (T-MEC in Spanish), despite some instability in North American trade relations. Mexican trucks and drivers can cross into the US to deliver tissue products, provided all safety inspections are met, and drivers show basic English proficiency, a new requirement for commercial driver entry. However, Mexican tissue producers must be concerned that the rules of trade could change at any time.

Mexico's geographical position as both a Latin American and North American country has fuelled growth in tissue production, allowing direct shipments from Mexican mills to American customers. The tissue business in North and South America has been shaken by Kimberly-Clark's agreement with Suzano. However, it should be noted that Kimberly-Clark de Mexico (KCM) is a Mexican majority-owned company that has a relationship with the global Kimberly-Clark Corporation (KCC), but the Suzano transaction specifically excludes Kimberly-Clark de Mexico.

GDP grew at 1.5% in 2024, following rates of 3.7% in 2022 and 3.3% in 2023. Real GDP per capita, expressed as PPP (purchasing power parity), is represented by the blue line in Figure 2. The adjusted purchasing power parity (PPP) of about $24,000 (USD) represents significant purchasing power to support continued

Table 1: Mexico Tissue Machine Count Changes

Country	Grade	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Mexico	Commercial T&T				1	-3					
	Consumer T&T			2	1				2	3	
	Specialty T&T										
TOTAL	TOTAL			2	2	-3			2	3	

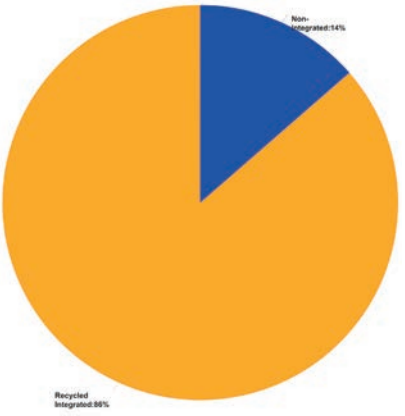

Figure 6: Mexico Tissue Site Integration

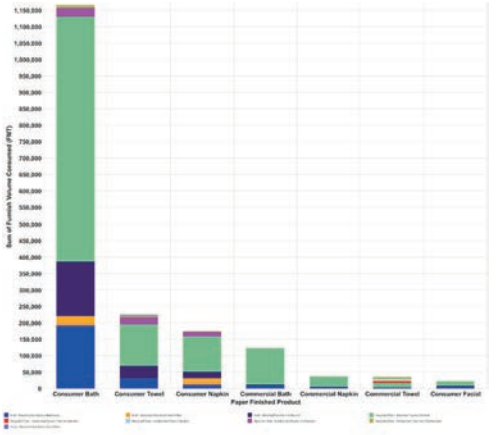

Figure 7: Mexico Tissue Product Formats by Fibre Source

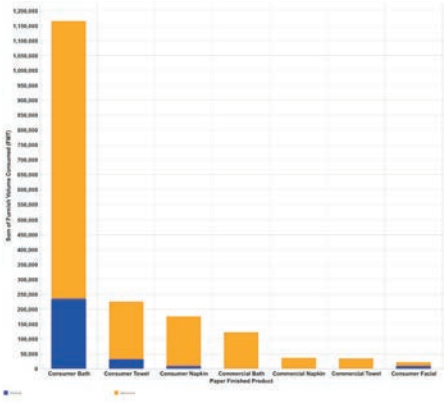

Figure 8: Mexico Tissue Products by Technology

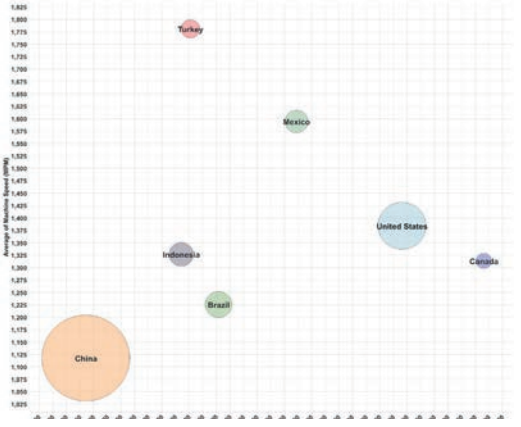

Figure 9: Mexico Tissue Machine Quality Comparison

domestic tissue demand. Still, about 37% of the population lives below the poverty line.

Mexico continues to be the tenth most populated country (about 130,793,927 in 2024) in the world, growing at about 0.72% per year, as shown in the solid bars in Figure 2. This growth rate is common in more developed countries, but Mexico's population age structure is much younger than the United States or Europe, with only 8.2% of the population over 65 years.

Inflation and unemployment are key indicators of economic factors that slow down tissue consumption. Figure 3 shows Mexico's inflation trend as a blue line. Inflation has mostly been stable, except during the pandemic recovery period, when it spiked in 2022. The current inflation rate is like that of the United States.

Unemployment is represented by the bars in the chart and is currently near 4%. Interestingly, the youth unemployment rate reported by the CIA World Factbook was 5.5% in 2024. This is very low compared to the United States or Europe. Taken together, Mexico's economy is well-positioned to support continued growth in domestic tissue demand. We will take a further look at this when we explore the mix of tissue product formats produced in Mexico. Mexico's tissue trade trends are shown in Figure 4 (Imports) and Figure 5 (Exports). Note that both charts are on the same Y-axis scale to allow direct visual comparison. Exports exceed imports by a ratio of about 2:1 after starting as equal in 2007-2008.

The final piece of the balance of Mexican tissue supply is the addition of tissue capacity through new

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	TOTAL
				1					1					0
	-2	1		2	3	-2		2	2	3				17
			-1											-1
	-2	1		3	3	-2		2	2	3				16

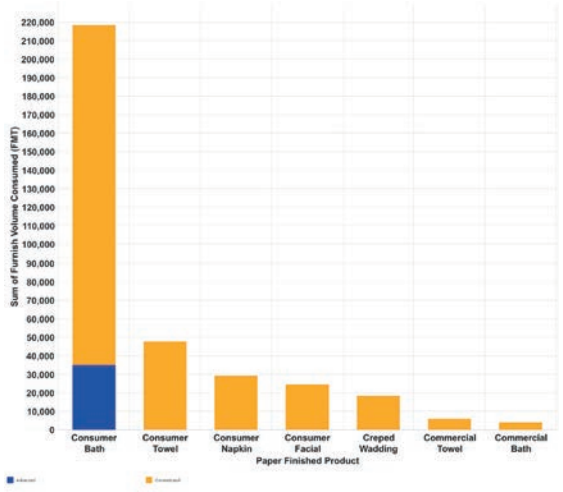

Figure 10: Mexico Comparison Cash Cost per Ton

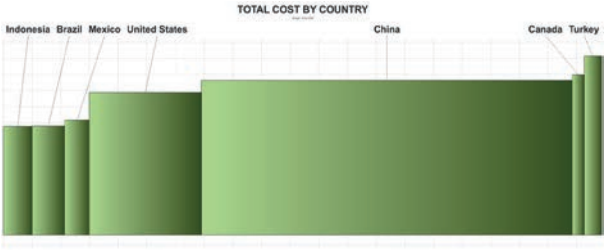

Figure 11: Mexico Comparison Cash Cost per Case of Equivalent Product

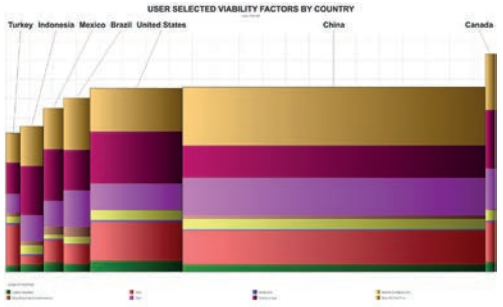

Figure 12: Portugal Tissue Machine Viability Comparison

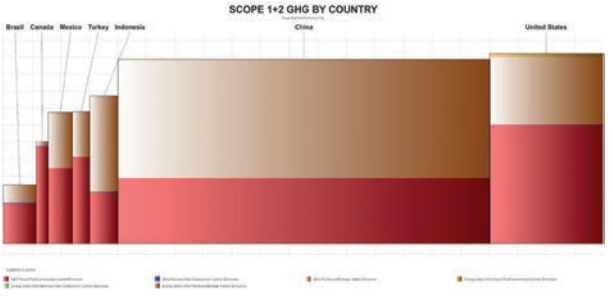

Figure 13: Mexico Comparison Carbon Emissions/Ton Scopes 1&2

tissue machines. This ignores the potential year-to-year impacts of inventory changes in the supply chain, but the results are true on average. This is normally reported with a bar chart, but a table with more detail by tissue grade is shown in Table 1 to facilitate analysis. Mexico added 17 new consumer tissue machines in the study period, while commercial tissue saw no net change as three machines were added and three were removed. Specialty or industrial tissue saw no new machines, and one was removed. This is a large increase in Consumer tissue capacity and indicates that it was targeted at the United States market, probably private-label tissue.

Tissue machine capacity tends do trend up as incremental investments and debottlenecking can add several percent capacity increases per year. However, new tissue machines tend to add significantly more capacity than replacing old and outdated machines.

Mexican tissue sites are 86% integrated with recycled fibre production from recovered paper. The remainder are non-integrated, as there are no virgin fibre-integrated tissue sites in Mexico - this high percentage of recycled fibre production positions Mexico for low-cost production of value-oriented products. Fibre applications for the Mexican tissue product by finished product type are shown in Figure 7. Consumer bath accounts for most of the Mexican tissue production and has the most variation from recycled to eucalyptus. This indicates that a range of bath tissue products are being produced, with about 70% made from recycled fibre.

Consumer kitchen roll towel is the second most common product. Here we see some eucalyptus and southern softwood that would be required for most advanced towel products. Commercial tissue products for away-from-home use are less common. Less common fibres in the Mexico furnish mix include both Soda and Kraft non-wood short fibre. Mexico has a history of producing fibre from agricultural waste, especially bagasse from sugar cane.

Mexico also has advanced tissue manufacturing technology that enhances the performance of tissue products with lower fibre grammage, as shown in Figure 9. This technology is specifically focused on bath tissue production, likely for export. Growing tissue demand and trade expansion may require further use of advanced technology to produce consumer kitchen towels that meet expectations in the United States, as shown in Figure 8. This advanced technology also shows up in consumer towel, napkin, and facial tissue products.

A comparison set of tissue manufacturing countries was selected from nearby trading partners and also countries with a focus on tissue exports to benchmark Mexico's tissue machine quality. This set includes China

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(export competition), Indonesia (export competition), Brazil (exports/imports), Türkiye (export competition), the United States, and Canada.

Results of this benchmark comparison are shown in Figure 9. China has both the newest machines and the slowest-running tissue machines. Indonesia and Brazil are somewhat faster than China. Türkiye represents the fastest machines on average. The Y-axis of this chart is the average machine speed. This was chosen as a benchmark because it shows Mexico's tissue machines running at higher speeds than everyone except Türkiye, indicating technical capability. Figure 10 shows the average tissue production costs across countries in the comparison group, including Mexico. Each bar's height indicates the cash cost per ton, while its width reflects tissue capacity. The coloured segments represent various cost components, such as raw materials, pulp, chemicals, energy, labour, overhead, and credits. Brazil, Indonesia, and Mexico have the lowest costs compared to the other tissue producers. However, the stacked cost types show that Mexico has the highest energy cost per ton of any of the comparison set.

An alternative approach to cost comparison uses the cost of an equivalent case of product, adjusting the basis weight or grammage to equalise performance. Brazil, Indonesia, and Mexico have similar average costs. The United States greatly exceeds the rest of the tissue-producing countries with a total of 46% of all production using advanced technology. The adjusted amount by case would be well over 50%. Consumer bath in the United States is 58% advanced technology, while Consumer towel is 81% advanced tissue process technology. Mexico has deployed more advanced tissue processes than most but not to the extreme of the United States.

Figure 12 illustrates the relative average viability of the comparison country set of tissue machines. The FisherSolve Next algorithm utilises estimated capital requirements, cash production costs, machine size, technical age, grade risk in the local economy, internal company risk, manufacturing competitiveness of the area, tons per unit trim, and export destination charges. Türkiye, Indonesia, and Mexico hold the most viable positions, followed by Brazil and the United States. Meanwhile, Canada has significantly lower viability scores for their tissue capacity. Fibre costs and high technical tissue machine age are the major issues.

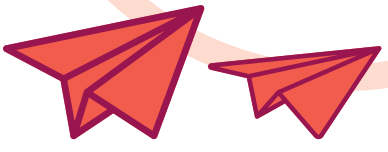
Figure 13 illustrates Scope 1 (on-site fuel) and Scope 2 (electricity) carbon emissions per the ton of finished tissue produced. The data indicate that Brazil, Canada, and Mexico's carbon emissions are relatively low. The stacked bars indicate that this is due to different factors. Canada enjoys very low-carbon electric power (scope 2) due to the availability of carbon-free hydro power. Mexico is reasonably balanced, but has relatively high fossil fuel (scope 1) use on-site. China and the United States continue to be at the high end of emissions per ton. The United States would look improved if the lower basis weights for advanced tissue were factored in.

MEXICO TISSUE SUMMARY:

- Mexico is recognised among global tissue producers for its low average production costs.
- Despite lower overall costs, Mexico has the highest energy cost per ton compared to other countries in the comparison group.
- Carbon emissions in Mexico are moderate, primarily due to substantial on-site fossil fuel usage.
- The country ranks highly in tissue machine operational viability, just behind Türkiye and Indonesia.
- Mexico has adopted advanced tissue processing technologies, though not to the same extent as the United States.
- The Mexican tissue industry is influenced by fluctuations in fibre prices, evolving environmental regulations, and shifting trade policies.
- Ongoing trade adjustments with the United States provide the greatest risk to Mexico's tissue business.

A detailed understanding of tissue producers and their individual machines is crucial for analysing the competitive landscape. This article presents an overview of the current tissue industry in Mexico. Fluctuations in fibre prices, exchange rates, and environmental regulations create both opportunities and challenges for industry participants. American trade policy development and revision is a unique risk to the Mexican tissue industry. Moreover, changes in ownership and consolidations are expected to persist among tissue mills in Mexico, while investments in tissue-making capacity from neighbouring countries may impact imports and exports.

Mexico's economy well-positioned for domestic tissue growth ... low average production costs, ranks high in tissue machine operational viability, has advanced tissue technologies, and hygiene aware consumers.



SECTOR BY SECTOR: GROWTH TRENDS EXAMINED AS RETAIL VALUE SALES RISE BY 6%

Jorge Araya, Consultant Tissue & Hygiene, Euromonitor International, finds that adding value is a key opportunity for Mexican manufacturers.

KEY DATA FINDINGS

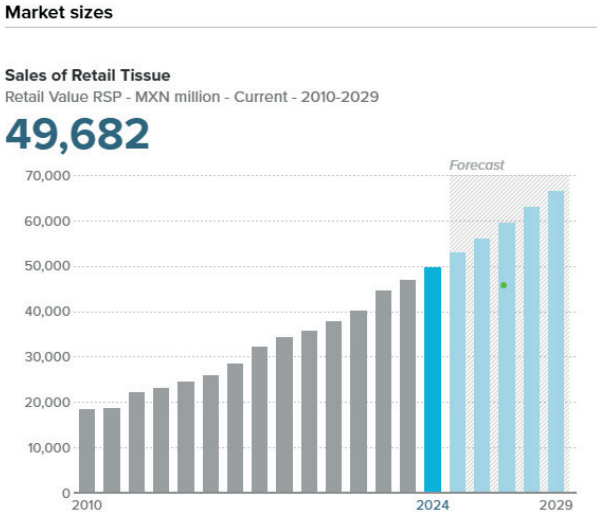
- Retail value sales increase by 6% in current terms in 2024 to MXN49.7bn
- Paper towels is the best performing category in 2024, with retail value sales rising by 8% in current terms to MXN10.9bn
- Retail sales are set to grow at a current value CAGR of 6% (2024 constant value CAGR of 3%) over the forecast period to MXN66.5bn

2024 developments: Toilet paper and paper towels drive growth as premiumisation is seen

Retail tissue experienced sustained growth in current value terms in Mexico in 2024, although volume growth was more moderate. Paper towels was the best-performing category, registering value growth two percentage points above the average for retail tissue. In contrast, napkins showed a weaker performance, growing two percentage points below the average, and seeing volume decline, indicating a trend amongst consumers of replacing napkins with products which are perceived as more premium, such as paper towels. Toilet paper also recorded solid growth, in line with the overall trend in retail tissue. Within facial tissues, both boxed facial tissues and pocket handkerchiefs recorded only modest, below-average increases.

Toilet paper remained the largest category within retail tissue in value terms in 2024, followed by the category that experienced the most significant growth, paper towels. Both grew partly thanks to the premiumisation trend, as consumers had higher purchasing power in a context of economic acceleration, and looked for added value in their consumption. The rise of premium-driven consumption can be seen in the growth of premium private label lines.

In addition, growth of paper towels was seen at the expense of napkins, as the former are regarded as premium products. The perception that paper towels are more hygienic, durable, and versatile than napkins has driven this trend. Similarly, in toilet paper, premium products with differentiating attributes, such as greater softness, pleasant fragrances, and double-ply technology, have gained popularity. The premiumisation of consumption represents a key opportunity for manufacturers, which can develop products with innovative and attractive features for consumers.



GROCERY RETAILERS CONTINUE TO DOMINATE

The main distribution channels for retail tissue products in Mexico in 2024 were grocery retailers such as supermarkets, hypermarkets, discounters, and small local grocers. Grocery retailers have an extensive reach, affordability, and benefit from the strong consumer preference for in-person shopping. Major retail chains dominate the market, offering a wide variety of brands and private label alternatives at competitive prices. These outlets attract a high number of shoppers who rely on bulk purchasing and frequent promotions, making them the go-to choice for household essentials such as toilet paper, paper towels, and napkins. Consumers in Mexico value the ability to compare products directly, assess the quality, and take advantage of in-store discounts, reinforcing the importance of physical retail.

Private label retail tissue products from major grocery retailers have gained significant share by offering cost-effective alternatives to established brands. This has intensified the competition, pushing leading manufacturers to introduce innovative, premium, and eco-friendly products to differentiate themselves. Most tissue purchases remain habit-driven, and are made through traditional store-based retail channels. Grocery retail channels ensure a steady supply of tissue products across both urban and regional markets, solidifying their role as the dominant sales channels in retail tissue in Mexico.

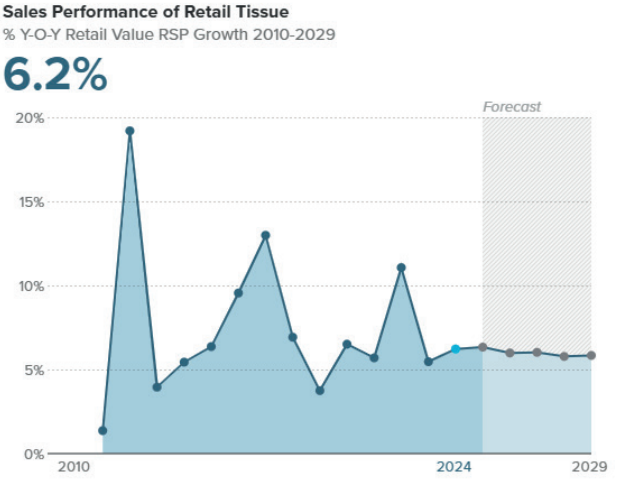
However, other non-grocery retailers saw the highest growth in 2024, although from a low base. In addition, over the review period retail e-commerce gained traction from a low base, especially in paper towels, in which it accounted for 5% of sales in 2024, and continued to trend upward. In other categories, e-commerce is growing at a more moderate pace. Although traditional retail outlets remain dominant, online sales have become increasingly important. The convenience offered by digital platforms, along with exclusive promotions and subscription options for recurring purchases, has fuelled this trend.

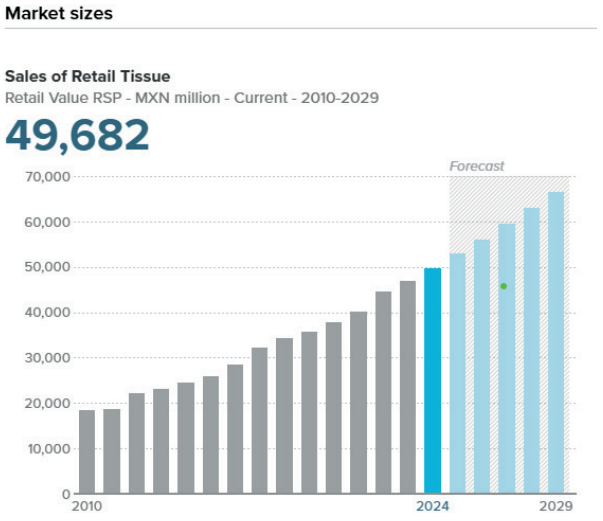
Although traditional retail outlets remain dominant, online sales have become increasingly important. The convenience offered by digital platforms, along with exclusive promotions and subscription options for recurring purchases, has fuelled this trend.

PROSPECTS AND OPPORTUNITIES: PAPER TOWELS WILL CONTINUE TO DRIVE GROWTH DUE TO INNOVATION AND PREMIUMISATION

Retail tissue in Mexico is expected to maintain retail volume and current value growth throughout the forecast period, although performances will vary across categories. The largest category, toilet paper, is anticipated to continue to see relevant growth, driven by the pursuit of softer fabrics and products that are perceived as premium. In addition, following the skin care trend and the rising demand for ingredient-based products, it is expected that facial tissues will show organic growth in the forecast period. Retail tissue therefore presents various growth opportunities in the short and medium term.

However, it is expected that paper towels will continue to be the strongest driver of growth in retail tissue moving forward, seeing the highest current value increase in the forecast period. This is due to the versatility of this product, as it can substitute napkins, but also reusable cloths and other cleaning alternatives, and usage is expanding beyond traditional tasks. The premiumisation of consumption is also allowing for the creation of products with innovative attributes that justify higher prices and foster consumer loyalty. For instance, consumers perceive paper towels as more hygienic and durable than napkins, reinforcing





their preference for everyday use in kitchens, workplaces, and public spaces. Innovations in this category in terms of absorbency, eco-friendly materials, and packaging convenience will support expansion, making paper towels an essential product in both residential and commercial settings. Moreover, the growing influence of e-commerce will enhance accessibility, with subscription models and bulk purchasing options driving higher consumption. As private label lines introduce competitive alternatives and manufacturers continue to refine product quality, paper towels will maintain its position as the fastest-growing category in retail tissue.

OPPORTUNITIES IN EXPANDING ONLINE SALES STRATEGIES

Players have the opportunity to expand their online sales strategies and reach a broader audience with flexible business models, such as subscriptions and scheduled deliveries. Companies that strengthen their online presence through digital marketing strategies, improvements in the user experience, and optimisation of delivery logistics, will be able to capitalise on the opportunity of retail e-commerce and improve their shares.

Nevertheless, with the strong position of grocery retailers in 2024, players will also have to maintain their focus on offline retail. Competition with private label, while challenging, also represents an opportunity for established brands to strengthen their positioning through more targeted and differentiated marketing campaigns.

INNOVATION IN PRODUCTS, PACKAGING AND DISTRIBUTION EXPECTED

Innovation is expected to be a key driver of growth in retail tissue over the forecast period, particularly as premiumisation continues to shape consumer preferences. Manufacturers will have to focus on developing high-quality products with enhanced features, such as improved softness, greater absorbency, and sustainable materials. Consumers are increasingly seeking added value in their purchases, favouring biodegradable, hypoallergenic, or scented tissues that offer a superior experience. At the same time, and although gradual, the rise of private label is intensifying the competition, requiring established players to refine their strategies. To maintain their positions, leading companies will need to invest in research and development, leveraging advanced manufacturing technologies to optimise costs while maintaining superior quality. Sustainability will also be a crucial factor, with eco-friendly innovations such as recycled materials, reduced plastic packaging, and carbon-neutral production playing a central role in brand differentiation.

The expected expansion of retail e-commerce further highlights the need for innovation in terms of distribution and marketing strategies. Digital platforms provide brands with opportunities to engage consumers through personalised experiences, subscription models, and customised packaging.

In addition, advances in logistics and automation will improve supply chain efficiency, enabling faster deliveries and reducing operational costs. Innovative packaging designs, such as compact or resealable formats, will enhance consumer convenience, making online purchases more attractive. As the competition intensifies, companies that integrate high-value innovation in various areas will be best-positioned to lead retail tissue in the coming years.

EXECUTIVE SUMMARY: TISSUE AND HYGIENE IN 2024 - THE BIG PICTURE

Tissue and hygiene saw growth in Mexico in 2024, with increases for both the retail and AfH channels, following the inertia the Mexican economy showed since 2023. In macroeconomic terms the country experienced a year of growth, driven by the arrival of foreign investments, the consolidation of the middle-class, a historically low unemployment rate, increased purchasing power, accompanied by a strong Mexican peso against the US dollar. However, throughout 2024 economic growth began to decelerate, mainly due to the uncertainty generated by the presidential elections in June. Despite this context, domestic consumption demonstrated resilience, mitigating the effects of the slowdown.

The deceleration of the economy resulted in some consumers exercising greater caution in their spending habits. However, this caution did not necessarily led to lower spending, but rather a transformation in consumption patterns. Consumers increasingly sought products which

provided better value for money, prioritising premium items over lower-cost alternatives. This trend was particularly evident in retail tissue, in which demand for higher-quality paper towels increased compared with napkins.

Inflation, while under control, remained a challenge for the industry, influencing cost structures and pricing strategies. While over 2024 inflation levels gradually decreased to the range set by the central bank, cost pressures remained a concern for both consumers and businesses. Inflation particularly influenced price-sensitive categories such as menstrual care, in which promotional activity played a crucial role in driving sales. The competition in this category remained fierce, with companies relying heavily on discounts, multi-pack promotions, and value-added incentives to retain customers. In this context, companies will have to maintain a balance between competitiveness, innovation, and sustainability to ensure growth in the medium and long term.

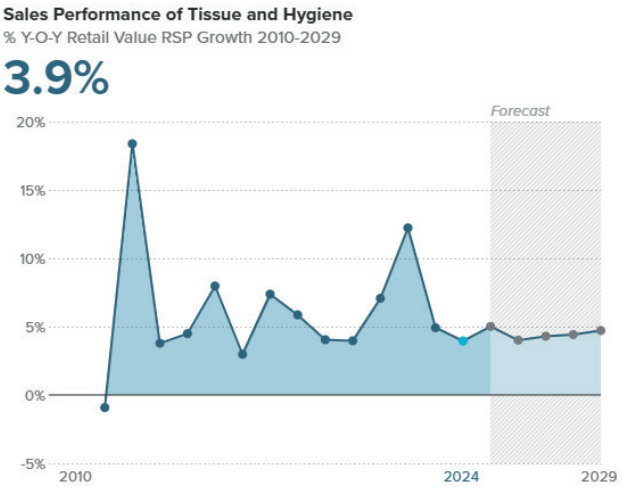
2024 KEY TRENDS

Mexico's demographic transformation continues to impact the dynamics in tissue and hygiene. For instance, both retail and AfH adult incontinence showed solid current value growth in 2024. The population aged 65+ continues to grow in Mexico, and with incontinence being more prevalent amongst this consumer group, demand for adult incontinence products therefore increased.

However, growth was fuelled not only by demographic shifts, but also by changing cultural attitudes, which have reduced the stigma around these products. Consumers have started to prioritise products with greater softness and functionality, which has driven innovation in these categories. Companies have innovated with features such as enhanced absorbency, greater comfort, and environmentally-friendly materials to attract consumers.

It was wipes which saw the strongest current value growth within tissue and hygiene in 2024. Within wipes, products related to personal care, such as facial cleaning wipes and moist toilet wipes, showed double-digit value growth, influenced by the growing concern for skin care in Mexico. In addition, general purpose wipes experienced double-digit growth. This shows that cleaning habits which developed during the pandemic have become normalised.

In addition, retail tissue experienced significant growth in 2024. There was clear growth of paper towels at the expense of napkins. The behaviour of Mexican consumers evolved in response to economic changes, with a trend not necessarily towards the cheapest products, but towards those that offer greater value for money. A clear example of this was the increased consumption of paper towels at the expense of napkins, reflecting a search for greater efficiency and quality in hygiene products. Meanwhile, toilet paper also showed strong dynamism.



Sustainability remains a critical issue in tissue and hygiene, not only due to end-user concerns, but also due to the resource-intensive nature of manufacturing tissue and hygiene products, particularly in terms of water consumption. Companies have increasingly engaged in sustainability campaigns, promoting the reduction of water use in production, and supporting water conservation initiatives in local communities. These initiatives not only improve brand perception, but also align with the growing consumer demand for environmentally-responsible products.

Sustainability remains a critical issue in tissue and hygiene, not only due to end-user concerns, but also due to the resource-intensive nature of manufacturing tissue and hygiene products, particularly in terms of water consumption.

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COMPETITIVE LANDSCAPE

The tissue and hygiene industry in Mexico is highly competitive, with the strong presence of established players and a minor – but increasing – participation of private label.

Given the stronghold of major players, many companies have invested in corporate social responsibility and sustainability initiatives to strengthen their positioning while solidifying brand loyalty. The high level of competition has led companies to focus on aggressive marketing and promotional campaigns.

Strategies such as bundle offers, bonus packs, and discounts during key promotional periods, including major retail events. The competitive landscape also reflects a strong shift towards e-commerce, which has gained traction as a preferred purchasing channel.

The premium private label segment has also grown, with private label players launching high-end lines to compete with traditional products. This increase is dominated by brands from supermarket chains. This growth is largely relevant in toilet paper, in which the premiumisation trend is noticeable through differentiation in quality through attributes such as increased softness or resistance.

Despite these advances, the ability of private label to compete in the premium segment remains limited, as consumers usually associate well-established national and international brands with quality.

RETAIL DEVELOPMENTS

Hypermarkets was the leading distribution channel within retail tissue and hygiene in 2024, accounting for almost a quarter of value sales, and was closely followed by discounters and supermarkets, together accounting for more than 6% of value sales. Many consumers purchase tissue and hygiene products along with their weekly shopping.

Supermarkets and hypermarkets saw above-average growth in 2024, driven by commercialisation strategies that focused on promotions and discounts, with a key role played by events, when companies invested in promotional packs and value-added offers to maintain their shares. However, other non-grocery retailers and vending saw the most dynamic growth, although from a very low base.

Although seeing little share movement in 2024, e-commerce expanded strongly in Mexico in the review period, driven by greater digitalisation and consumers' adoption of online shopping habits. Companies in tissue and hygiene have strengthened their presence on digital platforms and optimised logistics to meet the growing demand in this channel. The shift towards e-commerce has also been supported by broader internet access, improvements in logistics, and the growing trust of consumers in digital transactions. Companies are leveraging this shift by offering exclusive online promotions, subscription-based purchasing models, and personalised marketing to increase customer loyalty.

WHAT NEXT FOR TISSUE AND HYGIENE?

Tissue and hygiene in Mexico is set to continue to see retail current value growth throughout the forecast period, with increases for both retail and AfH tissue and hygiene, with one of the major factors impacting sales being the rising population. It is expected that facial cleansing wipes will see the strongest growth rate, following the trend seen regarding rising consumer demand for skin care products in Mexico.

In fact, overall wipes is anticipated to experience dynamic growth, as new cleaning habits continue to take hold amongst consumers in the country. Meanwhile, sustainability will remain a key differentiator, although the adoption of such products will largely depend on maintaining accessible prices for consumers.

Demographic changes are expected to remain relevant in the tissue and hygiene industry in Mexico. For example, retail and AfH adult incontinence are expected to see dynamic growth rates, due to the ageing of the population and rising number of people in the country aged 65+. Meanwhile, nappies/diapers/pants is set to see only marginal growth, due to the falling birth rate.

Euromonitor International estimates that by 2029, the birth rate in Mexico will have fallen to 13.32 babies per 1,000 people. This signals the need for stakeholders to prepare strategies to diversify their product portfolios.

Looking ahead, retail e-commerce is expected to see growth, consolidating as a strategic distribution channel for the industry. The increasing digitalisation of retail is expected to further transform consumer behaviour, making e-commerce a critical component of distribution strategies.

Additional digital strategies may involve subscription services, and direct-to-consumer sales models will likely gain traction as companies seek to strengthen customer relationships and ensure recurring revenue streams.

25 YEARS OF HITTING AMBITIOUS TARGETS FOR GROWTH

In 2018 Luis Alberto Reséndiz, General Director of Convertipap, said Mexico needed more tissue. Now TM8 is planned and the company's competitive edge is sharper still. TWM Senior Editor Helen Morris spoke with him in Tlaxcala, Mexico State.

"Mexico's tissue consumption per capita still presents substantial room for growth," Convertipap's General Director Luis Alberto Reséndiz explains from his office in Tlaxcala. "This is particularly true when benchmarked against the United States' market, and very much reinforces our confidence in the sector's long-term potential."

TWM first met the Reséndiz family at their Tlaxcala-based facility in 2018, and there was much discussion of how "Mexico needed more tissue" and the many opportunities that were there for the taking.

Established in 2000 by Mr. Nicolás Reséndiz, the father of Luis Alberto and his sister Lezly,

Celebrating 25 years of business: family-run Convertipap is based in the historic central region of Tlaxcala, Mexico

Production boost: Convertipap had responded by strategically expanding investment in machinery and diversifying its product offering

Convertipap's central location benefits not just from the region's impressive history – the nearby Cacaxtla archaeological site displays Mayan frescoes (rapidly painted watercolour on walls or ceilings dating to around 790), as well as the ancient pyramids of Xochitecatl – but also from its proximity to the 9.2 million people in nearby Mexico City.

At the time of 2018's visit, consumer tissue growth figures were up to 6% while private label products were increasing at 6%, and there was simply not enough tissue to supply Mexico's population – which was increasing rapidly and expected to reach 130.7 million within the year.

Convertipap had responded by strategically expanding investment in machinery and product range: two plants located in the Mexican Republic; one in Ixtapaluca, and the other in Tlaxcala; four machines – one producing kraft paper and the other three producing over 55,000tpy of tissue paper, towel or napkins per year – were supported by a PCMC Amica Matrix line dedicated to the production of toilet rolls, widening the range of converted products to include serviettes, hand towels, facial tissue, industrial rolls, toilet paper and kitchen towels.

The company was operating in three different markets: 30% of its production is in the AfH market, 40% in consumer and the remaining in private label, and aimed to consolidate further to adapt to the changes in the industry.

As of 2024, Mexico's population has increased to 130.9m, and for Convertipap, investing in machinery continues to be the backbone reaction to meeting the country's changing customer demands.

Reséndiz says that since the successful launch of its sixth tissue machine – TM7 – at the end of

Convertipap's central location benefits not just from the region's impressive history – but also from its proximity to the 9.2 million people in nearby Mexico City.

Celebrating PM4's major rebuild: Convertipap's General Director Luis Alberto Reséndiz (right), and colleague

2023, a major rebuild of TM4 has also started that will be dedicated to napkins production: "With this investment finalised, we will reach the objective of 125,000tpy that we established for ourselves."

Now in October 2025 and the discussion on the table is for TM8, which he would like to have commissioned by 2027, to reach the goal of 150,000tpy.

Additional converting capacity has also recently been added with a new PCMC-supplied Paragon Line bringing capacity to 160,000tpy while improving the quality of the final product. A collaboration with STAX has also been announced for the automation of all the company's converting lines including the acquisition of 46 packaging machines, 12 FANUK robots, and 11 palletising systems. "We are also looking to further increase our capacity in AfH by adding new machines," he adds.

Convertipap will continue to pursue organic growth through continued investment in new machinery over the course of the next few years: "As we've successfully done in previous years, this strategy reflects our commitment to our customers staying aligned with the rapid pace at which they are expanding."

With Mexico's tissue consumption per capita still presenting substantial room for growth, Reséndiz says the company is seeing a strong shift in consumer preferences toward higher quality and softer products: "This is driving growth in premium offerings, although the highly competitive distribution landscape puts consistent pressure on pricing. Therefore, the challenge lies in delivering enhanced product attributes while maintaining affordability."

This environment, he says, is "especially conducive" to the growth of private label tissue products, which are "poised to gain further traction over the coming years as consumers seek value without compromising on quality."

Within the AfH segment, the company is experiencing a dual trend: "On one hand, the recovery of the tourism sector – reaching 45 million visitors in 2024, which matches pre-Covid levels – is fuelling increased demand. On the other hand, uncertainty caused by tariff policies has led to some Maquiladoras in the north temporarily halting operations, creating uneven momentum across sub-sectors."

Maquiladoras, known as 'twin plants,' are largely duty free and tariff free factories in Mexico and other Latin American countries which have administration facilities in the US, thereby benefiting from cheaper labour in the south and trade in the north.

Generally, Mexico's tissue consumption per capita still has "significant growth potential", particularly when compared to Mexico's neighbouring giant to the north: "We expect gross sales to continue rising in the coming years driven by improving living standards and increasing tourism. However, we remain cautious in the short term due to potential impacts from recent political changes in the US, which may affect the Mexican economy. Overall, our outlook is optimistic."

As for additional key challenges in the coming years, Reséndiz anticipates heightened competition, with new entrants and increased investment from existing players potentially creating downward price pressure in the short term: "Additionally, global economic volatility and potential tariff changes add layers of uncertainty. On the regulatory front, upcoming environmental and labour mandates are expected to raise operational costs across the industry."

Convertipap has recently started exporting its recycled kraft jumbo rolls to the US, and he adds that export is "a strategic focus, helping to mitigate our foreign exchange risk and diversify our market exposure. In the long term, developing export channels will strengthen our resilience against domestic demand or price fluctuations."

Developing environmental structures also continue to be an opportunity for the company: "The plant operates with a highly efficient water treatment system, and we continuously invest in technologies that improve water usage efficiency. In terms of energy consumption, we are exploring alternative solutions such as turbines and solar panels to reduce our environmental footprint. With Mexico's evolving energy regulations and rising renewable production, we are actively evaluating long-term contracts to certify that our energy supply is sourced from renewables," he says.

The path forward lies in "strategic reinvestment" which includes upgrading the company's technology and machinery to "sharpen its competitive edge" to improve quality and lower operating costs: "Expanding our capacity while remaining agile and responsive to market dynamics, will be crucial for success in an increasingly unpredictable environment," he says. "Now in our 25th year, it remains an honour for us to continue building the vision my father began sketching 25 years ago."

A strong shift in consumer preferences: Mexico's consumption per capita is still presenting substantial room for growth, and Convertipap is in discussion for TM8

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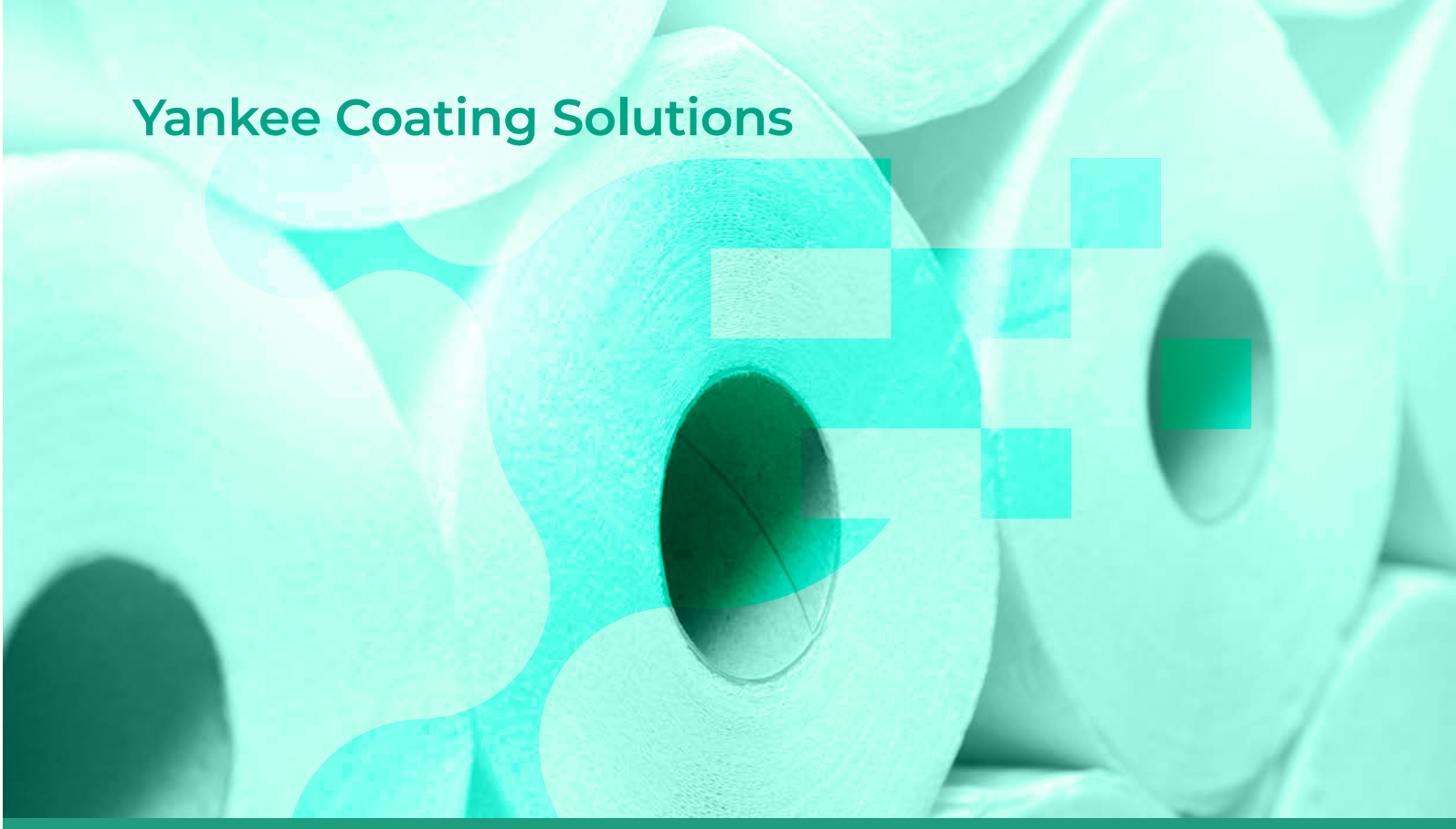

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Gerry Dunphy, Event Director

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PAPEL SAN FRANCISCO (PSF) STARTED UP ITS FIRST TISSUE MACHINE IN 1982 – AND NOW OPERATES SEVEN VALMET-SUPPLIED TISSUE MACHINES, WITH MORE TO FOLLOW

Dario Palma y Meza Espinoza, Chief Operating Officer, Papel San Francisco and Juan José Helú, Sales & Marketing Director, spoke to Tissue World Magazine Senior Editor Helen Morris.

Proudly celebrating its 45th anniversary: PSF's tissue plant in Mexicali, Mexico

"We remain committed to innovation, sustainability, and delivering high-quality solutions for our partners across all market segments," Dario Palma y Meza, Chief Operating Officer at Papel San Francisco (PSF) says, from his office in Mexicali, Mexico. "Proudly celebrating our 45th anniversary this year, we see continued opportunities in the Mexican and American tissue markets, where we will continue to grow with our strong and diverse portfolio."

PSF started up its first tissue machine in 1982 and now operates seven Valmet-supplied tissue machines. "Over the years we have secured a position among the top three Mexican suppliers in both the At-Home and AfH segments," he adds. "Our strategic location in Northern Mexico provides natural access to the US market, where our brands – Golden Gate, Level, Truly Green and Virtue – are already gaining traction."

Capacity boost: the latest investments will bring PSF's total paper production capacity to 270,000 metric tons per year

The company's export efforts have been supported by the launch of TM9 in July of last year, and the upcoming TM10, an Advantage DCT 100TS tissue machine, which is set to begin operations in the first quarter of next year. Both machines are located at the company's Mexicali mill and will bring PSF's total paper production capacity to 270,000 metric tons per year.

Supporting the new papermaking machines are several additions in the company's converting capacity, including a brand-new converting plant in the city of Querétaro, central Mexico, which is due to also startup in the first quarter of 2026.

In terms of tissue trends across Mexico, Juan José Helú, Sales & Marketing Director, says the Mexican market is currently "more competitive" than ever: "Many companies are dealing with overcapacity and are aggressively pursuing sales in an increasingly tight market, which has driven down prices and profitability for both retailers and suppliers," he says.

The AfH segment peaked around two years ago following the Covid-19 pandemic, but he says it has since become "just as challenging" as the At-Home segment and that prices today "are lower than they were two years ago."

In the At-Home segment, private label products are the primary driver of growth, showing more than 20% year-over-year increases – whereas national brands have seen little to no growth. PSF is launching "Truly Green" this Autumn, which it said is an environmentally-friendly brand made with 100% post-consumer fibre. "Our goal is to lead the Mexican market in this growing and essential segment," Helú adds.

Supporting the new papermaking machines are several additions in the company's converting capacity, including a brand-new converting plant in the city of Querétaro, central Mexico.

Capacity expansion: Mexican consumers continue to become more hygiene-conscious; below, PSF is launching "Truly Green" this Autumn, an environmentally-friendly brand made with 100% post-consumer fibre

However, the Mexican market is currently flat in terms of volume, and with ongoing price reductions the company doesn't anticipate any growth – at least through 2026. "The current overcapacity across the industry is affecting all players and placing downward pressure on both margin and volume."

Yet Mexican consumers continue to become more hygiene-conscious and are increasingly willing to purchase paper towels for sanitary purposes: "Additionally, they are opting for higher-quality bath tissue products – but at more competitive prices – particularly within the upper tiers of the market, where there is now a wide variety of options available."

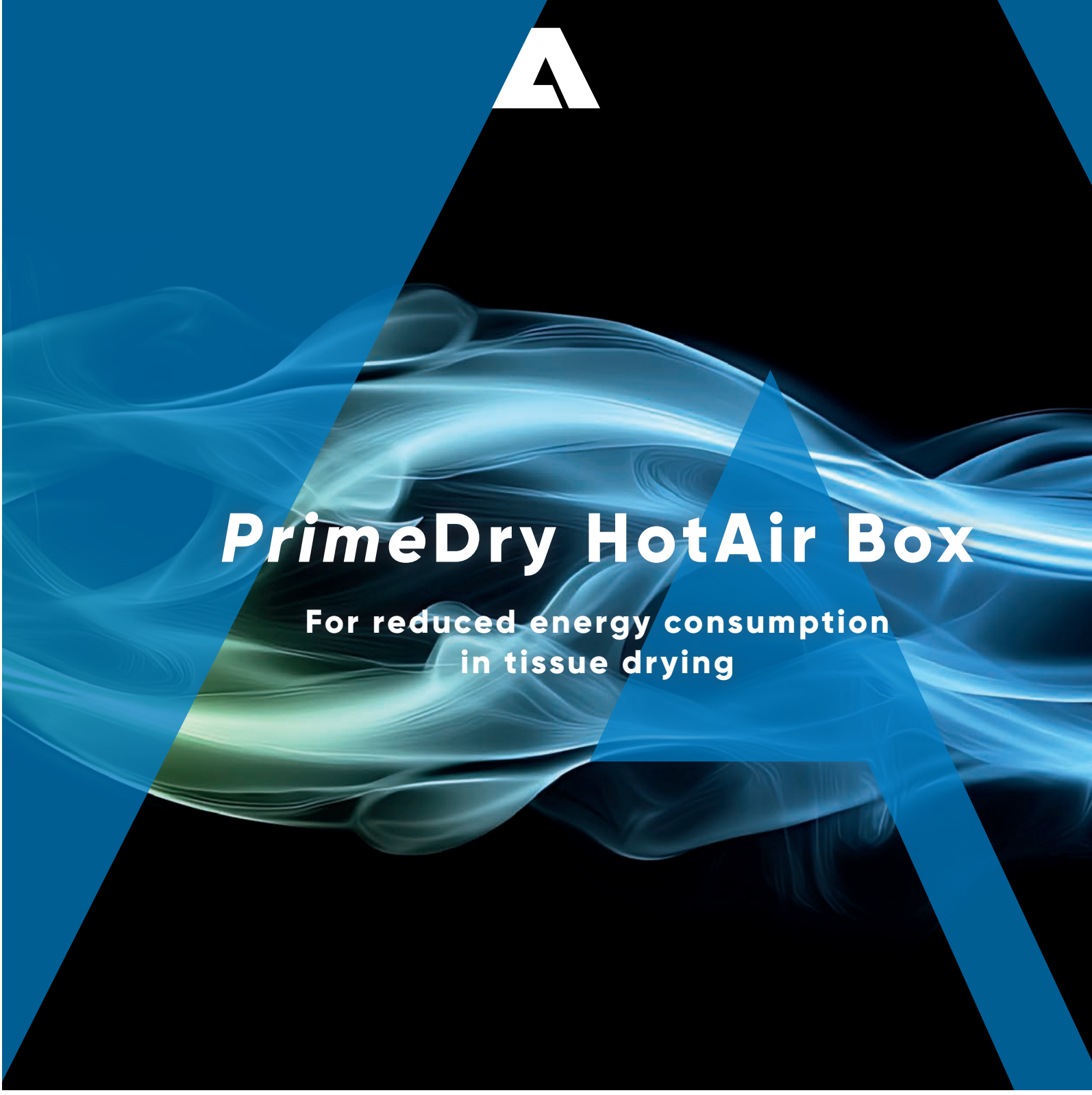
Palma y Meza says that sustainability remains a key opportunity for the business: "Sustainability has always been our focus as we operate one of the largest recycled-based facilities in North America," he says. Specific projects for the coming years include water management facilities so that the company can achieve best industry practices.

"It is a significant opportunity for us to position ourselves as the leading environmentally-friendly tissue producer in Mexico," Helú adds. "We are doing this through our "Truly Green" brand, among other initiatives. Our value proposition – "Save Money while You Save the Planet" – resonates with both retailers and consumers and aligns perfectly with current market trends."

The challenge now is to "continue achieving growth above the national market average while protecting our low-cost strategy", he says. "Maintaining strong margins is essential to support ongoing investments in capacity, technology and sustainability."

Export will also continue to be key: "PSF has recently focused on exporting jumbo rolls on a consistent basis, with emphasis on our competitive advantage in recycled grades and our location on the northwest of Mexico."

The business is currently supplying several tissue companies in the US and is expecting good growth in this segment.



*Prime*Dry HotAir Box

For reduced energy consumption in tissue drying

The need to achieve energy consumption efficiency for sustainable tissue production, combined with taxes on emissions and escalating gas costs, calls for a breakthrough in tissue machine heat recovery.
ANDRITZ focuses on exhaust heat with its *Prime*Dry HotAir Box technology, which can boost energy efficiency across a range of tissue-making scenarios.

In tissue production, the viscosity of water has historically restricted water removal by the suction roll. This means that either drying capacity or machine speed place an output limit on most tissue machines.
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IT'S THE TORTOISE NOT THE HARE … OUR SLOW ROUTE TO QUALITY AND EXCLUSIVITY IN TISSUE PRINTING

You have to treat it just right, otherwise it snaps, says Camilla Hadcock, co-founder in 2000 with husband Charles of Designbit, trading as Roach Bridge Tissues in Preston, north west England. Now based at the historic Roach Bridge Mill in nearby Samlesbury since 2008, she explains their organic route to the luxury market.

Lower Salle, Roach Bridge Mill: the site is based on the River Darwen, Lancashire, north west England

As printers and converters of tissue paper for wrapping and packaging purposes, Roach Bridge Tissues produces a range of luxury bespoke printed tissue paper, coloured tissue paper and white tissue paper - from a dramatically beautiful backdrop.

There has been a paper mill at Roach Bridge, on the River Darwen, since 1875. My grandfather owned and ran the mill for a period between 1950s and until his death in 1979. The paper mill was owned for a while by other parties, and in late 1999 it went into liquidation. Together with Charles we created a new company - Roach Bridge Tissues - to buy some of the machinery from the old paper mill to set up our business.

Now, we are celebrating 25 years of production. Our tissue type is wrapping tissue paper, so it is hard tissue paper. We import jumbo rolls of tissue paper and have four flexographic printing machines, three sheeting machines, guillotines and re-reelers on site. We print with water-based ink, using power generated on site with a hydroelectric turbine or solar panels. We can print up to four spot colours or full colour process. We are proud members of the Made in Britain organisation which brings together over 2200 manufacturing members who use a licensed mark to identify British manufactured products.

We hold stock in our warehouse of a variety of sizes, weights and colours of tissue paper, both in reel form for printing and converting, and ready packed into reams. Our printed paper is individually ream wrapped, packed with an average 500 sheets

The Roach Bridge Tissues team: Camilla Hadcock, second right

per ream. Plain white and coloured paper is packed with an average 480 sheets per ream in either single or double reams.

We are a bespoke printing company, so we are less about volume, more about quality and exclusivity. We import in the region of 260 tonnes per year, 85% of which we bespoke print, sheet and pack to send out within the UK for retail, e commerce and point-of-sales. A small proportion of the paper is sold without print and we sell some of our own printed designs too.

Our machines are quite old, and that suits our process: mechanical machines with fine gearing are ideally suited to printing tissue paper which needs just the right amount of tension to pull through the machines. You have to treat it just right, otherwise it snaps, it wraps around the print cylinder, it curls and it creases. It's a definite tortoise not hare process.

We recognise that our operations influence the local, regional and global environment, and we continually manage the environmental impacts of our business. All Roach Bridge Tissues paper products are fully recyclable and biodegradable. Any surplus and wastepaper is fully recyclable and is regularly recycled and all wooden pallets are reused, recycled or restored by our supplier. Water containing ink waste is cleaned to remove the ink particles, in a bespoke filtering machine. Our packaging is fully recyclable and we encourage our customers to make the most of this feature.

Our MG tissue paper stock for printing is made from 100% recycled material and our MF tissue paper is made from pulp sourced from FSC-certified managed sources.

We have followed an organic growth path, a bit like the printing process slow and steady. As a small company supplying bespoke products we sell mainly to the luxury market. As brand awareness increases, more businesses are seeing the benefit of bespoke tissue paper, it is a relatively inexpensive way of adding a bit of luxury to packing, whether that is at point-of-sale or e commerce. Tissue paper has the advantage of being recyclable and lightweight, and as the paper we sell is FSC-certified, it's also eco-friendly and sustainable.

Luxury products: one of the company's inhouse tissue paper designs printed onto MF paper

THE BUSINESS LANDSCAPE IS EVOLVING RAPIDLY: HOW LEADING EXECUTIVES KEEP AHEAD OF THE CHALLENGES

Tariffs, exchange rates, mergers, more stringent ESG, real-time energy metering, AI, sourcing skilled operators, changing consumer demands, localisation, logistical disruptions … new dynamics are creating a global market of opportunity, and uncertainty.

Cristian Giuliani,
Vice President Global Hygiene Engineering, BW Converting

TWM/1: WHAT EVENTS IN 2025 HAVE HAD THE BIGGEST IMPACT ON YOUR BUSINESS, AND HOW ARE YOU DEALING WITH THEM?

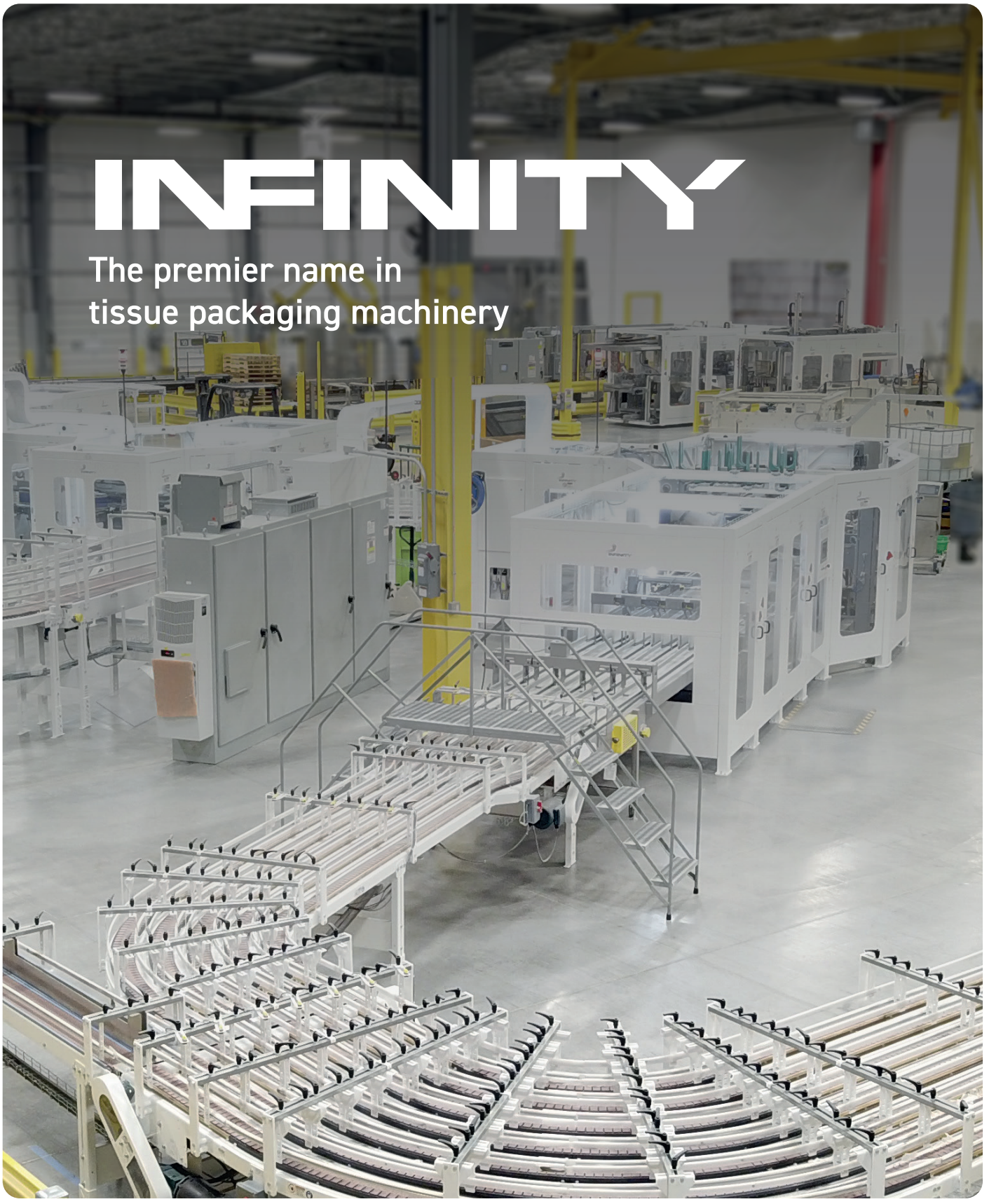
Cristian Giuliani, Vice President Global Hygiene Engineering, BW Converting: "Global and local forces are impacting the tissue industry. From major international mergers to shifting tariffs on raw materials, machinery, and finished goods, the business landscape is evolving rapidly. Region-specific developments such as the European Union Deforestation Regulation (EUDR) environmental regulation and soaring energy costs in Europe, rising recovered paper (RCP) prices in South America, the surge of private label in North America, and the fast-paced expansion of tissue manufacturing in Southeast Asia are having global ripple effects. Together, these dynamics are creating a unique blend of uncertainty and unprecedented opportunity for innovation and sustainable growth."

Sergio Tonarelli, chief sales officer, Futura: "While at the time of writing we don't know if industrial machinery will be included in the US tariffs, clearly these have the potential to impact investment decisions. However, the weakening of the US Dollar in the past few months has had just as much impact as tariffs are likely to on the prices US businesses pay for European technology.

"We have a very healthy order volume from the US to fulfil this year and next so these factors, which anyway are beyond our control, have not impacted us so far.

"The business activities likely to have an impact on the sector as a whole are Sofidel's acquisition of Clearwater and Kimberly-Clark's (K-C) proposed divestment of international assets. The former might cause a pause in investment while the integration of the businesses is established. The latter could cause a surge in investment if K-C is able to free-up resources to enhance its US tissue operations. Whatever the outcome, these transactions have the potential to make some waves.

"Our response is to support the US market ever more strongly. With this in mind, in addition to our Atlanta operation we have established a new base in the Green Bay area to serve customers for Futura and our Plusline business. At Green Bay we can



Throughout our over 20-year history we have been a company committed to continuous refinement. We pride ourselves in offering tissue packaging machinery built with steel frames and robust internal components, designed to give you the most from your investment. Our extensive list of customers speaks to the trust we have earned and continue to maintain as Infinity machinery can be found in over 25 countries across six different continents. Simply put, when you have machinery from Infinity, you have peace of mind.

INFINITY
Machine & Engineering Corp.

demonstrate technology as well as offer technical support and spare parts."

Nicola Romagnani, Marketing and Product Manager, Gambini: "2025's market has been shaped by energy cost volatility, supply chain disruptions, new tariffs and geopolitical turmoil.

"Our response is working: 2025 is on track to be a record-breaking year in our company's history. To address these pressures, we pursued a localisation strategy and opened a new plant in Brazil. It will start producing complete lines for the domestic market by year-end. We are also investing heavily in technology. AirMill – our Wet Embosser – delivers significant energy and fibre savings and supports full compliance with the latest sustainability requirements. This is how we turn constraints into opportunities."

Hazar Ulusoy, AP Management, ICM Makina: "The year 2025 has brought significant market transformations, particularly due to global raw material volatility, logistics disruptions, and growing pressure for sustainable and energy-efficient production.

"For ICM Makina, these shifts have accelerated our innovation drive. We have responded by increasing localisation in key components, strengthening our R&D base, and investing in automation technologies across our rewinders, V-interfolded towel and napkin converting lines. This approach not only stabilises production costs but also ensures our customers benefit from improved reliability, reduced downtime, and seamless adaptability to the market needs."

Giovanni Baia, Sales Area Manager, Maflex: "In the last years, and even in 2025, the market has been driven by a pull-market production logic. Basically, customer performance is based on two parameters: flexibility and time to market.

"This confirms the trend – even in traditionally stable markets – of a clear shift towards greater product variability, without giving up the timing dictated by the global market.

"This ongoing complexity has shaped converting line configurations from the ground up. Customers need the ability to switch between different product types and formats more frequently, and with minimal downtime. In this context, production flexibility is not a trend – it's a must.

"Since 1997, Maflex, has been engineering its machines with flexibility and adaptability in mind. Each solution is built around the customer's specific needs and designed to evolve over time. One example is a very fast and simple product change, with the possibility of upgrades after installation. I am proud to be part of a company that has been a pioneer in important tissue converting technology solutions, proving once again to be the right answer to the current market needs."

Sergio Tonarelli,
Chief Sales Officer, Futura

Lorenzo Lupi, Vice President Sales and Marketing, United Converting Tissue: "Choosing a single "event of the year" still feels premature – 2025 surely has more twists in store but there are three forces that have shaped our playbook so far and will keep steering us through December.

"First, accelerating industry consolidation. Regional tie-ups – among both customers and competitors – seem to surface almost every month. Staying ahead means doubling down on our core mission: helping customers succeed. Guided by that goal (and by a bias toward innovation and simplification), we opened a quick-response parts hub in Milwaukee, Wisconsin, and expanded service capacity across Southeast Asia.

"Second, sudden tariff volleys. New US import duties and China's anti-dumping fees can send input costs soaring overnight. To cushion those shocks, we invested heavily in advanced parts manufacturing, giving us the flexibility to localise critical components and respond before price spikes ripple down the supply chain.

"Third, Europe's tightening sustainability rulebook. The Ecodesign for Sustainable Products Regulation and the broadened Carbon Border Adjustment Mechanism already require audited energy-and-carbon data for any machine that might supply an EU-bound mill. Every new line we deliver now ships with our Digital Intelligent Dashboard (DiD), which within the many functionalities it includes to increase Overall Equipment Effectiveness (OEE) combines real-time energy metering with one-click CBAM/ESPR reporting – so customers aren't scrambling when auditors arrive.

"Because we've spent the past few years training both our people and our technology to pivot

quickly, these pressures haven't forced a strategic rewrite – only a faster cadence. Agility and flexibility are the very foundation on which United Converting Tissue is built, and they remain the surest answer to whatever the rest of 2025 throws at us."

Simone Barsanti, Strategy and M&A Director, Valmet, Tissue Converting business unit: "In 2025, Valmet Tissue Converting operated in a rapidly evolving landscape shaped by three major macro factors: changing consumer expectations, increasingly stringent environmental regulations, and growing challenges in sourcing skilled operators.

"A pivotal strategic shift further influenced our trajectory: our recent integration into the Valmet Group. This transition has enabled us to work in a fully integrated manner across the entire tissue value chain, offering customers a broader perspective and coordinated solutions from paper production to the finished product.

"In this context, we are responding to a growing market demand: having a single supplier for the entire production line. This has brought the challenge of palletising to the forefront. In 2025, we are investing in integrated solutions that include this final stage, which we will unveil in October at our Bologna facility, with the goal of ensuring efficiency and continuity across the entire converting line.

"We have also observed a significant shift in consumer demand. According to recent market studies, end-users are increasingly focused on sustainability: 74% are willing to pay more for responsibly produced tissue products, and over 50% have already switched brands for environmental reasons. Retailers and brand owners are demanding greater transparency, flexibility, and traceability, pushing manufacturers to rethink processes, materials, and formats to meet increasingly stringent Environmental, Social, and Governance (ESG) requirements.

"In response, we have strengthened our commitment to technologies that combine efficiency, operational simplicity, and sustainability, with a growing focus on automation, modularity, and digitalisation. Our goal is to support customers in building smarter, more flexible plants that are ready to meet the challenges of a constantly evolving market.

"In summary, 2025 has been a year of consolidation and acceleration for Valmet Tissue Converting. We have turned challenges into opportunities, reinforcing our commitment to a more efficient, automated, and sustainable converting process – integrated upstream and downstream to deliver end-to-end solutions tailored to our customers' specific needs."

Nicola Romagnani,
Marketing & Product Manager, Gambini

TWM/2: HOW ARE YOU RESPONDING TO CUSTOMER REQUESTS FOR INCREASED ENERGY EFFICIENCIES?

Giuliani: "Today's state-of-the-art converting lines must deliver efficiency across every dimension. From enhanced operator safety to optimised fibre usage, bulk preservation, and minimised waste, modern equipment is expected to do more with less. And above all, it must be more productive, supporting faster changeovers, higher output, and smarter automation to meet evolving market demands. A prime example is our latest innovation in web handling and tension control: Plystream+, combined with CS centre-driven unwinds. This breakthrough delivers up to 45% energy savings while retaining the most web bulk possible."

Tonarelli: "We acknowledge that our industry is very energy intensive, although this is particularly the case in tissue making as opposed to converting.

"Our response is to use the optimum technology by which I mean the best drives, direct-drive motors and regenerative units to make sure that are lines are efficient and consume less energy.

"We also make extensive use of composite materials to ensure rolls are lighter and therefore require less energy to drive than standard materials.

"We work closely with customers to ensure that technologies such as regenerative braking are used correctly, to avoid throwing away the advantages such innovations can bring.

"As far as trends such as heated embossing rolls are concerned: they are widely available, but we recommend our customers to consider the safety and environmental aspect before adopting this technology."

Romagnani: "Our approach to energy efficiency starts well before the converting line: it begins at the paper-mill. Our core technology is Wet Embossing: by introducing a controlled amount of

water during the embossing process, producers can achieve target performance at a lower basis weight (less fibre), enhancing the final roll's bulk, absorbency and – above all – strength, along with a TAD-like texture. This shifts savings upstream (reducing fibre use and drying energy), before jumbo rolls even reach the converting plant.

"Downstream, we pair this advantage with smart automation on the line, optimising processes and minimising waste. This dual strategy – cutting costs at the source and maximizing in-plant efficiency – provides a strong defence against volatile energy and raw-material prices."

Ulusoy: "Energy efficiency is now a decisive factor in every machinery investment. ICM Makina addresses this through servo-driven rewinders, optimised vacuum systems, and new drive technology designed to minimise energy losses. Our latest converting platforms integrate intelligent motion control and process optimisation software, allowing up to 15% energy savings compared to previous models. Beyond reducing power consumption, we also focus on heat recovery and low-maintenance components that extend machine life, aligning sustainability with operational profitability."

Baia: "Maflex is very sensitive to environmental sustainability and has been focused for over 10 years on continuous and measurable improvements. Energy efficiency is achieved through pragmatic, step-by-step optimisation.

"The Maflex green philosophy is based on a dual strategy:

- Continuous improvement of machines
- Focus on the final product

"On one side, there is the improvement of existing technology like Maflex Energy Regenerative System (MERS). It recovers energy during deceleration or machine stops and reintroduces it into the line or facility grid. It's a compact, scalable solution that can be integrated even in limited spaces and provides immediate benefits.

"On the other hand, there is the continuous research and testing of new efficient components such as motors, optimised parts, and intelligent software logic that adapts operations based on production dynamics.

"However, efficiency also comes from the product itself. A more sustainable green product must be part of the chain. The global market pushes for very bulky and decorated products, which often require technology which uses high energy consumption. Is using all this extra energy really a green philosophy?

"Maflex has always chosen to focus on the essential. Thanks to its values, philosophy, and competence, it has been successfully involved in several projects where the customer's target was to make a green product. This kind of production was monitored and demonstrated a significant cost reduction for the customer in terms of energy, waste, and transportation.

"Maflex: technical competence and vision."

Hazar Ulusoy,
AP Management, ICM Makina

Lupi: "Ever since we shipped our first line in 2004, every machine we build has been 100% servo-driven with full energy-regeneration – there's simply no other way we know how to engineer equipment. We've kept pace with each new wave of motion technology (lighter composite rolls, smarter regenerative drives, real-time torque sharing), so the kilowatt-per-ton curve has already been squeezed hard on the power side.

"That's why the real headroom for further energy gains now lies in waste reduction. A tonne of scrap tissue carries the embedded energy of pulping, drying and transport long before it even reaches the converter, so preventing that loss dwarfs the savings from another fractional-efficiency motor. By streamlining core process stations – wear-less automatic roll transfer that eliminates adjustments, high efficiency vacuum folding, reduced trim on log saws – we've cut typical trim and defect loss on a 15,000tpy line from around 6% to roughly 3%. Halving waste like that removes about 450t of fibre and roughly 1.5GWh of embodied energy a year, while also extending component life and service intervals.

"In short: the servo-regenerative foundation we laid in 2004 still sets the baseline, but today our energy-efficiency story is all about making every sheet once, making it right, and never paying twice for the power already locked into the fibre."

Barsanti: "Energy efficiency has become a central concern for our customers; not only to reduce operational costs, but also to meet increasingly stringent sustainability goals and regulatory

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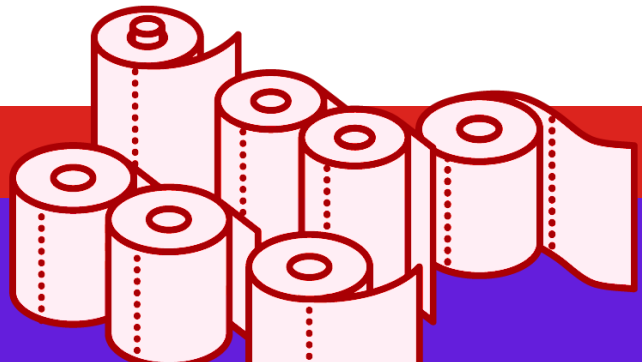

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Giovanni Baia,
Sales Area Manager, Maflex

requirements. At Valmet Tissue Converting, we are addressing this challenge on multiple levels by combining technological innovation, digitalisation, and intelligent design.

"We have developed solutions that directly target the most energy-intensive areas of the production process. Among these is the Perini Warm-Up Contactless system for embossing roll heating, which uses electromagnetic induction to eliminate the need for oil or water, reducing energy consumption by up to 60%. The same principle will soon be applied to our packaging solutions through the new Casmatic I-Seal system: a patented technology that enables more efficient sealing with significantly lower energy usage compared to traditional systems.

"Line design also plays a key role in improving energy performance. The Perini MyGo line, for example, has been engineered to reduce overall energy impact through plug-and-play architecture, electric modularity that simplifies maintenance, and an open-frame design that enhances visibility and reduces the need for internal lighting. These features enable faster start-up, streamlined operations, and lower indirect energy consumption.

"Finally, our Advanced Controls suite, including the Valmet SAM (Self Adjusting Machines) systems, contributes to energy efficiency across the board. By monitoring critical variables in real time – such as cutting, perforation, vacuum, and packaging quality – SAM systems optimise process parameters, reduce waste, and minimise unplanned downtime. The result is a more stable and rational use of energy, with a positive impact on the overall performance of the line."

TWM/3: IDENTIFY SOME AREAS OF TECHNOLOGY WHERE YOUR CONVERTING LINES REALLY STAND OUT.

Giuliani: "Our Paragon winding technology sets new standards with superior product quality, unmatched simplicity, and ultimate productivity. Operator experience is elevated through carefully engineered ergonomics, intuitive operation via the SmartTouch HMI, and real-time support from the Go2Roll Digital Assistant, now available on both Forte and Paragon lines.

"We continue to lead with signature technologies like Invisible-O, our consumer coreless solution that redefines sustainability and convenience. The Ventus facial and towel interfolder, featuring our exclusive No-Wear Technology, enhances process reliability while significantly reducing maintenance and downtime. Meanwhile, the Vertis wet wipes interfolder is purpose-built for high-speed processing of flushable, pulp-based substrates, meeting the growing demand for sustainable wipes with precision and speed."

Tonarelli: "In a word, automation. At Futura we have certainly had our headline-grabbing innovations over the years, but our focus is always very practical – to enable increased output and flexibility in such as a way as to increase OEE and maximise the return on investment (ROI). Automation is the key to this.

"Even today's rolls of, typically, 3.2m diameter need to be replaced every 30 minutes, so for two-ply tissue that means four roll changes per hour on a single converting line. By automating this process to the maximum, we save time and leave personnel free for other duties while also increasing safety.

"Our next-level automation, the Autopilot, which we are rolling out works like the DCS on a tissue machine. It enables an unprecedented control of process parameters to the extent that we can also predict maintenance needs rather than waiting for something to fail.

"But we don't insist that there is only one way up the mountain by imposing specific solutions on customers. Our flexibility to provide solutions tailored the specific customer's needs without putting the investment cost out of reach is an essential ingredient for us. We, in turn, learn so much from individual customer's challenges that we emerge from each project just a bit smarter than before. If we don't learn and apply the learning, then we're just stuck with today's numbers in terms of operational efficiency and safety."

Romagnani: "Our converting lines are engineered around two core principles: elevating finished product quality and delivering real process flexibility.

"Our latest AirMill-made C-TAD Punta-calda concept roll exemplifies both: it outperforms

traditional Point-to-Point designs in thickness and speed (up to 600m/min vs. 400m/min), while reducing operating costs and maximising efficiency, safety and ease of use.

"Alongside AirMill, our patented TouchMax embossing platform is another integration capability we can offer to customers."

Ulusoy: "ICM Makina's converting lines stand out for their precision engineering, high-speed capability, and flexible configurations. Our napkin and V-interfolded towel lines feature modular units, quick format changeovers, and advanced embossing systems, enabling converters to respond rapidly to evolving market needs. In rewinders, we incorporate automated core feeding and tension control technologies for perfect roll consistency. All systems will be Industry 4.0-ready in 2026, featuring predictive maintenance and remote diagnostics for maximised uptime and productivity."

Baia: "First of all, the build philosophy: Maflex converting lines are designed around a modular architecture that provides clear advantages. During configuration, it allows full customisation, with the full availability to design a tailored line that fits the customer's needs. Over time, it enables easy upgrades and expansions with minimal disruption.

"Technically speaking, the most important differentiation factor is the Heracle Embossing Laminator, which can be provided with a fully automatic top rolls changeover system. Only three real minutes are needed, without any human intervention and, above all, with no paper break. This means a truly fast and safe changeover, totally managed by HMI. Maflex has been ahead once more, introducing a fast technology with no equal in the market. I would also mention the electronic universal clamp for our log saws. No more clamp changes for different products – only one unique solution, easier and faster.

"Maflex is customer-oriented and designs solutions to help customers in their daily work. This is also replicated in machine maintenance. The mechanical structure is clean and accessible, supporting rapid interventions and maximising uptime.

"Maflex has also established a very strong partnership with Rockwell Automation and this means a full supply with benefits in terms of quality, time to delivery, and warranty."

Lupi: "Simplifying Tissue Converting is more than a slogan for us – it is the brand promise woven into every upgrade we release. The newest Unico 365 industrial log-saw shows how that promise becomes measurable value on the production floor.

"Engineered for ease of operation and minimal maintenance, the updated Unico 365 now sustains 140 logs per minute while keeping cut-face deviation well below premium-grade limits. A refined blade-orbit algorithm, teamed with adaptive clamp synchronisation, allows exceptionally narrow head – and tail-trim, and an improved lubrication and load-balancing system cuts blade heating by ≈ 35 %, extending edge life and holding density uniformity.

"For converters, the impact is clear: slimmer trim widths and virtually no second-grade rolls drive a sharp drop in total line waste, trimming fibre usage, reducing embedded energy and strengthening operating margins. In short, the Unico 365 embodies our commitment to Simplifying Tissue Converting – less complexity, less waste, and more value in every tonne."

Barsanti: "Our converting lines stand out for their ability to integrate technological innovation, operational simplicity, and sustainability, delivering high-performance solutions in compact spaces with exceptional flexibility. This approach allows us to effectively respond to evolving market demands and increasing regulatory pressures.

"In response to stricter environmental regulations, we have developed solutions that support the transition toward more sustainable converting. Among these is Perini ECOre, a retrofittable solution designed to produce coreless rolls. Based on the well-established Perini mandrel system already used in AFH lines, ECOre has been adapted for consumer lines and enables the production of both coreless and traditional rolls on the same machine, with minimal modifications to existing equipment. In the packaging segment, the Valmet Bio Pack Plus kit allows for the complete replacement of polyethylene film with kraft paper. This flexibility enables producers to quickly adapt to market shifts and retail demands while reducing environmental impact.

Lorenzo Lupi,
Vice President Sales and Marketing, United Converting Tissue

"Operational simplicity is another key differentiator, exemplified by the Perini MyGo line, which is designed to reduce time-to-market and simplify installation. It integrates proven technologies such as the Sincro winding system and the Aquabond glue-free lamination system.

"At the end-of-line stage, solutions like Casmatic F12 and Casmatic B23 offer modularity, automatic format change, and compatibility with sustainable materials; meeting the market's growing need for flexibility and eco-conscious packaging.

"Finally, one of our most distinctive technological areas is advanced automation, which reduces reliance on manual operations and enhances operational safety. Technologies such as Perini Auto Web Starter, Perini Catalyst, Perini 179AX, MTC ITF Change, and Casmatic Trolley One Touch automate critical tasks including web threading, embossing roll change, slitter blade replacement, cassette change, and pack format change. The result is a smart, efficient, and adaptable production ecosystem – ready to meet the challenges of modern converting."

TWM/4: WHAT GLOBAL TRENDS ARE CHANGING YOUR R&D EFFORTS?

Giuliani: "Sustainability is driving new expectations, including the use of eco-friendly materials for secondary and transportation packaging. At the same time, manufacturers are seeking greater automation, simplified processes, and intuitive systems that reduce training time and minimise the number of operators required to run a line. The use of recycled paper with ultra-low grammages and the rise of new structured substrates further underscores the need for converting equipment with exceptional web handling and robust process control, ensuring consistent quality and operational efficiency even with challenging materials. These trends are driving research toward next generation converting solutions. Soon, new technologies will enable greater web bulk while maintaining tensile strength and softness, all with a fraction of the energy currently required."

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

Tonarelli: "Over the last decade we've seen an increasing challenge in the US market and beyond to attract and retain talent.

"This is why automation is such a focus for our R&D efforts. Not only does automation increase efficiency and safety, it also creates more attractive, skilled roles which are more relevant to today's talent pool. And when automation spreads to the entire operation, including warehousing, it is an approach that brings our customers closer to their customers, by putting them in a position to better serve their needs. In this sense we are closely aligned with technology leaders throughout the value chain."

Romagnani: "Three global shifts are shaping our industry: sustainability, AI, and demand for customisation. Sustainability drives our push to make more efficient use of all resources. We are evaluating where AI can deliver practical optimisation for us and our clients, not as a buzzword, but with measurable outcomes. Markets are global, but people's needs remain local. Our strategy addresses this on two fronts: (1) developing tailored technology for specific markets (C-TAD Punta-calda was originally developed for South America); and (2) establishing a local presence (our new production facility in Joinville, Brazil), to work closely with customers and solve challenges directly on the ground."

Ulusoy: "ICM Makina's R&D strategy is driven by four global trends: digitalisation, sustainability, automation, and global capacity growth. We are focusing on smart control systems that real-time performance optimisation. Our engineers are also developing converting lines and turnkey systems that align with circular economy principles. As labour shortages and skill gaps persist in many regions, our R&D emphasizes user friendly designs and intuitive HMI interfaces to ensure ease of operation."

Baia: "Maflex firmly believes that development comes from continuous innovation.

"The R&D division is the engine of the company. Every day, mechanics, electronics, and IT specialists, working in great synergy, discuss new projects and plan priorities. Every day we hear and talk about AI. R&D is involved and is developing new algorithms and software to help customers in production and with diagnostic support.

"We are at the customer's side in real time. Moreover, customers are increasingly sensitive

to energy efficiency and waste reduction. Maflex completed its AfH machine portfolio by introducing a new industrial coreless continuous machine. No more core in production means less energy, less waste, and less raw material.

"And new projects are coming. Very soon, a new revolutionary log saw will be ready – faster, with no compromises in terms of diameter and density. Maflex always looks to the future!"

Lupi: "Our R&D agenda has always followed the issues that keep our customers awake at night. Today one challenge stands out above all others: a widening shortage of labour in both production halls and logistics chains. When a plant struggles to keep a full crew on shift – or a haulage firm can't find a driver for every lorry – the ripple reaches every corner of the tissue value chain. That reality is now driving our research in two very focused directions:

1/ Hands-light machinery. We are stripping complexity out of day-to-day operation. New one-screen HMIs guide even novice operators through start-up and recipe change in minutes, while our latest Unicore automatic-core introduction system removes manual interventions altogether. Fewer touch points mean fewer specialised skills and less downtime caused by staff turnover.

2/ High-density, low-touch products. End users facing janitorial or transport shortages are asking converters for rolls that last longer between change-overs. By re-engineering winding profiles and finishing parameters, we're delivering higher-density packs without compromising roll quality. Converters gain throughput with the same head-count, and their customers spend less time restocking dispensers—protecting margins on both sides of the transaction.

"Labour scarcity is not yet a universal mega-trend, but where it bites hardest it is already the dominant factor shaping our R&D roadmap. By making lines easier to run, products easier to handle and automation easier to adopt, we convert a workforce constraint into a competitive advantage – fully aligned with our brand promise of Simplifying Tissue Converting."

Barsanti: "The tissue industry is undergoing continuous transformation, with trends that vary across regions but share several global drivers. Among the most impactful are process integration, digitalisation, and operational efficiency; all of which are reshaping our R&D strategies.

"The acquisition by Valmet has opened new horizons, enabling us to study and implement technical solutions that span the entire production process, from pulp treatment to the finished product. Our clear objective is to support customers in optimizing their entire production plant by reducing inefficiencies, material waste, and space requirements, while simultaneously enhancing productivity and product quality.

"Leveraging the technical expertise of the Valmet Group, we are introducing advanced solutions such as the Digital Reel, which enables real-time traceability of reel data during production. This information allows converting lines to automatically configure themselves according to the specifications of the requested product, ensuring greater precision, flexibility and maximising OEE.

"In parallel, the integration of artificial intelligence algorithms developed by Factory Pal enables the creation of automatic centerlines, improving converting efficiency and providing real-time feedback to the tissue making process. This approach fosters continuous improvement in paper production, tailored to the specific requirements of each product type.

"Finally, centralised data management across the entire production process is applied within our Tissue Performance Center, where a team of experts monitors line performance in real time and delivers increasingly precise and personalised technical services. This proactive support model marks a significant evolution in customer service, driven by concrete data and predictive analytics."

TWM/5: WHAT GEOGRAPHICAL AREAS ARE SEEING INCREASES IN DEMAND FOR TISSUE PRODUCTS, AND WHAT OPPORTUNITIES/ CHALLENGES DOES THIS HOLD FOR YOU?

Giuliani: "Tissue production is accelerating in Latin America, Asia Pacific, and Eastern Europe. However, meeting the needs of these regions presents a unique challenge.

"Each market operates under distinct standards, cultural preferences, and economic conditions, requiring flexible product designs and adaptable technologies that can deliver consistent quality while respecting local expectations."

Tonarelli: "While our solutions have attracted most attention in mature markets, we are aware that the skills shortage is becoming widespread like oil on water. So for us it is more a question of where we can make a difference rather than purely where demand for tissue is increasing.

"Tissue manufacturers, some more than others, are looking to the future and planning for how they can meet demand in 10 to 20 years' time in a changing human-resources scenario.

"With this in mind we have not only boosted our resources in North America but also in other markets: a sales and service point in Bangkok to open shortly is just one example.

"The USA continues to be our key reference market. But with installations as far apart as Hungary and Argentina, the common denominator

for us, rather than raw tissue demand, is the vision to take automation to the next level and the appreciation of a flexible approach to the widely varied needs of tissue makers."

Romagnani: "Today our focus is on South America, as evidenced by our decision to establish a new branch in Brazil, a market we had not previously entered. At the same time, the growth centre of gravity in the global tissue market (or, as we call it, the well-being market) is shifting toward Asia. Across the region – led by Southeast Asia, particularly Vietnam – expansion is driven by rising incomes, urbanisation and a greater focus on hygiene. At Gambini, we're realistic about what success in Asia requires: navigating intense local competition; and building true partnerships, which, in turn, demand a strong presence and a deep understanding of local realities."

Ulusoy: "We are witnessing steady growth across South America, Central Asia, the Middle East, and Africa, where tissue consumption continues to expand due to rising hygiene awareness and population growth. These regions offer immense opportunities but also require robust, easy-to-operate technologies.

"ICM Makina addresses this by offering reliable, modular converting lines – particularly for rewinders, V-interfolded towels, and napkin production – that combine durability with minimal maintenance. Through local partnerships, training, and after-sales support, we help converters in emerging markets achieve world-class production standards."

Baia: "Considering the global trend, Maflex expects a growth in countries like Spain, Portugal, Latin America, and Oceania, but also in countries like Arabia, Africa, and Asia where new converting capacity is emerging – especially in regions building or upgrading local production infrastructure. These opportunities also bring challenges and to face challenges organisation was needed.

"This means employing additional staff, dedicated technical centres, fast spare parts delivery, and remote assistance systems – ensuring consistent performance anytime and everywhere."

Lupi: "United States – growth powered by a "build-it-at-home" agenda; Retail volumes have held their post-pandemic gains, and the AfH channel is expanding at ≈9% per year as offices, travel, and food service rebound. Federal and state incentives are pushing converters to add domestic capacity, creating a market with zero tolerance for late deliveries or performance dips. To match that expectation, we have enlarged our spare-parts inventory and field-service footprint in Milwaukee and the Southeast, ensuring a 48-hour response window anywhere in the country.

"Southeast Asia – capacity boom, rising margin pressure; Vietnam's tissue capacity has grown five-fold since 2007 and is still compounding at roughly 11 % annually, positioning the country as an export hub for the region. As US buyers replace imports with domestic output, Southeast-Asian converters must lift productivity to stay competitive. Demand for fully automated, high-efficiency converting lines is accelerating, so we are expanding service and spares infrastructure to support both existing and future customers across ASEAN and East Asia.

"A resurgent US market offers volume – but only if we deliver flawless local support. A maturing Southeast-Asian market offers growth – but only to converters who can cut costs through efficiency and automation. Both situations align perfectly with our brand promise, Simplifying Tissue Converting – helping customers stay competitive, whether the pressure comes from a tighter border or a hungrier neighbour."

Barsanti: "In 2025, we are witnessing significant growth in tissue product demand across several geographic regions, each with its own specific needs and evolving market dynamics.

"In Europe, tissue consumption is rising by more than 4%, driven by post-pandemic recovery and a growing focus on sustainability and product quality. Producers are being called upon to deliver flexible, efficient solutions that comply with increasingly strict environmental regulations in a highly competitive and regulated landscape.

"In Latin America and Asia, growth is fuelled by the expansion of the middle class, rising environmental awareness, and diversification of distribution channels. Our offerings are designed to meet these demands, providing modularity, sustainability, and automation.

"In Africa, we are seeing an increasing interest in accessible and adaptable tissue solutions. The main challenges involve infrastructure availability, technical training, and the need for robust, flexible technologies. In this context, our compact and scalable lines, combined with dedicated technical support services, represent a concrete opportunity to support the sector's development.

"To address these challenges and seize opportunities in both emerging and mature markets, Valmet has launched Pivot Solutions – a global network of pilot lines and laboratories located in Italy, Sweden, the USA, and Brazil. This initiative reflects our commitment to supporting customer needs by providing a controlled environment where new configurations, materials, and technologies can be tested under real-world conditions. Through Pivot Solutions, customers can produce samples for panel testing, explore new market opportunities, conduct advanced analysis on paper and finished products, and receive dedicated technical support and training. In doing so, we guide our customers throughout the entire journey – from concept to market-ready product – with a contained investment and a comprehensive end-to-end vision."

HOW CAN MILLS EXTEND THE LIFE OF THEIR PLANT ASSETS AND ENSURE LONG-TERM ROI?

Edward Gallivan, Key Account Manager at E80 Group, says design is not just the beginning of a project – it is the foundation of its lifecycle success. A TWM report.

In the tissue industry capital investments are significant and the pressure on return is relentless. Mills must manage soaring costs, changing consumer demand, and an ever-growing emphasis on safety and sustainability. Equipment is expected to perform not just for years, but for decades — adapting to evolving requirements while protecting margins and keeping workers safe.

Against this backdrop the question is simple but urgent: how can mills extend the life of their plant assets and ensure long-term performance? At E80 Group (E80), we've built our business around answering this question. After 45 years in the market, more than 80% of our business comes from repeat customers. The reason is straightforward: we design systems that stand the test of time, and

Durability: E80's AGVs and LGVs regularly achieve lifespans of 15 years or more

we commit to walking alongside our customers throughout the lifecycles of their plants.

A PARTNERSHIP THAT LASTS

A customer once told me: "Choosing a vendor is like choosing a partner – it's the partner you marry." That comment has stayed with me throughout my 18 years at E80.

When I first joined the North American market, our installed base was still developing. Today, it's remarkable to see some of the very first systems I helped install still running efficiently more than 15 years later. These plants have grown, shifted, and adapted — and our systems have grown with them.

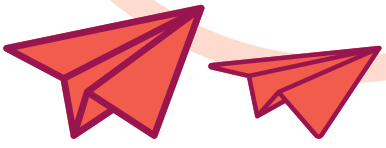
The lesson is clear: when equipment is designed for longevity, backed by software that evolves, and supported by a lifecycle partnership, ROI doesn't just extend – it multiplies.

EQUIPMENT DESIGNED FOR LONGEVITY

Traditional forklifts often need replacement every three to five years. By contrast, E80's automatic guided vehicles (AGVs) and laser-guided vehicles (LGVs) regularly achieve lifespans of 15 years or more.

This durability isn't coincidental. As a vertically integrated supplier, we design and manufacture our own chassis, masts, and control systems. Every component is engineered with long-term performance in mind, ensuring our customers avoid the frequent replacement cycles that erode efficiency gains.

At E80 our philosophy is design first: every project begins with a deep consulting process to ensure that the solution is tailored not only for today's needs, but also for tomorrow's growth.



Just as important our design philosophy ensures continuity across generations. Customers can operate multiple generations of LGVs at the same site, allowing for gradual replacement and seamless expansion without system disruption.

SOFTWARE THAT EVOLVES WITH YOU

A system's hardware may provide the foundation, but its software determines how far it can go. Unlike many automation suppliers, E80 owns and manages the software that runs the entire logistics flow.

This control layer is the "brain" of the system, coordinating vehicle movements, warehouse flows, palletizing, and trailer loading. By managing it directly, we ensure customers can benefit from continuous upgrades – logic enhancements, optimisation modules, and new functionalities – without replacing equipment.

For mills, this means a system installed today can evolve with changing production requirements tomorrow, extending ROI while avoiding costly overhauls.

MANAGING OBSOLESCENCE RESPONSIBLY

One of the challenges in long-term automation is dealing with component obsolescence. As technology cycles accelerate, customers risk being locked into outdated systems with no clear path forward.

E80's approach is different. By carefully selecting components with retrofit options, and by proactively monitoring obsolescence during scheduled audits, we help customers plan replacements before issues arise. This ensures compatibility and continuity – and, crucially, allows for predictable investment planning rather than sudden, disruptive expenses.

DESIGNING FOR LONGEVITY FROM DAY ONE

Extending the life of a system doesn't start 10 or 15 years down the road – it starts at the design table. At E80 our philosophy is design first: every project begins with a deep consulting process to ensure that the solution is tailored not only for today's needs, but also for tomorrow's growth.

When mills face decisions about greenfield construction or upgrades to existing facilities they are confronted with thousands of choices. Layouts, throughput requirements, storage density, SKU profiles, labour planning — each one influences long-term performance. Making the wrong decision at this stage can shorten system life and ROI.

That's why E80 takes a holistic, data-driven approach. Our consulting teams analyse throughput, workflows, seasonal fluctuations, and long-term growth models. With the help of

Flexibility and scalability: systems designed to adapt to changing market demands

advanced simulation tools we can test multiple scenarios and validate system performance with up to 95% accuracy. This means our customers don't just receive an automation solution — they receive a future-proofed design.

The result is flexibility and scalability built in from day one. Systems designed this way can adapt to changing market demands, integrate new technologies, and extend the business without requiring disruptive overhauls. In other words, design is not just the beginning of a project – it is the foundation of its lifecycle success.

A CONTINUOUS SUPPORT

The backbone of life plants extension is service. E80's customer service model is not reactive but collaborative, built around a 360° approach that includes:

- Service Level Agreements (SLAs): predictable, tailored support frameworks.
- Integrated technical support: both remote and on-site, including fleet management.
- Lifecycle audits: regular evaluations of wear, usage patterns, and obsolescence risks.
- Parts and optimisation strategies: keeping systems running at peak efficiency.

Because we own both the hardware and the software, our service is truly end-to-end – one source of accountability, one partner for the long term.

COLLABORATION IN PRACTICE

Partnership only works if it's practiced. That's why our technical teams meet with customer teams on site several times a year. These sessions serve three key purposes:

1/ Proactive evaluation. Our engineers identify wear, inefficiencies, or risks that daily operators may overlook.

2/ Shared knowledge. Customer teams receive refreshers on evolving features and best practices, ensuring they can fully leverage system capabilities.

3/ Obsolescence planning. Together, we review upcoming component changes and align strategies, keeping the system future-proof.

This hands-on, side-by-side approach ensures communication is constant and solutions are collaborative.

REAL-WORLD IMPACT: OPTIMIZATIONS IN ACTION

Consider a tissue mill that added a new product line requiring different palletising patterns. Instead of purchasing new vehicles or conveyors we optimised their existing software, reprogramming logic flows to handle the change seamlessly. The result: increased flexibility, zero downtime, and smarter use of existing resources.

In another case, a long-running fleet was evaluated during a routine audit. We identified early signs of wear that, if left unchecked, could have led to major disruption. With planned interventions, the customer avoided unscheduled downtime and preserved system reliability.

These examples highlight a simple truth: lifecycle support is not an afterthought — it's the strategy that makes long-term ROI possible.

The value equation: savings, safety, and sustainability

Plant life extension delivers more than just financial savings. The benefits ripple across the mill's operations:

- Savings: deferred CapEx, lower replacement costs, and optimized performance.
- Safety: fewer manual forklifts on site, lower accident risk, and safer workflows.
- Sustainability: reduced waste, fewer scrapped components, and more efficient energy use.

In today's industry, where sustainability commitments are tied directly to business reputation, extending system lifecycles is not only cost-effective – it's essential.

CONCLUSION

At E80, we view every installation not as a transaction but as the beginning of a journey. By designing equipment and software that last, by managing obsolescence responsibly, and by investing in lifecycle service, we ensure our customers remain competitive for decades.

The tissue industry will keep evolving. Technologies will change, sustainability requirements will increase, and customer demands will intensify. But one thing will remain constant: the need for partners who can extend ROI, ensure safety, and deliver end-to-end, cost-effective, sustainable solutions.

This article was written for TWM by Edward Gallivan, Key Account manager at E80 Group.

Optimisations in action: reprogramming logic flows to handle the change seamlessly

MEETING THE CHALLENGE OF SKU PROLIFERATION WITH FLEXIBLE AND HIGH-SPEED ROBOTIC PALLETISING IN MODERN TISSUE PRODUCTION

By Luc Vanden-Abeele, Director of Marketing at NūMove Robotics & Vision. A TWM report.

SKU EXPLOSION AND THE AUTOMATION IMPERATIVE

In today's tissue industry the proliferation of SKUs — from 1-, 2-, or 3-ply formats to cube boxes, flat packs, and soft wraps — is reshaping production demands for facial tissue. Consumers are driving this change, seeking softer, stronger, and more absorbent products in increasingly varied formats.

SKU proliferation demands greater flexibility for automation as production lines need to manufacture various products in smaller batches.

To keep up, converting equipment has become faster. End-of-line automation, particularly palletising, must also evolve in tandem to avoid bottlenecks and maintain throughput.

ENGINEERING FOR SPEED AND FLEXIBILITY

NūMove's latest robotic palletising system was designed for a new facial tissue facility handling up to 100 distinct SKUs. The system achieves a throughput of 50 products per minute at 80% capacity.

This performance is made possible by a multi-robot configuration:

- Two side-by-side robots prepare palletising patterns.
- One robot handles complete layer palletising.

HANDLING PACKAGING DIVERSITY

Facial tissue secondary packaging varies widely – corrugated boxes, shrink-wrapped cartons, and loosely wrapped packs. The latter are particularly challenging due to their tendency to swing during robotic handling. The end-effectors are then purposefully designed to address this.

- Pattern maker robots incorporate flexible clamps that adapt to product dimensions without causing damage.
- Palletising robot incorporates multiple vacuum zones to accommodate gaps in palletising patterns. This tool uses machine vision for layer validation, ensuring all products are within expected boundaries before palletising.

PATTERN MAKERS: MECHANICAL VS. ROBOTIC

Since the products are handled in full layers when being palletized, product patterns must be prepared upstream. Two technologies were evaluated:

MECHANICAL PATTERN MAKER

For this application, two mechanical pattern makers are needed to meet the 50 products per minute rate. Below is a short description of how it works.

- Product are fed through two separate infeed conveyors

- If needed, products are turned 90 degrees as per the final pattern requirements
- Rows of products are built and indexed into the layer pick conveyor
- When completed, the full layer is picked by the robot

While the system benefits from a well-established and proven technology, its operational limitations must be considered. With a throughput restricted to 25–30 products per minute per unit, a wide physical footprint, and limited flexibility, it may not meet the demands of high-speed or space-constrained tissue production environments.

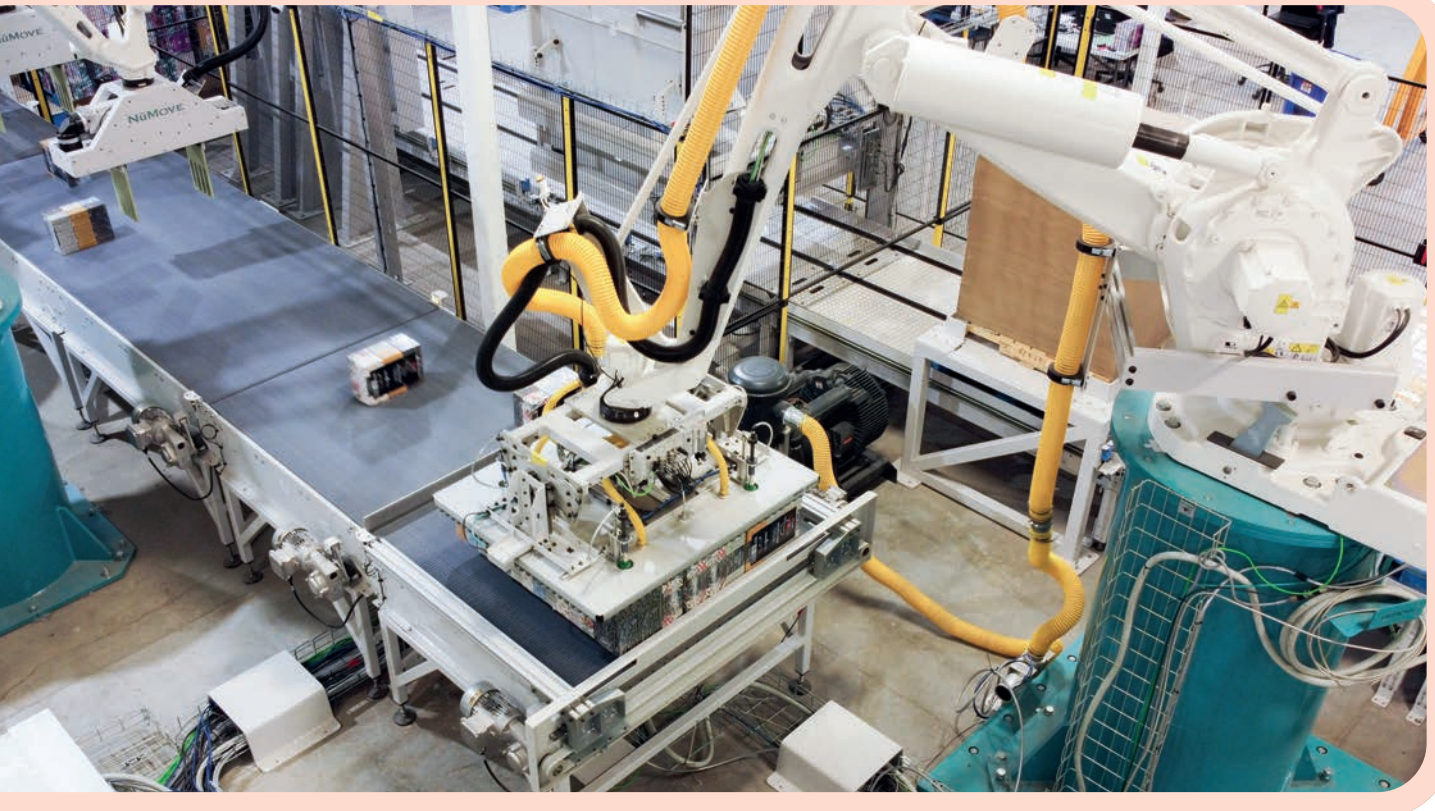
ROBOTIC PATTERN MAKER

Another option is to use a dual-robot approach:

- Products are fed through one infeed
- The two robots share the work and rotate, or slide products as needed to prepare the layer
- The full layer is built at the end of the conveyor
- When completed, the full layer is picked by the robot

This approach offers advantages in speed, flexibility, and spatial efficiency, making it particularly attractive for tissue manufacturers seeking compact and agile automation solutions. However, these benefits come at a cost: the technology typically requires a higher capital investment and involves more complex programming, which may demand a specialised expertise during integration and maintenance.

A robotic palletising solution aligns with broader industry shifts toward smart factories and warehouse automation. Automation has evolved from a competitive advantage to a strategic necessity.



Palletising robot handling products by layer: multiple vacuum zones accommodate gaps in palletising patterns

Robotic pattern maker: flexible clamps adapt to product dimensions without causing damage

Robotic pattern makers can operate blind if product feeding is controlled; or use machine vision for guidance. Robot programming must account for orientation needs, collision avoidance, and fall-back scenarios where one robot takes over if the other fails.

SOFTWARE-DRIVEN ADAPTABILITY

One of the standout features of this robotic system is its software-driven flexibility, powered by NūMove's proprietary software named NūLogikTM. Operators can add new products without any programming via a step-by-step wizard on the interface. This eliminates the need for tooling changes or code updates. In an industry where product innovation is frequent and format diversity is growing; such flexibility is essential.

Product changeovers are incredibly fast, no tooling change or modification is required, just a few parameter adjustments on the human-machine interface. It's seamless and efficient.

MARKET OUTLOOK AND STRATEGIC FIT

Industry analysts project continued growth in the facial tissue segment, driven by demand for premium and customised products. This trend underscores the need for flexible automation that can adapt to frequent SKU changes and format innovations.

A robotic high-speed palletizing solution aligns with broader industry shifts toward smart factories and warehouse automation. Across the tissue industry, automation has evolved from a competitive advantage to a strategic necessity – enabling manufacturers to streamline operations, reduce labour dependency, and respond faster to market demands.

CONCLUSION

This high-speed robotic palletizing system sets a new benchmark for end-of-line automation in the tissue industry. Combining mechanical precision, software intelligence, and operational flexibility, it meets the evolving demands of modern production lines. In an environment where speed, SKU diversity, and adaptability are paramount, NūMove delivers a scalable, future-ready platform that empowers tissue manufacturers to stay ahead of the curve – today and tomorrow.

This article was written for TWM by Luc Vanden-Abeele, Director of Marketing at NūMove Robotics & Vision.

HOW EVOLVING CONSUMER COST AND LIFESTYLE PRIORITIES ARE CHANGING WORLDWIDE – AND HOW THE INDUSTRY IS – AND SHOULD – RESPOND

A third of global consumers are concerned about finances. Personal and environmental health is increasingly viewed as a vital asset. Natalia Bezrebra, Senior Analyst at data analytics company Euromonitor International, says for the industry in a complex market clearly defined product positioning and effective messaging about specific benefits are essential.

In recent years, awareness of the vital connection between a healthy environment and human well-being has grown considerably. This momentum is fuelled by government regulations, corporate sustainability strategies and rising public concern for the planet and future generations.

This awareness is translating into consumer behaviour, particularly when it comes to purchasing decisions that reflect personal values. To explore this dynamic, we turn to insights from Euromonitor International's annual Tissue and Hygiene research: the Voice of the Consumer surveys and Sustainability: Claims tracker, which provides insights on how evolving consumer lifestyles priorities and sustainability perceptions are shaping consumer choices of tissue products worldwide and where future opportunities lie.

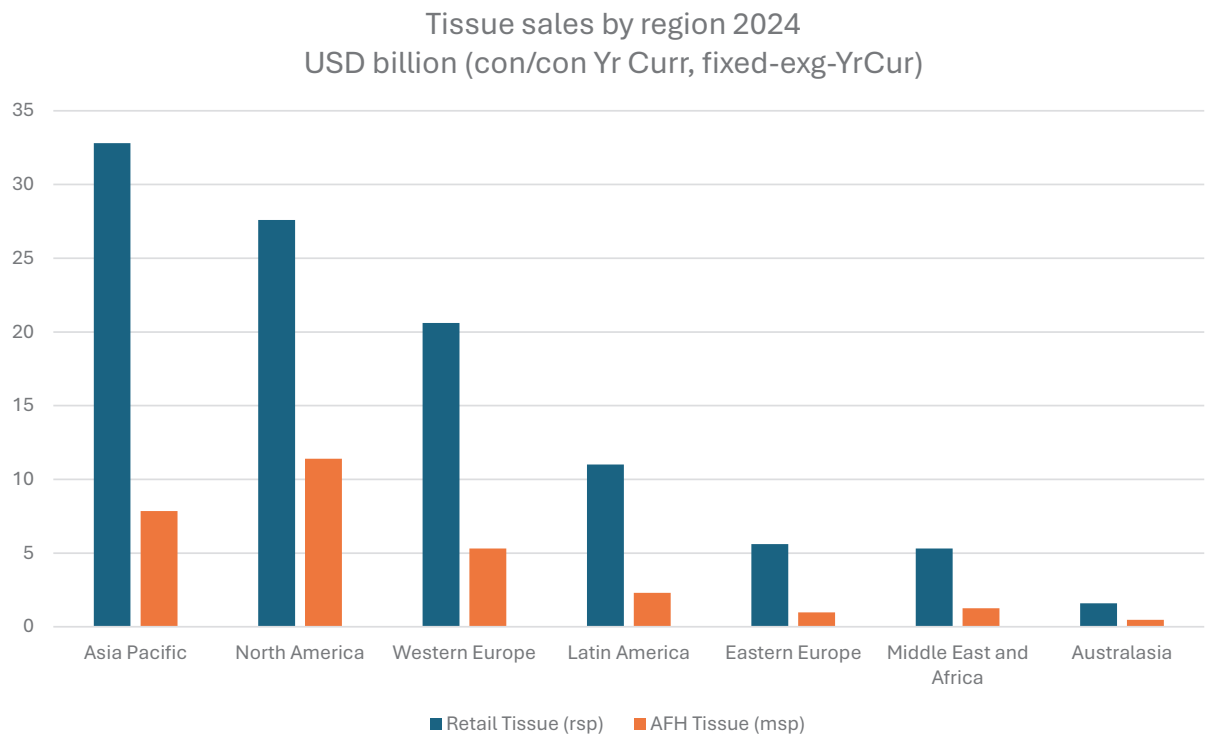
Our findings highlight that consumer demand for tissue is evolving in response to shifting life priorities – there is a growing focus on one's self and wellbeing, also beneficial for demand on sustainable tissue products, a preference for convenience and added value, well met with current innovations and more responsible purchasing decisions with consumers aiming to get the best for the money they can spend.

RETAIL TISSUE – ESTABLISHED BUT STILL PROSPECTIVE INDUSTRY

Tissue products are among the most regularly used items by most consumers globally. In 2024 retail tissue industry generated $105bn, projected to grow further to $107bn in 2025. AfH Tissue has a smaller share with $30bn (msp) value in 2024 forecast to grow by 2% over 2025.

The highest value consumption of retail tissue products comes from Asia Pacific, which is followed by North America and Western Europe with the rest of the regions making less significant contributions to the category. At that, the ratio of retail tissue and AfH tissue varies across the regions with AfH tissue the highest in share in North America (29%) and the lowest in Eastern Europe (15%).

Tissue products have become an indispensable part of daily life due to their essential nature. However, the regional differences and the split between retail and AfH distribution highlight the significant importance of additional factors on consumer demand. These factors include financial, demographic and cultural characteristics specific to different countries and regions.



Source: Euromonitor International Tissue and Hygiene 2025ed

ECONOMIC PRESSURES DRIVE MORE MINDFUL SPENDING ON ESSENTIAL PRODUCTS

In 2025, the global economic situation continues to face challenges driven by geopolitical tensions, most notably Russia's war in Ukraine, and the uncertainty surrounding Trump's international policies. These factors have impacted disposable incomes for many consumers, as well as their confidence.

According to the findings of Euromonitor International from Voice of the Consumer: Lifestyles Surveys conducted in 2025, 33% of global consumers are concerned about their current financial situation while 18% occasionally rely on credit cards and similar forms of borrowing. The share of such respondents has increased in 2025 compared to 2024. In contrast, the proportion of consumers who can regularly save a portion of their incomes has reduced, which is also true of those respondents who are comfortable with their current financial situation.

As a result, people are being compelled to adjust their lifestyles and attitudes to better navigate the shifting realities with greater efficiency and resilience. Many are re-evaluating their life priorities, spending habits and their relationship with the world around them. Additionally, factors such as population ageing, increasing life expectancy and growing urbanisation further reinforce the need for these lifestyle changes.

RISING PRIORITY: PERSONAL WELLBEING AND SELF-FOCUS

In this context, health is increasingly viewed as a vital personal asset. People are investing more time and money into activities that help prevent health issues, maintain social and physical activity and enhance emotional wellbeing. The rapid expansion of educational content on social platforms like TikTok and Instagram is accelerating these trends.

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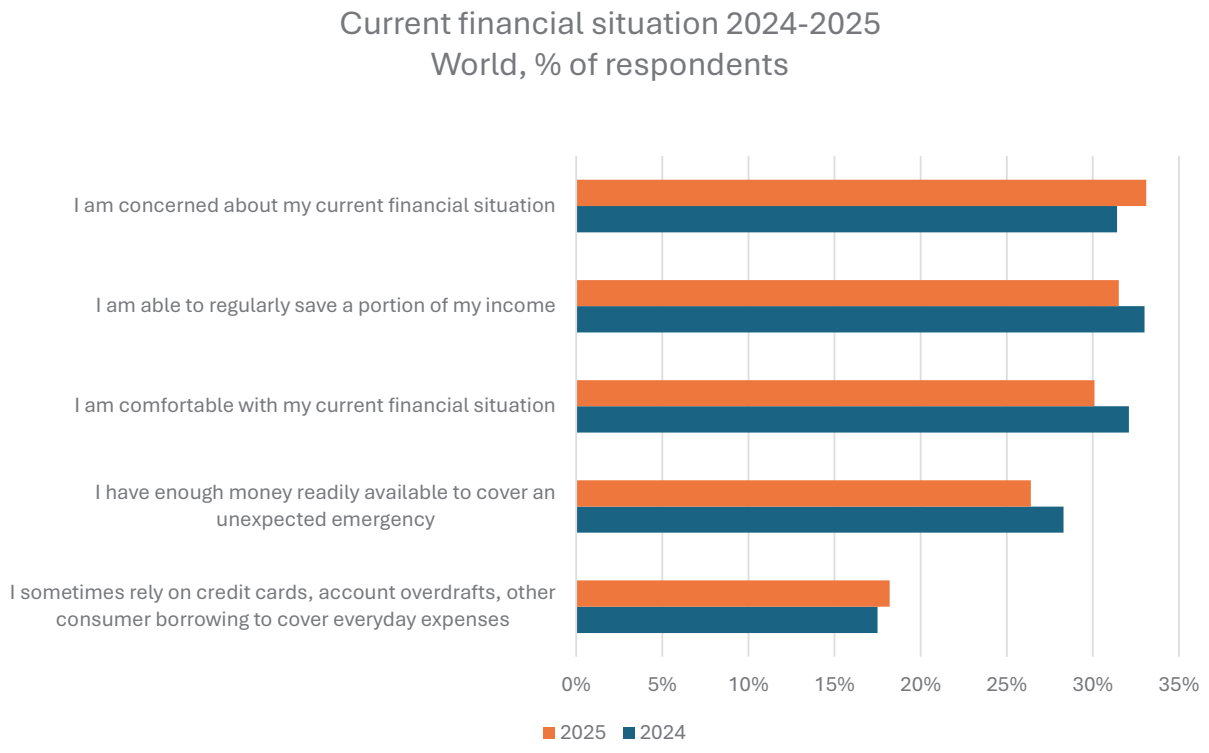

Source: Euromonitor International Voice of the Consumer: Lifestyles Surveys 2024 (n:40,236), 2025 (n:40,337)

Self-focus in another evolving trend. According to Euromonitor's Voice of consumer: Lifestyles Survey 2025 (n:40,337), "Time for myself" was selected by 51% of respondents as a top life priority, followed by "Time with partner of spouse" (48%) and "Time with children (39%). Time for myself and nurturing family are a priority and thus people are more selective as for activities, especially home chores, resorting to products which make daily chores simplified and more convenient to perform. Tissue products perfectly meet the criteria since they are disposable and allow for convenience and multi-functionality.

INTEGRATING PERSONAL HEALTH AND WELLBEING WITH PLANETARY RESPONSIBILITY

Consumers are increasingly aware of the connection between their personal wellbeing and the health of the planet. Natural resources such as clean water, air and soil are essential to maintaining good health and environmental concerns are becoming more central to consumer values. As lifespans increase, people are putting greater effort into preserving their health and appearance over time.

In fact, 45% of consumers associate beauty with looking healthy, according to Euromonitor's Voice of the Consumer: Health and Nutrition Survey 2025 (n:21,207). Healthy living is now widely understood to depend not only on personal habits but also on the quality of the surrounding environment, both social and natural. This growing awareness is driving interest in sustainable practices and products that support both individual and planetary health.

SUSTAINABILITY IN CONSUMER BEHAVIOUR AND PACKAGING PREFERENCES

In 2025, 62% of consumers reported being worried about climate change and 61% of them actively try to make a positive environmental impact through their daily actions. To be sustainable, consumers consider sustainable packaging as a way to reduce environmental harm. Recyclable packaging and biodegradable packaging are top packaging types associated with such packaging type by most of the respondents, 49% and 45% of those polled respectively. Paper packaging is selected as such by 35% of the respondents.

Data on sales of tissue and hygiene products with sustainability attributes found that Natural, Environmentally-Friendly and FSC-certified were ranked as the top-three in 2024. The fastest-growing attribute by value sales comprised Can Be Recycled, rising at 49% CAGR over 2020-2024.

The tissue industry has been actively responding to the growing demand on sustainability, with numerous product innovations launched in recent years across various countries. Tissue products are often viewed as relatively environmentally friendly due to their disposable nature, especially when compared to materials like plastic. This

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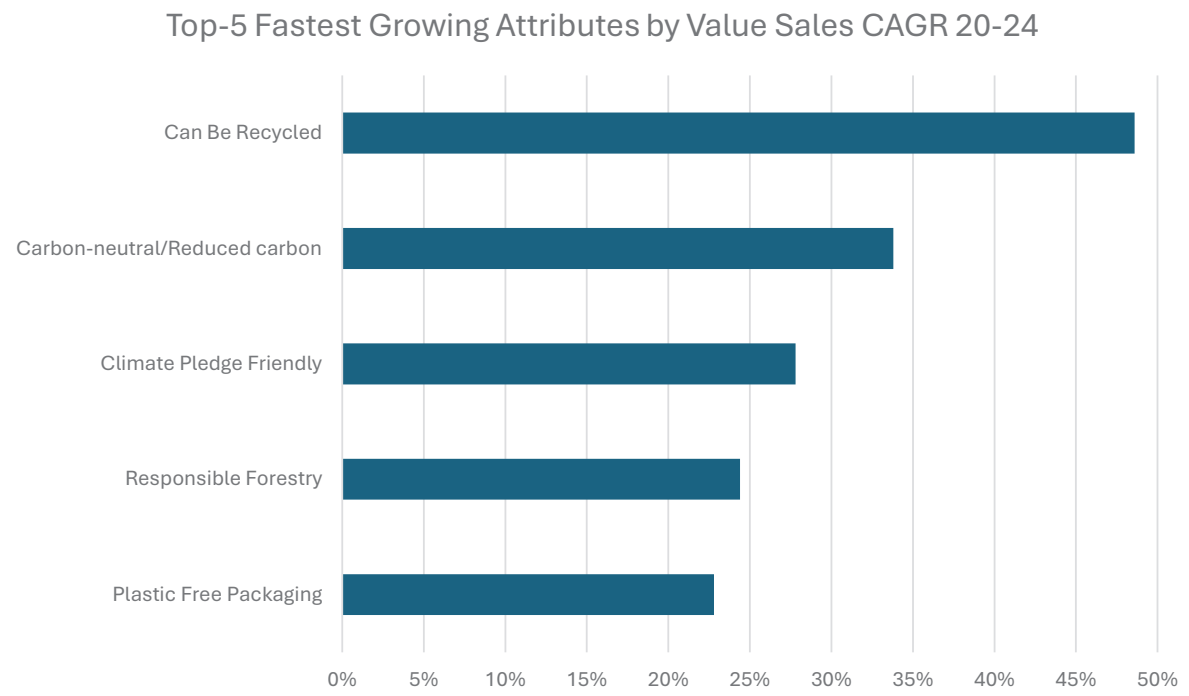

Source: Euromonitor International Sustainability: Claims tracker

perception, combined with ongoing efforts to introduce sustainability attributes, reflects the industry's commitment to aligning with evolving consumer expectations.

INNOVATIONS IN TISSUE – STRONG FOCUS ON ADDED VALUE AND SUSTAINABLE FEATURES

Looking at the most recent innovations in tissue, it is possible to summarise the developments in several directions. First, sustainability is a key focus, with new products featuring FSC certification, made from recycled and alternative source materials (eg, bamboo, straw) and tissue packaged in biodegradable materials. For instance, Portugal's The Navigator Company introduced its toilet paper Amoos Comfort (with softness achieved through Air Comfort Plus cushioned texture) and Amoos Naturally Soft in paper packaging. The latter is made with patented Natural Soft Fibre technology using 100% virgin fibre without chemical bleaches, further shaping its added value.

Cross-category innovations are also being explored, particularly those that blur the boundaries between tissue and personal care. For example, Kruger Products launched Scotties Ultra Soft Ultra Doux with Lotion facial tissues in Canada, featuring in a large tissue size. The products are hypoallergenic, have premium thickness (three-ply) and are infused with aloe and vitamin E.

At the same time, private labels - well-positioned during economically challenging periods - are expanding further with innovations increasingly entering the premium segment to meet the needs of the most demanding consumers. This includes improved functionality, sophisticated design and more convenient or sustainable packaging. Sustainable and cross-category innovations are actively explored by

People are putting greater effort into preserving their health and appearance over time. 45% of consumers associate beauty with looking healthy, according to Euromonitor's Survey

private label players too, further adding to their assortments' competitiveness.

Such multi-directional innovations in tissue are making consumer choices more complex. For manufacturers to succeed, clearly defined product positioning and effective messaging about the specific benefits of their offerings are essential, especially as budgets tighten and consumers make more careful and considered decisions, particularly when it comes to daily necessities like toilet paper, kitchen towels or napkins.

BALANCING CONSUMER PRIORITIES WITH FINANCIAL REALITIES: OVERCOMING BARRIERS TO PURCHASING SUSTAINABLE TISSUE PRODUCTS

So what can be done to stimulate healthy consumer demand on added value and sustainable tissue in future, while there is no evidence of global stabilisation and the future looks uncertain? Two key directions stand out.

First, product assortments must be tailored to meet diverse consumer needs, considering factors such as age, usage purpose, cultural specifics and financial status. Offering products in various size formats can help ensure affordability per purchase. The needs of single-person households should be considered too, along with experimenting with sheet sizes to better suit budget-conscious consumers, especially since sustainable options may not always be price competitive.

Packaging of tissue products should also reflect the rise of e-commerce, with formats that are both convenient for transport and appealing to consumers. Retail e-commerce's share in retail tissue distribution grew from 9% in 2019 to 17% of retail sales value in 2024. This growth highlights the need for packaging that is specifically designed to meet the logistical demands of online retail, ensuring products are easy to ship, store and handle, while remaining affordable and convenient for consumers to purchase.

Success depends not only on understanding regional demographics and income levels but also on recognising the specific realities of individual countries. For example, in markets where consumer incomes are relatively low, toilet paper may be used for a wider range of purposes, often substituting more expensive products like paper towels. This behaviour can significantly influence per capita consumption patterns. To succeed in such environments, manufacturers must adopt localised strategies that are responsive to evolving conditions and tailored to the unique needs of each market.

Second, clear and compelling messaging is essential. Consumers need to understand the unique benefits of each product, whether it is texture, format or functionality. This helps manage expectations and guide informed choices. At that, it is good to support such messaging with real stories about the brand so that consumer trust is enhanced. If to specifically consider the results of Euromonitor's Understanding of Green Labels/ Trust in Labels (n:39,533), trust in sustainability labels has slightly declined. In 2025 the label "Recyclable" is considered trustworthy by 57% of consumers, reducing in share compared to the previous four years in a row. Environmentally conscious or eco-friendly labels were trusted by 51% (somewhat reducing compared to 2024) and "Sustainably produced" by 47% (down from 50% in 2024). These figures highlight the importance of backing sustainability claims with clear, factual communication to reinforce consumer confidence in such products.

Adding an emotional element to communication can also be effective as people increasingly seek positive experiences from the products they buy.

As the population continues to age, simple and clear labelling will become increasingly important, especially for older consumers who appreciate straightforward information. Launching products tailored to specific consumer groups – such as children, men or women – can also help address diverse needs while adding a sense of personalisation. This targeted approach not only enhances product relevance but also strengthens consumer engagement by showing that their unique preferences and lifestyles are being considered.

While many people are currently more focused on their personal wellbeing than on external causes like environmental protection, in the nearest couple of years messaging would be better to reframe to connect sustainability with individual health and comfort. For example, highlighting that sustainable products are free from chemical dyes, made from softer alternative materials that are gentler on the skin or designed to perform more tasks per sheet – even if they appear more expensive at first glance – can shift the narrative. By focusing on "what's in it for me", manufacturers will be able to better engage consumers and simplify the path to adoption of innovative and sustainable tissue products.

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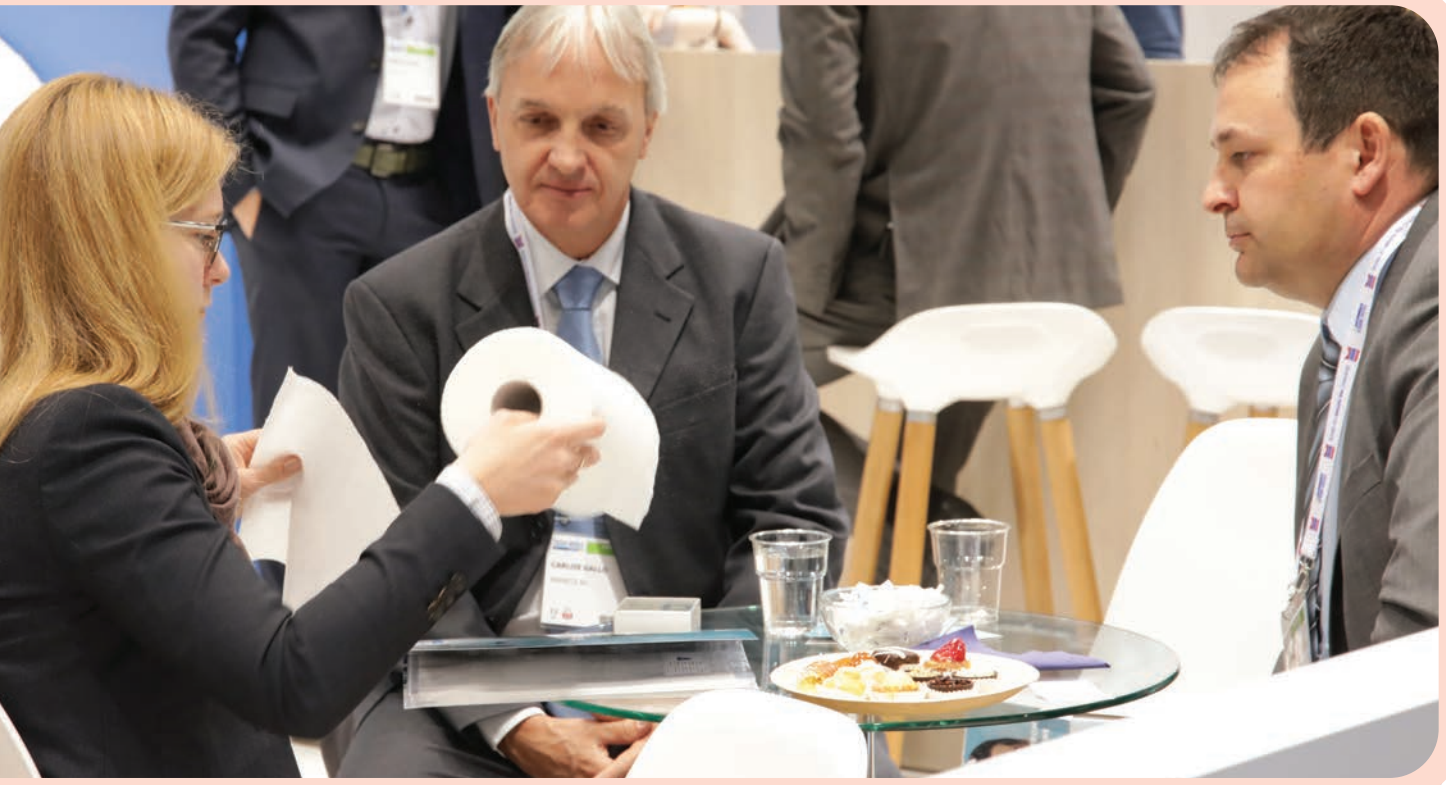

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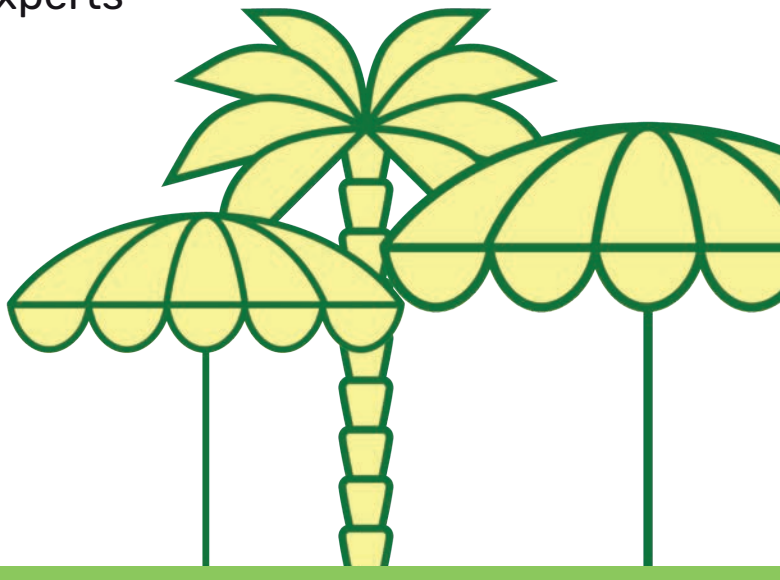

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