

TWM

TISSUE WORLD MAGAZINE

The independent news
provider for the global
tissue business

FINDING THE EDGE

SEARCH FOR EXTREME EFFICIENCY GOES TO THE NEXT LEVEL

Plus ...

Converting: Technical Theme

Efficiency - Flexibility - Automation
How companies evolved as the dynamics
and balances of the markets changed

Special Report: Distribution

'Automation is not just essential,
it's available for all'.

Edge Computing: poised to lead
the future of manufacturing

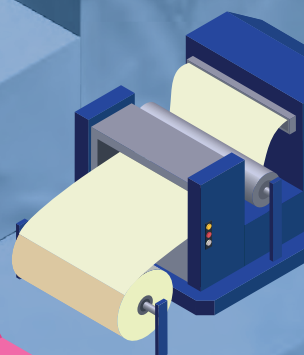
ExitIssues

Global BCP on the brink of
significant investment cycle

ConsumerSpeak

'Personal choices put me on a
mission to launch a line of 100%
bamboo tissue products'

Cloud Paper co-founder Ryan Fritsch



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In this issue...

FrontIssues 3

Multiple choices can mean multiple problems, and more costs. Bring on the era of optimal process stability.

MarketIssues 4

Operational excellence – companies must quantify, track, and improve process variability daily at paper machine level. Manufacturers need to pursue innovative ways to decrease consumption and make their factories more efficient as energy and raw material prices soar. Report for TWM by Eduardo de Almeida, Managing Director, AFRY Zaragoza.

News In Brief 6

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

Country Report: Thailand 12

Domestic consumer tissue demand is outpacing Thailand's home production capacity. With the tissue powerhouses of China and Indonesia nearby, the country needs an investment cycle to retain its competitive position after the pandemic setback. By Fisher International.

Country Report: Thailand 16

Thailand tissue: realising potential in a disrupted world. Previous articles have highlighted the driving forces behind retail tissue as a combination of factors centring on income, demography and availability. Thailand is no less subject to these forces than other markets, but some of the statistics linked to these drivers may be somewhat surprising. By Euromonitor International.

Kimberly-Clark Thailand: Operations Report 20

A 'fully reopening' Thailand sees its tissue demand boom continue. Ratree Skuntantimeta, Managing Director, Kimberly-Clark Thailand, talks to TWM about growth in the Asia-Pacific region.

C.A.S. Paper Mill: Operations Report 23

Launched in the pandemic, this new tissue entrant survived the worst and is now reaping the best. Managing Director Torpong Thongcharoen speaks to TWM.

Consumerspeak 25

Cloud Paper co-founder Ryan Fritsch discusses the long-time, personal tissue preferences which led to him co-founding Cloud Paper in 2019.

Converting: Technical Theme 27

Covid changed the dynamics and balances of the markets as companies evolved even greater efficiency, flexibility and automation. Baosuo's Stan Sheng, Futura and Plusline's Christian Zagnoni, Gambini's Carlo Berti, ICM's Hazar Ulusoy, Körber Business Area Tissue's Luca Frasnetti, Maflex's Scot Schoenwalder, Maxima Tissue's Enrico Ruglioni, OMET's Marco Calcagni, PCMC's Andrew Green, and 9.Septembar's Nevena Pantović speak to TWM.

Distribution: Special Feature 38

'Automation today is not just essential, it's available for all'. Many smaller companies doubted ROI from automatic assets combined with smart software, but those days should be over, says William Nelson, President, E80 Group North America. A TWM report.

Distribution: Special Feature 41

Industrial Edge Computing is poised to lead the future of manufacturing and increase its productivity growth rate in the near future. Claudia Borella, Promotech Marketing and Sales Manager, discusses the company's latest advancements. A TWM report.

ExitIssues 45

Review of global BCP capacity: on the brink of significant investment cycle with likely oversupply and pricing correction. Total BCP capacity shrank by just over 0.5Mt last year – the first contraction since 2009 and only the second on record. Report for TWM by Hawkins Wright's Research Managers Michael J Long and Pierre E Bach.

Ad Index 48



▲ Operations Report

"We have seen substantial shifts in shopper behaviour ... this is a huge opportunity to pivot our growth strategy and strengthen our omni-channel strategy, but also to drive stronger penetration for in-home consumption products such as paper towels," Kimberly-Clark Thailand's Managing Director Ratree Skuntantimeta.

Page 20

FI	FrontIssues	3
MI	MarketIssues	4
NB	News in Brief	6
CR	Country Report	12
OR	Operations Report	20
TT	Technical Theme	27
EI	Exit Issues	45
AA	Advert Index	48

Cover: An image representing the search for extreme efficiency, and how it's resulting in peak performance. Image by Hazel Gage, hazelsayshello, UK.

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FrontIssues

MULTIPLE CHOICES CAN MEAN MULTIPLE PROBLEMS, AND MORE COSTS. BRING ON THE ERA OF OPTIMAL PROCESS STABILITY.

Helen Morris

Senior Editor, Tissue World Magazine

There is an all-out attack of the fine margins in this edition of TWM. The search for gains in already highly specialised and efficient systems. It's what the industry has always done, but better yet.

Reaching for optimal computerised processes. Not just for the 'Big Boys,' but automation for companies across the whole range. Smoothing out the variables causing hitches, some small but some much bigger. As source material in the cause, no less a distinguished figure than Lord Kelvin makes an appearance.

Eduardo de Almeida, Managing Director, AFRY Zaragoza, quotes him in his analysis of the problems that result from the awkward and costly variability which can occur in production: "What is not defined cannot be measured. What is not measured, cannot be improved. What is not improved, is always degraded."

Lord Kelvin was a Scottish physicist and mathematician who invented the international system of absolute temperature which bears his name today. A man of precision. Eduardo de Almeida is a man of the same ilk, to use an archaic Scottish term. He raised the issue in these pages in 2021 – the prevalence of manufacturing variability, for example the struggle to control base weight, the resulting increase in average weight of tissue rolls – meaning companies in certain circumstances could be giving away a percentage of their product for free. An alarming fact, if ever there was one.

In *Marketissues* he now expands on the theme: "Sources of variability are hard to pinpoint and are spread throughout the whole manufacturing process. Sustainable improvement can be achieved only by implementing a company culture that focuses on quality and process stability."

As energy and raw material prices soar, a company culture of innovating ways to decrease consumption and make factories more efficient becomes even more imperative. He offers some insight into how that culture should become ingrained.

Searching for the extreme edge of efficiency is a cause espoused in a *Distribution: Special Report*. Claudia Borella, Promotech Marketing and Sales Manager, explains the concept of Industrial Edge Computing ... "a distributed architecture of micro data centres, each capable of storing and processing data locally and transmitting this information to a centralised system or to a Cloud storage."

Traditional data centres have their problems. Recent advances have brought greatly expanded storage and computing power resources at a more accessible level. And in *Technical Theme: Converting*, ten executives from leading companies detail the evolving dynamics and balances of the changing markets brought about by the pandemic. The same direction of travel, but a challenge to develop simpler, more automated and faster responses ... and many of the ideas seen through to fruition which contribute to that end.

Thailand back on track with its pre-pandemic tissue demand boom

A "strengthened economy, political stability, improving consumer sentiment, rising incomes and increased consumer sophistication." That's what US tissue giant Kimberly-Clark said about Thailand when TWM last reported from there in 2018. A lot of water has flowed through the floating markets of Bangkok since then. Our Thailand revisited *Operations Report* again talks to market leader K-C, happily celebrating its 150th anniversary this year.

Ratree Skuntantimeta, Managing Director of Kimberly-Clark Thailand, reports that the country "is fully reopening this summer." Tourism represents 12% of GDP, and visitor numbers could return to pre-pandemic levels by 2025, much of that potential is coming back on stream. A share of the expanding Asian-Pacific tissue growth is also well underway, even for a country in the shadow of the two giants China and Indonesia. Exports are due to increase in the coming years, and Skuntantimeta adds: "Consumers were becoming more sophisticated, and demanding products that met their lifestyle needs, seeking more convenience and wanting specialised solutions for specific problems."

Accompanying *Country Report* articles continue the theme: 'Domestic consumer tissue demand is outpacing the country's home production capacity,' AfH – which makes up a surprisingly large share of total tissue sales - is in recovery,' 'Thailand tissue: realising potential in a disrupted world.'

OPERATIONAL EXCELLENCE – COMPANIES MUST QUANTIFY, TRACK, AND IMPROVE PROCESS VARIABILITY DAILY AT PAPER MACHINE LEVEL

Manufacturers need to pursue innovative ways to decrease consumption and make their factories more efficient as energy and raw material prices soar. Report for TWM by Eduardo de Almeida, Managing Director, AFRY Zaragoza



Eduardo de Almeida
Managing Director, AFRY Zaragoza

In a time where cost savings are more important than ever, there is one low hanging fruit that most manufacturers are still overlooking: process variability. In this article, we'll identify the main sources of variability in paper tissue production, and more importantly – how to tackle them.

Soaring costs are pushing for efficiency

As prices of energy and raw materials soar, manufacturers pursue new ways to decrease consumption and make their factories more efficient. Higher costs mean that investments that were in the past dismissed due to long paybacks are now becoming attractive. Sustainability, and the push towards carbon-neutrality also puts pressure on companies to invest in green technology. Whilst companies should undoubtedly keep focus on green investments, there is a low-hanging fruit that often goes unnoticed: operational excellence.

Reaching stable basis weight is a struggle

In a recent article published in Tissue World Magazine in 2021 we discussed how manufacturing variability is common in the paper industry; companies are struggling to control base weight even within a single batch, and to meet minimum weight targets most were needing to compensate by increasing the average weight of their tissue rolls, therefore "giving away" a percentage of their product. This was shown by simply assessing basis weight variability of tissue rolls of the main manufacturers in Spain and Portugal. The results of that study showed that many companies – some of them large multinationals – were struggling to manufacture paper with stable basis weights.

The impact of this variability is massive. Manufacturing variability is indeed the tip of the iceberg, as lying beneath the surface one will find customer complaints, sheet breaks, excessive consumption of cellulose, water and energy, and more importantly, a culture that is not focused on operational excellence.

MANUFACTURING VARIABILITY IS INDEED THE TIP OF THE ICEBERG, AS LYING BENEATH THE SURFACE ONE WILL FIND CUSTOMER COMPLAINTS, SHEET BREAKS, EXCESSIVE CONSUMPTION OF CELLULOSE, WATER AND ENERGY, AND A CULTURE THAT IS NOT FOCUSED ON OPERATIONAL EXCELLENCE.

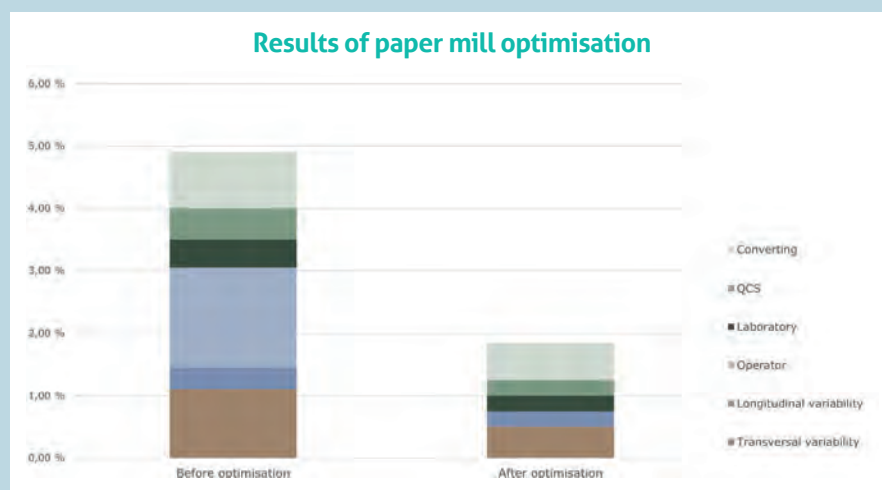


Figure 1: AfH tissue, World, sales, MFP, USD, million

Quantify First

"What is not defined cannot be measured. What is not measured, cannot be improved. What is not improved, is always degraded", said British physicist and mathematician William Thomson, Baron Kelvin of Largs. This, of course, also applies to manufacturing variability.

Most companies control top level KPIs such as specific consumption, number of defects, total production. Nonetheless, to improve their metrics, companies must quantify, track, and improve process variability daily at paper machine level. The more evident ones are for tracking variability of paper quality, such as basis weight, humidity, bulk, strength, or softness. But to really reduce variability, companies should identify critical process variables, track their variability, and implement statistical process control where needed.

Case Study: Basis Weight

Consider a simple parameter that each paper manufacturer should be able to accurately control: basis weight. Weight and humidity control are critical for every tissue manufacturer. Variability will unavoidably result in a loss of profits since the finished product is sold in units rather than weight. When there is variation, some of these end-user rolls are smaller in diameter than others. In these cases, when converting jumbo rolls to consumer rolls production departments frequently increase the number of sheets, resulting in the majority of rolls delivered to the public weighing more than their nominal weight.

What are the origins of this variability? AFRY's detailed study and quantification of the origin of total paper variability in tissue paper:

- Transversal variability. This is usually easily identified by paper makers, as QCS scanners will provide two sigma values for dry weight and humidity. However, values in a large number of machines are far from ideal and may be considerably improved. This is more complex than simply adjusting cross-sectional spindles, as there are interactions between the type of fibre being used, jet/wire ratios, and various head box adjustments. Within a given batch of end-product, transversal variability will amount to most of the variability.
- Longitudinal variability. Weight and humidity will always vary longitudinally during production. This is mostly controlled by the paper machine's control loops, but in many cases, problems come from stock preparation.
- Operator-induced noise. Most of the variation between batches will come from changes in setpoints by operators. In many cases, operators react to lab analysis, changing setpoints. However, best practice is to work with fixed setpoints, using lab analyses only as a reference.
- Laboratory. Variations in methods, ambient humidity, sampling location, and time of exposure will frequently effect weight variability of the final product, particularly in companies that do not operate with fixed weight setpoints.
- QCS calibration. A well calibrated QCS is key. Calibrations should be done regularly, and different curves may be required for different paper grades.
- Converting process. Conversion from jumbo reels to finalised product may add or reduce variability to the product.

Our experience shows the significance of each area, both before and after optimisation of a tissue paper mill. In our experience in an optimally managed company the variability of weight of the end-product should typically be below $\pm 1\%$.

Final remarks

Process variability has a very large impact on product cost and quality. Sources of variability are hard to pinpoint and are spread throughout the whole manufacturing process. Sustainable improvement can be achieved only by implementing a company culture that focuses on quality and process stability.

This article was written for TWM by Eduardo de Almeida, Managing Director, AFRY Zaragoza.

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GLOBAL NEWS UPDATE

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

Helicopter tragedy for tissue industry colleagues

Six tissue industry colleagues from Turkey's Eczacıbaşı Holding and Lebanon's INDEVCO have been killed in a helicopter crash in Italy, along with the Italian pilot. The helicopter was carrying four tissue executives from Eczacıbaşı Holding and two from Lebanon's INDEVCO, and crashed on the border between Tuscany and Emilia-Romagna on 9 June. The helicopter had taken off from Lucca and was heading towards the northern city of Treviso, when it was lost in bad weather.

Eczacıbaşı plant director Altug Erbil, Manisa plant manager Serhat Kenar, Yalova plant manager Arif Cez, and investment project manager Ilker Ucak lost their lives in the crash. The Chairman of Eczacıbaşı Holding expressed his grief and said: "We lost our friends".

INDEVCO employees who died in the crash included Tarek Tayah and Chadi Kreidy. Joining INDEVCO Group in 1985, Tarek Tayah held the role of Business Development Senior Manager since 2020 at General Supplying Agencies (GESPA), INDEVCO's procurement arm. Chadi Kreidy had been with INDEVCO since 2005. In 2018, he took on the role of General Manager at Sanita, an INDEVCO member company.

A spokesperson for the business told TWM: "Tayah and Kreidy exemplified INDEVCO's spirit and core values.

"The company and its employees were devastated by the loss of such important members of the INDEVCO family."

"He leaves behind a universe of affection": Sofidel Group Co-founder Emi Stefani passes

Emi Stefani, the co-founder of the Sofidel Group in 1966, has passed away suddenly at his home in Porcari, Lucca, on 28 June.

An industrialist with great vision, work ethic and courage, Emi Stefani was born on 9 October 1930 in Villa Basilica, Lucca, and became one of the leading figures in the history of the tissue paper industry, as well as the Chairman of the Sofidel Group until 2021.

Edilio Stefani, Stefani's son and Chairman of the Sofidel Group, said: "My father was an extraordinary example as an entrepreneur, one of the great papermakers, and as a man.

"His well-known qualities of loyalty, candour, and human empathy made him appreciated by so many during his long years in business.

"He leaves behind a universe of affection, which is what will help us live through this difficult time."

Luigi Lazzareschi, Sofidel Chief Executive Officer, said: "Emi Stefani has been like a second father to me.

"A figurehead who supported and sustained me when I joined the company. His passion for the company, his ability to face challenges, and his natural predisposition for human relationships have made the entire Sofidel community richer and stronger.

"We unanimously embrace and thank him with enormous affection and gratitude for all that he was able to give."



Above: Emi Stefani, Cavaliere del Lavoro (Order of Merit for Labour)

EUROPE

Metsä Tissue announces temporary production stops

Metsä Tissue has announced that its mills in Western and Eastern Europe will have day-long temporary production stops due to extremely high energy prices.

At the time of going to print, the stoppages had started in the week commencing 11 July in the company's Kreuzau mill in Germany and its Zilina mill in Slovakia.

Tobias Lüning, SVP, Central Europe, Metsä Tissue, said: "We are diligently

taking all actions possible to deliver hygiene necessities to Western and Eastern European markets and we are evaluating the situation daily.

"However, there is a risk that out-of-stock situations will occur if these extreme cost conditions prevail."

The business added that profitability will continue to be reviewed daily and high energy costs may continue to cause temporary production shutdowns.

It said: "The tissue business is very energy intensive and the extremely high energy prices are making the situation critical.

"The great volatility in the current

business environment and the recent extreme developments in cost inflation have resulted in these temporary production stops."

The company has been implementing all actions possible to mitigate the price conditions to safeguard the continuity of its operations and to deliver hygiene necessities to its markets.

Despite these actions, the cost situation has emerged critical and is expected to continue very volatile.

The temporary production stops may also result in further challenges in the delivery capability of tissue hygiene products.



North American boost: Paper Excellence's purchase of Resolute includes the company's Calhoun tissue mill in Tennessee

NORTH AMERICA

Paper Excellence to acquire Resolute in \$2.7bn all-cash deal

Canada's Paper Excellence Group is to expand its North American footprint after entering into a definite agreement to acquire Resolute Forest Products through its US unit Domtar. It is the second major deal in 14 months after Richmond, British Columbia-based Paper Excellence announced the purchase of Domtar in May 2021.

Patrick Loulou, Vice Chair and Chief Strategy Officer at Paper Excellence Group, said the purchase of Montreal, Quebec-based Resolute "complements our existing pulp, paper and packaging businesses and adds capabilities in lumber and tissue".

When asked about the company's plans for Resolute's tissue manufacturing and pulp divisions following the acquisition, a spokesman for Paper Excellence Group told TWM: "The business fully trusts management of both companies to build on their respective businesses."

Resolute will become a wholly owned subsidiary of Domtar and continue to operate on a business-as-usual basis under the Resolute name. The Resolute management team will remain in place at the company's headquarters, and the company said it plans to retain Resolute's

production locations and support its existing growth strategy, focused on "strategic investments in its lumber and pulp businesses, and maximising the value of its paper and tissue businesses".

It also plans to undertake a feasibility study for the eventual conversion of Resolute's Gatineau, Quebec, newsprint mill to the production of packaging paper.

GLOBAL

Raft of pulp price increases announced by world's pulp producers

Suzano and Klabin have confirmed they are announcing a range of global pulp price hikes in July. Swedish pulp producer Södra declined to comment on any plans to implement further increases when contacted by TWM. At the time of going to

print, Suzano had confirmed to TWM it is raising hardwood prices in three markets and that the increases will be between \$20 and \$40 per tonne.

In Europe, the price of eucalyptus will be increased by \$30 per tonne, raising the reference price to \$1,380 per tonne. In North America, it will increase its prices by \$40 per tonne, meaning that the cost of one tonne of eucalyptus pulp will now be \$1,610.

In China, it will make increases of \$20 per tonne, pushing the current price of \$840 per tonne up to \$860.

Suzano declined to comment further.

Klabin also confirmed to TWM that it will apply readjustments in the price of eucalyptus pulp ranging from \$20 to \$40 per tonne. In America, prices per tonne will increase by \$40, resulting in a tonne of pulp now costing \$1,610. In Europe, prices will be increased by \$30, raising the price for

SUZANO AND KLABIN HAVE CONFIRMED THEY ARE ANNOUNCING A RANGE OF GLOBAL PULP PRICE HIKES IN JULY. SWEDISH PULP PRODUCER SÖDRA DECLINED TO COMMENT ON ANY PLANS TO IMPLEMENT FURTHER INCREASES WHEN CONTACTED BY TWM. SUZANO HAS CONFIRMED TO TWM IT IS RAISING HARDWOOD PRICES IN THREE MARKETS AND THAT THE INCREASES WILL BE BETWEEN \$20 AND \$40 PER TONNE.

eucalyptus pulp to \$1,380.

In Asia, the increase will be \$20, raising the price to US\$ 860 per tonne.

A spokesperson for Klabin told TWM: "The leading causes of this new global pulp price increase (expected for July) are related to the current tight supply conditions and continued strong demand, supply disruptions – both planned and unplanned, delays in the introduction of new projects – 800kt impact on the hardwood pulp supply from Finland – and also due to restrictions on wood imports from Russia and logistical bottlenecks."

In North America, Canfor Pulp said to TWM that it sees "current pulp pricing levels at record highs".

Brian Yuen, Canfor Pulp, Vice President Pulp & Paper Sales and Marketing, said: "Pulp prices continue to trend up, i.e. June 2022 was the sixth consecutive NBSK price increase in North America.

"The primary drivers for these are the unprecedented unplanned pulp downtime (+2M tonnes July YTD) coupled with ongoing global supply chain bottlenecks (limited boxcar supply, port congestion, shortage of skilled labour, etc.)."

He confirmed the business has announced price hikes for its NBSK pulp in North America, which has increased from \$1,450 per tonne in January 2022 to \$1,805 per tonne in June 2022.

CHINA

Liaoning Yusen boosts high-quality tissue capacity

Liaoning Yusen Sanitary Products Co. has invested in two Valmet-supplied IntelliTissue 1600 tissue machines to be supplied at its mill in Tai'an, Liaoning province. The lines will produce high-quality tissue with a basis weight range of 12.5–31.3g/m², with a design speed of 1,600m/min and a reel trim of 3.5m.

The scope of supply also includes approach pipe and instrumentation mechanical drive system, lubrication system, steam system and other auxiliary systems.

The value of the order will not be disclosed but the delivery scope is typically around €6–8m.

Sun Paper boosts production capacity

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

LIAONING YUSEN SANITARY PRODUCTS CO. HAS INVESTED IN TWO VALMET-SUPPLIED INTELLITISSUE 1600 TISSUE MACHINES TO BE SUPPLIED AT ITS MILL IN TAI'AN, LIAONING PROVINCE. THE LINES WILL PRODUCE HIGH-QUALITY TISSUE WITH A BASIS WEIGHT RANGE OF 12.5–31.3G/M², WITH A DESIGN SPEED OF 1,600M/MIN AND A REEL TRIM OF 3.5M.

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

BTG launches ReelTime analytical software

BTG has targeted the global tissue manufacturing market with the launch of its ReelTime analytical software.

The software targets process variations from the pulper to the headbox, whilst at the same time predicting and impacting product quality in "real time".

BTG said it also combines innovative measurement, visualisation and analytical software, supported by process and tissue-making expertise and knowledge.

Ian Padley, Global Solutions Manager, said: "As tissue makers look towards self-regulating and autonomous papermaking, we believe implementing integrated digital solutions such as ReelTime will provide the basis for achieving this."

Toscotec targets premium quality structured tissue with INGENIA launch

Toscotec has launched INGENIA, the tissue machinery supplier's latest concept machine that produces premium quality structured tissue paper.

The supplier said that the quality generated by the INGENIA line is "substantially higher than textured tissue and close to TAD produced paper, but using 35% less energy".

It added that the line's launch is in response to demand for premium quality tissue obtained with lower energy use and lower capital investment than TAD lines, and builds on the R&D of Toscotec and Voith, and field data validation on TAD and structured paper systems.

Körber presents MTC ITF Change folding head

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

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

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

BTG launches Yankee refreshment blade

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

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

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

GERMANY

Essity launches first straw toilet paper into German market

Essity has launched its first straw toilet paper product – Zewa – into the German marketplace.

A spokesperson for the company said the move makes Essity "the first brand manufacturer in Europe to offer toilet paper with straw – with the same high quality".

The product uses straw leftover from local agriculture at the company's Mannheim plant. It grows back quickly and can be processed into cellulose.

The complete Zewa range contains a straw pulp content of at least 10%, which according to the manufacturer makes Essity "the first company in Europe to use a residual product from local agriculture in industrial production in order to improve the carbon footprint of its products across the range".

Ingolf Braun, Vice President Sales & Marketing Region Central & East Consumer Goods, Essity, said: "For Zewa with straw,

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SAUDI ARABIA

Saudi Paper Group increases premium tissue capacity with investment

Saudi Paper Group (SPG) has signed an agreement of understanding for the supply of a Toscotec-supplied tissue line to be installed at its plant in Dammam. Supplied on a turnkey basis, the tissue machine will produce 60,000tpy of premium quality tissue, bringing SPG's total capacity to 190,000tpy. The scope of supply includes a state-of-the-art integrated cogeneration plant for maximum energy efficiency.

Toscotec is currently supplying an advanced AHEAD 2.2S tissue machine and an OPTIMA slitter rewinder scheduled to be installed in the coming months at SPG's Dammam tissue mill to achieve a production increase of 30,000tpy.

AUSTRALIA

Essity acquires leakproof apparel company Modibodi for AUD140m

Essity has acquired Modibodi, a leakproof apparel company in Australia, New Zealand and UK. Through the acquisition, Essity will strengthen its position in leakproof apparel, which it said is the fastest growing product segment in Intimate Hygiene, which includes Feminine Care and Incontinence Products.

Magnus Groth, President and Chief Executive of Essity, said: "The acquisition of Modibodi strengthens Essity's position in leakproof apparel and enables faster growth within better-for-you, better-for-the-planet solutions.

"Modibodi has the qualities we are looking for with leading market positions, strong brand and sustainability credentials as well as excellent digital marketing and e-commerce capabilities."

SOUTH KOREA

Ssangyong boosts packaging capacity with Infinity line

Ssangyong has adapted to changing trends in tissue packaging by investing in

an Infinity Machine & Engineering Corp.-supplied packaging line for its Jochiwon plant. The line features Infinity's Eclipse T4 multipack poly wrapper, conveyor with multiple product manipulation devices and an EPXL poly bundler.

BRAZIL

Suzano boosts capacity with 60,000tpy Espírito Santo plant

Hardwood pulp producer Suzano has announced plans to build a R\$600m tissue paper and conversion plant in Brazil.

Based in Aracruz, Espírito Santo, the plant is in response to Brazil's growing demand for sanitary paper products.

It will have an annual production capacity of 60,000tpy which will be converted into toilet paper and paper towels, with construction expected to be finished in two years.

Walter Schalka, Suzano's Chief Executive, said: "In late 2019 we announced an investment of nearly R\$1bn in the state of Espírito Santo, which included construction of a plant in Cachoeiro de Itapemirim.

"This unit started operations in early 2021 and now, less than a year and a half later, we have announced plans to make another important investment in the state."

The Aracruz project is subject to approval and analysis by the Board of Directors of Suzano and the relevant local authorities.

IRELAND

Zeus acquires JJ O'Toole as part of latest investment strategy

Irish-owned global packaging company Zeus has boosted its product offering after acquiring Ireland's oldest packaging company JJ O'Toole. It is the latest in a recent series of acquisitions into the retail, ecommerce, industrial and food and beverage sectors made by the business. Founded in 1914, JJ O'Toole employs 25 people with customers including Dunnes Stores, Brown Thomas and Newbridge Silverware. Zeus founder and owner Brian O'Sullivan said: "As Ireland's longest established packaging company, JJ O'Toole has an impressive reputation in the Irish retail and ecommerce markets.

"As two strong Irish companies joining together, we are now in a stronger position than ever, allowing us to continue to deliver innovative and sustainable solutions for our combined customer base.

"Zeus also remains on track to be the largest sole shareholder packaging company in the world by 2023."

JJ O'Toole owner and Managing Director Vicki O'Toole said: "JJ O'Toole has an incredible history of survival and success with a kaleidoscope of wonderful stories.

"The company has been the centre of packaging excellence in Ireland for over a century with an outstanding reputation, endorsed by an exceptional loyal clientele, many who have remained with the company for over 40 years."

So far in 2022 Zeus has acquired UK companies Swanline Group and BoxMart and Canadian agricultural supply business Agri-Flex. The company also acquired Aldar Tissue in 2019.



Pictured at the signing: Zeus founder and owner Brian O'Sullivan and Vicki O'Toole Managing Director, JJ O'Toole



Own-brand innovation: Sainsbury's launches double length products into the UK market

UK

Sainsbury's launches double-length own-brand toilet rolls

Supermarket giant Sainsbury's has launched double-length toilet rolls into the UK market, a move which it said reduces plastic packaging by 30%* – equating to 84 tonnes of plastic saved. The business said the new double length toilet rolls "last longer, and are lower in price, offering customers high-quality and great value".

It added that they are designed to help customers reduce plastic waste at home, with the multipack rolls including double the number of sheets on each roll compared to the retailer's standard offerings, and on average use 30% less plastic.

Sainsbury's said: "The double toilet rolls are estimated to save a total of 84 tonnes of plastic and 164 tonnes of cardboard from card cores (50%).

"By fitting more paper onto each roll, the toilet rolls take up less space.

"This reduction will lead to removing 28% of lorries from the roads required for supplier transportation, minimising the impact on the environment."**

The double toilet rolls cost from £1.75 for a multipack of two double rolls which Sainsbury's said equates to the same quantity of sheets in a four-pack of standard toilet rolls.

It added that all toilet roll plastic packaging is recyclable – customers can bring it to one of the company's plastics recycling points, which it said are available in all Sainsbury's UK supermarkets.

Details:

- Super Soft TT 440sh 2X12 Roll White
- Super Soft TT 440sh 4RX8 Roll White
- Super Soft TT 440sh 4RX8 Roll Natural
- Super Soft TT 440sh 8RX4 Roll White
- House 247 toilet tissue 4 Double Roll
- House 247 supreme toilet tissue 9 Double Roll.

* Sainsbury's said this figure is based on data from supplier Sofidel and is the average plastic reduction across the six SKUs moving to double roll. This is based on the old single roll plastic weight versus the new double roll plastic weight.

** Based on data from supplier Sofidel using four months forecast of sales between December 2021 and March 2022 and then multiplying the total four-month data by three to give 12 month sales.

HUNGARY

Vajda-Papír boosts capacity with turnkey start-up

Hungary's Vajda-Papír has started up its Toscotec-supplied double-width AHEAD 2.2L tissue machine at its Dunaföldvár facility. The AHEAD 2.2L machine features a net sheet width of 5.6m, a maximum operating speed of 2,200m/min, and a production capacity of over 80,000tpy.

The supply of PM2 was a complete turnkey, including the entire tissue production line and all erection operations at the mill.

It included the entire stock preparation

system and Toscotec's patented TT SAF (Short Approach Flow) fitted with a double dilution system to maximise energy savings, and comprised the electrification and controls, dust and mist removal systems, boiler plant, bridge cranes, air compressor station, roll handling and wrapping systems, and hall ventilation with conditioning system.

For the mill's PM1, Toscotec also supplied an OPTIMA 2600 slitter rewinder equipped with automatic shaft puller and dust removal system that came online in February 2022.

It is equipped with Toscotec's state-of-the-art technology, including a fully hydraulic TT Headbox-MLT, a shoe press of the upgraded design TT NextPress, a third-generation TT SYD Steel Yankee Dryer, and TT Hood system designed for maximum energy recovery.

Attila Vajda, Managing Director of Vajda-Papír, said: "We have a vision for Vajda-Papír's expansion to be in harmony with the environment, and that is why we chose the most energy efficient technology available on the market.

"The successful start-up of PM2 represents a key achievement and an important step forward for Vajda-Papír's sustainable growth."

Founded in 1999, Vajda-Papír is headquartered in Budapest and operates three sites in Budapest, Székesfehérvár and Hungary's biggest and most modern integrated tissue mill at Dunaföldvár, south of Budapest.

It manufactures 115,000tpy of toilet tissue, handkerchiefs, towels, and napkins and distributes its products to the consumer and AfH markets in Hungary and over 30 countries worldwide.



Start-up team: Vajda-Papír boosts production capacity with its Toscotec-supplied double-width AHEAD 2.2L

DOMESTIC CONSUMER TISSUE DEMAND IS OUTPACING THAILAND'S HOME PRODUCTION CAPACITY

With the tissue powerhouses of China and Indonesia nearby, the country needs an investment cycle to retain its competitive position after the pandemic setback.

Thailand's history as a unified country dates back to the 13th century. Although pressured by colonial powers, the Thai Monarchy maintained the independence of the core Thai lands until Japan invaded in 1941. Many of the current tissue mills still running date back to this post-war period.

In the 1970s, Thailand's government launched a population control initiative resulting in a significant change in population growth, and an aging population that we see today. Figure 1 shows the population trend as a line over this study interval, and as we can see, the population growth is estimated to be at 0.23% for 2022.

Thailand has a well-developed infrastructure and is highly dependent on international trade. However, its workers need retraining in order to keep up with the developing productivity of its trade partners. Real GDP growth slowed from 4.26% in 2017 to 2.62% in 2019 just before it entered the pandemic. The bar chart in Figure 1 shows the GDP as a per

capita measure based on purchasing power parity. There was a pullback in 2020 due to the pandemic and a slow recovery in 2021, factors that do not support a domestic tissue industry's strong growth from more consumers or purchasing power.

Thailand has relatively low unemployment at 0.99% in 2019. Figure 2 shows the unemployment trend as a series of bars. While it did spike up in 2020 due to the pandemic, it was still considered at a relatively low level when compared to most other economies. In 2019, Thailand's inflation rate was 0.7%, which again, is very low compared to most other countries. The inflation trend is shown in Figure 2 as a line. These statistics however tend to put Thailand in a relatively good position for consumer spending.

These economic and demographic factors have supported a relatively slow growth in domestic tissue consumption. This is reflected in the cautious growth of Thailand's tissue machine fleet. The changing trend in the number of tissue



Bruce Janda
Senior Consultant, Fisher International

machines is shown in Figure 3. Seven new machines were installed between 2013 and 2021, while only one was removed in 2017. Several tissue manufacturers are active with two or more mill sites in Thailand. Notable is the international company Kimberly-Clark, headquartered in the United States.

Thailand is very involved in international trade and runs a small positive trade surplus. However, the country tends to import more tissue than it exports. Figure 4 shows the tissue exports with a significant drop starting in 2018. Current tissue customers include Australia, Malaysia, Myanmar, and the United States.

Thailand's tissue export trend shown in Figure 5 shows an interesting anomaly. The trend of imports shows a linear growth pattern that indicates that tissue machine additions have not kept up with domestic consumer tissue demand. However, the spike in imports from Indonesia seen in 2020 suggests a disruption in domestic mill production due to pandemic closures. In addition to Indonesia, China is becoming a significant tissue supplier to Thailand as well.

It will be interesting to see the tissue import trend in 2022 and 2023 to see if Indonesia will continue to play an expanded role and if domestic Thai tissue producers will add plans for expanding capacity.

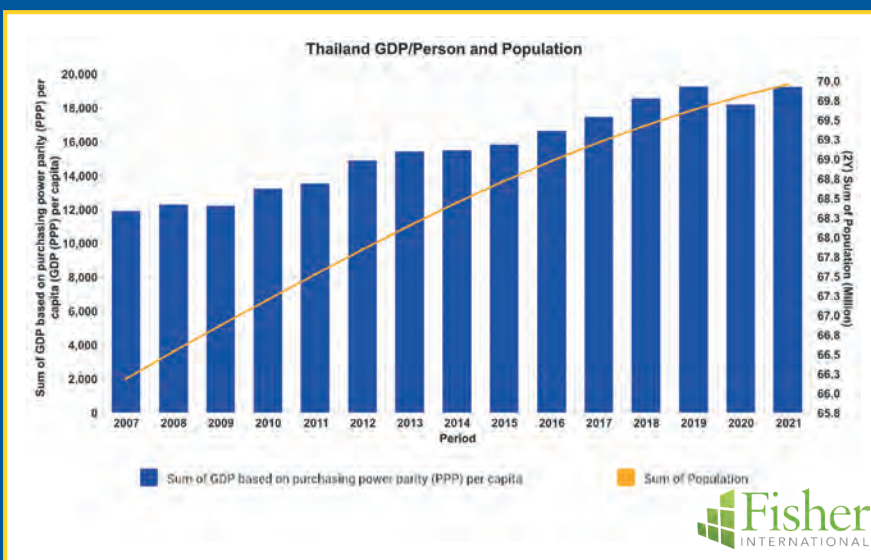


Figure 1: GDP/Capita and Population Trend



Figure 2: Inflation and Unemployment Trend

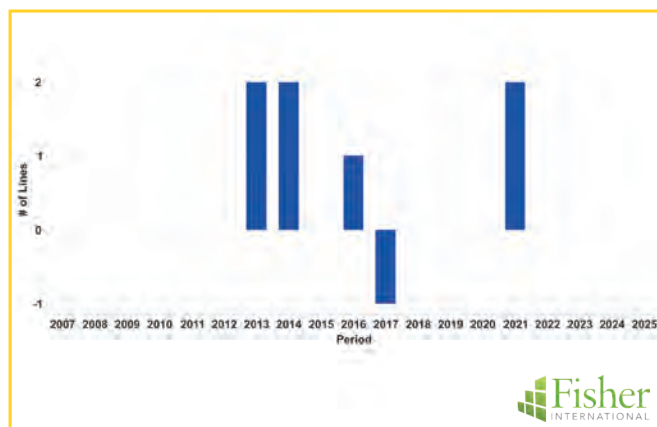


Figure 3: Tissue Machine Count Changes Trend

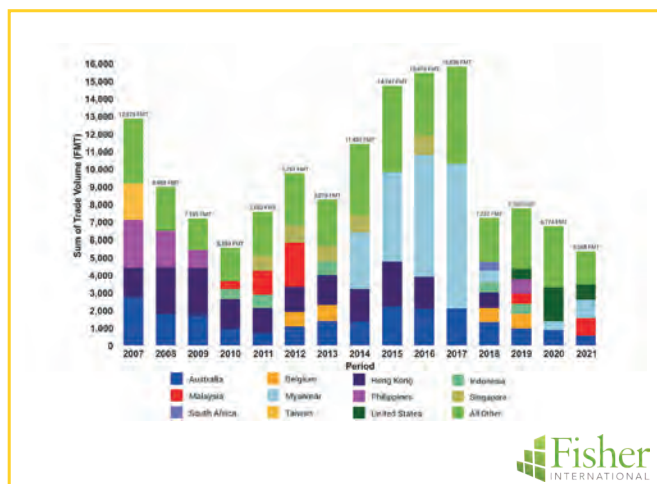


Figure 4: Thailand Tissue Exports Trend

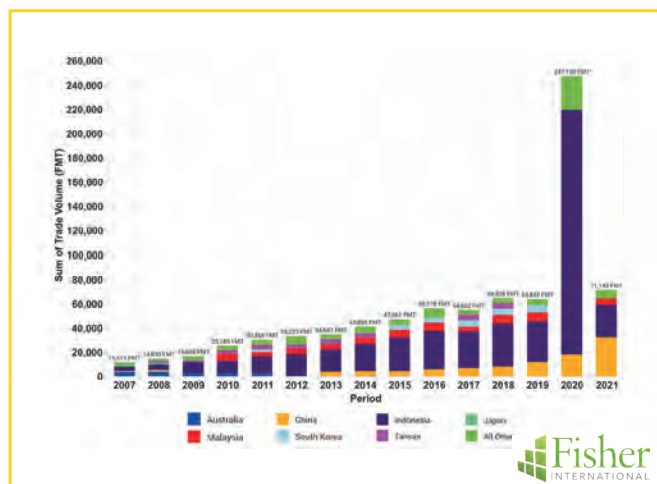


Figure 5: Thailand Tissue Imports Trend

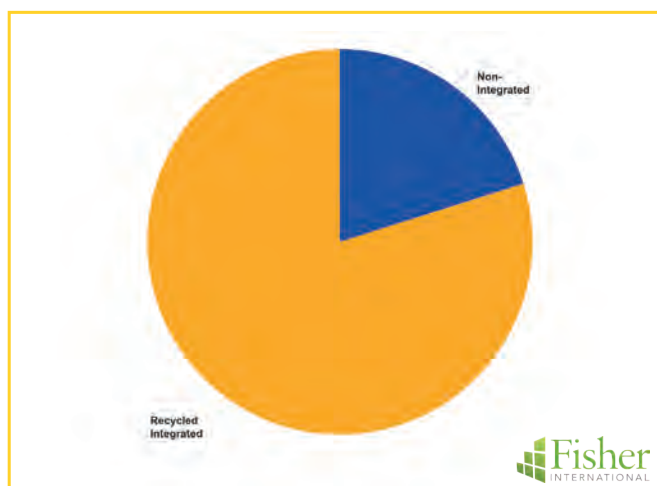


Figure 6: Thailand Tissue Mill Fibre Integration

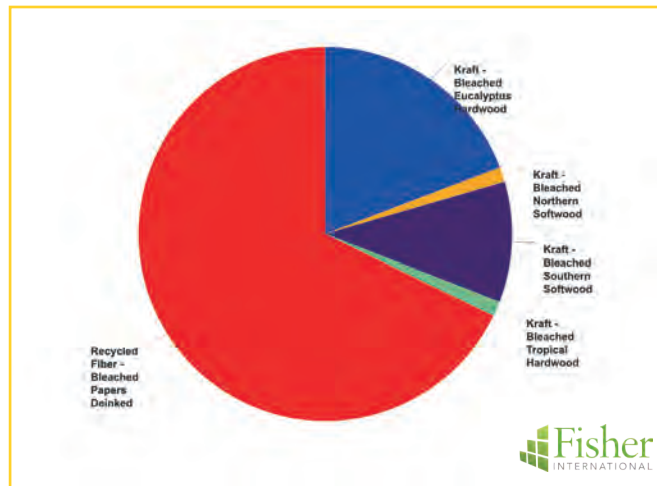


Figure 7: Thailand Tissue Mill Fibre Sources

However, there are no plans for new machines in 2022-2025, as shown in Figure 3.

Another noteworthy observation is that none of Thailand's tissue machines appear to be using bamboo pulp. This is interesting as niche tissue products marketed in North America as "Tree-Free" claim to use Thai bamboo market pulp. However, it must not have a massive appeal in the domestic market.

Most tissue mills are partially integrated with recycled fibre, as shown in Figure 6, and there appear to be no integrated virgin fibre tissue mills. The Thai tissue fibre sources are shown in Figure 7. Recycled fibre makes up about 66% of the total. This is less than the 80% shown in Figure 6 for the total capacity of the integrated recycled

mills. The difference is explained by the fact that many of the tissue mills are only partially integrated and purchase market pulp.

Bleached eucalyptus kraft pulp is the most common pulp source followed by bleached southern softwood kraft. Smaller amounts of bleached tropical kraft and bleached northern softwood kraft are also used.

Thai tissue products are focused on the consumer market with a small portion of specialty tissue grades as tissue wrap stock and commercial towels. More than half of the end-use consumer tissue is bath followed by towels and facial tissue. In fact, the amount of consumer towels produced is higher than most comparable economies.

A comparison set of Indonesia, Malaysia, Taiwan, South Korea,

Philippines, and Australia was selected to benchmark Thailand's tissue machine fleet. The relative average quality of the machines is shown in Figure 9. The size of each bubble represents the relative size of each country's tissue production. The X-axis is the average technical age of the country's tissue machines and the Y-axis is the average machine width.

Indonesia is a major player due to its large tissue production compared to all the others. Indonesia also has the newest and widest tissue fleet for the best cost and quality potential. Thailand is the oldest tissue fleet, and only the Philippine's average tissue machine is narrower.

The Tissue Machine Quality analysis is only partially reflected in the average tissue production cash costs benchmark shown in Figure 10. Thailand is in the middle of the comparison set of countries. Indonesia's large capacity and newest machines make for a strong competitor.

The average viability of the same set of countries' tissue production is shown in Figure 11. Despite the age of Thailand's tissue machines, this benchmark shows Thailand in second place in regard to mill viability. However, it's important to note that the gap between Indonesia and Thailand is remarkable.

The carbon footprint of the comparison set is shown in Figure 12. Again, Thailand's footprint is relatively high due to the fossil fuels burned for power onsite. And once again, Indonesia is a stronger player in this analysis.

Indonesia has a relatively good environment for continued tissue demand as the migrant labour force supplements the slow population growth and the consumer income growth will support further tissue demand. However, Thailand's tissue fleet on the other hand is old and narrow, despite the new additions since 2012, and has fallen behind the demand growth. An upset like the pandemic in 2020 allowed Indonesian imports to replace Thai domestic tissue production quickly. With Indonesia as a tissue powerhouse due to its new equipment and fibre sources, Thailand's tissue mills will need to find ways to reinvest if they intend to compete and hold market share with this eager competitor nearby.

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

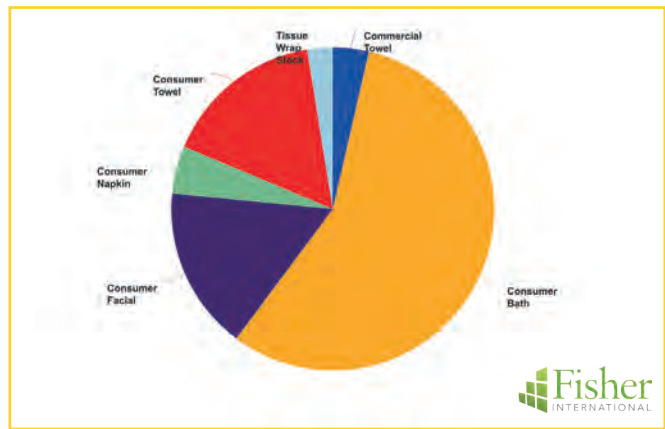


Figure 8: Thailand Tissue Product Formats

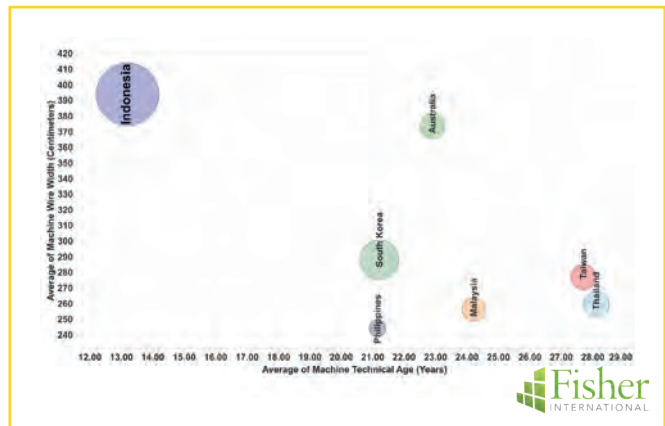


Figure 9: Thailand Tissue Machine Quality

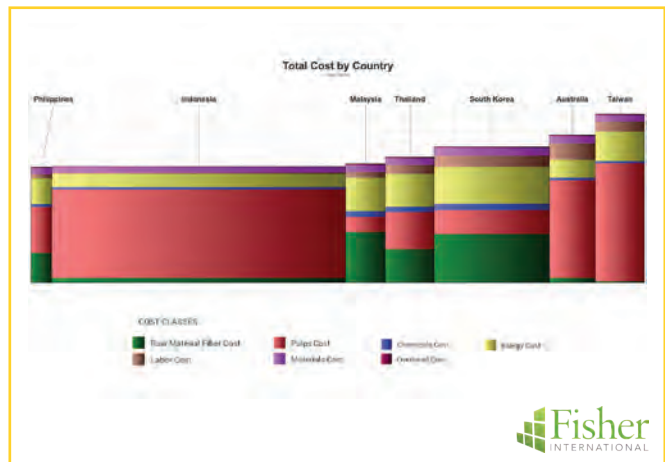


Figure 10: Thailand Cost Benchmark

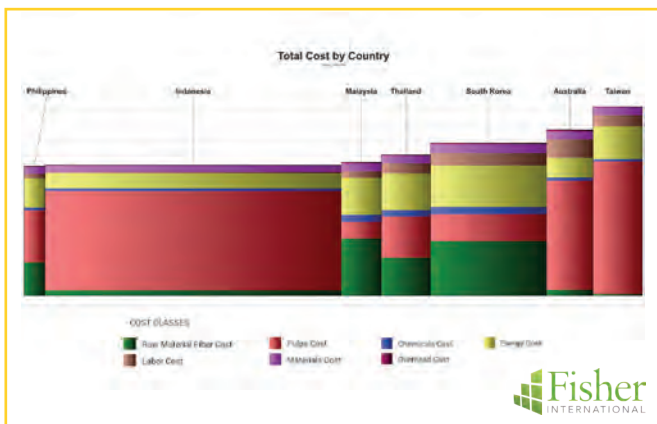


Figure 11: Thailand Tissue Mill Viability

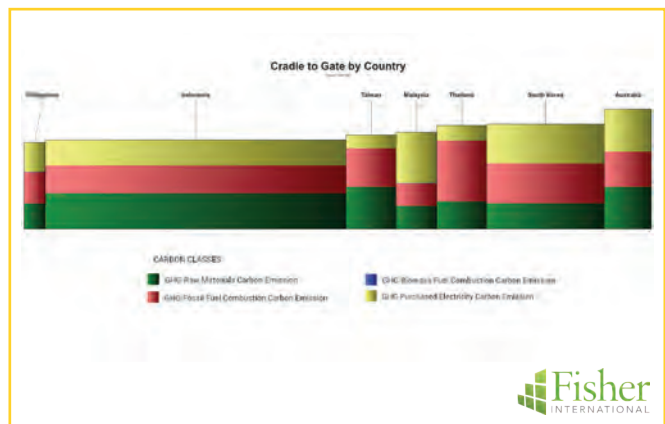
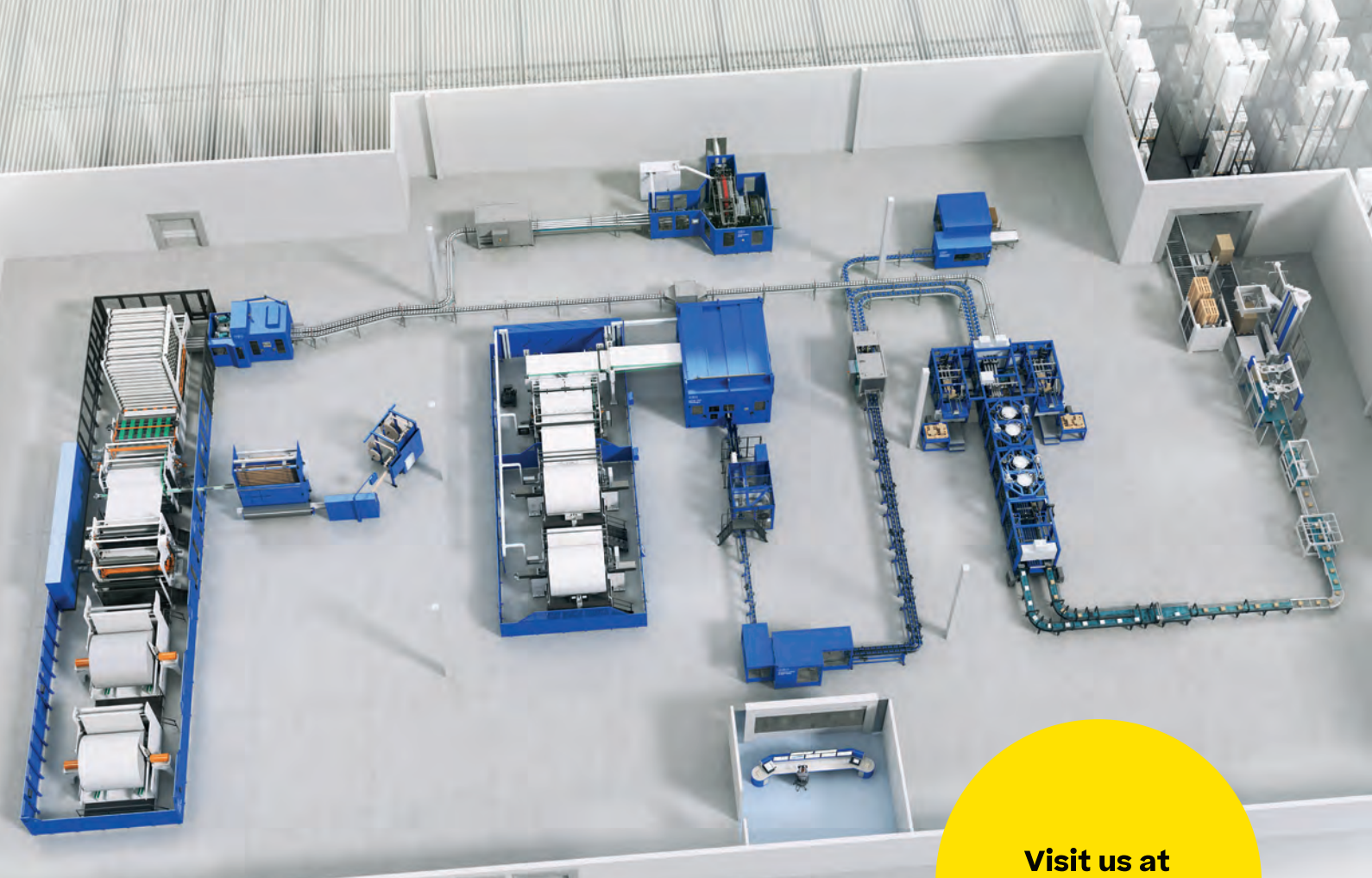


Figure 12: Thailand Benchmark Carbon



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THAILAND TISSUE: REALISING POTENTIAL IN A DISRUPTED WORLD

In previous articles we have highlighted the driving forces behind retail tissue as a combination of factors centring on income, demography and availability. Thailand is no less subject to these forces than other markets, but some of the statistics linked to these drivers may be somewhat surprising.



Ian Bell
Head of Tissue and Hygiene,
Euromonitor International

Demography is destiny

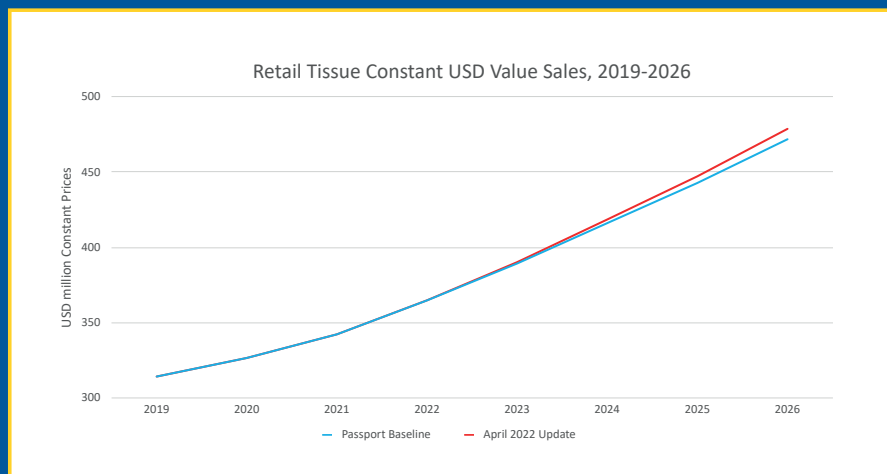
Taking demography as an example, on average, fertility in Thailand is below that of most Western markets, with a rate of 1.5 compared to 1.65 in the UK for example. This puts the market at a very interesting juncture, one of a growing number of Asian markets that have managed to navigate the course of development while keeping a lid on population growth. Indeed, with fertility at such relatively low levels this put the country right in the middle of what is commonly referred to as the demographic 'trilemma', a development choice from competing forces, the economic, the family and social homogeneity. Preserving two is attainable but not three, meaning there is a compromise to make somewhere down the road and where this compromise lands will have implications for the fortunes of many markets, not least tissue products, as economy, demographics and homes are three core drivers.

The Thai demographic structure in 2022 is decidedly European in nature, ageing and with total population topping out at 79 million, and forecasts suggesting population

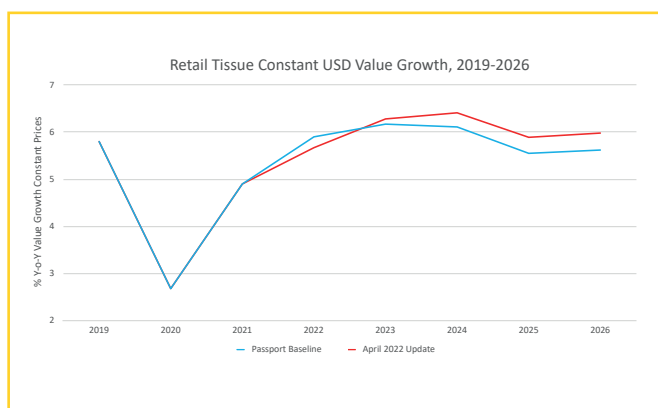
will move into decline from around 2028. Although the Thai government has looked to make maternity benefits more generous, including 96 days of paid maternity leave, there is little sign that this will boost birth rates, all the evidence from comparable markets in the region is that falling birth rates are next to impossible to turn around through policy. For the tissue market, this is significant as it clearly points to a ceiling on consumption from a numbers perspective. Immigration and elongation of life expectancy are unlikely to make any significant contribution to total population numbers, this again points to the trilemma, low birth rates and a low (relative) average immigration rate mean that longer term, and like Japan, there will be significant economic questions to answer, not least to what extent automation can help solve the problem (more on this later).

Housing upgrades and time

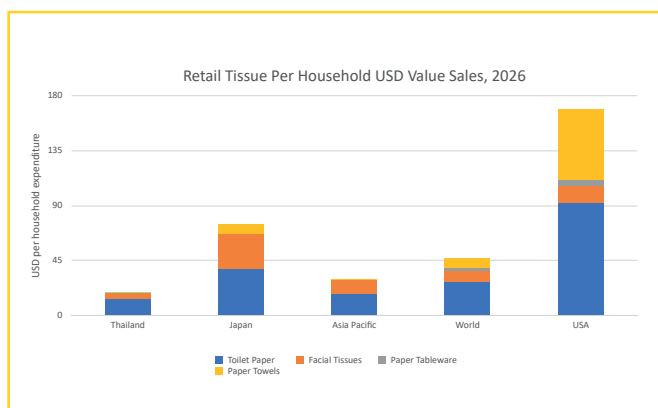
One saving grace for the retail tissue industry will come from household growth, the current 25 million households will continue to grow on average by just under



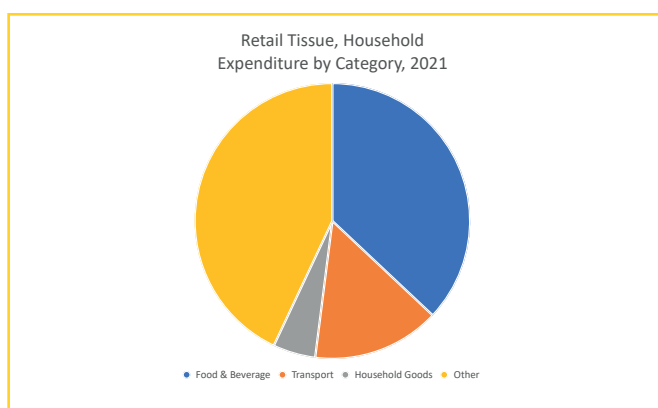
Source: Euromonitor International



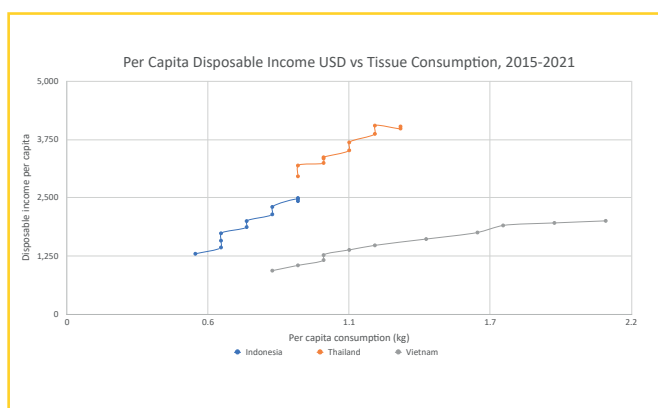
Source: Euromonitor International



Source: Euromonitor International



Source: Euromonitor International



Source: Euromonitor International

1% CAGR over the coming five years, although this growth is decelerating long term in line with the underlying population trend. A further positive factor for retail tissue is the continued growth of flush toilet penetration, 90% reported in 2022 growing to 93% by 2030, as well as growth in the number of homes with a dedicated bathroom, from 83% to 87% over the same period. The expansion and modernisation of Thai housing stock will form a positive base for tissue expansion over the medium term, this will also be impacted by how quickly Covid-19 lifestyle change, more time spent at home for example. Google Mobility data for 1 July 2022, indicates a 21% decline in transit footfall and a 7% increase in time spent in residential locations compared to its May 2020 baseline.

Part of the development of housing stock is linked to disposable income levels, economic growth and growing income levels will remain a strong suit for the tissue industry which will continue to push volumes as well as being the key to broader format adoption beyond the core toilet paper category.

Tentative tissue forecasting

The surge in inflation over the last few months, although perhaps dampening the prospects for market growth, by April 2022 (our most recent data update, another is due in July 2022 but arrives too late for this article), was somewhat limited. Thailand tissue sales are still forecast rapid >6% value growth through to 2026, although this is a modest downgrade on expectations from the end of 2021. Needless to say, growth forecasts will inevitably be downgraded further as inflation bites into consumer expenditure, but this is more likely to be disruptive, than derail the course of market development.

Original Screen Shots

While discussions around pricing and availability are nonetheless important, the position of the Thai tissue market relative to others in the region is a strong basis to have confidence around continued long-term growth prospects. That is to say, against any measure, tissue consumption in Thailand remains far behind other markets in the region, the regional average and is dwarfed by expenditure in the world's largest market in the US. Certainly, comparisons with the US are not particularly helpful for a multitude of good reasons, but if only to provide a sense of perspective these figures are presented in the 'Retail tissue per household USD value sales' chart.

A FURTHER POSITIVE FACTOR FOR RETAIL TISSUE IS THE CONTINUED GROWTH OF FLUSH TOILET PENETRATION, 90% REPORTED IN 2022 GROWING TO 93% BY 2030, AS WELL AS GROWTH IN THE NUMBER OF HOMES WITH A DEDICATED BATHROOM, FROM 83% TO 87% OVER THE SAME PERIOD. THE EXPANSION AND MODERNISATION OF THAI HOUSING STOCK WILL FORM A POSITIVE BASE FOR TISSUE EXPANSION OVER THE MEDIUM TERM, THIS WILL ALSO BE IMPACTED BY HOW QUICKLY COVID-19 LIFESTYLES CHANGE, MORE TIME SPENT AT HOME FOR EXAMPLE.

The top half of the advertisement features a dark red background. On the left, there is a circular graphic consisting of three concentric rings. The innermost ring is a solid dark red circle containing the text "TAD+®" in white. A thin white line extends from the right side of this circle towards a larger circular inset on the right. This inset shows a close-up, grayscale image of a textured surface with a repeating cross-hatched or woven pattern.

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The primacy of economic performance

Economic performance will be the critical factor for long-term market development, and this links irrevocably with disposable income levels. While inflation pressures will steal some of the prevailing momentum (more on this next) there is a lot of space to move into, what is euphemistically referred to as 'low hanging fruit'. The link between disposable income growth and retail tissue sales is well established and sees Thailand tissue sales developing relatively well although some way behind the meteoric rise reported in neighbouring Vietnam.

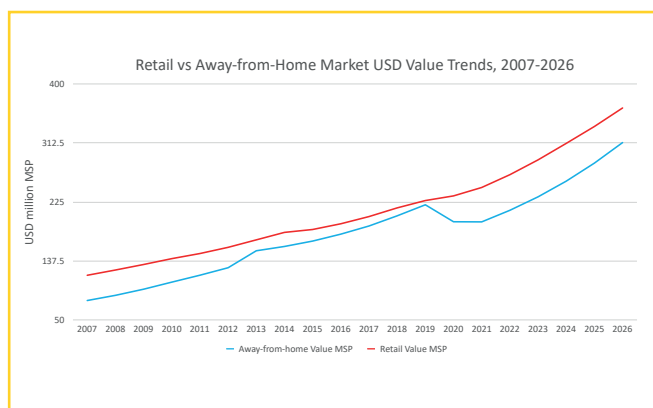
The future growth opportunities for tissue (retail and AfH) are tightly bound to future economic performance and what this does for average household disposable income levels. This will be the critical factor in confirming Thailand's growth trajectory over the medium term. That said, the country has not been immune to the march of inflation, and this has been particularly evident in summer 2022, annual inflation breaking the 7% barrier for the first time since 2008, this up by 2.5 percentage points over a month earlier.

As we have observed internationally, the current pandemic inflation surge has had a particularly invasive effect on household expenditure as it concentrated on food and beverage and transportation, which in the case of Thailand accounts for roughly half of household expenditure on average but an even greater proportion for lower-income homes. For context, already by May 2022, food inflation hit 8.2%, roughly doubling in a few short months, and transportation costs broke 13%, illustrating the country's dependency on imported energy which also has implications for manufacturing, not least tissue production and conversion.

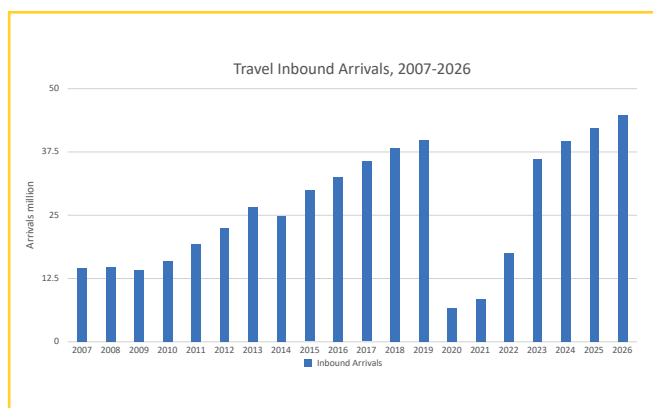
AfH Recovery

While there is much to be optimistic about the future of retail tissue growth in Thailand, this is still only half the story. AfH makes up a surprisingly large share of total tissue sales in the country, and like other markets each facet had a diametrically opposed pandemic experience, with lockdowns and tightening social control boosting domestic use while curtailing institutional sales.

The rebounding of international travel, with tourism making up a significant portion of AfH tissue sales in Thailand, will have an increasing positive impact on category sales. Forecasts for arrivals suggest that tourist numbers could return to pre-pandemic levels by 2025 meaning that this lucrative area for retail tissue will rebound strongly as a result. Taking the wider view, tourism represents 12% of GDP in Thailand, so a rebound of tourism and tourist expenditure not only boosts the AfH sector but has an important 'trickle down' effect for the broader economy, household incomes and ultimately available spend for retail tissue.



Source: Euromonitor International



Source: Euromonitor International

THE FUTURE GROWTH OPPORTUNITIES FOR TISSUE (RETAIL AND AfH) ARE TIGHTLY BOUND TO FUTURE ECONOMIC PERFORMANCE AND WHAT THIS DOES FOR AVERAGE HOUSEHOLD DISPOSABLE INCOME LEVELS. THIS WILL BE THE CRITICAL FACTOR IN CONFIRMING THAILAND'S GROWTH TRAJECTORY OVER THE MEDIUM TERM.

12%

GDP PERCENTAGE THAT
TOURISM REPRESENTS
IN THAILAND

2025

YEAR TOURISM NUMBERS ARE
EXPECTED TO RETURN TO PRE-
PANDEMIC LEVELS

8.2%

FOOD INFLATION LEVELS
ROUGHLY DOUBLED IN
MAY 2022

A 'FULLY REOPENING' THAILAND SEES ITS TISSUE DEMAND BOOM CONTINUE

The country's market leader Kimberly-Clark, celebrating its 150th anniversary, reflects on local shifts in shopping habits and pandemic-accelerated opportunities to pivot and drive stronger penetration for in-home consumption. Ratree Skuntantimeta, Managing Director, Kimberly-Clark Thailand, talks to TWM about growth in the Asia-Pacific region.



Northern Bangkok: Kimberly-Clark Thailand's Pathum Thani plant

This year marks the 150th anniversary of Kimberly-Clark," Ratree Skuntantimeta, Managing Director, Kimberly-Clark Thailand, says from her office in Bangkok. "And throughout our history, we have always taken a consumer-centric approach in all that we do. This ties back to Better Care for a Better World, which reflects our ambition to be a purpose-led and performance-driven company."

The Irving, Texas-headquartered multinational business has been producing personal care products for consumers globally since 1872. It established its two Thai-based tissue plants – one based in Pathum Thani, located in the northern Bangkok metropolitan area established in 1966, as well as the second in Samut Prakan, a central province on the Gulf of Thailand through the 1995 Scott Paper Company merger, and to this day it is still one of

"OVER THE PAST 18 MONTHS WE HAVE SEEN SUBSTANTIAL SHIFTS IN SHOPPER BEHAVIOUR,"

**Ratree Skuntantimeta,
Managing Director,
Kimberly-Clark Thailand**

just a few Western-headquartered tissue manufacturers in the Asia-Pacific region.

In Thailand, it is the country's leading provider of hygiene and cleaning solutions, manufacturing and distributing a variety of products in three core areas: consumer tissue, personal care and Kimberly-Clark Professional. It manufactures Kimberly-Clark facial tissue, bath tissue and paper

towels under its Scott and Kleenex brands for both its consumer and professional businesses (Kimberly-Clark Professional).

Further export potential is increasingly on the horizon: "The products produced from our manufacturing facilities don't just support customers in Thailand," Skuntantimeta says. "We also export them to several countries across the Asia-Pacific region."



When TWM last interviewed Kimberly-Clark Thailand in 2018, increasing urbanisation in the country was resulting in a boom for tissue demand, as well as trends for more varied and sophisticated products. The tissue giant discussed the growing confidence in its Thai and Asian tissue operations, and that it was seeing mid-single digit growth, the result of the country's "strengthened economy, political stability, improving consumer sentiment, rising incomes and increased consumer sophistication".

Consumers were becoming more sophisticated, and demanding products that met their lifestyle needs, seeking more convenience and wanting specialised solutions for specific problems.

Interestingly, the business was also seeing more interest in the Thai health and wellness space and was pursuing innovation in this area. Earlier this year, Kimberly-Clark launched its Kleenex Acne Comfort facial tissue, a product infused with tea tree extract, catering to beauty conscious consumers who seek gentle products that also pamper their skin.

Fast forward to 2022 and Thailand's demographic structure increasingly sets it apart from the countries that immediately surround it. An ageing population of 79 million, forecasts suggest its population will start to steadily decline from around 2028. However, tourism remains a key driver for tissue growth in the country, and the rebounding of international travel is making



up a significant portion of boosted AfH tissue sales.

And on another positive note for the country's AfH market – which makes up a surprisingly large share of total tissue sales – forecasts suggest that numbers could return to pre-pandemic levels by 2025.

Has the pandemic-accelerated 'habit of hygiene' sparked further tissue trend changes? "Over the past 18 months we have seen substantial shifts in shopper behaviour, and this has primarily been due to the global Covid-19 pandemic," Skuntantimeta says. "More people stayed at home, which led to less frequent offline purchases but bigger basket sizes, and there has also been a substantial growth in e-commerce adoption. This was a huge

opportunity to not only pivot our growth strategy to support this behaviour change and strengthen our omni-channel strategy, but also to drive stronger penetration for in-home consumption products such as paper towels."

To help meet the demand, in 2021 the company invested in a Gambini-supplied consumer Flex 600 converting line at its plant in Pathum Thani, an investment that features the supplier's TouchMax embossing and will boost the company's premium bathroom tissue offering in the region. What further growth plans in Thailand does the company have? "Amongst consumers and retailers, our brands have a rich history of innovation,

Samut Praka: the company's southern Thai plant, and above, its Scott towels product





In-home consumption boost: demand for products such as K-C's Scott Clean Care and Kleenex Acne Comfort have increased

and this is something we will continue to invest in and focus on moving forward. We see numerous opportunities to drive tissue penetration in Thailand, and we will continue to invest in research and development to better understand our consumers, gain deeper insights and develop innovative products to meet their diverse and evolving needs."

Globally, Skuntantimeta highlights that Kimberly-Clark has an ambition to improve the lives of one billion people in underserved communities by 2030 with the smallest environmental footprint. "Sustainability plays a vital role in this ambition, and we are working to cut our environmental footprint in half by 2030 by focusing on areas where we can make the biggest difference – climate, forests, water and plastics. Today almost all our products manufactured in Thailand are FSC-certified and 100% of manufacturing waste is kept out of landfill."

In terms of changing trends in the market sectors, Kimberly-Clark serves both consumers and businesses across multiple industries. "The global Covid-19 pandemic impacted numerous industries such as tourism and hospitality, and we saw increased sales in our consumer business as more consumers stayed at home," she says.

"With Thailand fully reopening this summer, we anticipate new opportunities for the AfH market. Our focus is to continue driving consumer-led innovation that delivers solutions to cater to both the AfH and At-Home consumers. There is also low In-Home consumption of certain tissue products, such as paper towels, as consumers use water and cloth while at home and this is an opportunity for us to drive growth for paper towels for cleaning and hygiene purposes."

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LAUNCHED IN THE PANDEMIC — THIS NEW TISSUE ENTRANT SURVIVED THE WORST, AND IS NOW REAPING THE BEST

With most countries in the region now opening up, tissue is continuing on its growth path. Here, C.A.S. Paper Mill Co. Managing Director Torpong Thongcharoen describes what's next for Thailand's newest tissue entrant. Interviewed by TWM Senior Editor Helen Morris.



C.A.S. Paper Mill Co.'s Sing Buri plant: "In Thailand, we expect a natural growth in overall tissue and towel consumption," says Managing Director Torpong Thongcharoen

When a company's decision to move into tissue and towel production coincides with the onset of global trade restrictions during a pandemic, it's safe to say that on the face of it the launch has not got off to the best of starts.

A well-established paper maker, C.A.S. Paper Mill Co. announced that decision in 2018, with launch set for 2021.

Managing Director Torpong Thongcharoen, whose business intelligence is very much forward looking, reflects briefly on the near past: "The whole ASEAN region suffered from the aftermath of the Covid-19 pandemic. Most countries followed the same practice to prevent further infection by closing the border for almost all traveling. As a result, major business segments in Thailand such as tourism and hospitality were facing serious downfalls."

"MOST COUNTRIES ARE NOW OPENING UP THEIR BORDERS AND VERY LIKELY WILL NOT RETURN TO THE SAME PATH. WE BELIEVE THE AFH MARKET AND OEM IS GRADUALLY COMING BACK."

The future is brighter: "However, most countries are now opening up their borders and very likely will not return to the same path. We believe the AfH market and OEM is gradually coming back."

The turnkey-supply start-up, at the plant in Sing Buri north of Bangkok, includes a Toscotec-supplied AHEAD 1.5S tissue machine with a trim width of 2.8m, a maximum operating speed of 1,850m/min, producing more than 25,000tpy of premium quality tissue, is equipped with a second-generation Steel Yankee Dryer TT SYD, Toscotec's shoe press technology TT

NextPress and steam-heated hybrid hoods TT Milltech-HYH."

Torpong Thongcharoen explains the build-up to the transition: "C.A.S. Paper Mill Co. is part of Thai printing supplies company Charoen Akson Holding Group (C.A.S. Group), which was established in 1963 and is a well-established paper trading company in Thailand. In 2013, C.A.S. Group purchased Norwegian-headquartered Norske Skog Thailand - once the largest newsprint paper producer in Thailand, with operations in the country since 1994.



Turnkey-supply start-up: the company's Toscotec-supplied AHEAD 1.5S tissue machine

"The company operated a pulp and paper mill situated in Sing Buri. It first produced paper in 1994 and in total, our current annual production capacity of paper newspaper, book, magazine, textbook, brochure and leaflets – and now tissue – is 125,000tpy/150,000tpy. We are also one of the largest recycle-based paper mill in the country."

Readjusting a growth strategy post-pandemic will concentrate on OEM and the private label segment, with tissue rolls sales a significant business: "Our near-term growth strategy will be to expand product portfolio and improve our quality and service in response to these segments. Any capital investment, if any, will be small and focus to enhance our efficiency and filling up the gap in converting."

"We are expecting all sectors will grow again."

"For now, At-Home segment will be a tough market due to the strong presence by the market leader and high brand loyalty amongst household consumer. We definitely saw that the AfH market in

"OUR NEAR-TERM GROWTH STRATEGY WILL BE TO EXPAND PRODUCT PORTFOLIO AND IMPROVE OUR QUALITY AND SERVICE IN RESPONSE TO THESE SEGMENTS. ANY CAPITAL INVESTMENT, IF ANY, WILL BE SMALL AND FOCUS TO ENHANCE OUR EFFICIENCY AND FILLING UP THE GAP IN CONVERTING."

Thailand collapsed during the pandemic. Now that the country is fully opening, we are expecting reasonable rebound."

"Our project start-up has been delayed significantly due to the pandemic. We faced several challenges such as restriction and quarantine on traveling, postponement of delivery, etc."

Of Thailand's general economy, he says: "Growth in urbanisation and educational development leads to change in consumer behaviour. The consumer is looking for specific quality. Market segmentation is becoming clearer. We need to focus on product development. An economic recession could accelerate the potential growth in private label at a faster pace."

Is environmental sustainability an

important consideration? "We are continuously looking for environmental improvement and sustainability. Energy and water conservation are the main focus. Recycled content in our tissue paper will be an important addition. We are the one of the major recycle paper producers since the beginning, so we are already familiar with this way of working."

Does he see an increase in gross sales of tissue and towel products, and if so, what is driving that increase?

"In Thailand, we expect a natural growth in overall tissue and towel consumption. Given the fact that the population growth is on the low level but we believe the economic development will prevail in Thailand."

"Tourism and hospitality shall remain the major business segment for Thailand. Awareness for hygiene – brought on by Covid-19 – will be additional driver for tissue consumption all over the world."

"THE CONSUMER IS LOOKING FOR SPECIFIC QUALITY. MARKET SEGMENTATION IS BECOMING CLEARER. WE NEED TO FOCUS ON PRODUCT DEVELOPMENT. AN ECONOMIC RECESSION COULD ACCELERATE THE POTENTIAL GROWTH IN PRIVATE LABEL AT A FASTER PACE."

FROM PERSONAL PREFERENCE – TO A TISSUE START-UP

Ryan Fritsch co-founded the US company Cloud Paper, the 100% bamboo and plastic-free paper brand, in the spring of 2019. Here, he discusses the long-term, personal tissue choices which led to his start-up in the industry

I've always appreciated the higher quality and sustainable tissue products. The problem was for a long time it was impossible to find high-quality, soft, tissue on the market.

This is why I am a vocal advocate for bamboo tissue products – it is far more sustainable than traditional paper products, without sacrificing softness or quality.

Traditionally, sustainable tissue products meant using recycled fibre. Unfortunately, the quality of recycled tissue is subpar for a lot of people so we haven't seen the mass adoption we would hope for. So we set out to launch a line of tissue products that were both sustainable and high quality and landed on 100% bamboo as the core input to our products.

Historically, tissue products were part of my weekly supermarket routine, but my shopping habits have changed dramatically over the last several years with the rise of convenient, direct-to-consumer brands. Now, with automatic deliveries to my doorstep, I never have to think about buying tissue products.

Over the last several years I've exclusively used environmentally-friendly tissue and towel products. Price, quality, and convenience are all important to me as it is to most people.

This is why at Cloud Paper, we've been incredibly focused on providing the most price competitive and highest quality 100% bamboo products on the market. We've also built out a fulfilment system to make getting Cloud Paper as convenient and as easy as possible.

We have developed premium 3-ply and 2-ply 100% bamboo toilet paper and 100% bamboo paper towels, as well as our first ever reusable product, the Swish Cloth. Cloud Paper is an omni-channel product, which means I can use it and order it at home, as well as find it in other locations in the local Seattle community (with more coming soon!) or in cities throughout the United States via our Gopuff partnership.



The Covid-19 outbreak was definitely a unique period for companies like ours in the tissue and towel space. We saw a significant amount of people start to buy these products in bulk and do so online for the very first time.

The vast majority of people have previously never used an e-commerce site for this type of product. However, given the supply constraints in 2020, many people turned to this channel and now enjoy the convenience of ordering online, direct to their door.

Cloud Paper is on a mission to end the global deforestation from paper products. We provide a more sustainable alternative to toilet paper and paper towels with

its line of 100% bamboo products, and a new line of reusable Swish Cloths, all in plastic-free packaging, and through carbon-neutral deliveries.

Deforestation is a major driver of climate change and we currently lose an acre of forest land every second around the globe. Cloud Paper is resetting the status quo by moving away from tree-based paper and using ultra-sustainable and renewable resources like bamboo instead.

Going forward, we want to prove to American consumers that you can switch to a sustainable tissue product without sacrificing quality, softness, affordability, or convenience.



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CONVERTING SPECIAL: COVID CHANGED THE DYNAMICS AND BALANCES OF THE MARKETS AS COMPANIES EVOLVED EVEN GREATER EFFICIENCY, FLEXIBILITY AND AUTOMATION



Stan Sheng
Deputy General Manager,
Baosuo



Christian Zagnoni
Chief Technology Officer,
Futura and Plusline



Carlo Berti
Chief Business Officer,
Gambini



Hazar Ulusoy
AP Management, Innovative
Converting Machinery



Luca Frasnetti
Chief Technology Officer,
Körber Business Area Tissue



Scot Schoenwalder
Area Sales Manager,
Maflex



Enrico Ruglioni
European Sales Director,
Maxima



Marco Calcagni
Sales and Marketing Director,
OMET



Andrew Green
Segment President - Tissue,
PCMC



Nevena Pantović
Marketing Manager,
9.Septembar

TWM/1: How have 2022's tissue & towel trends changed the direction of your company's Research & Development (R&D) efforts?

Stan Sheng, Deputy General Manager, Baosuo: "The tissue market is always growing in demand, and we continuously see an increased trend for products as more and more people become more interested in hygienic care. Follow this direction, Baosuo continues to invest its efforts in researching machinery updates, water bonds, glue-free lamination, warm-up embossing, and position embossing. We believe market requirements for such products will keep on growing."

Christian Zagnoni, Chief Technology Officer, Futura and Plusline: "The trend for more choice and greater differentiation means flexibility should be the essential focus of R&D efforts. However, this has always been the case for Futura in FuturaLab, our

laboratory for ideas and technology, so it is not a change of direction. Rather, we are challenging ourselves to develop simpler, more automated and faster solutions to maximise availability within the bespoke configurations we develop for our clients.

"A recent result of these efforts is Camallo, the first automatic system for loading, unwinding and exchanging coreboard reels.

"The requirement for transparent sustainability is also an important driver in the market, and with this in mind our R&D has been responsible for JOI Hydro-Bond, which creates perfect bonding of tissue plies with water alone – and using no glue. Together with Plusline, we have also proved that we can reduce the polyethylene thickness for packaging to 18 microns (25 microns for bundles) and even use post-consumer recycled poly packaging at high speeds. Paper packaging is another emerging requirement, so we have to ensure an optimised changeover between paper and polyethylene.

"In short, the work never stops for R&D, and automation, safety and sustainability are the focus."

Carlo Berti, Chief Business Officer, Gambini: "First of all, let me say a couple words on the times we're living: with a terrible pandemic still going on and a brutal war on the very European continent, we all must act to ensure the former is responsibly taken care of and the latter gets immediately to an end. We're humans, before being industry professional.

"It's such a tough period in a tough world. Supply chains are disrupted, and production costs are skyrocketing. A highly competitive environment like tissue and towel is forcing us to focus on how letting producers save energy (thus money). Lately, in our field we have monitored an increased interest

Christian Zagnoni

"THE REQUIREMENT FOR TRANSPARENT SUSTAINABILITY IS ALSO AN IMPORTANT DRIVER IN THE MARKET, AND WITH THIS IN MIND OUR R&D HAS BEEN RESPONSIBLE FOR JOI HYDRO-BOND, WHICH CREATES PERFECT BONDING OF TISSUE PLIES WITH WATER ALONE – AND USING NO GLUE. TOGETHER WITH PLUSLINE, WE HAVE ALSO PROVED THAT WE CAN REDUCE THE POLYETHYLENE THICKNESS FOR PACKAGING TO 18 MICRONS"

towards two topics: heated rolls and structured tissue paper.

"Everybody acknowledges we're the sole inventors of heated rolls in the tissue converting business: today our water-plus-heat technology AirMill is well established and profitably used all over the planet to manufacture toilet rolls and kitchen towels.

"And this is where textured/structured paper – or TAD-like, as we call it – gets in the game: AirMill can produce a paper which looks and feels like TAD and has similar features, in terms of strength and firmness; but needs a lot less energy than traditional TAD, so it costs much less money!

"Speaking of which, to tissue converters who have smaller budgets we can offer our AirTube, which basically is heat inside an embosser/laminator: you get more volume and more absorbency, a premium roll able to keep the strength of the base paper you feed into the line!"

Hazar Ulusoy, Assembly Process Management, Innovative Converting Machinery (ICM): "At ICM, we have always focused on our customers' needs and technological advancements to shape our research plans. It has always been a priority for our business to deliver the best quality machines that can be tailored to special products as requested.

"For the last two years we had a lot of requests on our interfolder machines. While we have 25 years of experience in these

machines, the electronic chips shortage was a key challenge to overcome. This became a priority for our R&D team and they did their best to cut our usage of such electronics while maintaining the technological needs of 2022."

Luca Frasnetti, Chief Technology Officer, Körber Business Area Tissue: "R&D have always been key variables for a company like ours that aims to anticipate customer needs and be a strategic partner in our sector.

"We know that the tissue market is constantly evolving, just like the needs of our customers, not only in line with demands of the final consumer but also because of global economy trends. The pandemic and the current conflict have significantly changed the dynamics and balances of the markets, forcing companies to evolve increasingly towards greater flexibility.

"The challenge for our R&D in recent years has been to offer customised processes and at the same time easy-to-use solutions that limit the need of expert or skilled operators. Our Sam Operation Solution systems are in line with this strategy. They are in fact designed to adapt continuously and independently to the entire manufacturing process, preventing production slowdowns as much as possible. These systems automatically monitor line performance and product quality, always ensuring maximum performance stability. The range of Sam solutions that Körber Business Area Tissue offers varies based on the customer's needs. Their instalment in our machines, or even in those of third parties, results in significant energy savings and an important reduction in waste compared to lines managed by human operators."

Scot Schoenwalder, Area Sales Manager, Maflex: "The last two years have presented unique challenges to the tissue industry. There were massive spikes in sales due to

Carlo Berti

"WITH A TERRIBLE PANDEMIC STILL GOING ON AND A BRUTAL WAR ON THE VERY EUROPEAN CONTINENT, WE ALL MUST ACT TO ENSURE THE FORMER IS RESPONSIBLY TAKEN CARE OF AND THE LATTER GETS IMMEDIATELY TO AN END. WE'RE HUMANS, BEFORE BEING INDUSTRY PROFESSIONAL. IT'S SUCH A TOUGH PERIOD IN A TOUGH WORLD. SUPPLY CHAINS ARE DISRUPTED, AND PRODUCTION COSTS ARE SKYROCKETING."

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TWM
TISSUE WORLD MAGAZINE

Nevena Pantović

“OUR R&D EFFORTS ARE ALWAYS FOCUSED ON FINDING THE BEST AND MOST EFFICIENT WAYS TO CONVERT TISSUE PAPER. NOW, OUR EFFORTS IN RESEARCH HAVE GONE BEYOND TISSUE CONVERTING. WE APPLY THE ACQUIRED KNOWLEDGE FROM TISSUE CONVERTING IN OTHER AREAS OF MECHANICAL ENGINEERING IN THE SAME WAY AS WE ADOPTED IDEAS FROM OTHER INDUSTRIES AND INTRODUCED THEM IN TISSUE CONVERTING.”

panic buying and hoarding, followed by periods of slow sales due to this overreaction by consumers. Massive shutdowns to schools, hotels, restaurants, etc, caused the AfH market to struggle mightily during this time. On top of all of that, we have been seeing a major supply issue when it comes to parent reels of tissue. There has been a lot of uncertainty in the market.

“With some of that uncertainty came opportunity. Maflex was able to enter into other sectors, allowing our machinery to be utilised for different products. With ideas from our R&D department and our company’s strength of flexibility and quick response times, Maflex has been able to meet new demands from customers. These solutions allowed us to provide machinery to multiple companies within our core business sector of tissue, as well as other industries.”

Enrico Ruglioni, European Sales Director, Maxima Tissue: “Maxima provided coreless option on AfH lines to various customers (eliminating the core helps reducing waste and simplifies centre pull products). In 2022 such possibility has also been extended to consumer products. Maxima customers can equip their lines with coreless option or retrofit it into existing OEM rewinders. Maxima delivered a fully automatic gearless Process Printing 4 Colour Printer (PRINTECH4) with tool-less, quick (less than one minute) and safe change of the sleeves. This is another step by Maxima in the direction of total flexibility of the whole converting line.”

Marco Calcagni, Sales and Marketing Director, OMET: “2022 did not change the threshold of OMET’s investments in R&D, but only created a further awareness of the importance of innovating more and more in the world of folded products.

“For this reason, OMET has presented new production lines both in the interfolded towel sector and in the napkin sector.”

Andrew Green, Segment President - Tissue, PCMC: “The trends we have seen in the past year have reinforced that we are on the right path with our R&D efforts. As a recently formed BW Converting Solutions platform serving tissue, hygiene and print, bag and mailing, we are very well prepared to meet all market demands. We continue to work on product benefits such as automation for safety, ease of use, perfecting water lamination, energy reduction, as well as some smart features and connected services.

“Above all, we are paying special attention to sustainability and how that relates to tissue. At the most basic level, one can become more sustainable simply by producing less waste. One of the things we have highlighted with our Paragon technology is it is much easier to operate, which will result in less material waste during setup and while running.

“PCMC’s INVISIBLE-O converting technology can deliver 100% sustainable tissue product with zero-waste to the market. These coreless technology examples are the consumer and AfH no-core rolls obtained through the patented INVISIBLE-O technology which allows the production of both high firmness as well as low firmness, toilet and towel products. We envision a future state where most tissue products have no cores.

“Sustainability is important in packaging as well. STAX Technologies is dedicated to finding solutions that will support both the customers’ needs as well as the market demands. As a result, STAX equipment can do both foil and paper wrapping or banding in some cases. Nevertheless, with paper as a wrapping material used on STAX’s machines, we get a perfectly packed product supporting ecological standards with huge savings.”

Nevena Pantović, Marketing Manager, 9.Septembar: “Our R&D efforts are always focused on finding the best and most efficient ways to convert tissue paper.

“Now, our efforts in research have gone beyond tissue converting. We apply the acquired knowledge from tissue converting in other areas of mechanical engineering in the same way as we adopted ideas from other industries and introduced them in tissue converting.”

TWM/2: What digitalisation / Industry 4.0 / automation trends do you forecast for the converting machinery sector in the next few years?

Sheng: “AI is always a key machinery development trend. To support the use of machinery, we believe remote control and online services will be more and more important in the next few years as it gives users more convenient and in-time support, reducing the chance for machinery shut down.

“E-commerce has been widely developed worldwide and it gives a new channel of increase in tissue consumption, opening up the market with updates in product sizes and packaging. Accordingly, Baosuo is updating our machinery lines to match the requirement.”

Zagnoni: “Collection of data is one thing but what really matters is to get meaningful information from it. Our Performance Management Team analyses data and cooperates with customers to produce a more stable, improved process.

“One of the key ways we support customers is through automation. Andromeda remains the most automated converting line in the market and we continue to redesign the operator’s job through new solutions which eliminate manual intervention, increase speed, flexibility and precision, and enhance safety.

“E-commerce requires high output and more flexibility which plays to all of Futura’s and Plusline’s strengths. Our Casepack case packer for example - fresh on the market - can produce more than 30 cases per minute, which is exactly the level of performance which e-commerce demands.”

Berti: “2022 marks for Gambini the start of a brand-new collaboration, one that will shape the future of how producers perceive the tissue converting business. We are partnering with E80 Group to develop smart factories, not just converting lines!

“From now on, customers will be able to focus just on their products, on what they’re

going to make and sell, on the value they create themselves! Through exact data collection and a smart equipment choice, our two companies can design a new tissue paper converting plant from scratch: from the building itself up to the finished goods automated warehouse, there's nothing Gambini and E80 Group can't engineer and create together.

"We have already started with an unwinding system which is working completely independent of operators, for the safety of all those involved in the production process: no cranes, no downtimes. Safety and efficiency!"

Ulusoy: "Industry 4.0 is already here and being implemented in new facilities. With the growing artificial intelligence technology and robotics, the paper converting sector as well as most other production will be implementing these technologies.

"It is our vision to apply these technologies in house with better end-of-line solutions to our customers' needs. It is undoubtedly clear that e-commerce has become a crucial part of the new world, and with this came the need for innovation. We believe that personalisation of the end-product by the client with fully automated lines customisable directly from the internet is not that far off a future. In the coming years we will be announcing our solutions regarding this implementation."

Frasnetti: "In 2020, Covid-19 led to a significant growth in all tissue categories, with the exception of the AfH market as the tissue products used in public places were closed down in response to the pandemic. In this scenario, although 90% of tissue's sales are in large-scale distribution, the growth of e-commerce channels has exceeded 15% for almost all categories, highlighting the importance of offering sustainable solutions also in terms of packaging.

"E-commerce and sustainability are the trends that will guide the tissue market for the next few years. Casmatic Zephyrus is able to respond to both challenges with an integrated and highly automated solution that represents a new era of packaging in the tissue industry. Thanks to the patented application of delta robot technology, the 100% recycled cardboard boxes can be filled with different products in a flexible way in order to adapt production

to market changes; once opened, the box can be closed again, keeping the product pristine and easy to store. In addition, the ability to produce boxes that are "ready for shipment" allows customers to develop and increase business related to e-commerce in a simple, fast and personalised way."

Schoenwalder: "Industry 4.0 and digitalisation have helped companies tie into their facilities like never before. Not only can they review current production, but the information collected can be analysed and used for more efficient production runs in the future.

"Over the last two years there has been a need for additional workforce in the industry – but it has been difficult to find and retain good employees. That said, we have seen a shift towards more automation to fill that space. Whether it's automatic end of line palletisation or complete line automation, companies are beginning to pivot away from depending on unpredictable human beings to reliable robots and other automated solutions.

"We have recently introduced PEGASO, a virtual assistant for all Maflex equipment. This system is capable of remotely monitoring production and can assist in maintenance, production planning, and troubleshooting.

"Maflex started offering spare parts and components online some years ago. We saw the value in a clear, easy to view catalogue that a purchaser can navigate easily. Our online parts catalogue, with exploded view drawings, is specific to the customer's machine. This allows individuals within the mill that may not have much experience with machine components to make confident decisions in what they are ordering."

Ruglioni: "One of the opportunities

that we can see with digitalisation are 3D procedures for training machine operators to the various functions of the line. Virtual reality will enter more and more in everyday life, so machine manufacturers must follow and take advantage of this trend.

"Machine data analysis will also be pushed further so that production and logistic managers have more tools to improve efficiency, which will be combined with intelligent sensors placed in various areas of the converting line."

Calcagni: "We have always believed in digitisation. For this reason, our machines are increasingly smart, that is, they are interconnected with the ERP (Enterprise Resource Planning) of customers who can extrapolate all the data necessary to make their production more efficient.

"Digitisation also means cost-effective connection between machine, manufacturer and user, hence new service platforms born, such as NOVA (New Omet Virtual Access).

"Nova is the new OMET multilingual app for managing maintenance and service activities and remote installations. It allows operations to be done with maximum efficiency and timeliness."

Green: "One of the benefits of automation is an increase in safety. For example, our Xcut logsaw comes standard with an Automatic Blade Shield (ABS) and customers have the option to add Automatic Blade Change (ABC) feature. This system, just like the whole machine, can easily be managed by SmartTouch HMI, a game-changing human-machine interface providing intuitive navigation and situational awareness.

"In addition to our new HMI, there is ACCELERATE, our global digital service program that embodies our Industry 4.0

Luca Frasnetti

"IN 2020, COVID-19 LED TO A SIGNIFICANT GROWTH IN ALL TISSUE CATEGORIES, WITH THE EXCEPTION OF THE AFH MARKET AS THE TISSUE PRODUCTS USED IN PUBLIC PLACES WERE CLOSED DOWN IN RESPONSE TO THE PANDEMIC. IN THIS SCENARIO, ALTHOUGH 90% OF TISSUE'S SALES ARE IN LARGE-SCALE DISTRIBUTION, THE GROWTH OF E-COMMERCE CHANNELS HAS EXCEEDED 15% FOR ALMOST ALL CATEGORIES, HIGHLIGHTING THE IMPORTANCE OF OFFERING SUSTAINABLE SOLUTIONS ALSO IN TERMS OF PACKAGING."

Stan Sheng

“FOR ENERGY SAVING OR MORE EFFICIENT USE, WE HAVE CONTINUOUSLY UPDATED OUR MACHINE’S MECHANICAL AND ELECTRIC ABILITIES, INCLUDING BETTER DESIGN WHICH CAN INCREASE THE MACHINE’S CAPACITY AND AT THE SAME TIME REDUCED THE UNIT OF ENERGY CONSUMPTION. THE WIDE APPLICATION OF THE ENERGY FEEDBACK UNIT ALSO MEANS THE POWER IS RECYCLABLE, WHICH SAVES ENERGY CONSUMPTION IN PRODUCTION.”

approach. With this programme we can support our customers worldwide at any time – a whole new level of support. SmartTouch and ACCELERATE will grow in the future delivering even more advantages to our customers and will revolutionise the way we interact with a converting line.

“Regarding e-commerce and tissue, we can meet current needs with a wide portfolio of packaging equipment – from rolls to folded. STAX Technologies is a leader in innovative packaging solutions. We feel providing adequate small packages for e-retailers such as Amazon is an opportunity.”

“We all understand that tissue became a must in e-commerce. We are able to answer any kind of market with a wide portfolio in our packaging equipment - from rolls to folded. STAX Technologies is a leader in innovative packaging solution. Providing adequate small packages for e-retailers such as Amazon is an opportunity for us.

“Regarding how the tissue industry can further take advantage of developments, it is fundamental that everyone in the supply chain views tissue making, converting, and packaging as a single system with a common goal. This is something that we have achieved with Barry-Whmiller Converting Solutions.”

Pantović: “Industry 4.0 has already taken off. From the very beginning of the emergence of Industry 4.0. we follow trends and introduce innovations. The biggest benefit is that everything is in the cloud and communicating with each other. Smart components from renowned global suppliers installed in the machine can measure various parameters and identify areas for saving air and electricity. In addition, smart devices provide timely information about the time for replacement or service of certain parts of the machine. Those are great ways for better and easier production monitoring and organisation.

“Moving forward, we anticipate that the number of operators working on the machine will be reduced. We are moving towards one operator being able to monitor multiple machines at once.

“Above all, through Industry 4.0 security systems oversight has been raised to a higher level.

“As far as e-commerce is concerned, we are working to ensure that after the order, information about the desired package of napkins reaches the machine. The machine will then make them under the supervision of the operator without his need to participate in the production.”

TWM/3: What new technologies are you implementing to improve your customer’s energy efficiencies? What are your projections for trends and needs here in 2022 and 2023?

Sheng: “For energy saving or more efficient use, we have continuously updated our machine’s mechanical and electric abilities, including better design which can increase the machine’s capacity and at the same time reduced the unit of energy consumption. The wide application of the energy feedback unit also means the power is recyclable, which saves energy consumption in production.”

Zagnoni: “The most effective way to increase energy efficiency is to simplify and rationalise the process, and maximise Overall Equipment Effectiveness (OEE) through speed, flexibility and automation.

“Examples include Together, the integrated system developed with Plusline which converts logs into shelf-ready packs with a radically smaller footprint in the factory. Fewer components mean a lower energy requirement and smaller factories that are less energy consuming. Andromeda is another example: it handles jumbo reels of up to 3.2m diameter with a line height of just 7.5m, because it has no need for

an overhead crane. It also allows two lines in only 30m of width compared with the typical 43m. So a smaller plant with lighter construction is required, which saves considerable amounts of energy (and capex for that matter).

“But we need to look at resource optimisation and carbon footprint more generally to create a true picture. Consistent with Sustainable Development Goals (and quality demands) is the fact that we focus on manufacturing in Italy rather than sourcing substantial elements worldwide. This simplifies and reduces the carbon footprint of our supply chain. Our automated solutions such as our automatic blade-grinding system - which can drastically reduce the need to change cutting blades - reduce the consumption of materials and the impact of transporting them.

“Our Trim Cutter reduces waste and downtime caused by waste build-up. Elimination of glue thanks to JOI Hydro-Bond also means a cleaner line, which is less likely to break down and reduce production efficiency. And production efficiency is the best way to reduce energy consumption per tonne of paper produced.”

Berti: “We have invented a new paradigm in the tissue field. Thanks to our latest technology, there’s no such thing as papermaking and tissue converting. It’s no more a two-step process, we consider it as one.

“That’s why AirMill is such a breakthrough invention: because something you can’t achieve in a paper-mill – due to the cost of getting to it – like thickness or strength, is now within reach while converting the paper. You just need a Gambini line equipped with AirMill. And you save energy, too!”

Ulusoy: “Efficiency is one of the most important steps in production. From the usage of air to electricity, ICM has always made sure to work with the right components with the correct design to reach peak efficiency for our machines. Correct components supplied from Rockwell Automation enables us to recover energy from deceleration using regenerative DC bus supplies, while our main design principle is maximising operating performance while increasing efficiency. We estimate that with industry 4.0 there will be more need for energy conservation due to



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increasing consumption, and ICM plans to deliver just that."

Frasnetti: "The tissue market is constantly evolving and with this comes the need to offer more effective, efficient, sustainable and easy-to-use systems. Strengthened by our experience in the sector, our R&D centre has developed further innovative solutions, including in the field of energy saving and efficiency.

"Safety, simplicity, flexibility and sustainability are the cornerstones on which, for example, the Warm-up Contactless Double system the DESL product phase is based on. This solution is the evolution of Warm-Up Contactless which involves the heating of the embossing rollers from the outside without the need for physical contact with the rollers themselves. This results in a 1/3 reduction in heating times and energy savings of over 60%. The double embossing system preserves all the advantages of the version that is already present on the market and can be used in the production of kitchen towels as well.

"Another example that falls in line with these needs is the new MTC ITF Change machine, capable of reducing energy consumption up to 30% compared to a normal interfolder. This patented solution has only two folding rollers, in which the cutting function is incorporated. The elimination of two rollers greatly simplifies operations and leads to a further reduction in the consumption of energy necessary to create the vacuum inside the rolls."

Schoenwalder: "Maflex has been ahead of the curve when it comes to energy efficiency – we have been including our MERS (Maflex Energy Restorative System) on our start-stop rewinders for over a decade now. This takes the energy built up on the drives during ramp up and places it back onto the grid to be reused. This can create an energy savings of 30% during production.

"Maflex also provides monitoring systems through our remote access system, PEGASO. PEGASO allows the converter to keep track of the performance and lifetime of electrical components to ensure they are operating correctly and there are no excessive energy drains.

"With the uncertainty of fuel pricing and a push for lower emissions, we will continue

Marco Calcagni

"MAKING MACHINES EFFICIENT IS THE MOST IMPORTANT TREND IN THE DIRECTION OF ENERGY SAVING, FOR THIS REASON THERE IS AN EXTREME ATTENTION FROM OMET BOTH IN TERMS OF MECHANICAL AND ELECTRONIC DESIGN. FOR EXAMPLE, SYSTEMS HAVE BEEN FOUND FOR OUR INTERFOLDING LINES THAT ALLOW THE USE OF SMALLER PUMPS, THUS ALLOWING A CONSIDERABLE SAVING IN ENERGY COSTS."

to see an increase in renewable energy."

Ruglioni: "We are following different paths, in our converting lines, to reduce energy consumption:

- The Simotion Motion Control system, together with the Sinamics S120 drive system and Siemens Simotics motors: they enable energy-efficient solutions with high efficiency and reduce energy consumption significantly.
- Utilisation of IE2 and IE3 asynchronous motors with inverter.
- Cabinets air conditioning with intelligent cooling management.
- Extensive use of regenerative unit systems in combination with digital controllers integrated in the Siemens architecture."

Calcagni: "Making machines efficient is the most important trend in the direction of energy saving, for this reason there is an extreme attention from OMET both in terms of mechanical and electronic design.

"For example, systems have been found for our interfolding lines that allow the use of smaller pumps, thus allowing a considerable saving in energy costs."

Green: "We are approaching this opportunity from many angles. Our commitment is to create and design equipment that is mechanically and electrically energy efficient. The best examples are our embosser-laminator

OMNIA that has no hydraulics and uses a precise and efficient servonip system for the embossing rolls. Another example is our CS REEL UNWINDS that can reduce the energy consumption up to 40% versus belt-driven unwinds. In this way, we successfully managed to produce the whole line with no hydraulics resulting in a line that is safer, with lower maintenance and insurance costs and lower energy consumption."

Pantović: "We are implementing the latest technologies in the world of the machine control equipment. For the example, instead of using single drive to power single motor, we are using one drive to power up to three motors. We are also using latest solutions for air supply and distribution from our strategic partner FESTO, air leakages are at bare minimum. Sensors that we use are made of recycled plastic.

"It is difficult to project needs for the future, because of the global crisis and the microchip shortages. What we can do is to research and implement the trends that are dictated by the global market and we are working on machines that are prepared for industry revolution 4.0."

TWM/4: Identify some areas of technology in which your converting systems really stand out.

Sheng: "Baosuo is a company with years of experience in manufacturing tissue converting machinery, and our technology has been widely used all over this tissue category. From all kinds of rolls to folded products, leading the technology for glue-

Scot Schoenwalder

"MAFLEX HAS BEEN AHEAD OF THE CURVE WHEN IT COMES TO ENERGY EFFICIENCY – WE HAVE BEEN INCLUDING OUR MERS (MAFLEX ENERGY RESTORATIVE SYSTEM) ON OUR START-STOP REWINDERS FOR OVER A DECADE NOW. THIS TAKES THE ENERGY BUILT UP ON THE DRIVES DURING RAMP UP AND PLACES IT BACK ONTO THE GRID TO BE REUSED. THIS CAN CREATE AN ENERGY SAVINGS OF 30% DURING PRODUCTION."

free lamination and position embossing - which has been used on both rolls and folded products - are widely accepted by the market. These technologies provide a much more hygienic and effective outlook for our products to all users."

Zagnoni: "Many examples have already been mentioned such as Together, Casepack, Camallo, JOI Hydro-Bond and Andromeda itself. But the list is long and includes everything from fully automatic changeover in primary and secondary packaging to our new tail-sealing glue application system for easy-start rolls.

"The common denominator is automation: whether it is in Andromeda (automatic jumbo reel handling, core cleaning and embossing rolls change, automatic dust and noise-reducing roof), or process innovations such as automatic log saw blade change and grinding, coreboard reel change, or the Together system.

"With Futura, automation, which is changing the way people work and tackling gender bias in production roles, is at the heart of a sector-leading safety-first culture."

Berti: "Well, everybody knows Gambini's TouchMax, which we dubbed the King of Embossers: we are known for the quality of our embossing techniques, for how we treat the paper once it's unwound on a converting line and fed into it.

"But we have the responsibility to keep that quality downstream in the process. So now there's more: the combination between an embosser and a rewinder of ours is now the best one can get in the tissue sector. Gambini's G1 rewinder features a reliable 3-roll technology of utmost easiness to use and maintain: Easy as a smartphone, as our commercials claim."

Ulusoy: "Innovation and quality have always been a priority for us, as has responding to our customers' needs. For 25 years we have provided tailor-made

Andrew Green

"THERE IS NO DOUBT THAT PARAGON IS REVOLUTIONISING CONVERTING. THE TECHNOLOGY RESULTS IN HIGH PRODUCT QUALITY, SIMPLICITY THAT MAKES THIS REWINDER INHERENTLY ROBUST, AND ITS "FORGIVENESS" THAT MAKES IT TOLERANT TO ANY VARIATIONS THAT COULD HAPPEN DURING THE PRODUCTION PROCESS. WHEN THE OPERATOR NEEDS TO INTERACT WITH THE MACHINE THE UNPARALLELED OPEN ACCESS MAKES IT SAFE AND ERGONOMIC TO DO SO."

solutions to our customers with innovation and efficiency in mind. This year we will proudly be presenting our new rewinder line "TOROS" implementing new technologies and achieving higher speeds. This line will carry our legacy into the future."

Frasnetti: "Striving to improve the performance of our technologies and continuously innovating to open the market up to new business is essential for Körber Business Area Tissue.

"We are convinced that respect and care for our planet are fundamental to create a better tomorrow for all of us. What we are aiming for in the near future, and for which we are evolving into the role of sole reference partner, is also to focus on the flexibility and sustainability of the machines already in the design phase. We strongly believe in relationships and in the value of exchanging ideas in order to better understand the market, its evolutions and trends.

"This is why the ties we have with our customers are fundamental for us. Supporting them in their business, in their vision and through the changes imposed by the market by looking at different business areas allows us to offer timely and precise advice not only in terms of technology, but also for the future, by proposing systems and solutions useful for developing a sustainable business."

Schoenwalder: "Maflex has always taken pride in the fact that our equipment is modular - each section of our converting lines come equipped with its own electrical

cabinet. This allows for extremely fast installations and quick upgrades. These upgrades can be done to existing Maflex machinery, as well as any other OEM lines.

"Another area in which Maflex stands alone is the complete tool-free product change from unwind stand to log saw. A few years ago, we introduced an automatic roll change on our high-speed embosser, the HERACLE. It is a simple design with easy access throughout and a completely tool-free roll change can be done in less than three minutes. This is all done without breaking the upper web and without the need for operator interaction. This was the last piece to complete our tool-free product change solution."

Ruglioni: "Our MULTIFUNCTIONAL (MF) Embosser can be recognised for its easy and quick change (fully automatic) abilities, with the possibility of having up to six different embossing patterns on the same line, and all type of embossing/lamination configurations (including P/P).

"Our PRINTECH (available in two and four colours configuration) is recognised by many players in the market as the most advanced in terms of controls, automation and quality (all the production issues of previous applications have been looked at and overcome with our new solution).

"Last but not least we must mention our UNITECH rewinder that provides the best quality of rolls from start to finish thanks to our BULKTECH technology. On the field it has proved to be capable of managing all types of paper, from TAD to recycled."

Calcagni: "The innovations that OMET has presented are revolutions both in the production of interfolding lines for towels and facial tissue - which today are the most performing on the market - and in the napkin field where with the new XV Line the standard concept of how napkins are produced today is revolutionised."

Enrico Ruglioni

"OUR PRINTECH (AVAILABLE IN TWO AND FOUR COLOURS CONFIGURATION) IS RECOGNISED BY MANY PLAYERS IN THE MARKET AS THE MOST ADVANCED IN TERMS OF CONTROLS, AUTOMATION AND QUALITY (ALL THE PRODUCTION ISSUES OF PREVIOUS APPLICATIONS HAVE BEEN LOOKED AT AND OVERCOME WITH OUR NEW SOLUTION)."

Green: "There is no doubt that PARAGON is revolutionising converting. The technology results in high product quality, simplicity that makes this rewinder inherently robust, and its "forgiveness" that makes it tolerant to any variations that could happen during the production process. When the operator needs to interact with the machine the unparalleled open access makes it safe and ergonomic to do so."

Pantović: "Based on a deep knowledge and understanding of challenges of the tissue industry, every machine unit produced in 9. Septembar must meet the highest standards of precision and functionality. By improving each section individually, the machine as a whole is improved. However, what we are best-known for is developing and producing unique machines according to customer's request."

"Our knowledge and experience mixed with customers ideas sometimes gives completely new types of the machines, making us pioneers, but also making our customers leaders on their market."

TWM/5: What geographical areas are seeing an increase in demand for tissue products and so potential for converting lines? Why are these regions seeing these trends, what is causing the changes?

Sheng: "The Asian market has been presenting a substantially outstanding increase in demand for tissue and converting lines in recent years, and we believe this will continue even more so in the following years. This increase is based on the development of economic progress and ideas and habits for a more hygienic life. The growing population as well as more reliable pulp and jumbo roll supply is also supporting the developments."

Zagnoni: "Demand for tissue products has increased worldwide thanks to Covid and the greater attention to hygiene which has come in its wake."

"The key change is that customers need to be competitive to retain and build their share of a growing market. This is why our solutions are attracting ever more attention, notably in North America and the Middle East. The ability to produce volume efficiently and flexibly is driving investment decisions more than ever."

Berti: "We don't really see an increase in the tissue demand overall; we can rather observe a shift towards the towel business,

for many reasons we might ascribe to Covid-19's new normal. Therefore, in October we will be launching a new release of G1, for making rolls up to a diameter of 250mm."

Ulusoy: "With Covid-19 the world became aware of the importance on hygiene, and with this awareness demands on paper products increased all over the world. We believe that this awareness effected underdeveloped countries more, thus increasing the demand immensely in these regions."

Frasnetti: "We are seeing increased tissue and towel demand all over the world. But what I believe is a key issue for the future development and growth in our markets, and what I believe is our greatest challenge regardless of where we are based, is that of sustainability. This impacts all of us and must be faced as a whole."

"To this end, tissue paper manufacturers are taking action to eliminate waste, reduce energy consumption, fuel and carbon dioxide emissions by including alternative sources of fibre and reducing the use of packaging plastics."

"Globally, another issue that is impacting the growth of tissue demand, is the decrease in the number of skilled workers on the market, combined with the need to achieve greater overall equipment efficiency (OEE). This is forcing tissue converters to turn to technological innovations to achieve operational objectives, so we will continue to develop unique solutions that are able to adapt to individual circumstances while maintaining other production features." **Schoenwalder:** "After the last two years of Covid and its aftermath, there has been a heightened sense of health and hygiene awareness which is driving up demand in several countries."

"We are also seeing an uptick in leisure travel, which is increasing demand for AfH products."

Hazar Ulusoy

"WITH COVID-19 THE WORLD BECAME AWARE OF THE IMPORTANCE ON HYGIENE, AND WITH THIS AWARENESS DEMANDS ON PAPER PRODUCTS INCREASED ALL OVER THE WORLD. WE BELIEVE THAT THIS AWARENESS EFFECTED UNDERDEVELOPED COUNTRIES MORE, THUS INCREASING THE DEMAND IMMENSELY IN THESE REGIONS."

"Maflex is poised to support these markets with easy-to-use, reliable machinery."

Ruglioni: "China is growing significantly but it has become more and more difficult for non-Chinese companies to provide equipment there, also due to Coronavirus implications."

"In general, private labels keep on growing everywhere, and America is the best example of how the market has seen new players taking market shares away from branded products. The current increase of energy and raw material costs is creating a new scenario in the market which is, by far, difficult to predict."

Calcagni: "We continue to see that demand in Asian and South American countries is rising as expected as more people get better access to disposable income."

"On the other hand, a modernisation trend is being noticed in Europe and North America with extreme attention to efficiency and energy."

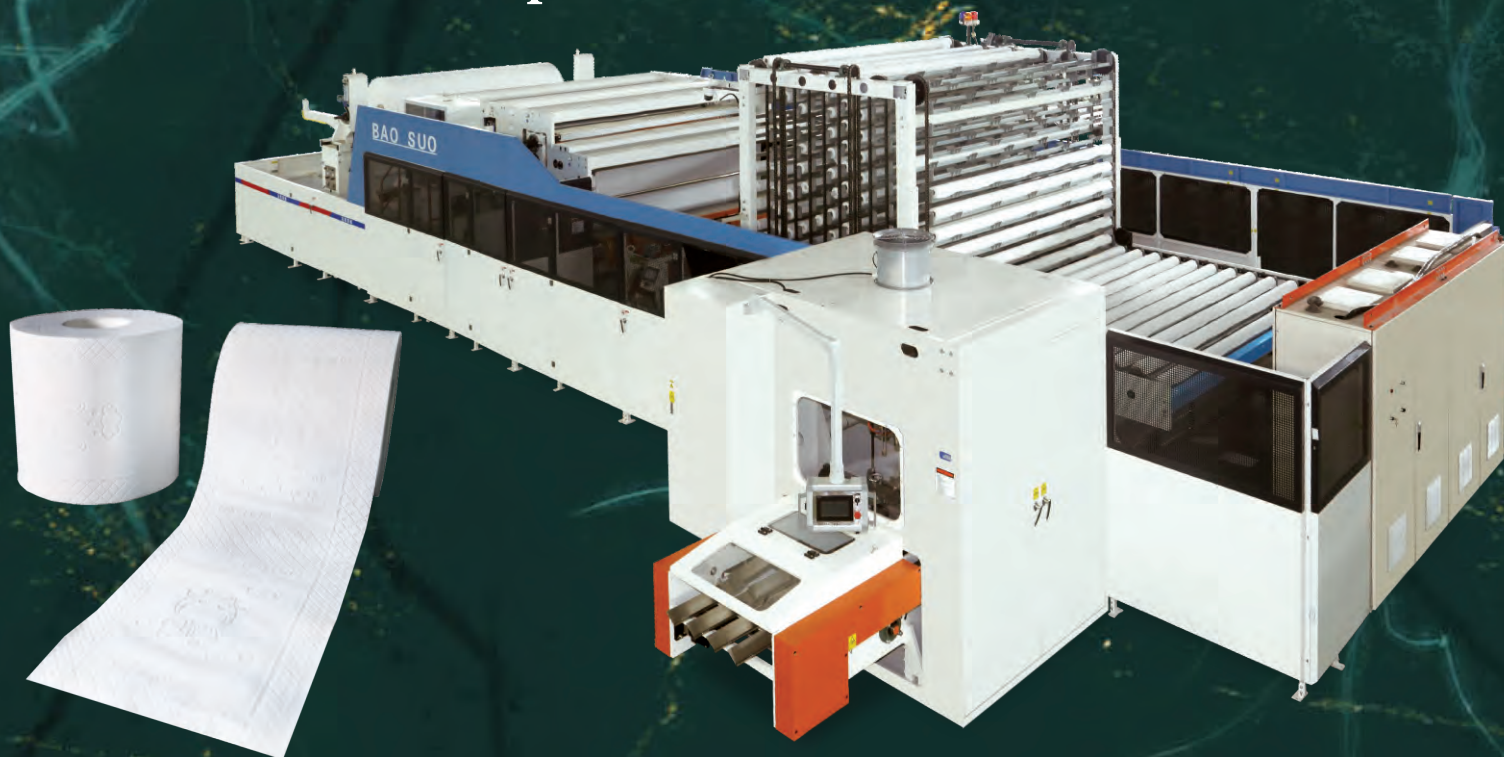
Green: "While we all know that the USA and China are the biggest tissue consumers in the world, the markets and the markets' needs are changing all the time."

"We still see Asia and Latin America as the most interesting parts of the world for expansion. As the standard of living rises within a population, tissue consumption rises. The growing market there has also recently attracted new participants, and the increased competition has created new challenges for the existing players."

Pantović: "It is certain that the Covid pandemic caused changes all over the world. Changes in consumers habits bring different demands of the world market. In addition, due to problems with transportation, prices and delivery times, many have turned to converting and controlling production. This brings new worldwide inquiries for converting lines."

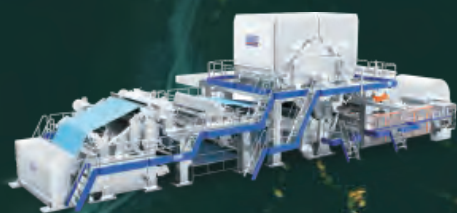


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'AUTOMATION TODAY IS NOT JUST ESSENTIAL, IT'S AVAILABLE FOR ALL'

Many smaller companies doubted ROI from automatic assets combined with smart software, but those days should be over, says William Nelson, President, E80 Group North America. A TWM report.



Integration advantages: Systems composed of smart decision-making software and vehicle management

One of the most common statements I've heard over the years goes like this: "Yes, we'd love to be able to afford to do that like the Big Guys are doing." But is this statement pertinent today? Is automation only the domain of the "Big Guys," or is it time to re-think this well-worn theory that automated material handling requires size to justify traditional ROI? Let's take a look at what we have been able to execute so far:

- Just about any function in material handling can be automated:
 - warehousing of finished products and raw materials in block storage or racks of any type;
 - fully cubed trailers are loaded automatically;
 - parent rolls are stored and delivered into the rewinder;
 - raw materials are directly delivered to production assets;
 - most recently, trailers are unloaded automatically.

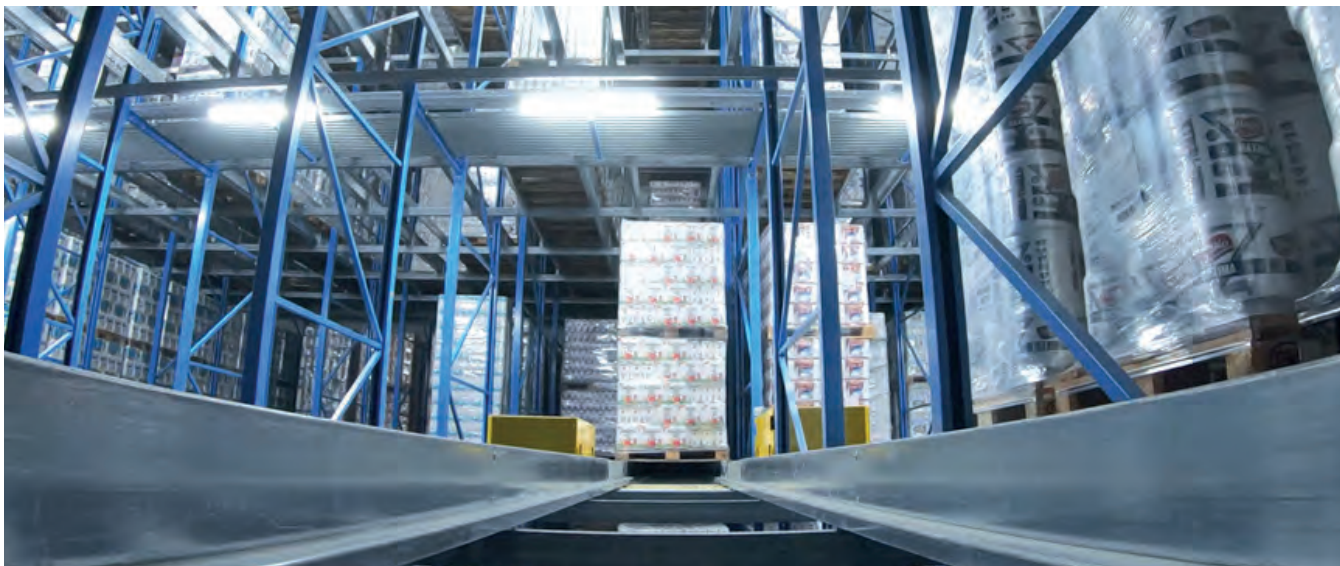
IS AUTOMATION ONLY THE DOMAIN OF THE "BIG GUYS," OR IS IT TIME TO RE-THINK THIS WELL-WORN THEORY THAT AUTOMATED MATERIAL HANDLING REQUIRES SIZE TO JUSTIFY TRADITIONAL ROI?

- Automatic vehicles support operations, allowing managers to focus on productivity, efficiency, and maintenance.
 - Automatic guided vehicles do the job of multiple operators 24/7/365, delivering goods to the right place at the right time.
 - Combine automatic assets with a smart software platform, and you have a robust decision-making structure that is as adaptable as it is repeatable.
 - Automation is scalable, meaning it can grow and evolve as a plant changes over time.
 - Safety developments enhance the workplace experience.
- Doesn't every tissue producer require the same essential functions as above? We

move input materials in and ship finished goods out; therefore, the challenge isn't in identifying WHAT to do. Instead, it's in knowing HOW to do it.

Anyone who has walked the floor of an automation show in the last years can clearly see that a wide range of automated vehicles come in a dizzying array of shapes, sizes, and costs. So, how does one decide what to buy?

This is where experience, expertise and capabilities of suppliers come into play. First-time experimenters with automation may decide that an A-to-B repetitive task may be ripe for automation because it's easy to execute and costs very little – this approach is comparable to buying a



Performance guarantee: Single automated vehicles perform multiple tasks

casepacker, being a highly repetitive and tedious task requiring multiple operators.

But what if we take this case one step further?

What if we are able to combine and manage all the functions stated in the bullets above under a software umbrella that employs single automated vehicles to perform multiple tasks in an orchestrated flow that even allows for a combination of disparate vehicle types to work collaboratively within a single area like bees around a hive while still ensuring the safest of all work environments?

What if all these simultaneous functions only require one person to oversee them, so you can re-locate and value the people in charge of the floorspace? Does the picture of how to realise the benefits of automation become clearer? All this is possible through an integrated combination of Smart Decision Maker (SDM) and vehicle mission manager. In essence, the decisions regarding the actions necessary to feed lines, pull products and ship are all coordinated by one brain capable of determining priorities from hundreds of scenarios while directing the vehicle assets to interact efficiently among themselves.

As an analogy: imagine if all the delivery drivers in Chicago, Paris, or Mexico City, all were coordinated to safely deliver specific goods based on established priorities to a particular destination at a scheduled time by taking a path that avoids traffic congestion yet can adapt to changing circumstances in real time. Think of all the time and money saved!

Well, that's precisely the advantage of an integrated system composed of smart decision-making software and vehicle



William Nelson: "It's time to re-think this well-worn theory that automated material handling requires size to justify traditional ROI."

WHAT IF WE ARE ABLE TO COMBINE AND MANAGE ALL THE FUNCTIONS STATED IN THE BULLETS ABOVE UNDER A SOFTWARE UMBRELLA THAT EMPLOYS SINGLE AUTOMATED VEHICLES TO PERFORM MULTIPLE TASKS IN AN ORCHESTRATED FLOW THAT EVEN ALLOWS FOR A COMBINATION OF DISPARATE VEHICLE TYPES TO WORK COLLABORATIVELY WITHIN A SINGLE AREA LIKE BEES AROUND A HIVE WHILE STILL ENSURING THE SAFEST OF ALL WORK ENVIRONMENTS?

management. To name just a few benefits:

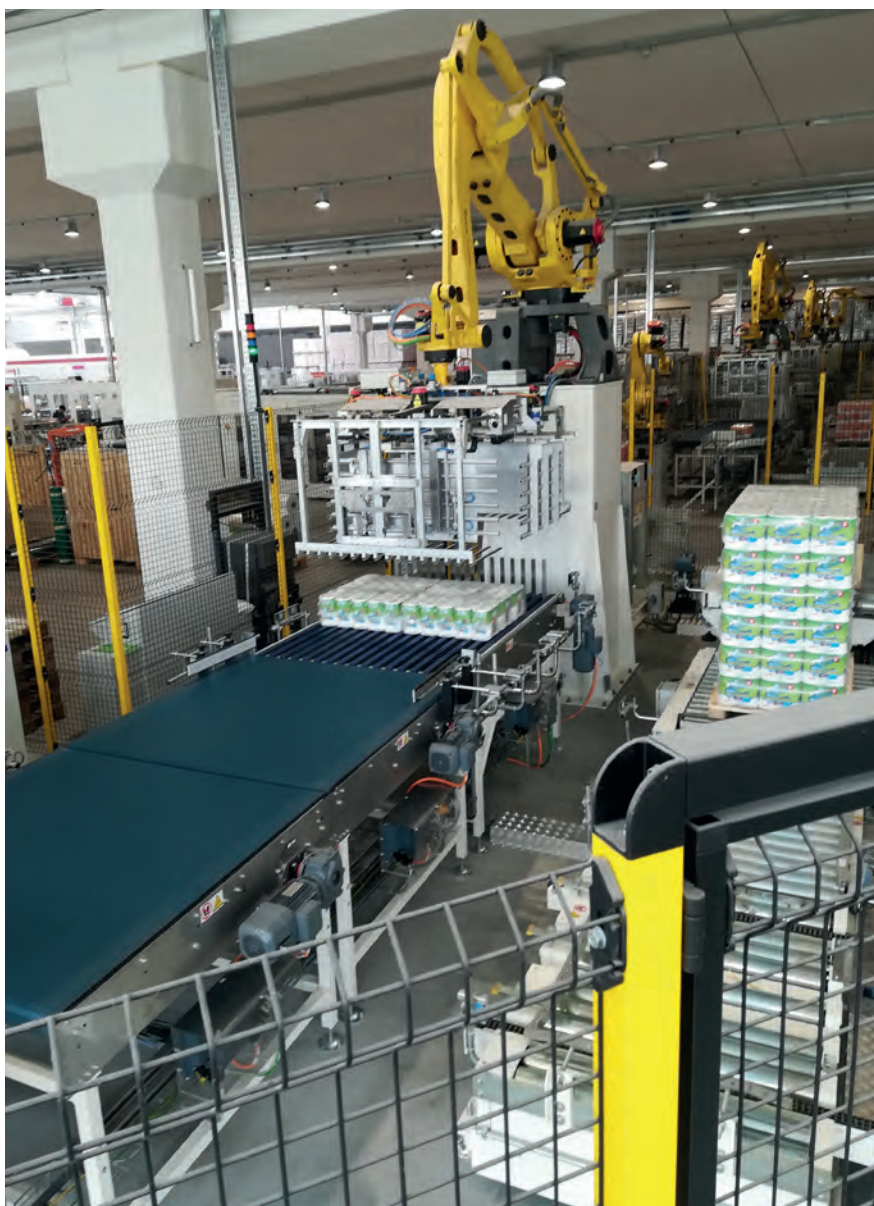
- System throughput guaranteed tied to meaningful KPI
- Single durable interface for performance monitoring and troubleshooting
- Scalability to grow and adapt the system to changing requirements without complicated interfacing of multiple vendors
- Safety improvement due to ground-breaking technology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

All this brings us back to our original question: Can anyone afford NOT to automate? The answer is: of course, you can forego automation and add it later. But at what price? Your return on safety, customer satisfaction and productivity really depends on HOW you automate and with whom.

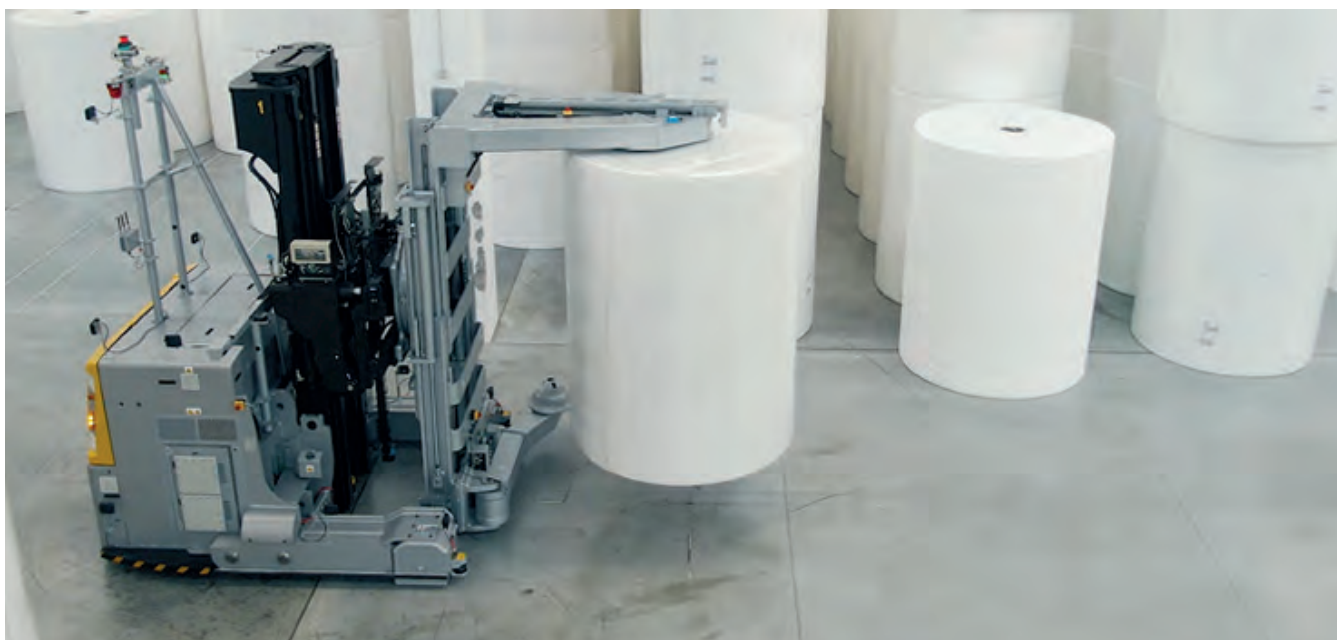
The old paradigm of automation as a luxury of the "Big Guys" is lore from days gone by. Today, everyone feasibly can consider automated material handling. More and more companies espouse the benefits of automation with glossy videos and fancy blinking lights. Nevertheless, the devil is still in the details.

Choose the right partner willing to dig in and get to know your business, who has the experience to guide you through your process requirements, the capability to simulate your flows with the highest accuracy, and who delivers a system performance guarantee. So the answer to the question becomes evident: Can anyone afford to NOT automate in light of these benefits?

This article was written for TWM by William Nelson, President E80 Group North America.



A dizzying array of shapes, sizes, and costs: Just about any function in material handling can be automated



DISTRIBUTION SPECIAL: EDGE COMPUTING

Industrial Edge Computing is poised to lead the future of manufacturing and increase its productivity growth rate in the near future. Claudia Borella, Promotech Marketing and Sales Manager, discusses the company's latest advancements. A TWM report.



Claudia Borella
Marketing and Sales Manager, Promotech

What is Edge Computing? An Edge Computing architecture is actually a distributed architecture of micro data centres, each capable of storing and processing data locally and transmitting this information to a centralised system or to a Cloud storage.

Centralised data centres have evident disadvantages: they are expensive, energy-consuming and not very agile. These limitations have been mitigated in recent years with the Cloud. Moving the workloads to the Cloud has made it possible to reduce these costs. This is even more true if you use the public Cloud and therefore have the ability to access virtually unlimited storage and computing power resources available on demand.

Not all applications could be uploaded to the Cloud, there are particular situations that highlight the typical limits of such infrastructures. One of the most important is linked to the inability of establishing connections that are always reliable - capable of supporting, for example, the continuous flows of data from sensors and objects connected from an IoT point of view. Another limitation is linked to latency, the time required to transmit a data packet through the public network used by the Cloud.

To overcome these problems, a new approach is emerging called Edge Computing. According to many analysts, it is gaining increasing approval in multiple segments and different application areas.



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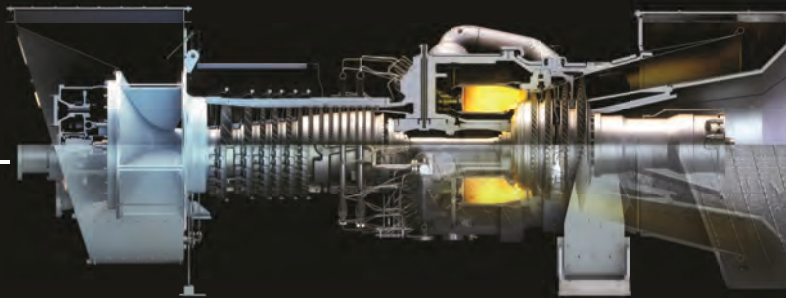
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Edge Computing architecture: A stylised symbol of distributed micro data centres

EDGE COMPUTING IS THE FUTURE FOR COMPANIES THAT WANT TO CREATE NEW AND IMPROVED WAYS TO OPTIMISE OPERATIONAL EFFICIENCY, INCREASE PERFORMANCE AND SECURITY, AUTOMATE CORE PROCESSES AND ENSURE CONTINUOUS AVAILABILITY TO INDUSTRIES AND BUSINESSES.

Edge Computing is the future for companies that want to create new and improved ways to optimise operational efficiency, increase performance and security, automate core processes and ensure continuous availability to industries and businesses. This is a fundamental method for ensuring the work digital transformation.

- It will be the driving force of the next industrial revolution by transforming the

manufacture and service sectors.

- Optimising the collection and analysis of data on peripheral systems to generate usable information for the business.
- Creating flexible, scalable, secure, and more automated business process technologies, systems and environments.
- Promoting a faster, more efficient

agile business ecosystem that saves costs and simplifies management and maintenance.

The increase in processing power on peripheral systems is a necessary prerequisite to implement autonomous systems, allowing companies to increase efficiency and productivity while human resources can focus on higher-value activities.

Edge Computing refers to the



implementation of data management activities and network operations by enhancing the number of individual sources of data collection or storage. This is a new era "from Cloud to Edge" defining these technologies as solutions to facilitate data processing at the data generating source or near it. In this way, instead of having to access a centralized network segment or the cloud while capturing data, edge computing ensures that data can be immediately captured at the edge of a computer, device or stand-alone device.

By means of edge computing, the decision-making processes take place in real time and data is processed with greater security and higher analytical speed. In this way, the use of Industry 4.0 business models is accelerated, and it also allows you to easily monitor the performance of individual devices or equipment. This data will help the manufacturer to optimise equipment performance while reducing costs and hazards.

Edge Computing also runs the automation of predictive maintenance initiatives. Smart edge technologies such as sensors, actuators and controllers can be used to monitor the health of equipment and the moving parts within it. By using Edge Computing technology, the machine does not need to communicate with the central Cloud before making a decision that will preserve equipment and reduce downtime in real time.

Industrial Edge Computing is poised to lead the future of manufacturing and increase its productivity growth rate in the near future. This will be possible along with Cloud computing as they both have a role to play in ensuring that real-time computing is introduced to the workshop

INDUSTRIAL EDGE COMPUTING IS POISED TO LEAD THE FUTURE OF MANUFACTURING AND INCREASE ITS PRODUCTIVITY GROWTH RATE IN THE NEAR FUTURE. THIS WILL BE POSSIBLE ALONG WITH CLOUD COMPUTING AS THEY BOTH HAVE A ROLE TO PLAY IN ENSURING THAT REAL-TIME COMPUTING IS INTRODUCED TO THE WORKSHOP FLOOR.

floor. In particular, industrial Edge Computing operates with fewer workloads at the device or equipment level, whereas Cloud Computing manages more workloads to increase productivity.

Promotech, as a distributor of electronic, servo-mechanical and IT equipment used in industrial automation, is the ideal partner offering solutions for Edge Computing and Industry 4.0. Production and logistics companies are no longer asking themselves if they should digitise their processes and implement the concepts of Industry 4.0, but rather asking whom to entrust their work to.

Promotech is able to do it with no difficulties. With a wide range of products, Promotech gives solutions focused on all applications in order to be able to tackle the future challenges of digitisation.

To meet any future communication

needs, Promotech is able to find through its partners IoT functional solutions for technical process systems already existing or still to be created. Depending on the automation technologies used by our customers, both on PCs and on third-party control platforms, plant operators can count on all the IoT and analysis solutions offered by Promotech.

Data collection and its digitisation are made possible through a new ranges of digital sensors that give further added value in the vertical integration of data from the sensor to the Cloud. This results in reducing the production costs, optimising the product quality and above all supervising the process development.

This article was written for TWM by Claudia Borella, Promotech Marketing and Sales Manager.

**SMART EDGE
TECHNOLOGIES:
MONITORING THE
HEALTH OF EQUIPMENT**

**A FASTER, MORE
EFFICIENT, AGILE AND
COST-EFFECTIVE
BUSINESS ECOSYSTEM**

**THE DRIVING FORCE OF
THE NEXT INDUSTRIAL
REVOLUTION**

**INCREASING
APPROVAL IN
MULTIPLE SEGMENTS
AND DIFFERENT
APPLICATION AREAS**

**OPTIMISING THE
COLLECTION AND
ANALYSIS OF DATA ON
PERIPHERAL SYSTEMS**

REVIEW OF GLOBAL BCP CAPACITY: ON THE BRINK OF SIGNIFICANT INVESTMENT CYCLE WITH LIKELY OVERSUPPLY AND PRICING CORRECTION

Total BCP capacity shrank by just over 0.5Mt last year – the first contraction since 2009 and only the second on record. Report for TWM by Hawkins Wright's Research Managers Michael J Long and Pierre E Bach.



Michael J Long
Research Manager, Hawkins Wright



Pierre E Bach
Research Manager, Hawkins Wright

Current estimates place global market Bleached Chemical Pulp (BCP) capacity at 68Mt. This volume is allocated to various paper grade pulps (28.1Mt of BSKP, 39.6Mt of BHKP and 0.3Mt of sulphite), to which one can add 4.6Mt of high yield pulp capacity and 4.0Mt UKP capacity. Hardwood pulp from Latin America continues to grow in prominence while the softwood sector experiences a slowdown in investment focus, a trend which implies potential undersupply further down the line.

Total BCP capacity shrank by just over 0.5Mt last year – the first contraction since 2009 (and only the second on record). This follows a significant investment cycle through 2015-19 and was mostly attributable to the first full year of closure at Paper Excellence's Pictou and Mackenzie mills, to increased integration at certain mills, and to Arauco Valdivia's full conversion to dissolving pulp production.

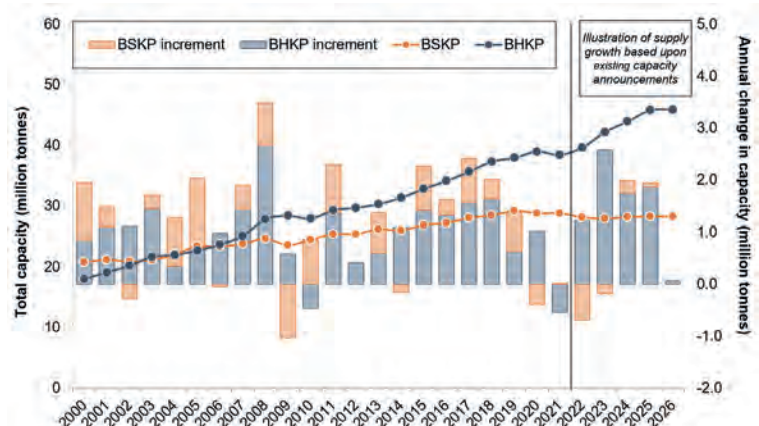
During 2022, we have witnessed the unexpected closure of West Rock's Panama City pulp mill which displays the degree to which many companies are evaluating their pulp assets even as prices (both list and net) have breached record highs. The timing points to broader structural challenges that many older assets throughout the northern hemisphere face. This case illustrates willingness on the part of pulp and paper

companies to focus on their core business (e.g., WestRock & packaging). The closure has removed some 0.3Mt of softwood (fluff & paper grade) capacity from the market and places additional stress on fluff pulp buyers to secure new supply. As CAPEX requirements have grown over the years many pulp producers may need to idle older and less efficient assets.

Looking ahead, total market pulp capacity will grow by 6.4Mt during the 2023-26 period, at an average rate of +2.3% pa. The growth comprises +0.1Mt in BSKP and +6.3Mt in BHKP. Separately, high yield pulp capacity is set to grow by +0.2Mt and UKP by +0.4Mt over the forecast period. The major expansions include Bracell's Project Star (start-up in Q4 2021 and now ramping up), Arauco MAPA (launch expected for September 2022 after several project delays), UPM Paso de los Toros (Q1 2023), Metsä Kemi (Q3 2023) and Suzano's Cerrado project in Mato Grosso do Sul, due to start in 2024. As Arauco's recent experience with their MAPA project suggests, supply chain and labour challenges threaten the timely start-up of such projects, posing a risk to the outlook for supply. Aside from Latin American BHKP, the only other meaningful pulp capacity growth to 2026 will take place in Scandinavia, with Metsä Fibre's investment at the Kemi mill.

Another risk to the BCP capacity forecast

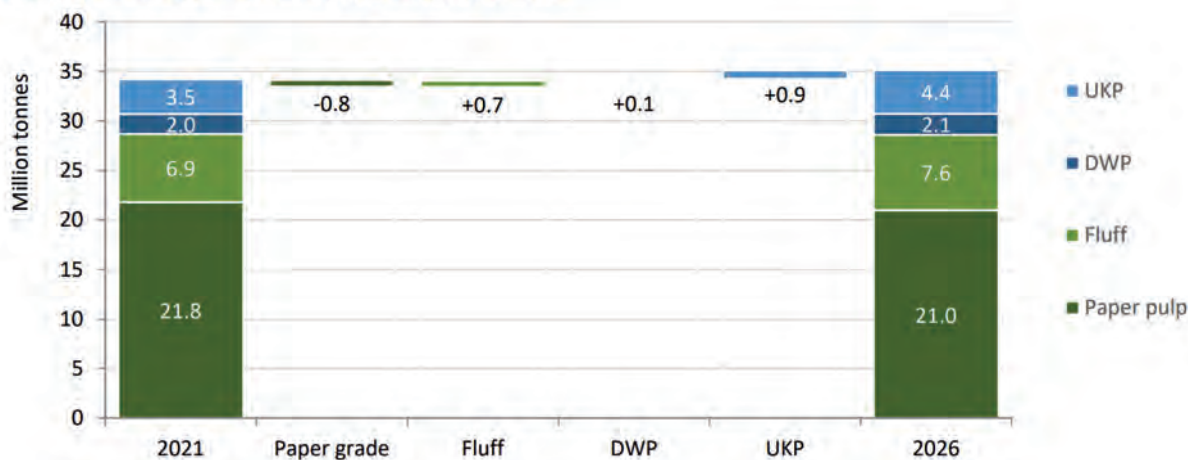
Global BCP Capacity Additions
y-o-y change and cumulative capacity, by grade



Softwood pulp capacity forecast overview



Market pulp furnished with softwood, by grade, 2021 vs. 2026



stems from growth prospects across specialty grades. Most visibly, swings to UKP have occurred at an increased rate of late, driven in part by high bleaching and chemical costs or by efforts to curb mills' environmental footprint. We quantify this increased interest in UKP production in our Outlook for Unbleached Fibre report which has just been updated in June 2022. Recent examples include Fibre Excellence's French mill in Tarascon, or the recent conversion at West Fraser's Hinton mill. Already, some 0.4Mt of NBSK capacity have been thus converted to UKP – and more are on the way, including Paper Excellence and ND Paper which are in the process of making significant swings to UKP production in North America.

In fact, paper grade BSKP capacity is set to contract over the forecast period, not only due to conversions to UKP but also due to increased focus on the fluff and dissolving pulp specialty sectors. Our analysis shows that almost 2Mt of existing supply looks likely to be converted – more than offsetting growth in BSKP supply derived from any greenfield investment or debottlenecking work. In fact, given the age profile of the softwood industry, we expect more closures to be announced during the coming years meaning that shipments of softwood market pulp for paper making purposes have probably peaked. One caveat that is not yet accounted for in our models is the evolution of birch production in Scandinavia. At present, producers are no longer able to procure Russian birch logs and chips. This will likely pave the way for some additional NBSK, but companies have

yet to make their medium- and long-term plans clear.

Naturally, any market pulp capacity projections carry some inherent risks. We do not incorporate assumptions regarding mill closures, although we know that about 2.5Mt's worth of annual paper grade pulp capacity has closed over the last ten years, implying an average rate of attrition of about 0.25Mt/y. Furthermore, lines can restart at relatively short notice, as evidenced by the restart of Nordic Kraft's mill in Quebec, or the restart of both Wickliffe and Old Town in 2018 and 2019 after the mills were acquired by Chinese investors.

There are also unforeseeable events related to extreme weather, natural disasters, geo-political conflict, mechanical failures, and logistical disruptions. Other variables at play include supply from integrated mills and swing capacity, which fluctuate according to market dynamics and prices, and can have a significant impact on

supply and demand balance.

Nonetheless, we are on the brink of another significant investment cycle which has generated a consensus view that the market will soon become oversupplied, likely stimulating a pricing correction. However, historical precedent demonstrates that this should not be a forgone conclusion.

As we enter a new investment cycle, supply disruptions are already to the fore, as supply chains remain beset by Covid-induced bottlenecks. Meanwhile, despite a recent strengthening of the US dollar, most pulp producers are battling against rising fibre, logistics, energy, and chemical costs which are inflating the cost base of the global industry. These dynamics will yield a strong influence in dictating pulp prices during the coming months, perhaps more so than the start-up of new capacity.

IN FACT, PAPER GRADE BSKP CAPACITY IS SET TO CONTRACT OVER THE FORECAST PERIOD, NOT ONLY DUE TO CONVERSIONS TO UKP BUT ALSO DUE TO INCREASED FOCUS ON THE FLUFF AND DISSOLVING PULP SPECIALTY SECTORS. OUR ANALYSIS SHOWS THAT ALMOST 2MT OF EXISTING SUPPLY LOOKS LIKELY TO BE CONVERTED – MORE THAN OFFSETTING GROWTH IN BSKP SUPPLY DERIVED FROM ANY GREENFIELD INVESTMENT OR DEBOTTLENECKING WORK.

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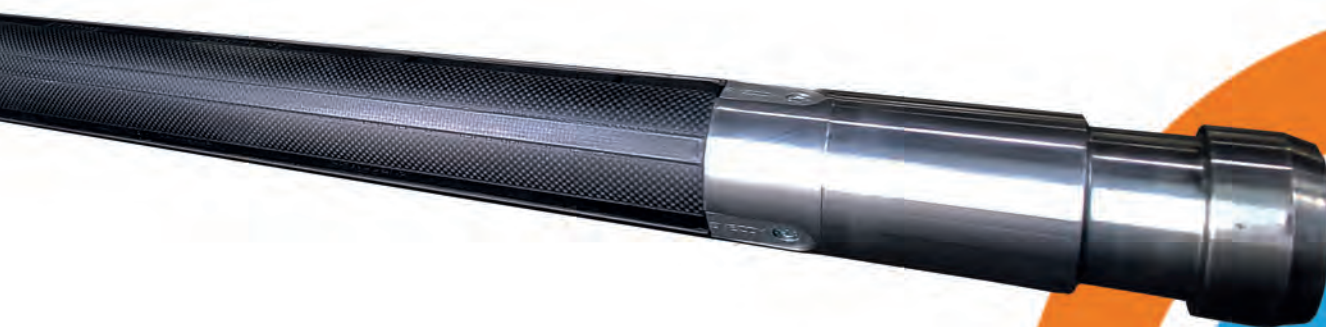
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