



Hygiene Solutions

A **Barry-Wehmiller** Converting Division



Simply makes you feel good

Converting solutions for the tissue and hygiene industry
















ONE Global Team - Better Together

BW Converting Solutions

BW Converting Solutions (BWCS) is a strategic alliance of resources and services that brings together six Barry-Wehmiller companies — Paper Converting Machine Company (PCMC), Baldwin Technology Co., Winkler+Dünnebier (W+D), STAX Technologies, Hudson-Sharp, and Northern Engraving and Machine. These industry leaders offer trusted brands and innovative technologies in the design, manufacture, and service of high-performance converting and packaging machinery for the tissue, nonwovens, hygiene, bag-converting, mailing, and printing industries.



Tissue	Print, Bag & Mail	Hygiene	
 Tissue converting machinery	 Printing presses and laser anilox cleaners	 Baby, adult and feminine care products converting machinery	
 Tissue packaging machinery	 Bag and pouch converting machinery	 Tissue & handkerchief converting machinery	 Dry & wet wipe converting machinery
 Custom embossing for tissue	 Envelope converting, inserting, and printing machinery	 Protective mask converting machinery	 Custom embossing for nonwovens

By coming together as one global team, our combined engineering, operations, supply chain, and sales teams work together to better serve customer needs. Together, we provide one global parts network, one service support network, a broad base of engineering experience and talent, regional sales support and a superior level of service.





The hygiene sector of the BWCS platform

Winkler+Dünnebier GmbH (W+D) and Paper Converting Machine Company (PCMC) are part of global equipment manufacturer Barry-Wehmiller and its BW Converting Solutions (BWCS) platform.

Together, these two companies represent the hygiene sector of the BWCS platform and offer a wide range of high-performance machines and services to the hygiene industry worldwide. The comprehensive product offerings include converting lines for Baby Care, Feminine Care, Adult Care, Dry and Wet Wipes, Tissue Handkerchiefs, Facial Tissue, and Face Masks.

Simply feeling good and comfortable is a basic human desire. In everyday life, disposable hygiene products are key to the experience of well-being. We invest all our know-how and resources in developing excellent technology for our customers to manufacture personal care and tissue products of the highest quality and with innovative product features, whilst obtaining economical and efficient production conditions.



Headquarters of W+D in Neuwied, Germany

W+D Hygiene Solutions is a merger of the German machine manufacturing companies BICMA Hygiene Technologie GmbH and Winkler+Dünnebier GmbH (W+D). They joined expertise of more than 40 years in hygiene converting resources in 2018 with the aim to provide even better products and optimized customer service. W+D's core competencies encompass converting and precise processing of thin and inhomogeneous materials at high production speeds, for example paper, tissue, and nonwoven materials. The company designs and builds top-quality, customized machinery and retrofits. It is a partner of manufacturers of baby diapers and pants, feminine hygiene products, light incontinence products, adult diapers and pants, handkerchiefs, facial tissue, face masks as well as underpads.

Paper Converting Machine Company is a leader in tissue converting, packaging, flexographic printing, and bag and wipes converting technology — backed by a century of machine design, manufacturing, and service experience. With four major production centers in the U.S., England, Italy, and Serbia, and 1,000 team members worldwide, PCMC is uniquely equipped to provide customers with a broad range of automated converting solutions.

Standing behind all of our equipment is our promise to serve you and service the machines that you rely on to keep your business moving.



Headquarters of PCMC in Ashland, USA

There is more to a company than its name and history

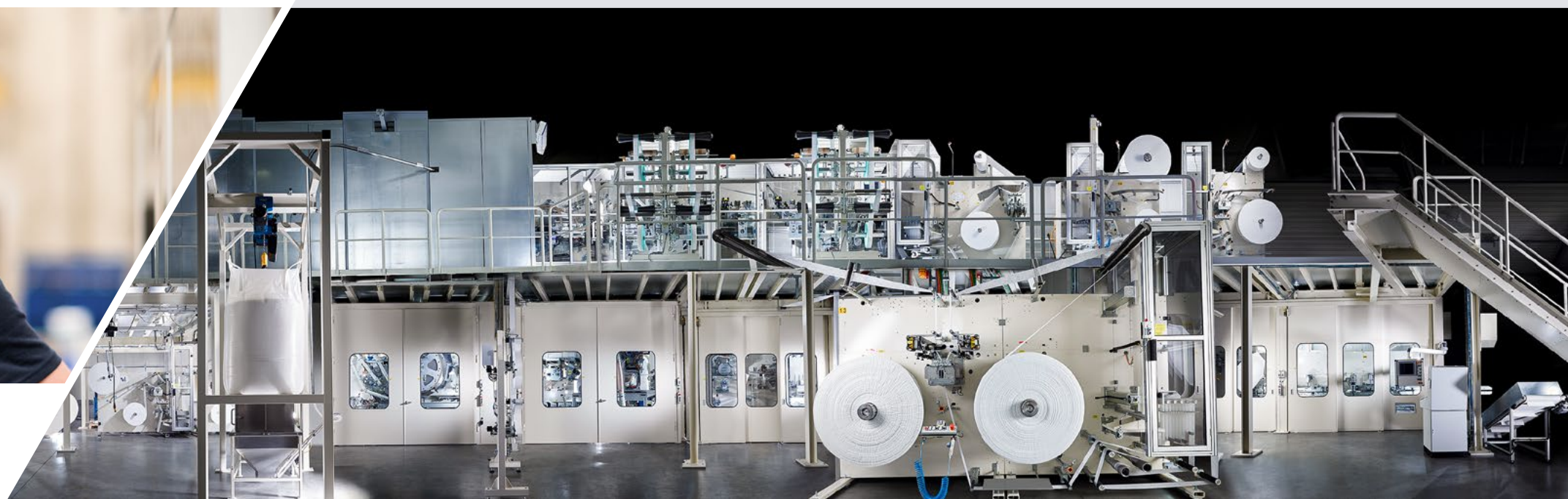
It is the people who make the difference

Flexibility has been part of our DNA for decades, resulting in tailor-made customer solutions and flexible machine concepts. Our machines are known to be among the fastest in format change thanks to our quick-change modules or our express drum-change technology.

Innovation drives us day by day to create smart and extraordinary solutions relating to products and processes. With our lab lines we are able to develop with our customers the products for tomorrow.

Competence accrued in the hygiene industry over decades makes every member of our team a reliable partner for our customers.

Sustainability of the machines we build and of the products manufactured by using them has inspired our activities right from the start. Reduced energy consumption, zero-waste processes, glueless bonding, and replacing single-wrap plastic by paper material are important parts of our philosophy.



Customer technology centers

Develop your future products with us!

To strengthen our relationship with our partners, we provide customers, raw material suppliers, and institutions access to different test stands and lab lines globally. This allows them to develop the products of tomorrow under production conditions outside a production environment.

One continuous wet wipe longitudinal folder line from the CLIPPER Series is installed at our PCMC facility in Green Bay, WI, USA, for material testing and research and development purposes. The CLIPPER consists of unwind stations, forming section, hygienic wetting system, and a rotary-pinch cutoff system. The machine layout is designed to match the following specifications:

Cutoff unit speed	Up to 600 cuts per minute
Cutoff length range	Min. 102 mm (4") — max. 305 mm (12")
Ribbon width	Min. 76 mm (3") — max. 160 mm (6.3")
Ribbon thickness	Min. 3.3 mm (0.13") — max. 20 mm (0.79")
Fold type & format*	Modified-V — interfold/non-interfold

*Note: depending on selected range, customer may be required to purchase additional parts to meet their product specifications (e.g., folding boards)

For canister applications and embossing trials, we have a FORTE lab line at our Northern Engraving facility in Green Bay, WI, USA. The line consists of unwind stands, laminating and single-nip embosser, and a rewinder.



At our W+D facility in Neuwied, Germany, we have installed smaller test stands and are in the planning phase for a Personal Care lab line.

Baby Care

NUBIS Series



Produce the best baby care

Whether you produce open diapers, pants, or baby change pads, W+D has the right technology for you: from highly flexible baby diaper production lines for growth markets to customized top-speed lines for market leaders.

Meet the dynamic demands of the market with our flexible and highly efficient production lines. Disposable inserts for hybrid diapers or booster pads that extend the wearing time of disposable diapers represent new sustainable solutions — but they increase the complexity of production. This complexity can be considerably reduced with our modular machines and flexible upgrade kits.



Compact machine design meets high process flexibility

- / Variety of core designs and core features
- / Predesigned choice of competitive options
- / Customized product features
- / Machine option to combine open diapers and pants

NUBIS-BD (open baby diaper)

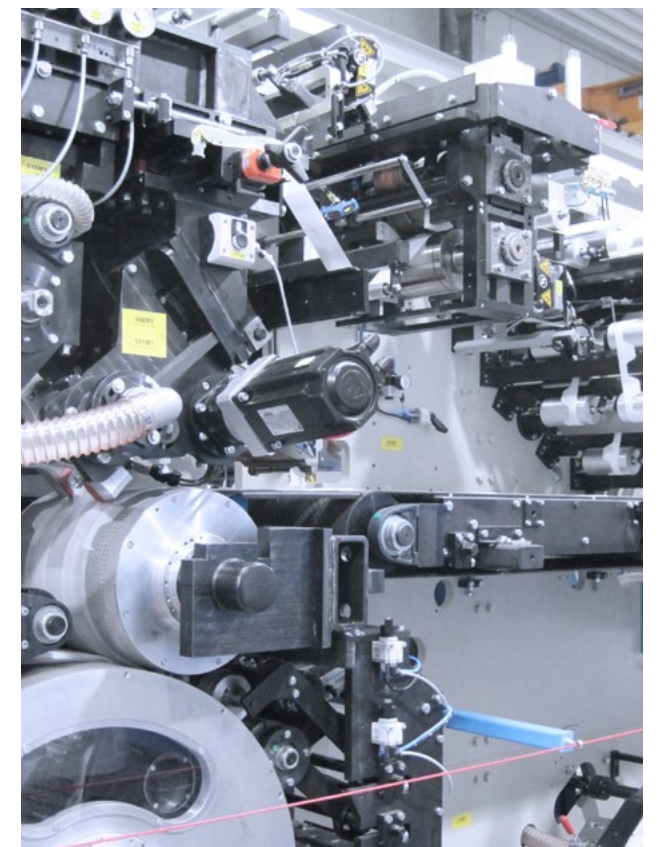
Shapes: Traditional / T-shape /
low-waste ears / zero-waste ears

- / Wide size range with minimized physical size-part changes
- / Optional booster pad

NUBIS-BP (baby pants)

Lycra nonwoven waistbands

- / High-precision ultrasonic waistband bonding
- / S2S quick-change concept



Feminine Care

ARCUS Series



Produce the best feminine care

For us, efficiency and flexibility are more than product features — especially when it comes to monthly hygiene products for women and girls.

The production flow of our modular machines is designed for high speed and maximum reliability. They cover a complete product range from ultrathin panty liners to thick night sanitary napkins with high performance, and are even combinable on one machine. Sustainable packaging solutions are also available, reducing single-wrap material costs and plastic waste. Take advantage of the economical manufacturing process and offer your customers maximum comfort and the best fit, according to their individual specifications.

W+D's TO-GO Ministacks create a small count of three to five folded products, wrapped in a reclosable pouch. They save around 85% of pouch material and are suitable for menstrual care and Light Inco products of all regions and markets.



Modern products, enhanced by multiple end-of-line options

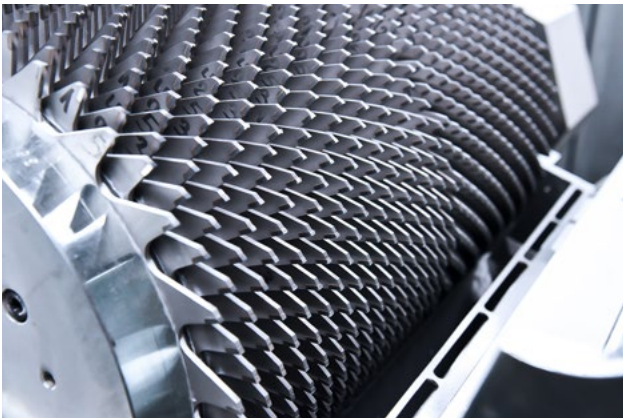
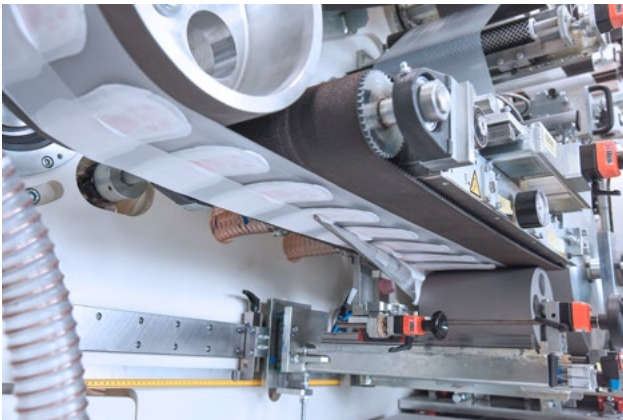
- / HDC High-Density Cores for top quality and best product performance
- / Inline flexo printing
- / Sustainable alternatives to PE single wrap: TO-GO pouch with 3-5 folded products / Green Manta paper single-wrap envelope / folded non-wrapped products
- / Predesigned choice of competitive options
- / Option to combine pantyliners and sanitary napkins

ARCUS-SN (sanitary napkin)

- / Ultrathin or thick
- / Wide backend for overnight napkins

ARCUS-PL (pantyliner)

- / Production in cross direction or machine direction
- / Anatomical, flex, shape or tanga shape



Adult Care — Light Inco

AURA Series



Produce the best adult care for light inco

Mobility is one of the most valuable assets in life. Light incontinence products help people to stay mobile and agile. Decades of experience in this specific market guide us when creating customized machines to make discrete high-performance products that wear comfortably and are tailored to the different needs of female and male users.



Man and lady products benefit from specialized processes

- / Full product range: incontinence pantyliners to long multicore XL sizes
- / Unisex, lady or men products
- / Inline flexo printing / Lycra or foam elastics
- / Sustainable alternatives, e.g., folded non-wrapped products
- / Predesigned choice of competitive options

AURA-LI-F (lady light inco product)

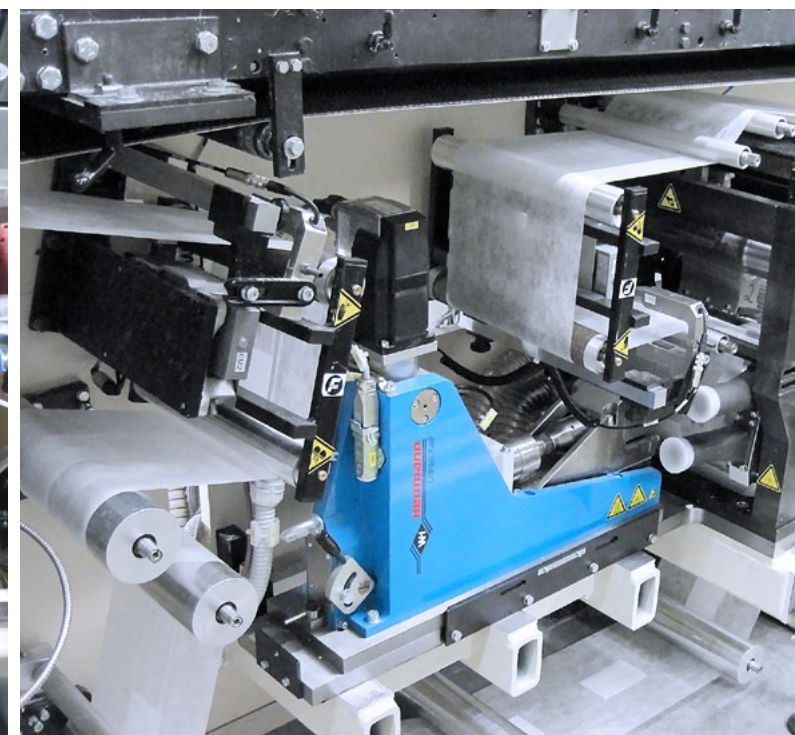
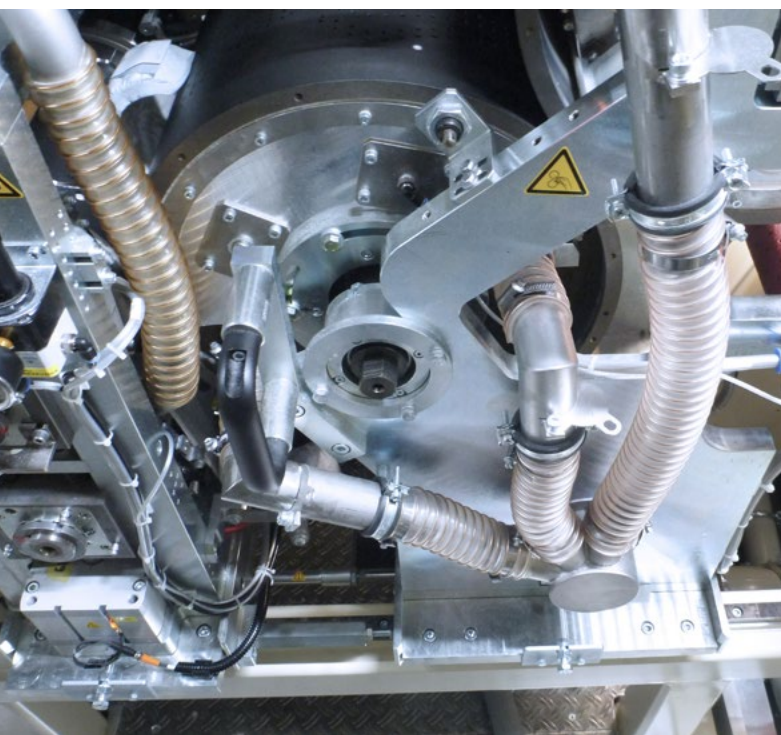
Designed for lady products with straight sides and side elastic

- / Suitable for men products with straight sides and side elastic
- / Perfect solution to enter into the growing inco-men market segment

AURA-LI-M (V-shaped men light inco product)

Dedicated process for V-shaped men products

- / V-shaped foam as side elastic
- / Ultrathin men pantyliner, V-shaped without elastics
- / Lengthfold of wide product sides, 1 crossfold



Adult Care — Heavy Inco

AURA Series



Produce the best adult care for heavy inco

Adult diapers, pants, and bed underpads make the lives of caregivers and patients easier and more independent. The variety of products requires tailor-made converting machinery. Our knowledge and close customer relations allow us to present the right solution to ensure a competitive, reliable, and cost-effective production setup.



Economical products for institutional sale, or sophisticated designs for direct-to-consumer markets

- / Variety of core designs and core features
- / Specific adult incontinence processes
- / Sturdy, reliable machine design
- / Predesigned choice of competitive options
- / Option to combine open diapers and pants or shaped pads

AURA-AD (adult diaper)

Shapes: Traditional / T-shape / shaped or rectangular ears / belts

- / Prefolding and sealing of ears/belts
- / Wide size range with minimized physical size-part changes
- / Unique S2S module for size change within two hours
- / Option shaped pads

AURA-AP (adult pants)

Lycra nonwoven waistbands

- / High-precision ultrasonic waistband bonding
- / S2S quick-change concept

AURA-UP (underpad)

Suitable for adult bedpads

- / Also suitable for baby change or puppy pads

Wet Wipes — Folded

CLIPPER + MARLIN PRO Series



Produce the best folded wet wipes

When it comes to cleaning, wet wipes nowadays play an important role in our daily lives. Baby wipes, personal hygiene wipes, moisture toilet tissue, industrial wipes, or disinfecting wipes are only examples of the wide range of applications. With our wipe converting machines we have the right answer to today's product needs. High speed, maximum efficiency, and quick changeover times allow a cost-efficient production.



CLIPPER Series offers interfolded flat-pack converting machines

- / Quick changeover modules
- / Wide range of materials including flushable nonwoven
- / Easy count change via HMI
- / Compact machine design
- / Patented technology ensures a wipes pack with fully connected sheets
- / Optional auto-splice function for the unwinds
- / Optional web guides

MARLIN PRO Series provides cost-efficient crossfolded wet wipes for cosmetic and personal care applications

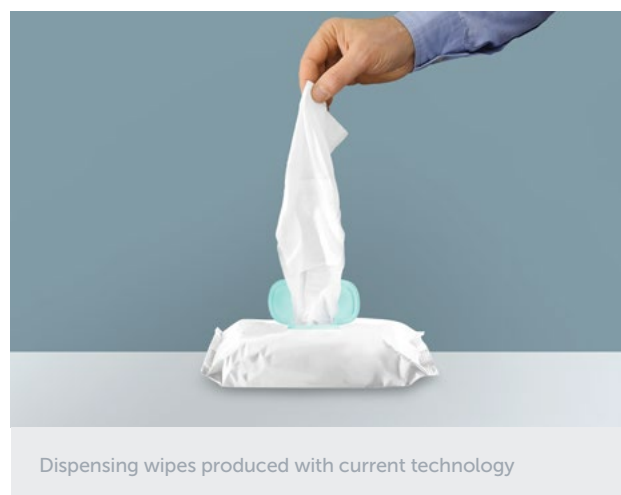
- / Highly efficient vacuum system results in low energy consumption, low waste, and increased machine availability
- / Compact footprint minimizes floor space needs
- / Full sanitary design
- / All motors outside of the wet area
- / Easy access to all critical-process-related areas
- / Fast and easy cutting blade changes

Wet Wipes — Interfolded VERTIS Series



Produce tear-resistant wet wipes from biodegradable materials – with the best user experience

When it comes to end user experience, the VERTIS produces the best finished product in the market. With its continuous interfold we ensure a perfect dispensing from the pack. Dispensing of the sheet in the stronger MD direction results in perfect dispensing even with very sensitive biodegradable raw materials. Zero breaks and optimum product quality in use is our new standard.



Dispensing wipes produced with current technology



Dispensing wipes produced with VERTIS

VERTIS Series offers interfolded flat-pack converting machines

- / Wide range of materials including biodegradable nonwoven
- / Better dispensing quality
- / Fully interfolded packs with up to 100 sheets
- / Very compact machine design
- / Quick changeover modules with open frames for full inside access
- / Easy even count change via HMI
- / Auto-splice function for the unwinds
- / Patented wetting technology
- / Fewer operators required
- / Smaller footprint



Wet Wipes — Rolled

FORTE-NW Series



Produce the best rolled wet wipes

With new applications being developed, rolled canister wipes are becoming more and more important in today's wipes offerings. With the FORTE-NW narrow canister wipe converting line, we eliminate the expense of rewinding parent rolls to run on multiple narrow machines and provide benchmarking productivity and efficiency.

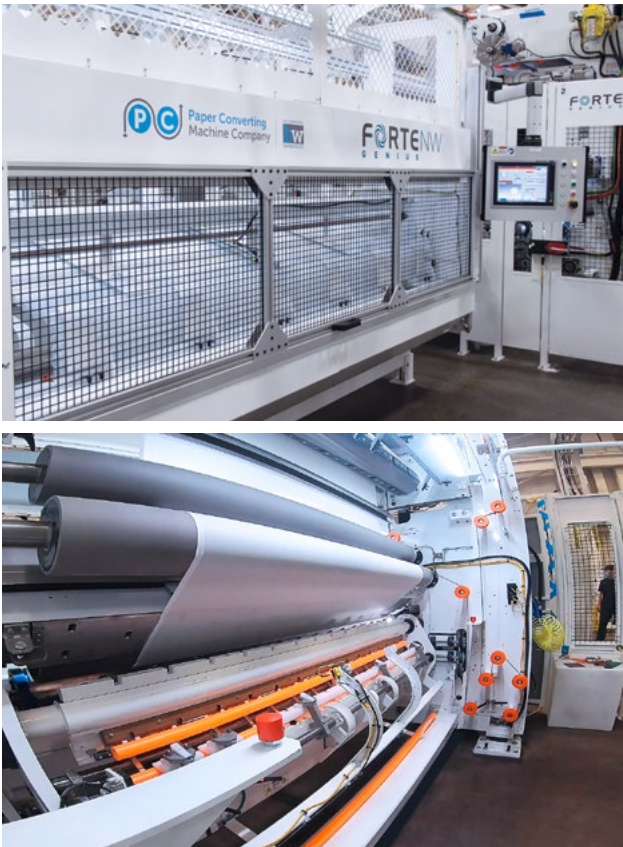
PCMC's patented InvisibleO™ coreless technology, which winds logs on re-circulating, recyclable thermoplastic mandrels, ensures cost-effective production as well.

Highly efficient canister rolls with FORTE-NW

- / Flexibility in feeding different widths of parent rolls
- / Better tension control results in better product quality throughout the roll
- / Fast product changeovers
- / Simplicity in operation
- / Benchmarking availability and productivity
- / Change of perforation via HMI
- / Optional second perforator package

Canister rolls with IR450 FLEX

The semi automatic rewinder model IR 450 FLEX has been designed to convert nonwovens, tissue paper, crepe paper, industrial rags, kitchen towel, and other similar products.



Dry Wipes — Folded CLIPPER Series



Produce the best folded dry wipes

Our dry wipe converting machine is the perfect solution for customers who need a good economical solution to produce not fully folded products. These products can be used for clean-room, industrial, food processing, health-care, and other purposes. A patented stacker system ensures a very high packing height of up to 320 mm (uncompressed) and a length of 380 mm, which can be easily combined with existing dispensing systems.



CLIPPER Series offers interfolded flat-pack converting machines

- / Quick changeover modules using folding boards
- / Wide range of nonwoven materials
- / Easy count change via HMI
- / Very compact machine design
- / Patented stacking technology
- / Optional auto-splice function for the unwinds
- / Optional saw for difficult welding materials



Tissue — Fold

VENTUS Series

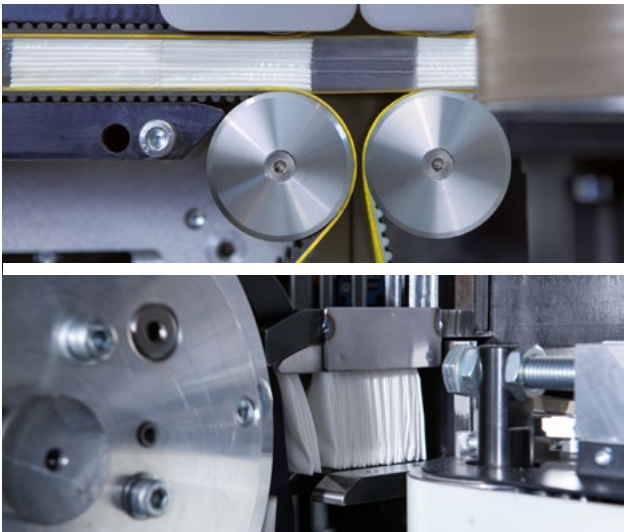


Produce the best tissue fold

Handkerchiefs and facial tissues accompany us in life and fulfill our needs for hygiene and skin care. For decades, we have been setting benchmarks as a global leader in tissue handkerchief production technology. We offer the fastest and most efficient machines to convert and wrap highest-quality handkerchiefs. Our machinery portfolio also contains flexible and competitive interfolder machines, sought after by marketers of bulk and boutique quantities of interfolded tissue.

VENTUS-624R

Fastest and most efficient handkerchief converting and packaging platform worldwide. The new VENTUS-624R is equipped throughout with auto-matically splicing unwinder units for all materials and is tuned for highest efficiency.



VENTUS-Flowtos

VENTUS-Flowtos, the most innovative and flexible medium-speed handkerchief production line encompassing converting, packaging, and bundle-wrapping. Featuring patented highly flexible single-pack flow-wrap technology.

Market leadership and turnkey solutions.
From converting to packaging: fully integrated solutions.

VENTUS-TI

For facial tissues the new VENTUS-TI interfolder is the right solution. High flexibility, and easy changeover and cleaning allow maximum efficiency to produce facial tissue products.



VENTUS-LF

This solution is for high-capacity facial tissue applications. The machine works from single unwinds matching the number of sheets in the pack and folds them longitudinally. The profile saw cuts the endless ribbon into the required sheet length.

Face Masks

AUXILIUM Series



Produce the best face masks

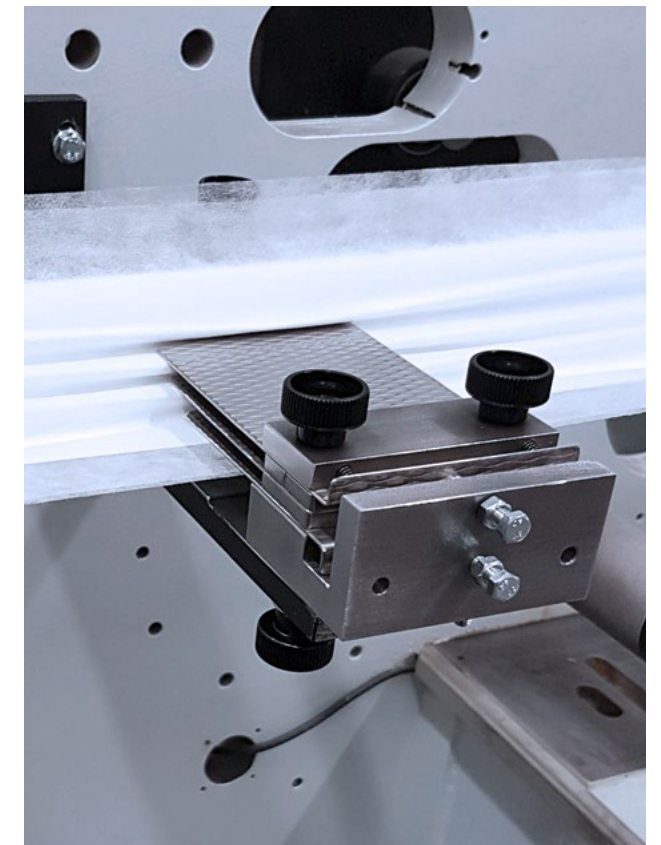
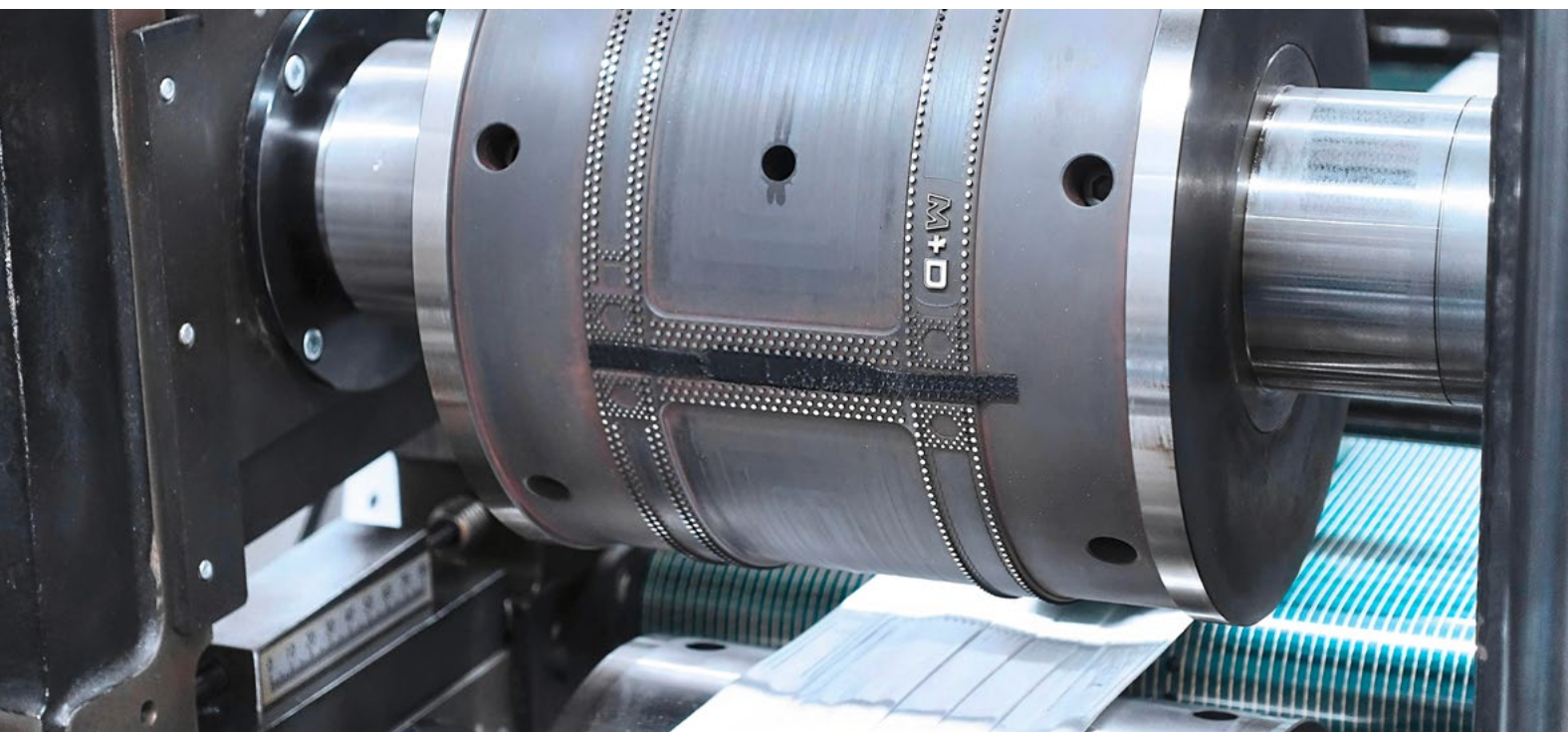
Profound knowledge of nonwoven conversion processes allows us to build complete, fully automated converting machines to manufacture surgical masks. High speed, maximum efficiency, and smart product concepts allow our customers long-term cost-saving production of personal protective products at a profit.



AUXILIUM MNS is one of the fastest mask-production machines in the world when making surgical masks. The machine provides some unique technology features to stay profitable in a very competitive environment. We offer various mask designs and soft ear or soft head bands.

Product customizing includes:

- / Inline flexo printing
- / Synchronizing preprinted materials
- / Processing ecological and sustainable materials
- / Printing or embossing logos



Professional embossing rolls for all converting needs



Produce the best engraving pattern

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



Our solutions

- / 3-D design
- / Pattern and product development
- / Pilot line trials
- / Laser engraving
- / Mechanical engraving
- / Roll configurator
- / Roll manufacturing
- / Roll and pattern repair
- / Roll straightening

Converting solutions lab

Get real-world results before going to market. Our converting solutions lab offers customers an optimal environment to test and optimize their products prior to releasing them in the marketplace.



Quality Services over the entire life cycle of your machines

Boost your operation by taking advantage of our wide spectrum of quality services, upgrades, retrofits, and digital solutions! As leading system partners of mail, bag, tissue, and personal care converting, BW Converting Solutions (BWCS) offer a comprehensive portfolio of engineering service solutions to meet your business needs throughout the entire operative life of your machines.

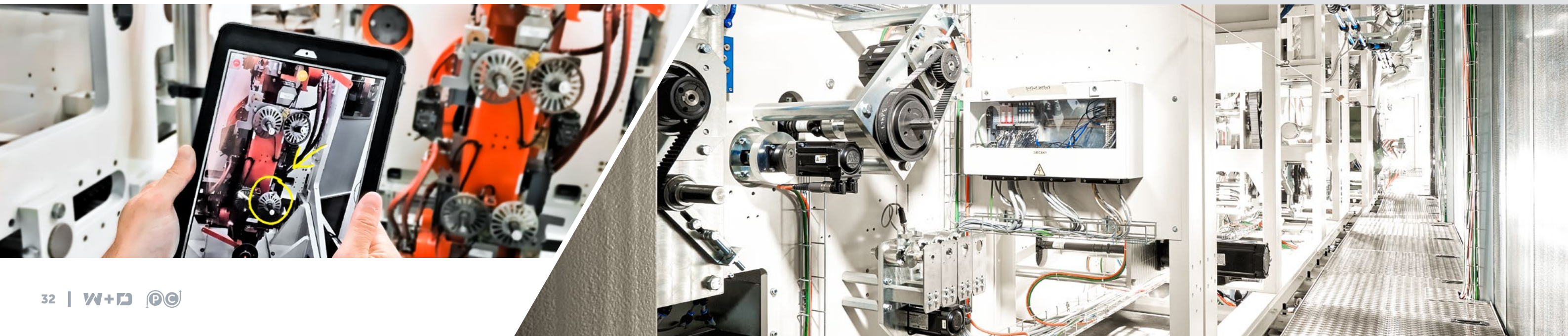
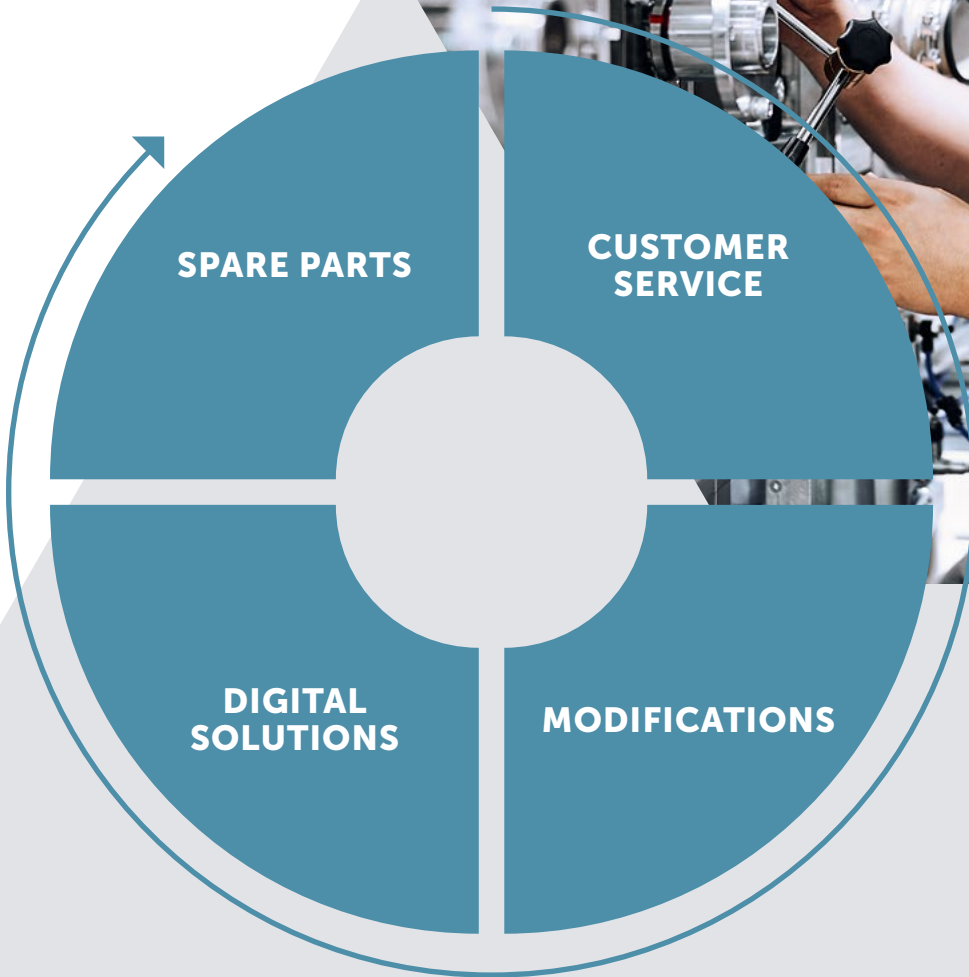
Together, we provide:

One global parts network: Spare Parts contribute to your success! By offering you a fast, nearby, one-stop shop for high-quality spare parts and equipment for all types and generations of hygiene machinery.

One service support network: Customer Service is always there for you and gives the support you need. A global team of more than 150 service technicians is now at your disposal for fast and efficient service, to keep up and optimize your operations.

A broad base of engineering experience and talent: Modifications keep your machine running if parts are already obsolete. We are specialized in upgrading installed lines of all brands with latest product and technology features.

A superior level of service: Digital Solutions help you to optimize your production through ease of operation and analyzing operation data from your machine.

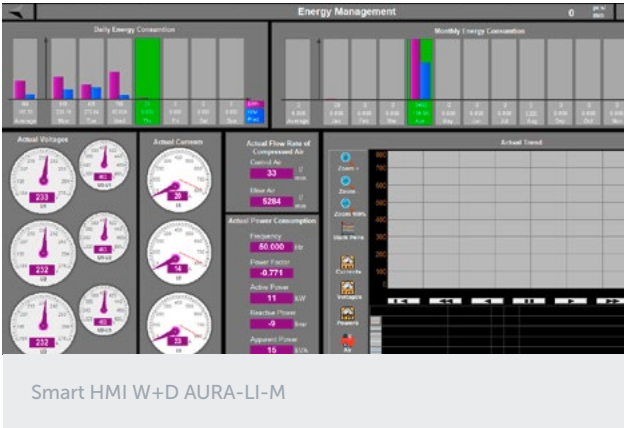
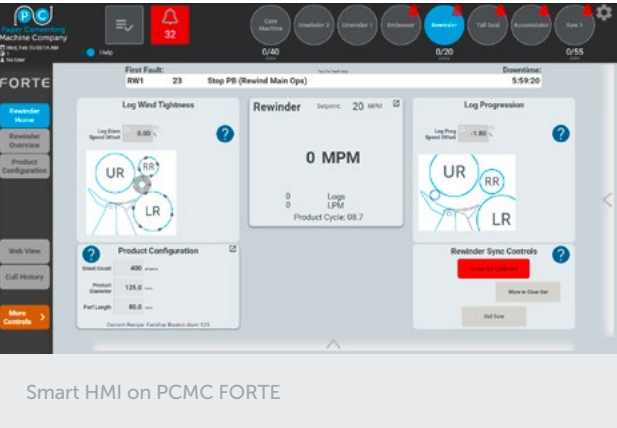


Smart HMI

Smart features that enhance the HMI experience for operators, maintenance, and production managers:

- / Easy navigation
- / Tag histories
- / Fault analytics screen
- / Production data
- / Web view mode
- / Warning/task forecast
- / Managing recipes
- / Maintenance tracking tool

Decreases operator training time



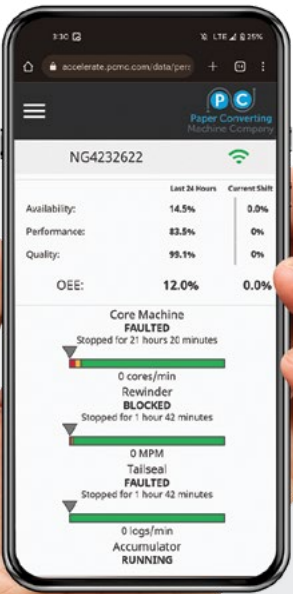
Your gateway to the present and the future: industry 4.0, machine learning, and AI.

Accelerate Digital Services

Delivering on the promise of industry 4.0

Real-time access to machine performance

- / Secure access to live dashboards through any device with an Internet connection
- / Cloud-based data
- / Easy-to-understand visuals of machine speeds, OEE, downtime, and more
- / Visibility to historical data
- / New awareness of OEE trends
- / Easy access to machine documentation
- / Three levels of service to choose from
- / Available for new and legacy equipment



Expert service

Our Accelerate team is made up of machine experts with more than 80 years of combined experience and technical knowledge. They provide you with action-oriented recommendations and customized analysis to keep you running at peak performance.



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For more about W+D, visit w-d.de

For more about PCMC, visit pcmc.com

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