



NONWOVEN
**INCREASE
YOUR SUCCESS WITH
NEEDLEPUNCH**

FOR YEARS TO COME

ANDRTZ

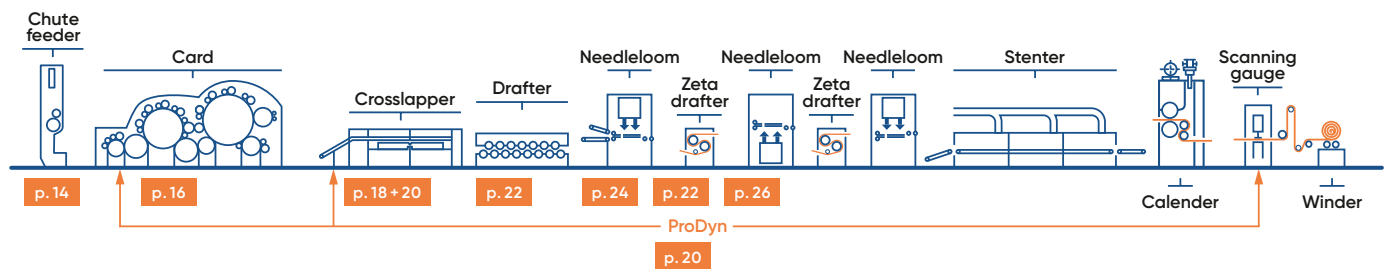
ENGINEERED SUCCESS

neXline eXcelle needlepunch line

Needlepunch solutions tailored to your needs: The neXline eXcelle portfolio offers you superior technologies and enables you to produce exactly the fabric characteristics you want. For market entry solutions, ask us about the neXline aXcess range.

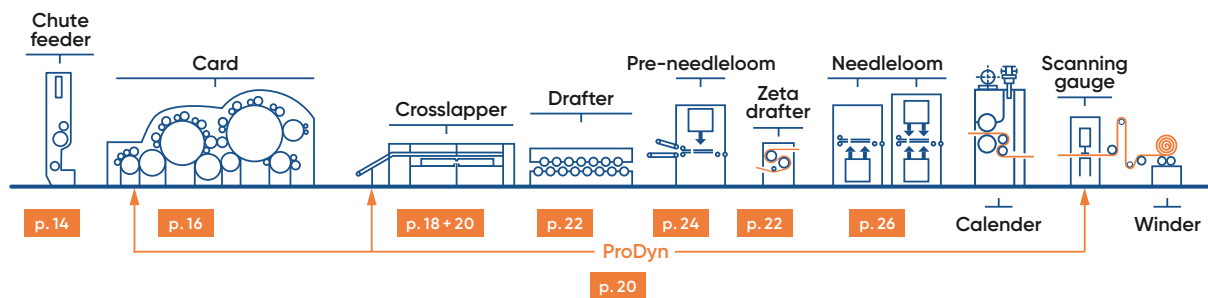
GEOTEXTILES, FURNITURE, TECHNICAL FELTS, ...

75 – 700 gsm



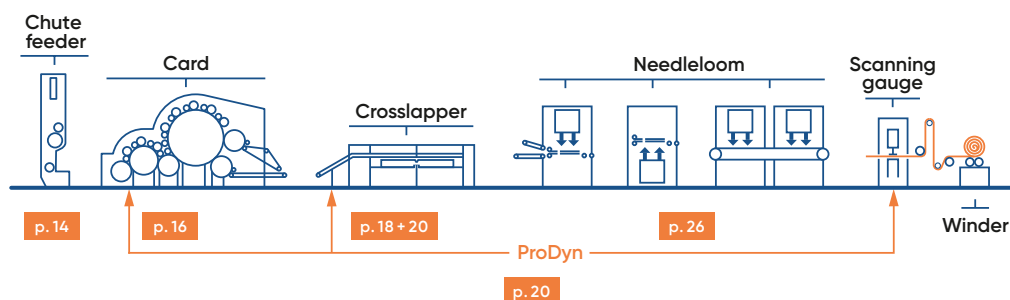
FILTRATION, TECHNICAL FELTS, ...

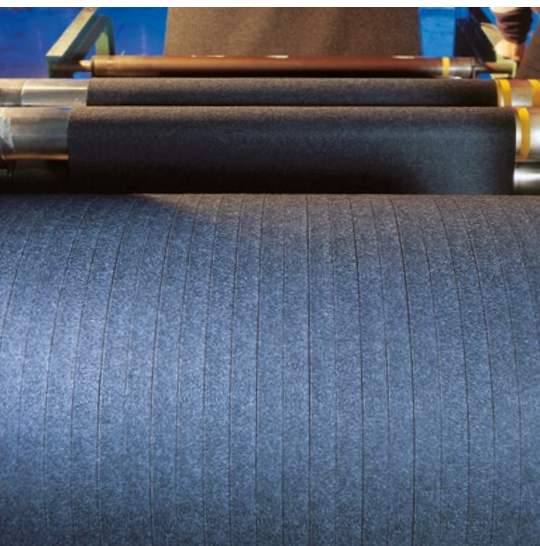
90 – 1,600 gsm



AUTOMOTIVE

150 – 600 gsm





HIGH FLEXIBILITY IN MATERIALS

Needlepunching gives you high flexibility and suitability for use with nearly all existing fibers, from natural to man-made fibers, and filaments. You can also customize the fabric's tensile strength and weight distribution.



VARIOUS APPLICATIONS

Needlepunch can be used for a large number of markets, such as:

- Geotextiles
- Automotive
- Filtration
- Furniture
- Roofing felts
- Coating substrates
- Artificial and synthetic leathers
- Flooring
- High-tech composite felts
- Ceramics ...



"Since the beginning of the 21st century, the needling process has enjoyed a steady growth compared to the overall production of nonwovens. It serves demanding markets such as automotive, geotextiles, building and civil engineering, filtration, and synthetic leather."

EDANA (European Disposables And Nonwovens Association)

Needlepunch line configurations →

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AUGMENTED REALITY CONTENT

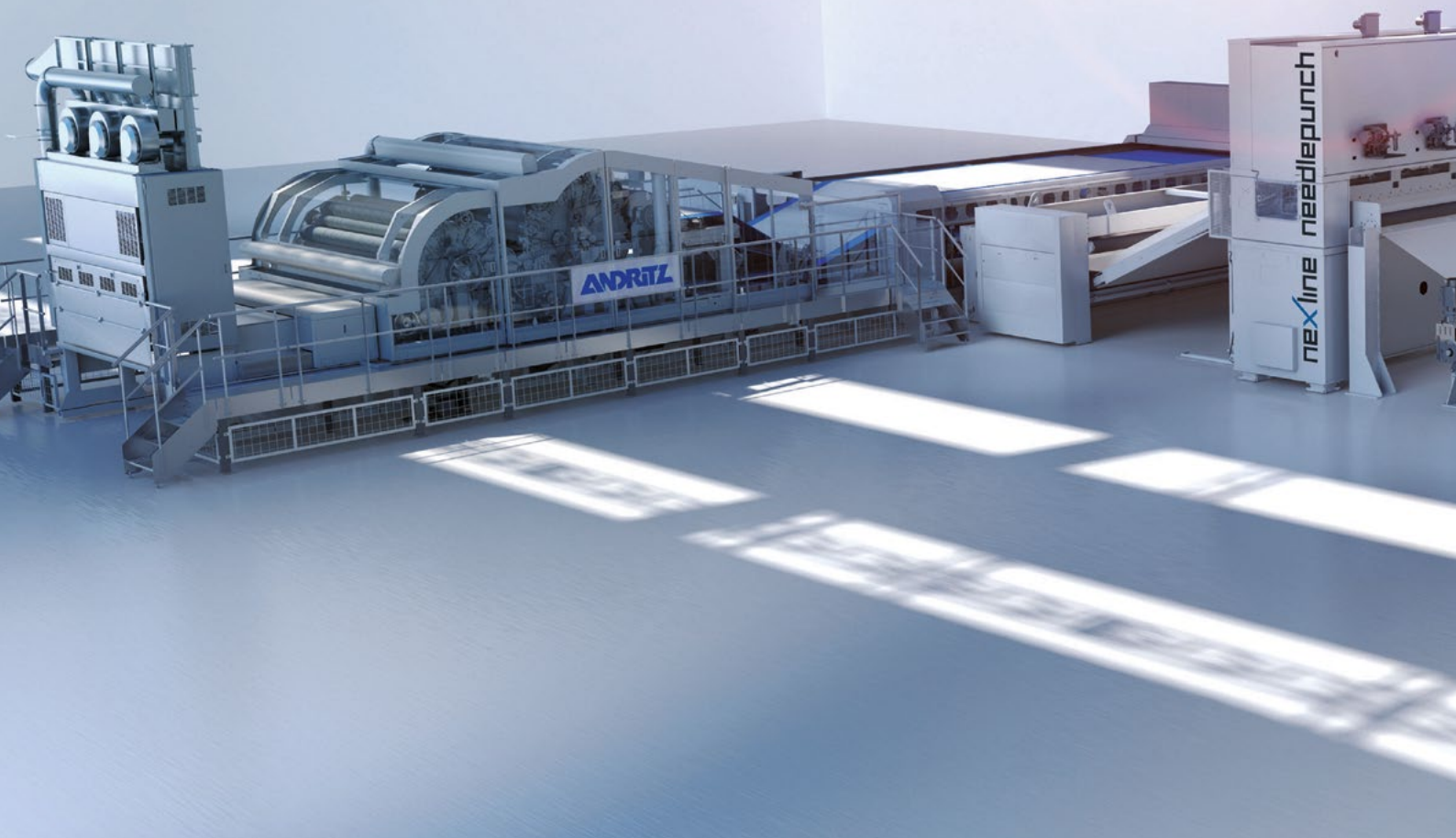
To view videos, illustrations and picture galleries in a more direct and lively way, we added augmented reality to several contents! Download our **ANDRITZ AR APP** on our website or in the AppStore/PlayStore!

**SCAN THE MARKED PAGES AND
EXPERIENCE THE ENHANCED CONTENT.**



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A vital part of your business



Reliability is most essential for your needlepunch production: You'll keep your customers happy as long as they can be sure of the quality, consistency and reliability of delivery times. The quality and value of the fabrics you produce should win over your customers. ANDRITZ needlepunch production lines will help you make this happen – For years to come.



FOR THE BEST RESULTS

You can count on our innovative technology to optimize your production processes and reduce energy and raw material consumption. Simulation tools help us find the ideal production line for your business and can even help you with your product development.

MAXIMIZING UPTIME

Our technical experts and skilled service teams help keep your assets in perfect shape. This protects your production line and ensures a stable return on your investment. And when your production lines run smoothly, your business does, too.



View video footage of this brochure in our augmented reality App!

**FOR FURTHER
INFORMATION
SEE PAGE 5**

Simulation tool neXmatrix

Optimizing your investment: The ANDRITZ mission is to be a reliable partner at every stage of your industrial process. This starts with the sales approach. The neXmatrix simulator newly developed by ANDRITZ is a distinctive tool to support you in making the right investment decision.

COMPARE DIFFERENT TECHNICAL SOLUTIONS

The neXmatrix simulator helps you to work out alternative line set-ups. On your premises, ANDRITZ can conduct a comprehensive comparison of different technical solutions in terms of:

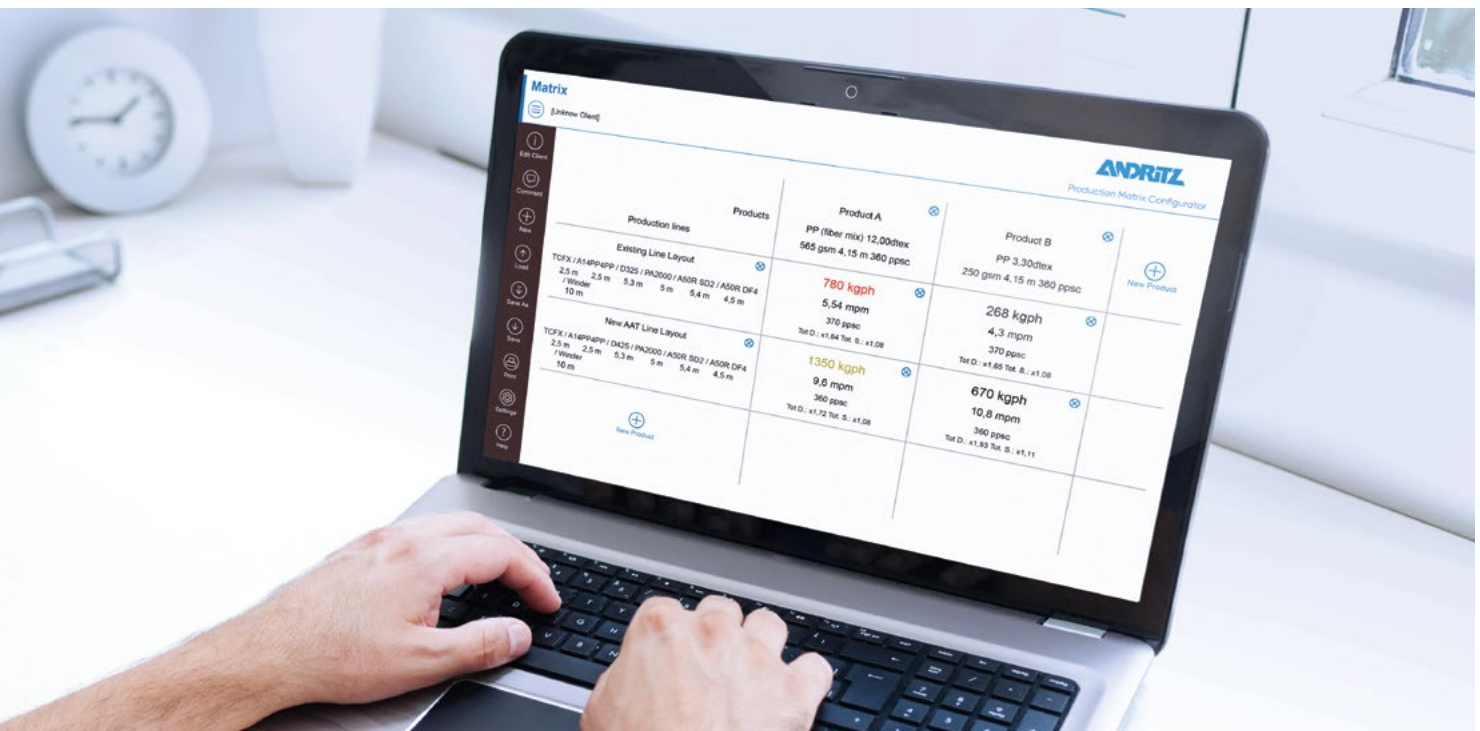
- production and final width
- production versatility
- complexity
- investment payback

VALIDATION AND TESTING IN THE ANDRITZ TECHNICAL CENTER

The results achieved with the neXmatrix simulator are, of course, analyzed and discussed with the ANDRITZ skilled process experts, who give you appropriate advice. In addition, you have the opportunity to check and approve line performance in the ANDRITZ technical center.

YOUR BENEFITS

- Save time in your project design
- Choose and validate the customized line configuration
- Develop the appropriate fabrics
- Full support from process experts



Comparison of line configurations with neXmatrix

Fully equipped technical center

Spot-on support and development: The ANDRITZ technical center in Elbeuf, France, is equipped with a complete needlepunch pilot line built to industrial scale. The installation combines all the latest technology developments by ANDRITZ for the needlepunch market.

EXPERIENCE NEW PRODUCTS

ANDRITZ Nonwoven offers you the opportunity to test the neXline needlepunch pilot line. It is the perfect opportunity to experience new products that will provide access to different markets.

EQUIPPED WITH THE LATEST DEVELOPMENTS

This installation combines all the latest developments by ANDRITZ, such as the high-performance eXcelle double card with crosslapper and the A.50-R and RS needlelooms, which are capable of needling from one side only or from

both sides. The line controls feature the new standard ANDRITZ electrical equipment, replacing the proprietary IPC racks. The intelligent monitoring solution is available for complete production line management.

The pilot line is designed to run short and long staple fibers with an even card web aspect despite throughput capabilities in excess of 500 kg / h / m. ANDRITZ process experts support you in your R & D during trials with your own fibers, helping you to improve your equipment efficiency.

YOUR BENEFITS

- Complete needlepunch line built to industrial scale
- Latest technology development
- Process expert support
- Integrated laboratory for testing nonwoven fabrics
- Simulation tool



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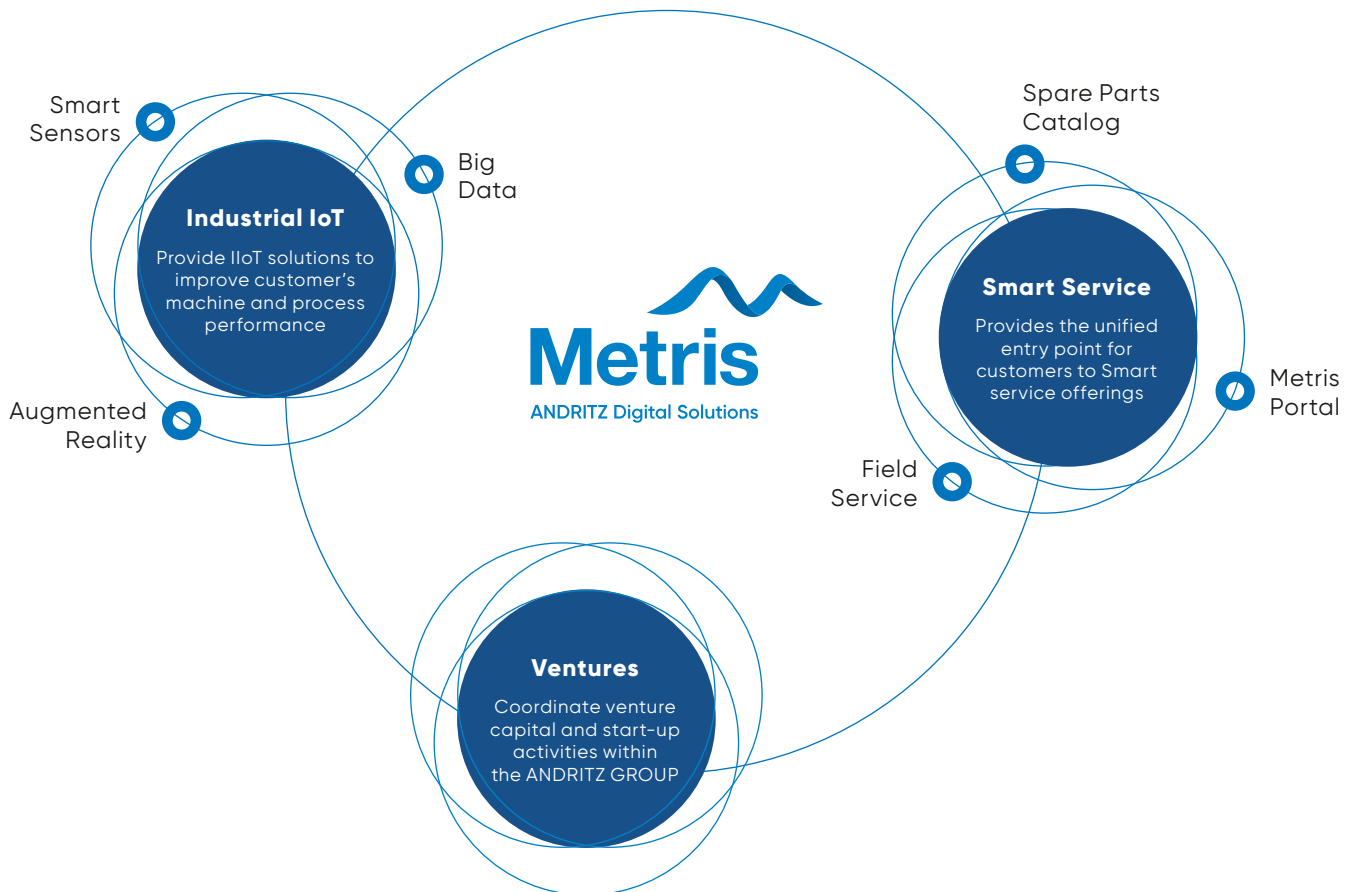
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ANDRITZ technical center in Elbeuf, France

Metris: ANDRITZ Digital Solutions

Digitalization is changing the nonwoven world: With digitalization, Industrial Internet of Things (IIoT) and Smart Service, expectations for greater line efficiency and increased profitability are rising. This can be gained by networking of machines and applying such technologies as Smart Sensors, Big Data Analytics, and visualization using Augmented Reality. Metris OPP (Optimization of Process Performance) as one of the core products of the Metris portfolio can provide the whole range according to individual needs.



WHAT IS METRIS?

With the Metris brand's digital solutions, you are preparing for the growing digital challenges in the industrial environment. Metris products are the very latest state of the art – they can be customized to suit your individual requirements, and they make you achieve the best possible productivity and efficiency for your nonwovens production.

WHAT DOES METRIS OPP DO?

The intelligent Metris OPP platform analyzes available line data, compares it with data already gathered, assesses the data, and provides you with valuable output. But Metris OPP is not just a platform – it offers ANDRITZ service contracts for both on-site and remote assistance services by specialists.



YOUR BENEFITS

- Full use of equipment and no need to install new hardware
- Continuous measurement of savings
- Ongoing R & D to provide the latest state-of-the-art technology
- Field model proven in many different countries
- Big data analysis with tried-and-tested models for deviation analysis
- Providing information locally with augmented reality
- Extensive solution and process engineering knowledge
- Cybersecurity solution to safeguard data on the network



View video
in our app

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SMART SENSORS

ANDRITZ uses micro and wireless sensors for Metris solutions. You can use these sensors to collect even more detailed machine and plant data from pre-defined areas that are relevant in optimizing operations.



BIG DATA ANALYSES

To provide you with a rapid overview of the plant operating status, the data is analyzed automatically in real time. Necessary control measures can be initiated based on the knowledge of possible effects in order to avoid plant shutdowns, for example, or reduce the use of consumables.



AUGMENTED REALITY

Augmented reality can make information visible at the machine or plant and display it very easily on mobile devices such as a tablet PC or smartglasses. Technology makes machine and system operation easier and more efficient for you.

Monitoring tool

Control parameters and improve performance: ANDRITZ has developed a monitoring system to guarantee smooth operation and improve your process and plant profitability. It controls the line parameters constantly and creates the best configuration to enhance production.

INDUSTRIAL IOT FOR SMART PRODUCTION

Sensors on the machines record sensitive data and send it to the monitoring system. It summarizes data in comprehensive reports and helps you to improve the line's performance. Reports show various information, such as CV deviations, MD/CD deviation, optical quality, humidity deviation, and more.

CONSTANT IMPROVEMENT

ANDRITZ textile engineers provide a monthly executive report with proposals on how to improve production.

It is possible to use "walking cameras" to explain a situation or a problem easily to the ANDRITZ support team providing remote assistance. Thanks to this system, you receive preventive maintenance alerts that help to anticipate problems and reduce unplanned downtime.

YOUR BENEFITS

- All data at a glance
- Improved production
- Enhanced textile performance
- Less maintenance
- Designed to support neXmatrix tool



ANDRITZ monitoring system to manage the nonwoven needlepunch production line

Dedicated service

We know how important uptime is for your production efficiency:

That's why we do everything to keep interruptions to a minimum.

With remote maintenance and a highly responsive service team, we can react to your issues in the shortest time possible.

SPARE PARTS

To ensure the longevity and the performance of your equipment, we recommend using only original spare parts from ANDRITZ.

A sales team for spare parts is at your disposal at ANDRITZ to help you make your choice.

UPGRADES AND RETROFITS

ANDRITZ specialists are available to inspect your production lines and propose improvements to extend the product life of your equipment and gain productivity.

SKILLED TECHNICIANS AT YOUR DISPOSAL

With the goal of providing the most efficient and reactive service as possible, ANDRITZ assigns a dedicated team of skilled technicians, as well as automation and textile engineers.

ONLINE SUPPORT

ANDRITZ wants to support you at all times. You always have a competent partner to explain any problems related to textile, mechanical, or electrical / electronic issues.



View our service contacts in our augmented reality App!

**FOR FURTHER INFORMATION
SEE PAGE 5**



YOUR BENEFITS

- Service centers around the globe
- Technical and electrical diagnosis by experts
- Complete stock of original parts
- Assistance with installation, operation, maintenance, and training
- Improve your production operations
- Enhance the performance of your equipment

Card feeders

Perfect evenness in feeding: Multiple and comprehensive solutions are available for every kind of drylaid web forming process in the ANDRITZ range. ANDRITZ offers you different types of card feeders to match the required production capacity while feeding the card evenly.

YOUR BENEFITS

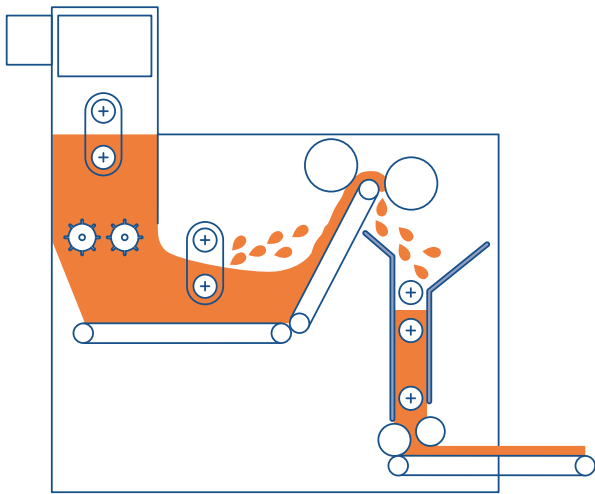
- Long-term weight evenness $\pm 1\%$
- Accurate and reliable
- Low cleaning requirement

CARD FEEDERS

You can choose between two card feeders, depending on the fiber range characteristics.

Continuous Flux volumetric hopper (CFX)

- Throughput over 500 kg / h / m
- Fibers up to 150 mm
- Suitable for high-density fibers
- Synthetic and natural fibers



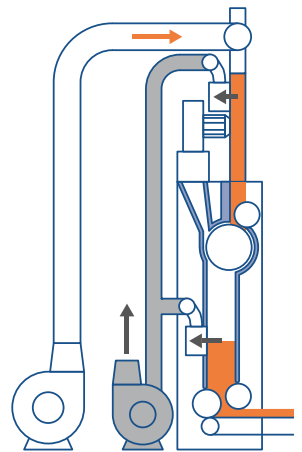
CFX volumetric hopper

Thibau Chute Feed (TCF-X)

- Throughput over 500 kg / h / m
- Cross direction card evenness $\leq 2.5\%$
- Fibers up to 120 mm
- Self-regulating fiber distribution system in cross direction
- Compatible with intimate blends and well-opened fibers



TCF-X: Self-regulating fiber distribution system in cross direction



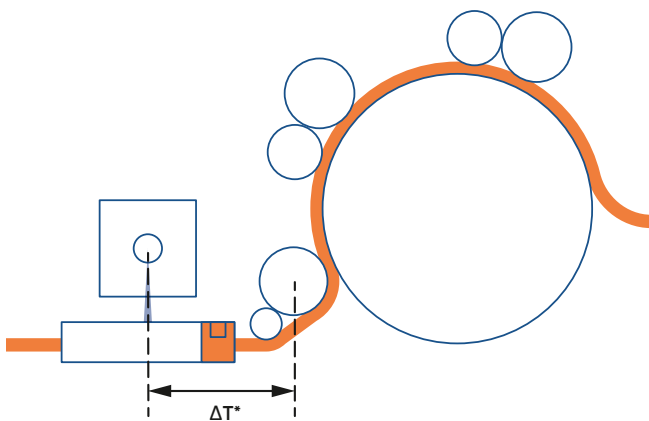
Option: Dedusting system
— Air + dust
— Fibers

CARD INFEEED REGULATORS / AUTO-LEVELERS

ANDRITZ offers you two types of card infeed auto-levelers for highest accuracy.

X-ray measurement (Servo-X)

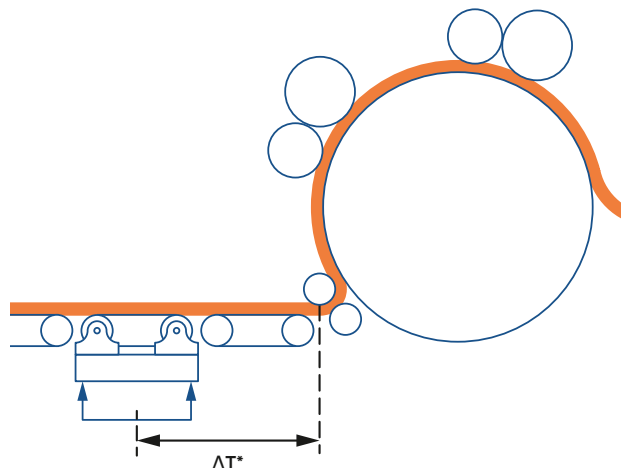
- Density measurement
- No wear parts, no maintenance
- Customers' preferred solution



* Calculation time for adaptive speed

Weight measurement (ACE)

- Weighing system
- No reset needed for a wide range of fiber densities



Cards

eXcelle range for flexibility in web forming: The eXcelle cards cover all your requirements in terms of capacity or web properties and are available with carding power alternatives.

Single or double card set-up and different web structure solutions: parallel, condensed, or randomized. In combination with the number of doffers, the card enables you to obtain a wide range of web weights.



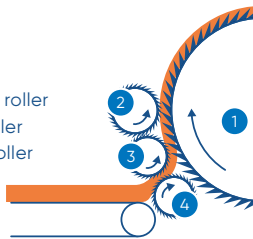
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Alternatives for card feeding sections

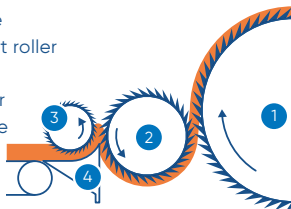
"A" feeding rollers

- 1 – Licker-in roller
- 2 – Cleaning feed roller
- 3 – Upper feed roller
- 4 – Bottom feed roller



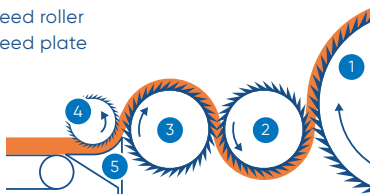
"R" feed plate

- 1 – AVT breast roller
- 2 – RTB roller
- 3 – Feed roller
- 4 – Feed plate

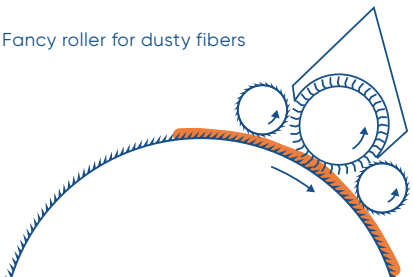


"S" feed plate

- 1 – AVT breast roller
- 2 – COM transfer roller
- 3 – Licker-in roller
- 4 – Feed roller
- 5 – Feed plate

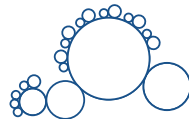


Fancy roller for dusty fibers

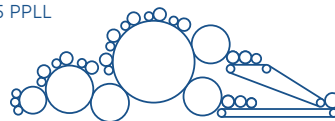


Alternatives for carding power

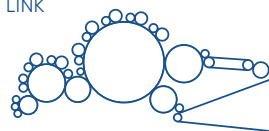
A 16 P



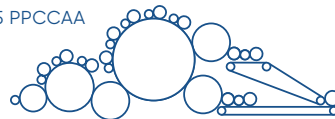
A 35 PPLL



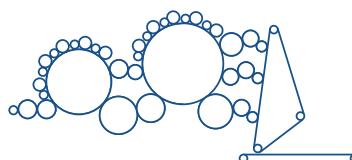
A 35 PP LINK



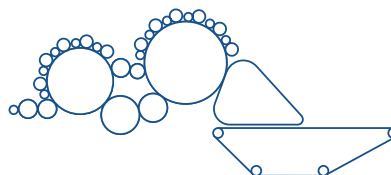
R 35 PPCCAA



S 5 PP 5 VarioWeb 3



S 5 PP 6 TT



Alternatives for card web structure

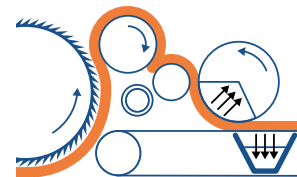
Take-off roller



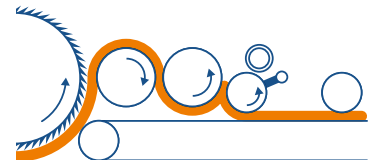
LDS take-off



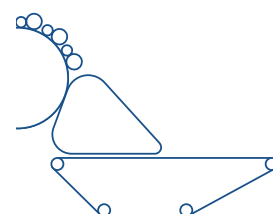
C1 condenser (type C)



C2 condenser (type L)



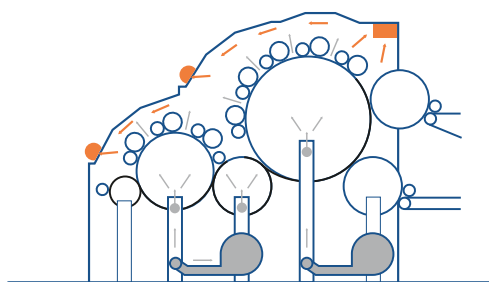
TT delivery



YOUR BENEFITS

- Customized to meet your requirements in fiber range, throughput, web qualities, and so on
- eXcelle = consistent web qualities
- Air management system including air cushion solution
- Enhanced visibility
- Easy accessibility for maintenance
- Low cleaning requirement

Web forming	w.w. [m]	1 or 2 doffer(s)	2 or 3 doffer(s)
Inline	from 1.5 to 5.1 m	eXcelle	eXcelle VarioWeb
Crosslapped	from 1.5 to 3.0 m	eXcelle LINK	N / A
	from 1.5 to 3.5 m	eXcelle	N / A



Air management system

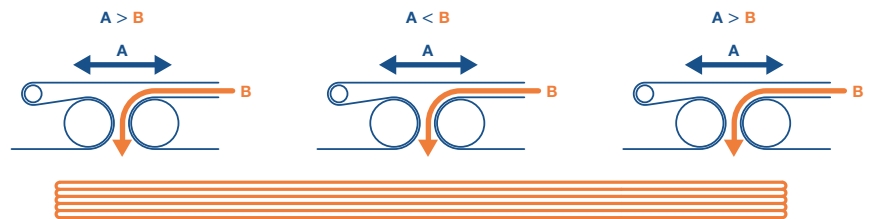


Card outlet

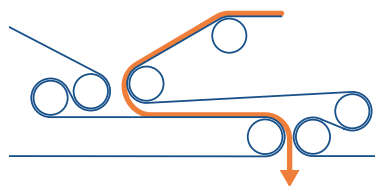
Profile crosslappers

Profile for high productivity: The ANDRITZ Nonwoven crosslapping technology is based on 60 years of experience and continuous innovations. Today ANDRITZ offers you the complete eXcelle crosslapper range.

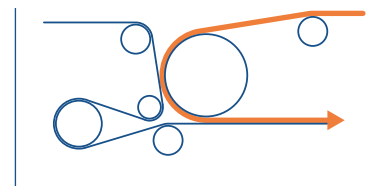
Thanks to its short textile path, profiling capabilities, and infeed speed, the Profile crosslappers range perfectly matches the new production lines requiring higher productivity and web weight profiling improvements.



Profiling batt shaping – speed principle



Short textile path



HSC top carriage

PROWID

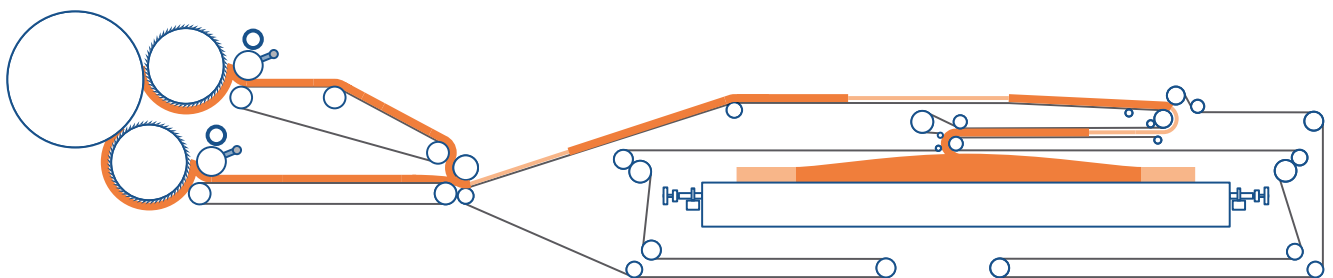
The ProWid control system is a tool that regulates the card web weight before the web enters the crosslapper in order to lay a fiber mat with lighter edges. It thus anticipates later fabric deformation caused by the bonding process. The CV percentage is generally improved by a factor

of two, in particular when the CV percentage is in excess of 3% without the ProWid system.

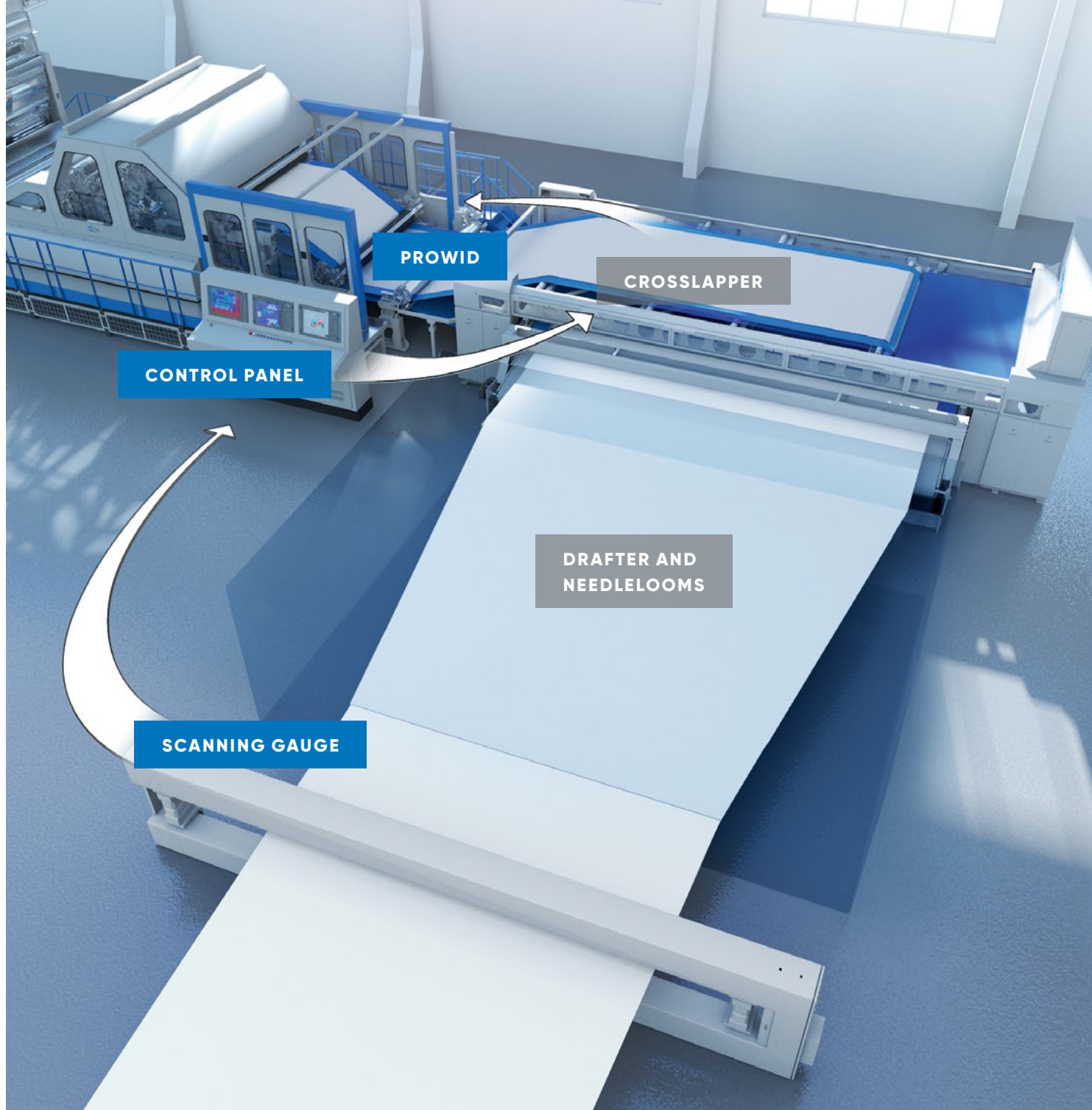
ProWid can be delivered with an individual ANDRITZ crosslapper to enhance performance in existing carding lines or with new needle-punch aXcess lines.

YOUR BENEFITS

- High production speed
- Fabric evenness
- Fiber savings
- Low cleaning requirement



Impact of the ProWid system on fiber distribution



ProWid system

Profile crosslapper	Card width			Fabric weight control	Speed variation
	2.50 m	3.00 m	3.50 m		
Max. infeed speed [m / min]	90 – 200	90 – 170	90 – 130	Profiling by stretching on card web corresponding to fabric edges	up to 40 % stretch (maximum)
Max. laydown speed [m / min]	123 – 295	123 – 230	127 – 180		

Profile crosslappers

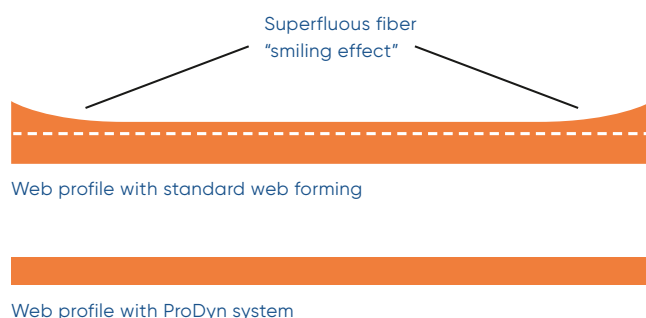
ANDRITZ ProDyn: Dynamic motion from card delivery and Profile cross-lapper contribute a remarkable reduction in production costs thanks to the improved fabric weight evenness. The ProDyn is designed to work with Dynamic eXcelle cards and a scanning gauge for fully automatic, closed loop control.

PRODYN

The ProDyn system combines actions from the card doffers and dynamic speed variation at the crosslapper. It allows you to generate a fiber mat with lighter edges and a heavier center area, anticipating subsequent fabric

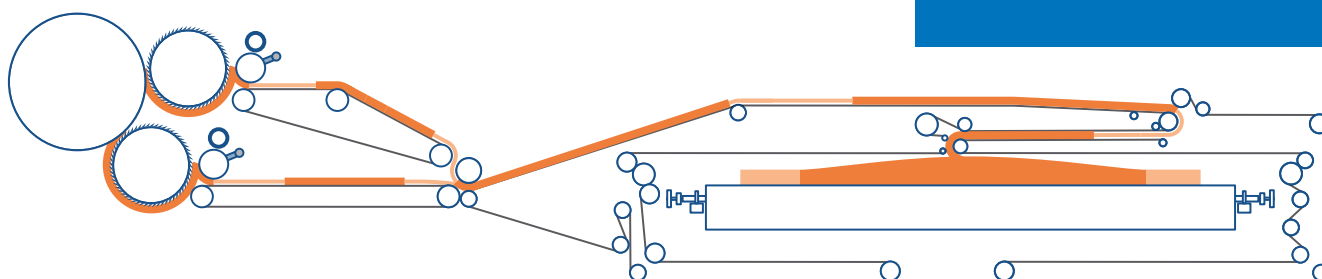
deformation during the bonding process (no "Smiling effect").

To minimize cloudiness and variations in fabric behavior, the fiber mat is formed with card web layers with the same consistency and low fiber tension.



YOUR PRODYN BENEFITS

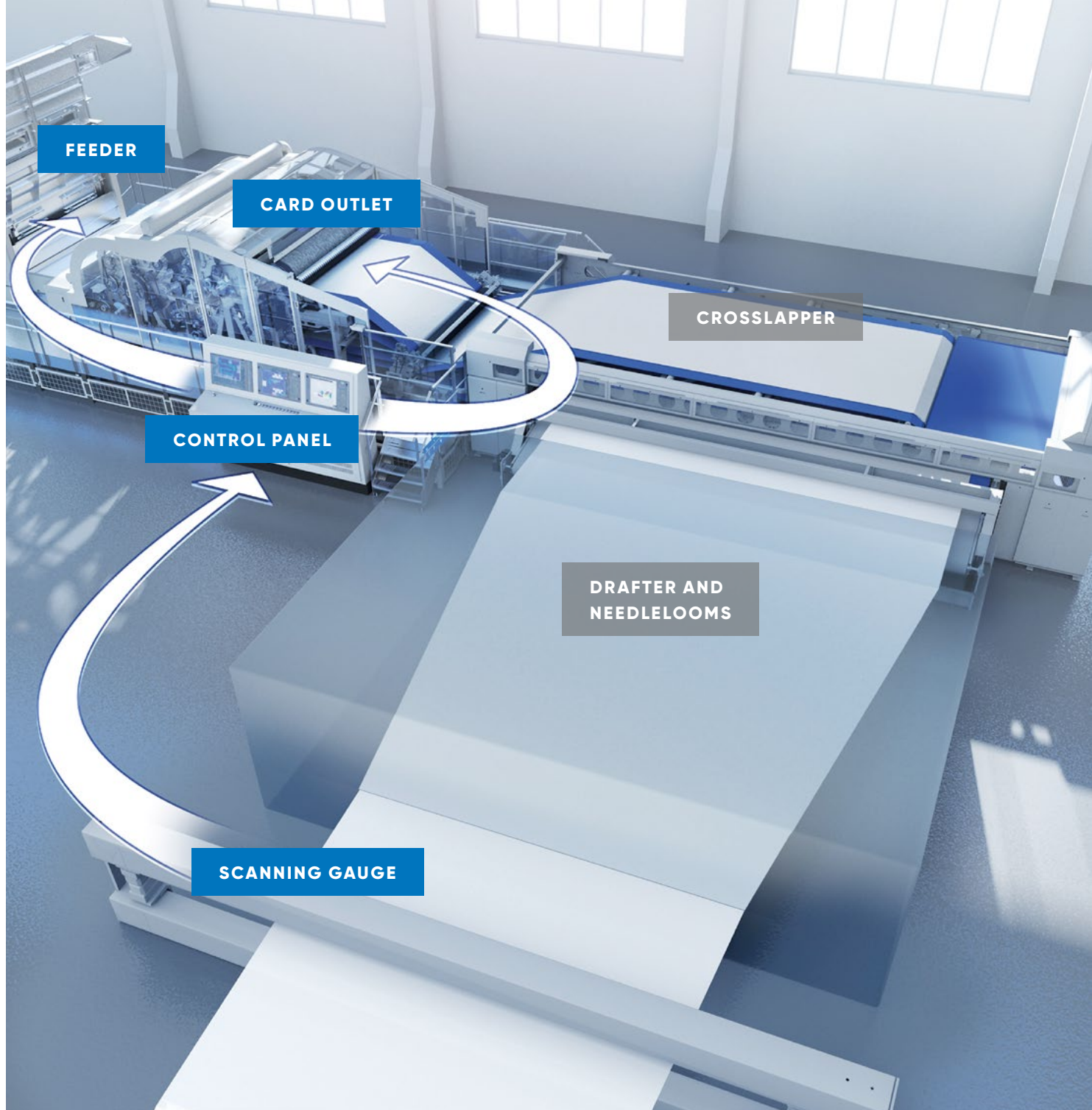
- State-of-the-art system for weight evenness
- Fiber savings
- Weight evenness improvement in process flow direction (MD) as well as across the fabric width (CD)
- Fully efficient with any fiber, production speed and fabric weight
- Input speed of up to 170 m/min with Dynamic ProDyn (205 m/min max peak infeed speed)
- ProDyn works without stretching and without drafting the card web(s), thus providing greater fabric dimensional stability



Impact of the ProDyn system on fiber distribution

ProDyn crosslapper	Card width			Fabric weight control	Speed variation
	2.50 m	3.00 m	3.50 m		
Max. average infeed speed [m / min]	90 – 200	90 – 170	90 – 130	Card web weight adjustment with constant fiber tension	Card web weight variation of $\pm 20\%$
Max. infeed speed [m / min]	110 – 240	110 – 205	110 – 155		
Max. laydown speed [m / min]	155 – 265	155 – 265	145 – 165		





ProDyn system

ISOLAYER

As an option for light fabrics, the Isolayer system is able to absorb the speed difference at the outlet conveyor of the crosslapper. It improves the overlap and, optionally, modifies the fiber orientation over the fabric width.



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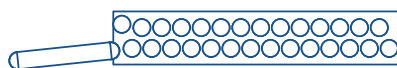
YOUR ISOLAYER BENEFITS

- Enhanced final fabric evenness, overlap control, and production line capacity
- Improved control over fabric shrinkage and MD/CD tensile strength values across the width
- Crosslaying capability with two folds

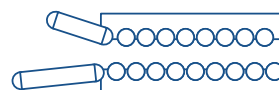
Drafters

Perfect control of the fiber mat: ANDRITZ drafters ensure you perfect control of the product throughout the process to speed up the line speed and to better balance the MD/CD tensile strength ratio. Two ranges of batt and felt drafters can be combined in one production line.

ANDRITZ provides you with **batt drafters** containing between 9 and 27 rolls and which are located after the crosslapper.

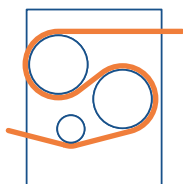


ET-27 batt drafter with pressing roller



ETO-15 batt drafter with pressing conveyor

Felt drafters are located between or after needlelooms.

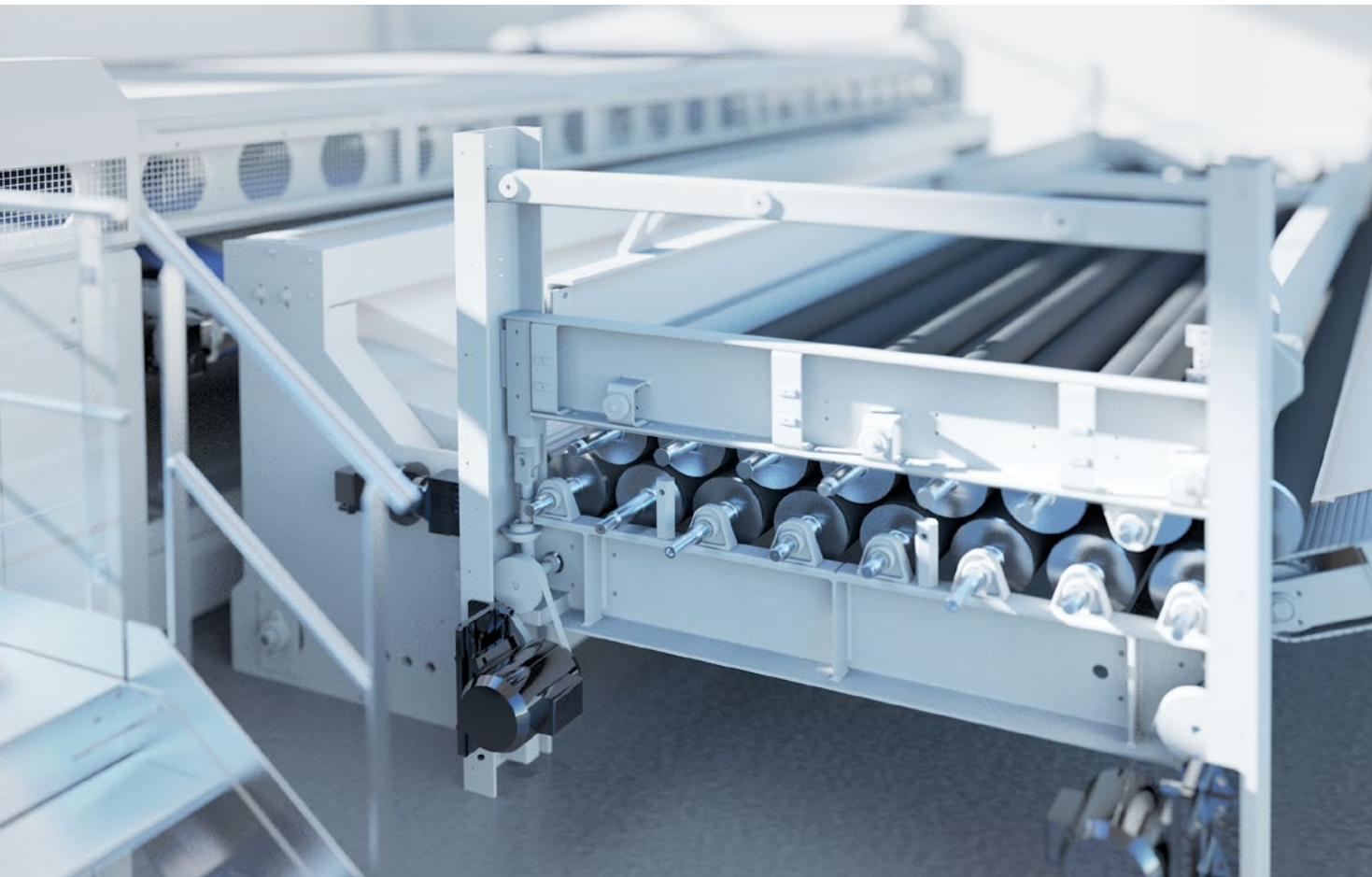


Zeta felt drafter



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**FOR FURTHER INFORMATION
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Batt drafter

Models without opening bypass
Models with opening bypass

–
ETO-9

ET-15
ETO-15

ET-21
ETO-21

ET-27
–

Zeta HR /HS
–

Application

Batt drafter after crosslapper

Felt drafter
after pre-needler

Working width [m]

2.5 – 8.5

2.5 – 8.5

2.5 – 8.5

2.5 – 8.5

2.5 – 8.0

Max. textile drafting ratio

1.7

2.5

3.0

3.5

1.30

YOUR BENEFITS

- Optimum MD /CD tensile strength ratio
- Higher production capacity for light fabrics
- Enhanced tensile strength
- Improved dimensional stability in the fabric
- Minimum fabric shrinkage
- Low cleaning requirement



Zeta felt drafter

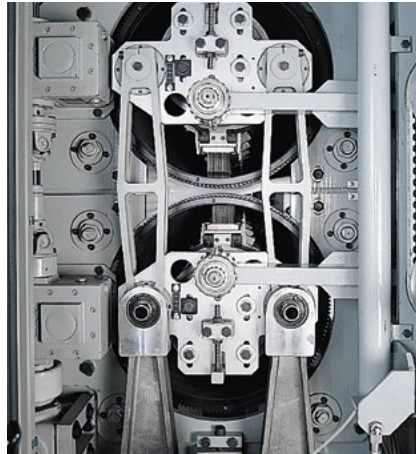
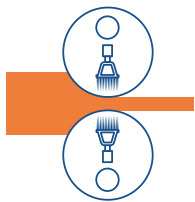
Pre-needlelooms

An essential step for heavy products and special applications:

Pre-needling is a key success factor to enable the subsequent needling line to process heavy webs smoothly.

CYLINDER PRE-NEEDLER

Elliptical stroke motion synchronized with two perforated cylinders for perfect adaptation to processing heavy and / or special applications. It is available in working widths of up to 6.0 m.



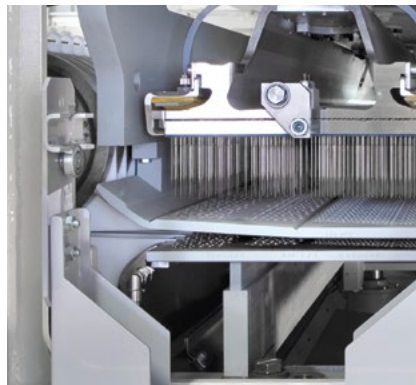
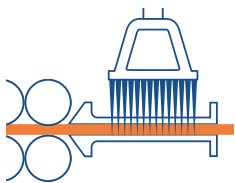
Cylinder pre-needler

YOUR BENEFITS

- Zero draft
- Maintains the batt evenness
- Pre-consolidates both sides of the fabric in one step
- Processes any kind of fiber, including low-crimp, slippery fibers
- Processes over 2,500 gsm felts
- Low cleaning requirement

SELF FEEDING DEVICE (SFD)

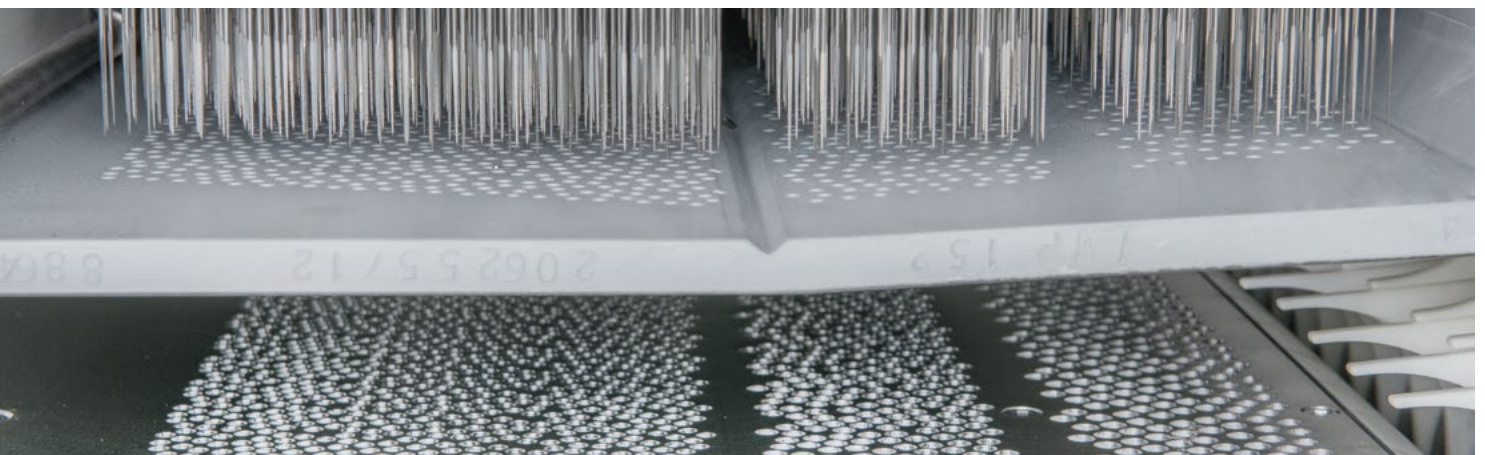
The compressive fiber batt feeding system is positioned in front of the first needleloom. It allows the batt to be fed in a controlled way to the first row of needles using driven, positive-engagement cylinders and low-friction guiding fingers.



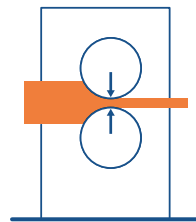
SFD feeding system

YOUR BENEFITS

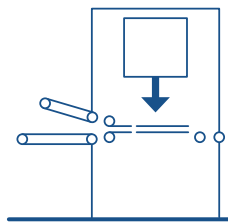
- Able to feed a wide range of fiber batts
- Minimizes draft
- Fully adjustable device
- Easy access for maintenance
- Low cleaning requirement



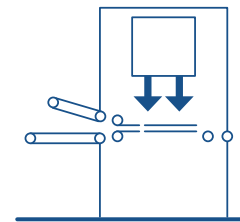
Progressive pattern needling



Cylinder pre-needler

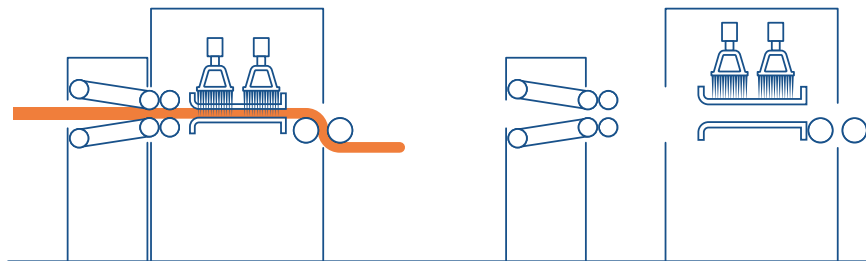


SD-1 needleloom



SD-2 needleloom

Pre-needler models	PA PA 169	PA PA 2000	SD-1 A.50-R	SD-1 A.50-RS	SD-2 A.50-RS	SD-2 A.50-RS
Punching speed [rpm]	0 – 530	0 – 750	1,200 – 1,500	1,200 – 1,500	1,200 – 1,500	1,200 – 1,500
Punching load	+	++	+	++	+	++
Working width [m]	1.1 – 4.0	2.6 – 6.0	1.5 – 8.25	1.5 – 8.1	1.5 – 8.25	1.5 – 8.1
Board size [mm]	75	90	320	320	320	320
Needle pattern [needles / m]	900	1,400	2,000 – 6,600	2,226 – 6,600	5,560 – 14,600	4,560 – 11,650



Easy access to the needleloom



Easy maintenance

Needlelooms

Robust and reliable for consistent quality: The ANDRITZ needleloom range offers you a variety of punching speeds and working width sizes.

ANDRITZ eXcelle needlelooms use the technology based on oil-lubricated modules with patented guiding piston design. Oil keeps the bearing at optimum working temperature, securing long-lasting use. Needleboard patterns have been adapted for optimum visual appearance and high versatility throughout wide ranges of advance pitch.

OPTIONAL EQUIPMENT

- Dynamic Harmonic Shifter (DHS) for needling process with heavy punching load
- Quick exchange of bed / stripper plate
- Intermittent air blowing network
- Dedusting suction systems
- Heavy-duty delivery press
- Magnetic bars
- Pneumatic centralized needleboard pinning system

YOUR BENEFITS

- Highly durable equipment
- Wide range of possible needling densities
- Clean environment
- Low maintenance requirement with change of oil after 14,000 working hours
- Easy cleaning and maintenance
- Low cleaning requirement

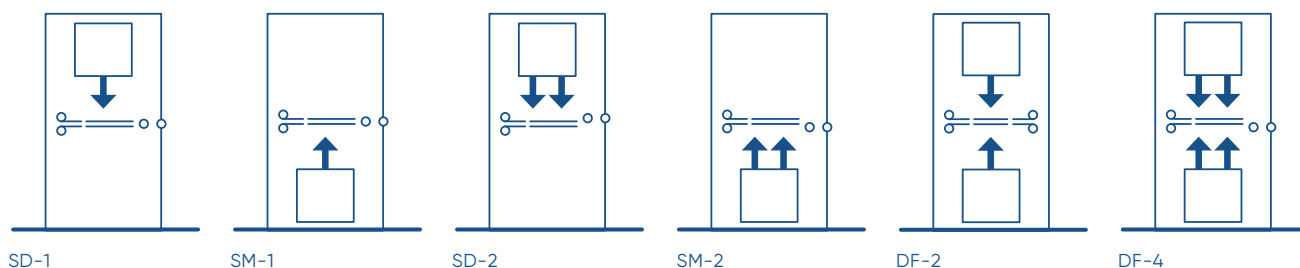


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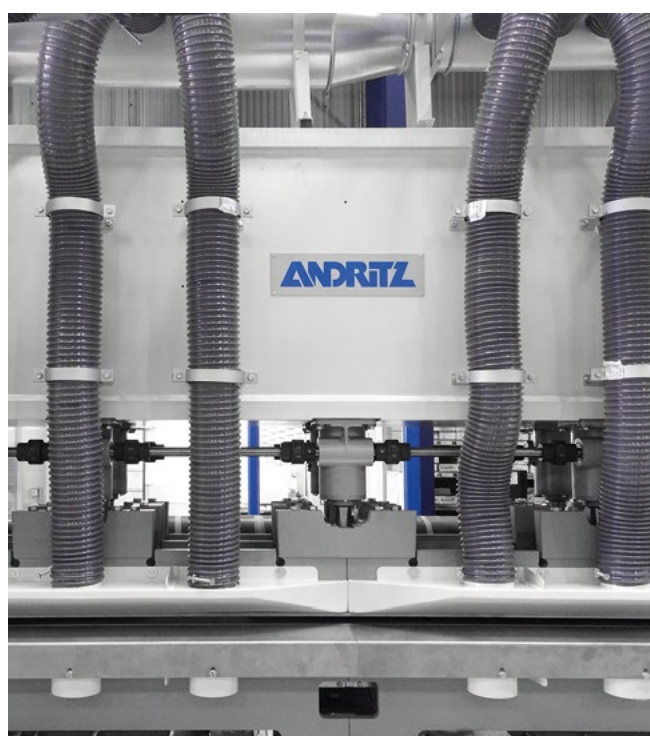
**FOR FURTHER INFORMATION
SEE PAGE 5**



Inside of a needleloom



Needleloom models	SD-1 / SM-1 A.50-R	SD-2 / SM-2 A.50-R	SD-2 / SM-2 A.50-RS	DF-2 / DF-4 A.50-R	DF-4 A.50-RS
Punching speed [rpm]	1,200 – 1,500	1,200 – 1,500	1,200 – 2,000	1,200	1,200 – 1,500
Punching load / Punching speed	++	++	+++	++	+++
Working width [m]	2.6 – 8.2	2.6 – 8.25	2.6 – 8.1	2.6 – 7.5	2.6 – 7.5
Max. speed [m / min]	50 or 100	50 or 100	50 or 100	40	40
Board size [mm]	320	320	320	320	320
Needle pattern [needles / m]	2,000 – 8,000	4,000 – 16,000	4,000 – 16,000	4,000 – 32,000	8,000 – 32,000



Dedusting suction system (option)



ANDRITZ needling line

Specialties, customized needlelooms

PILOT NEEDLELOOM: A.50-RL

For special or limited-scale applications, ANDRITZ offers the A.50-RL needlelooms in 1.5 m working width with down-punch, up-punch, or double punch set-up. Typical applications include carbon fiber felts and low-scale production batches.

RANDOM VELOURS NEEDLELOOM: SDV

Mainly dedicated to automotive and domestic market applications, the ANDRITZ design is based on a patented, angled brush alignment. It ensures a long-lasting, random, and even velour aspect, which requires lower needling density than conventional market solutions.

RIB STRUCTURING NEEDLELOOM: SDB

The heavy-duty needleloom with lamella bed plate and high-speed production capacity is used in carpet applications. Its production capacity of up to 20 m /min allows the needleloom to be installed in-line with the pre-needling production line, thus saving handling costs.

FOR NATURAL AND DUSTY FIBERS: A.50-RD

It is used for processing heavy mats and dusty fibers particularly for market applications such as furniture, bedding, and automotive insulation felts. The design and auxiliary equipment allow high production capacity with low cleaning and maintenance requirements.

FOR MINERAL AND CERAMIC FIBERS: A.35

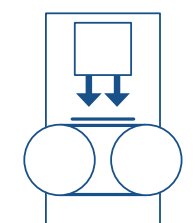
It has been developed with a high stroke height (160 mm) for bonding high-temperature fiber mats. The A.35 needleloom offers a double-stroke process (alternate needling from top and bottom). It ensures longer part lifetime because the mechanical parts are protected against the dusty and abrasive needling zone.



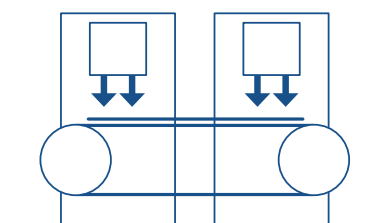
Needleloom in operation



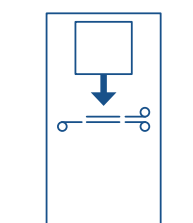
Rib structuring SDB in 4.4 m working width



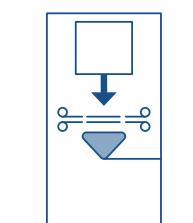
SDV-2 needleloom



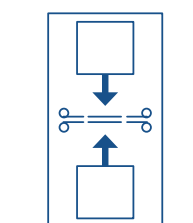
SDV-2+2 needleloom



Rib SDB-1



A.50-RD needleloom



A.35 needleloom

Needlelooms	Pilot line application	Random Velours SDV-2 / 2+2	Rib structuring SDB-1	Spunbond SD-1 & SM-1	Spunbond SD-2 & SM-2	Shoddy felts SD-1	Mineral felts DF-2
	A.50-RL	A.50-RS	A.50-RS	A.50-R / RS	A.50-R / RS	A.50-RD	A.35
Punching speed [rpm]	1,200 – 1,900	1,600 – 2,000	1,500 – 1,800	1,400 – 2,200	1,400 – 2,200	1,200	400
Punching load	+++	+++	+++	+++	+++	+++	+
Working width [m]	1.2 – 1.5	2.3 – 5.3	2.6 – 6.6	2.7 – 7.5	2.7 – 7.5	2.7 – 4.5	1.5 – 2.2
Needle pattern [needles / m]	3,200 – 28,000	16,000 – 32,000	3,500 – 7,150	3,000 – 7,000	4,667 – 14,000	1,500 – 3,000	4,000 – 8,000



Random Velours needleloom at the ANDRITZ Asselin-Thibau technical center



GET THE MOST OUT OF YOUR INVESTMENT

At ANDRITZ Nonwoven we know that your business depends on satisfied customers and efficient processes. That's why we support you in every aspect of your nonwoven production. Take advantage of technology that lets you produce consistent quality for decades to come. Profit from the highly efficient use of energy and raw materials that our production provides. You can rely on our responsive service teams who will protect your investment and optimize your processes. Experience how innovative approaches and digital services give you more control than ever before. With ANDRITZ, the leading supplier for the nonwovens market, you get the most out of your investment.

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