

NONWOVENS

GETTING FIBERS INTO SHAPE



TRÜTZSCHLER
NONWOVENS



NONWOVENS

4	it's true	34	T-DRY: Drying
6	Technology	36	T-WIND: Winding/Slitting
8	T-BLEND: Fiber preparation	42	Trützschler Man-Made Fibers
12	T-WEB: Web formation	44	Configurations
18	T-BOND: Web bonding	49	Technical data
	HYDROENTANGLING	18	
	WET-IN-WET PROCESSES	22	
	MECHANICAL NEEDLING	24	
	THERMO- AND CHEMICAL BONDING	28	

Experience interactive added values with
our Trützschler Nonwovens App



1. Download the app

You can use the Trützschler Nonwovens App with Android devices as well as iPhone and iPad. Download the app free-of-charge from the Google Play Store (≥ Android version 4.1) or the Apple App Store (≥ iOS version 8).

2. Use the Smartview function

Open the Trützschler Nonwovens App and activate Smartview in the drop-down side menu.



3. Scanning and viewing additional information

Scan the entire page that contains the scan icon with the Smartview function. Touch the screen to play the video. Get started.

www.truetzschler.com/apps

FARSIGHTED AND RESPON

We want you to be successful with the help of our technologies and services. However, our actions are not limited to economic aspects.

As family enterprise, we have experienced, accompanied and shaped the business and its specifics for decades. Thus we know that success is more than just numbers.



Business partner, with emphasis on partner

Those who choose Trützschler will receive added values that cannot be taken for granted in view of the increasingly fierce competition. But in our opinion they are imperative.

Reliable and close

For four generations we have demonstrated that our word carries the same weight as a contract elsewhere. Though business numbers are taken seriously by us, we will not bow to them. Instead, we rely on real customer proximity in the textile markets of this world through our international production and service network.

Always innovative

Our actions, which are based on long-term success, ensure that you have a partner that is always available. But also the security to continuously profit from technical innovations that can only be provided by Trützschler in this quality.

In short: Trützschler attaches importance to commercial success, but even more to long-term partnerships.

SIBLE ACTION



Customer benefits, with emphasis on benefits

What constitutes a good production installation? Definitely a low TCO (Total Cost of Ownership). The only response of some machine manufacturers is to lower investment costs. We use a different approach.

Compact and secure

The small footprint of our machine technology and its high safety level are good for nature and user. One results in lower building and operating costs, and the other protects the operator during his work.

Long-term efficiency

Our installations convince in terms of a well-known long service life and low energy consumption. At the same time they make the best possible use of valuable raw materials. Our intelligent technologies retrieve additional good fibers even from alleged production waste. The beauty of this particular type of environment protection and resource conservation lies in the fact that it benefits nature and your production equally.

Anyone who expects sustained added value from an installation throughout the entire production process is demanding – and a Trützschler customer.

Convincingly strong performance

Advantages made by Trützschler Nonwovens

When deciding on a supply partner, various factors play a role. We are convinced that competence, individuality, efficiency and security of investment are of particular importance. Therefore we offer you decisive advantages exactly in those four areas.

Making use of proven expertise

Trützschler Nonwovens combines the know-how of the reputable Fleissner, Erko and Bastian brands for you. Trützschler Spinning is regarded as the leading specialist in fiber preparation. Trützschler Card Clothing has been developing and producing high performance clothings for roller cards and cards for many years. On a global level, the Trützschler Group has nine sites in six countries. The slogan "getting fibers into shape" documents our core competence for your success.

Profit from individual diversity

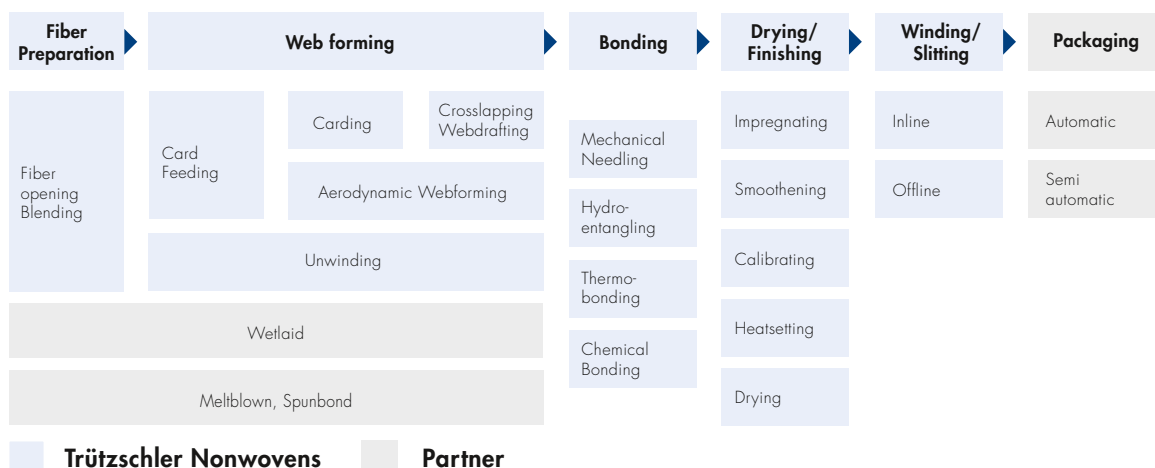
We are one of the few providers in the world that can offer four different bonding processes and more than ten types of carding machinery from a single source. This facilitates planning and the creation of customised solutions. The bottom line for you is an optimal balance of quality and economic efficiency.

An intelligent way to save energy

In addition to raw material, the consumption of energy per ton or per square metre of end product is playing an increasingly important role. Particularly in the production of nonwovens, a lot of energy is required for drying. Innovations such as the Streamliner or the re-designed multi-drum dryer allow us to make your production more energy efficient and thus more economical.

Making more secure decisions

We support your decision on the optimal technology and layout with two fully equipped technical centres in Germany where you can perform tests with your own material under industrial conditions. When doing so, make use of our comprehensive advice based on hundreds of successfully implemented projects and more than 150 years experience in textile machine engineering.





Opening, weighing and blending

Perfect start of quality chain

The initial process steps form the basis for the quality of the finished product. It is essential to maintain a continuous, uniform material flow from bale opener to the web former. This is exactly what the fiber preparation system from Trützschler Nonwovens enables you to do.



The new modular fiber preparation

High throughputs without compromise

Modular machinery opens up the opportunity to individually combine compactness, production capacity, product quality and economic efficiency into an installation that is like a fingerprint of your requirements.

Blending chamber: consistent high quality

In high performance lines the blending chamber is used as a fiber storage which ensures a continuous flow of fibers to the web forming machinery.

If fibers of different types, lengths, counts and colours are to be blended, the chamber allows for a maximum homogeneity. It is easy to operate, safe and reliable.

Exactly matching components

A high accuracy of measurement results in significantly lower costs when processing expensive fiber types. Trützschler Nonwovens' new discontinuous pan and continuous belt weighing systems reduce the addition of fibers to the necessary minimum. Both systems deliver reproducible and perfect blendings – whether there are two or six different fiber qualities.

Trützschler's modular building set consists of various single components to be selected and arranged depending on requirements. :

- different bale openers
- the newly designed, vibration-free pan weigher with a larger volume and shorter weighing cycles
- the proven belt weigher with highest measuring accuracy



Blending chamber with component-independent blending system

- the conveyor belt with special elements to ensure a uniform tuft distribution over the whole belt width, also at high production rates
- the blending opener for further blending and gentle fiber opening

The new pan weigher

Advantages are a high accuracy and high performance due to :

- 50% increased weigh pan volume
- no connection between the weigh pan and the bale openers to prevent unwanted vibrations
- an innovative three-point suspension to prevent vibrations



The new pan weigher with 50% increased weigh pan volume

Auxiliary units and feeding systems

Integral and optional components

Feed box



Fine opener and feed box

The feed box is more than just a material buffer between blending chamber and card feeder. Equipped with large diameter feed rolls and a pinned opening roller, it generates a uniform flow of small tufts to the card feeder.

Fine opening in the feed box is clamp-free to prevent stress on the fibers.

The speed of the feed rolls is continuously adjusted via a pressure monitoring system that monitors the filling level in the downstream card feeder (CONTIFEED).

The high demands of bleached cotton, natural and recycled fibers are answered by a fine opener with a special layout to gently open coarse fiber tufts into finest tufts or single fibers.

For certain products this allows direct bonding, completely without intermediate roller card.

Edge opener

The edge opener can be applied inline as well as offline and is used for opening of web waste. When returning this web waste into the ongoing process, the economic efficiency of the installation increases significantly.

Depending on the feeding system, it is suited for recycling of thermally bonded webs and needle felts up to 2000 gsm (roller feeding) or spunlaced and chemically bonded webs up to 1000 gsm (tray feeding). Optionally, a spraying device is available.

Auxiliary units and accessories often go unnoticed even though they are included in the scope of delivery of entire installations. Examples are feed boxes as integral part of the installation and edge openers as optional components.



Edge opener



Homogeneous fiber web via TWF-TF.

Tuft feeding: decisive for the quality

Since tuft feeding is decisive for the subsequent product quality, we developed state-of-the-art technologies for this purpose. They are based on the principle of pressure feeding. This principle features such a high level of accuracy that for some products a downstream roller card can be eliminated. The web goes straight to bonding, thus lowering investment costs without sacrificing quality.

Tuft feeder TWF-TF

The TWF-TF ensures homogeneous fiber feeding, whether processing coarse or extremely long fibers. The downstream belt weigher monitors the process and makes necessary adjustments.



Tuft feeder TWF-TF with belt weigher and roller card



Roller cards

Individuality as basis for success

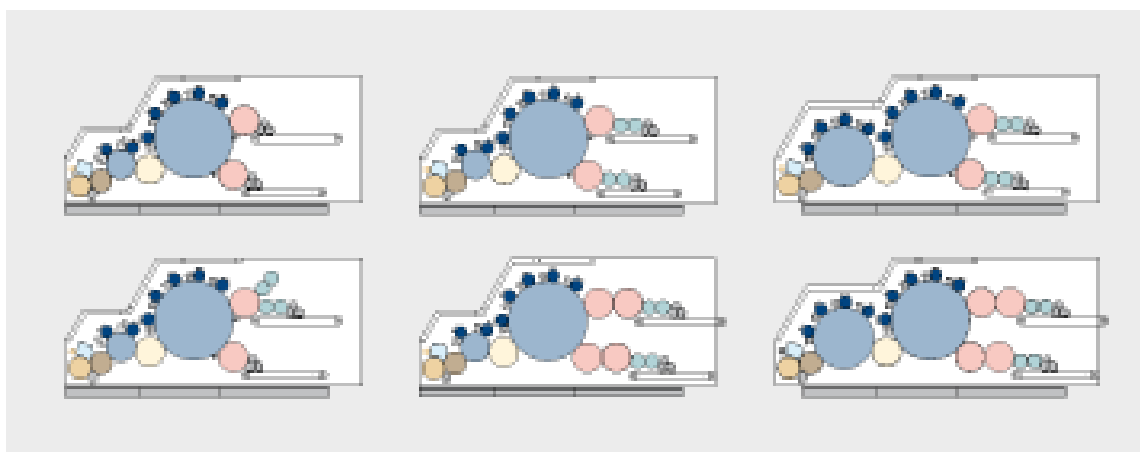
During carding on the roller card, opening of the fiber tufts is continued and the individual fibers are parallelised to form an unbonded web. Trützschler Nonwovens provides roller cards for a variety of natural and man-made fibers. The random card TWF-NCR, the Airlay solution TWF-NCA as well as the new high-speed card TWF-NCT complete the product range of the standard roller card TWF-NC.

TWF-NC: always the right solution

For carding, Trützschler Nonwovens offers six different basic machine types that can be combined with three different doffing systems (parallel web, random roller, condensed roller). In combination with various special executions, the right solution is available for every production and every product. The things all roller cards have in common are the extremely clean take-off system, the customised TCC clothings and the exemplary maintainability.



Clean card concept: Within shortest time, all maintenance points of the roller card are perfectly accessible.



Modular roller card concept

NEW: TWF-NCT for high throughputs

Carding in high-speed spunlacing lines

The high-speed card TWF-NCT



TWF-NCT: innovations...

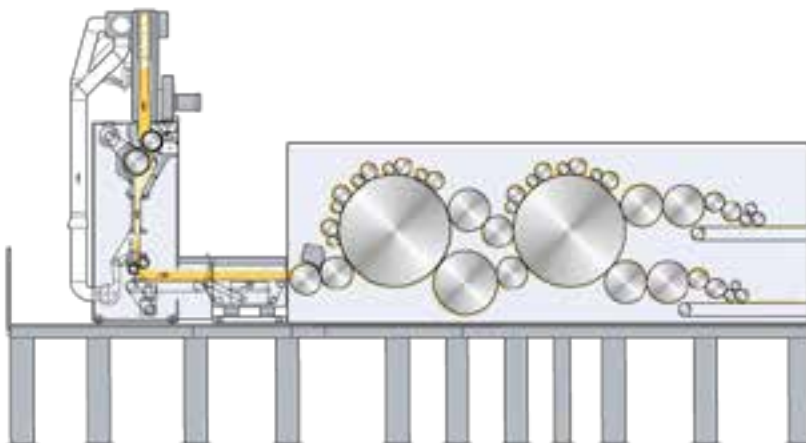
The new layout opens the door to higher line speeds up to 300 m/min at the winder. By re-designing the pre-opening as well as the transfer section TWF-NCT's carding area is significantly enlarged.

...and proven concepts

As all roller cards the new high-speed card is designed for both flexibility and high efficiency.

Trützschler Nonwovens' proven doffing solutions adapt perfectly to your product requirements. Your choice is between parallel webs, condensing or random rollers.

Our Clean Card concept ensures a high machine availability. Various technical measures reduce the risk of fiber contamination and allow for easy handling.



High speed without compromising on web quality

Random and airlay cards

Specialists for various materials



Random card, e.g. for hygiene products

Random card TWF-NCR

Our special roller card for random web technology is particularly well suited for subsequent spunlacing processes. It allows a high random layer. This results in fluffy, soft nonwovens, especially when processing cotton. The use of only two different roll diameters reduces clothing change time but still allows large variability in web weight.



High random layer due to optimal arrangement of rolls

Airlay card TWF-NCA: first-class homogeneity

The card section of the airlay card ensures an optimal opening while the airlay head forms a homogeneous random web. It only takes three different roll diameters to combine high performance with first-class precision. Other advantages of the airlay cards are compactness, easy cleaning and a large weight range.

An economic plus is that the TWF-NCA card can also process cotton mill waste generated in the blow room, card or comb.



Airlay card: especially for increased weights of hygiene products

Crosslapper and web drafter

Top quality of the finished product

Roller card installation
with high-performance
crosslapper



Crosslapper: combined strengths

The task of the crosslapper is to lay several layers of carded web accurately and at high speed to the required width. At the same time it must generate the desired surface weight. The required web weight is produced in cooperation with the downstream web drafter. Trützschler Nonwovens provides different needs-based solutions – particularly the crosslapper TWF-CLH.

Subsequent processes, for instance mechanical bonding, have some unwanted side effects such as increased web density in the edge area or increased surface weight. To ensure uniform control of the surface weight distribution – also referred to as profiling – Trützschler Nonwovens uses different control systems.

The crosslapper TWF-CLH contains the CROSS-MASTER, a control system that works with specific drafts.



High-performance crosslapper with web drafter

Advantages at a glance:

- safe web transport without floating draft zones by means of innovative web guidance in the upper carriage and the lay-down carriage.
- reduced acceleration and braking loads due to reduction of the moving machine masses in conjunction with rolls made of carbon fiber reinforced materials
- reduced machine load
- increased energy efficiency due to latest drive technology (AC servo motors with energy recovery).



Web drafter

4/6/8 web drafter: measurable increase in speed

Up to eight drafting zones turn the Trützschler Nonwovens web drafter into a high-speed solution: Drafting in machine direction, result in up to 30% higher line speeds when processing light-weight products.



Web layer edges positioned precisely on top of each other result in reduced edge trims and thus optimal material utilisation.

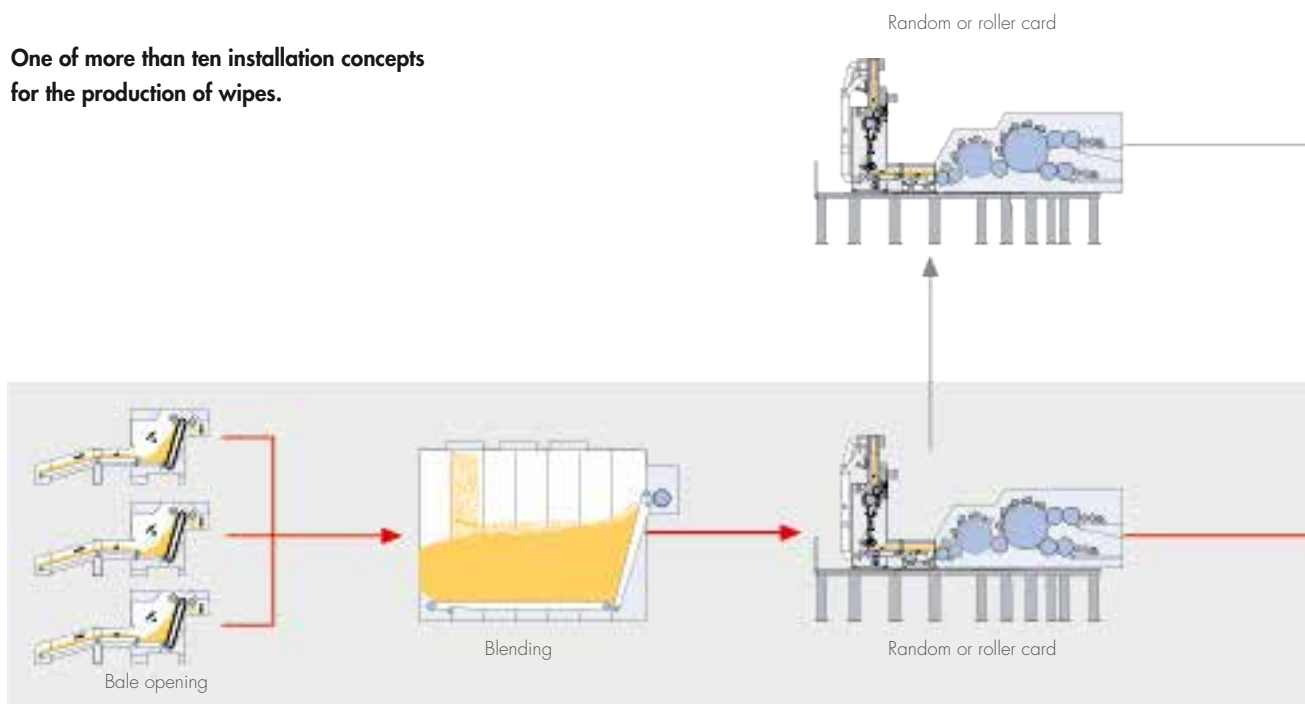
Hydroentangling

Modular for individual installation concepts

To provide you with the best overall package for your application, the AquaJet is designed individually. The core consists of 2 spunlace drums that can be combined with one of three compaction systems and one of four suction types.

In addition, various special designs are available, ranging from MiniJet for small capacities all the way to the specialist for wet-laid webs.

One of more than ten installation concepts for the production of wipes.



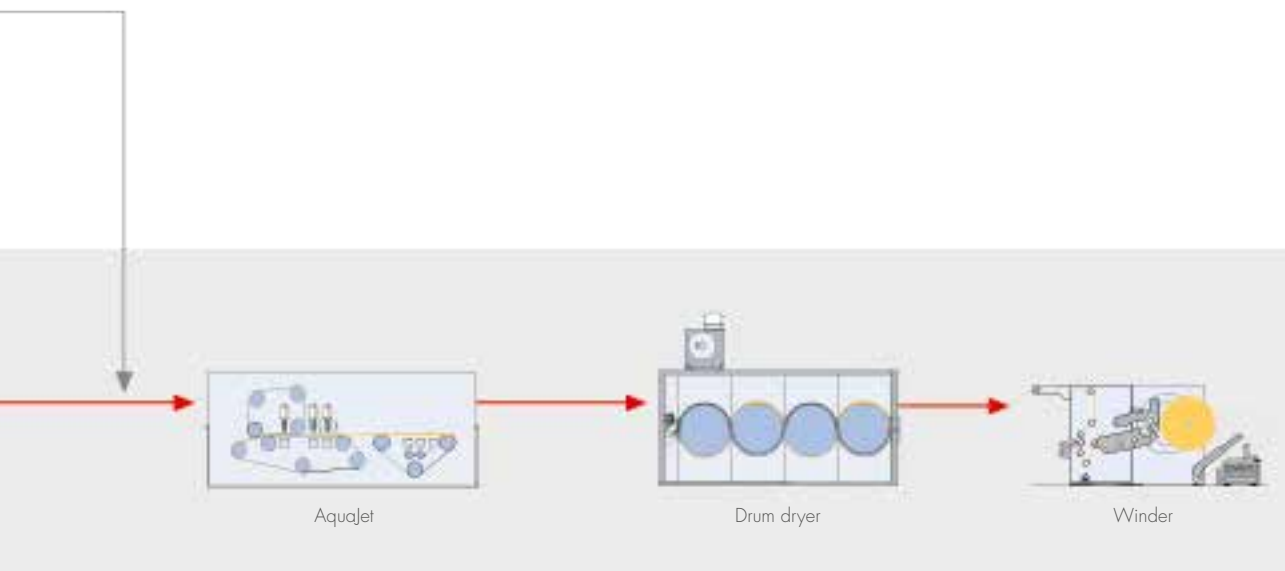
The spectrum of spunlaced nonwovens includes light-weight wipes, medical textiles and cotton pads, as well as heavy filter webs and coating substrates. The highly flexible AquaJet machine concept ensures a customised and energy-efficient bonding process.

Modular AquaJet concept

- 3 functional units: compaction, bonding, dewatering
- Reliable layouts for standard products
- Freely selectable combination of modules, depending on product and process
- Easy retrofitting and conversion, even after longer periods of operation



Due to the jet heads' freely selectable arrangement and high precision, a perfect end product is ensured.



 = standard installation

Material transport components as well as auxiliary units have not been mentioned individually

Compaction

- Belt-belt compaction with advantages for light-weight webs (patented)
- Belt-drum compaction for heavy webs
- NEW: energy-optimized belt-strip compaction for light-weight webs (patent pending)

Bonding

- 2 standard spunlace drums and different executions
- Shells for structuring and perforation

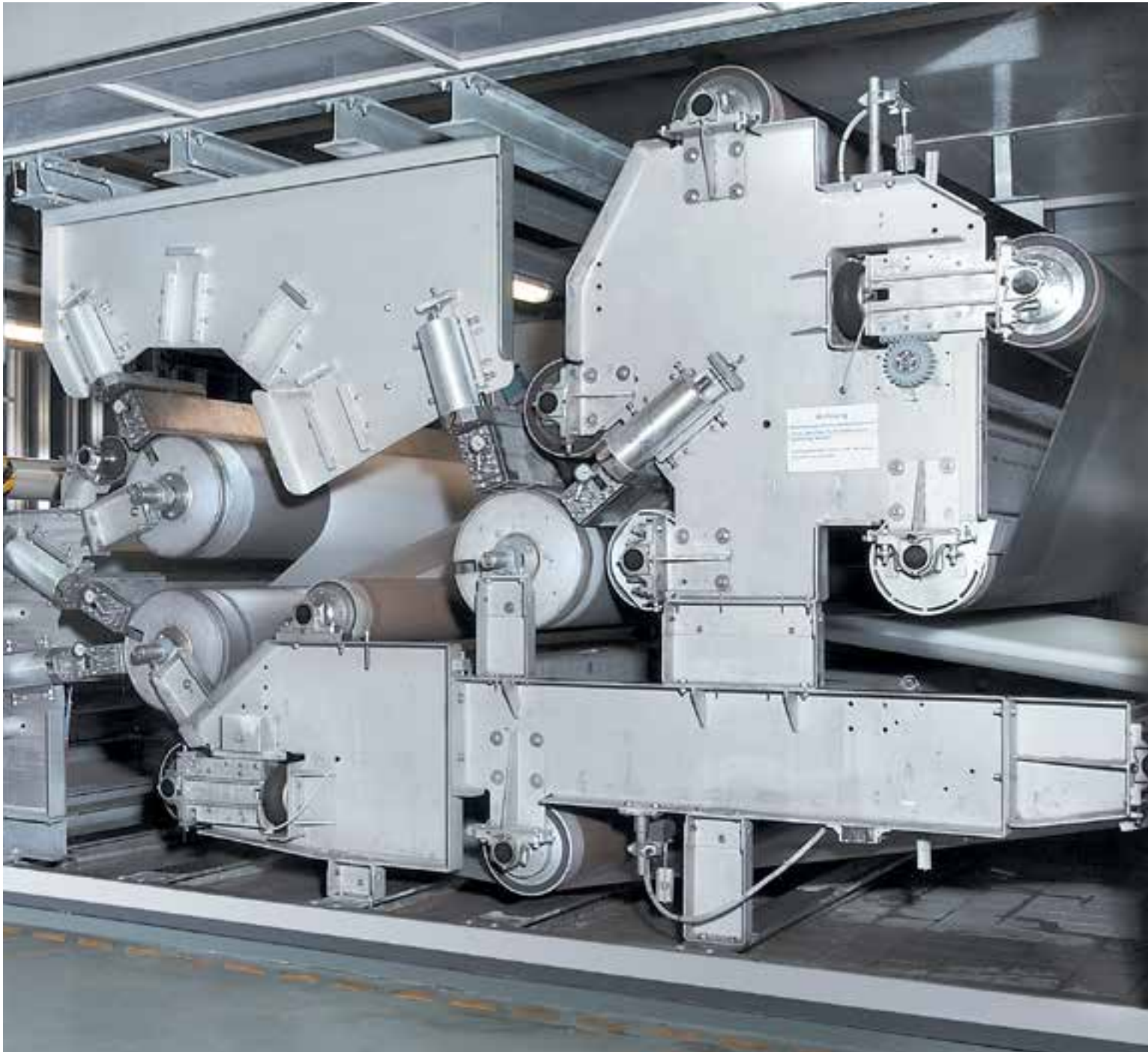
Dewatering

- One or two-sided dewatering
- Various types of dewatering belts

AquaJet

Proven technology for every requirement

With the AquaJet spunlacing unit, Trützschler Nonwovens is providing a modular system that can be specifically adapted to different products and materials. Individual, fast and efficient.

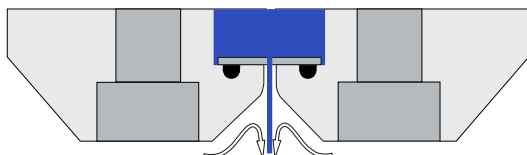


AquaJet: Perfection from small to large

In line with product and material, compaction and dewatering as well as the number and position of jet heads can be freely planned. AquaJet allows efficient web bonding and, in addition, structuring and/or perforation. In practice, the unit convinces with its maintenance and user friendliness as well as its excellent availability.

Jet heads

- Robust design for water pressures up to 400 bar
- No filter inside the jet head
- Double chamber system for turbulence free flow (patented)
- Fluidically optimized outlet of water jets (patented)
- Self-sealing O-ring for patented jet strip change



The jet head design ensures perfect results at less pressure.

Structured and perforated nonwovens

Special structuring and perforation shells, which can easily be pushed onto the spunlace drum, are available for the structuring or perforation of the webs. For this purpose, a perforated shell with a support mesh is always used as basic drum.

Microporous shell

MPS (microporous shell) for lighter webs – with patented spiral type:

- Highest strength
- Best surface bonding
- Uniform surface



Spiral type

Nickel coated wires for heavier webs

Patented nickel-coated mesh:

- Less open area compared to standard mesh
- Better water jet reflection
- Softer web surface than with nickel shell
- Less fiber contamination on drum
- Easier web removal from drum surface



Nickel-coated mesh



MiniJet in a cotton pad line



Structured (top) and perforated nonwoven (bottom)

Wet-in-wet processes

Results of a highly efficient partnership

For the production of wet-laid nonwovens, Trützschler Nonwovens teams up with Voith Paper, the pioneer in and leading partner to the paper industry. The wet-laying process for webs is similar to the production process for paper: A suspension of fiber and water is filtered onto a perforated belt to form a homogeneous fiber web. Hydroentangling with the AquaJet results in perfectly bonded and, if required, structured or perforated nonwoven fabrics.

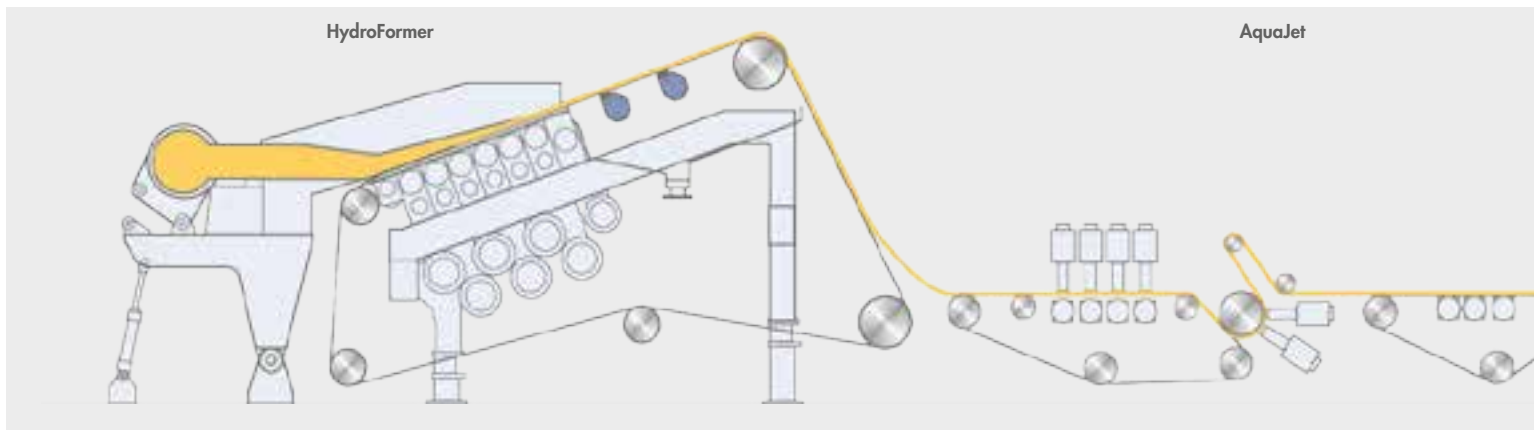


A popular end product: Flushable wipes.

Wet-laid, spunlaced webs – a world full of potential

Nonwovens produced by wet-in-wet processes are suitable for a wide range of applications. The use of short fibers results in a very special characteristic. This feed material allows for instance the production of flushable wipes, i.e. hygiene and personal care wipes that can be flushed down the toilet after use. The excellent homogeneity of wet-laid webs in combination with spunlacing also produces ideal personal care and industrial cleaning wipes, filter materials or coating substrates.

An integrated solution with customised components



All components in one sweep

The high-performance installation concept of Trützschler Nonwovens and Voith Paper is adaptable to a variety of fiber blends and product requirements. The spectrum of possibilities ranges from single layer viscose wipes made from renewable and biodegradable raw materials to multi-layer composites. The overall installation includes machines and components for

- wet-laying
- spunlacing
- drying
- winding
- water treatment and fiber recovery

Voith – the expert in wet laying

Founded in 1867, Voith employs more than 42,000 people, generates € 5.7 billion in sales, operates in about 50 countries around the world and is today one of the biggest family-owned companies in Europe.

Voith Paper is a division of the Voith Group and the leading partner to and pioneer in the paper industry. Through constant innovations, Voith Paper is optimizing the paper manufacturing process, focusing on developing resource-saving products to reduce the use of energy, water, and fibers.

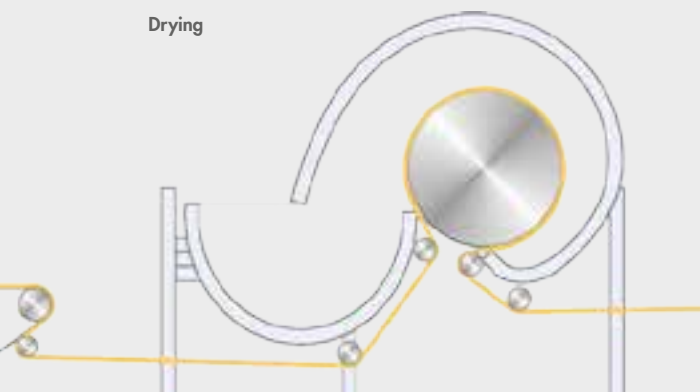
With its HydroFormer, Voith Paper contributes the core component to the cooperation. It has been specifically optimised for the formation of wet-laid webs and, with more than 70 successful installations, has gained worldwide acceptance. In addition, Voith provides its expertise regarding stock and water systems, headboxes, press concepts and calendars.



Headbox of HydroFormer

VOITH
Engineered Reliability

Drying



Winding

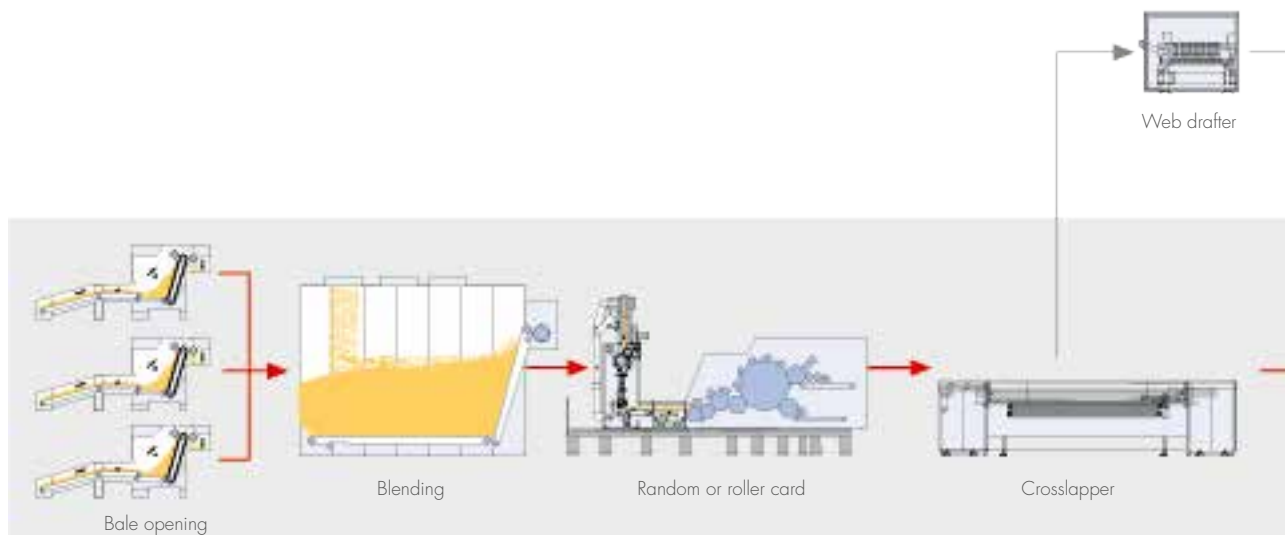


Needling

The oldest bonding concept is as relevant as ever

Mechanically needled nonwovens are optimally suited for many industrial applications. High strength and low elongation in longitudinal and transverse direction provide carpets, geotextiles, filter materials and technical felts with high durability.

Installation concept for the production of geotextiles



 = standard installation

Material transport components as well as auxiliary units have not been mentioned individually

Material variety

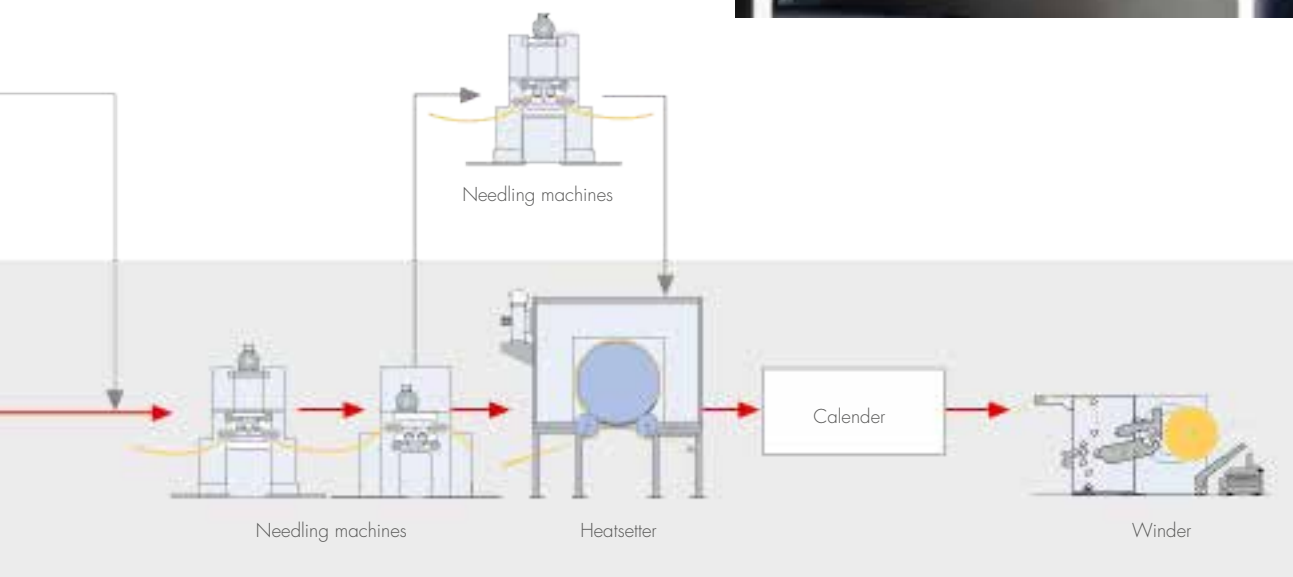
One of the main features of the needling process is the variety of materials that can be processed. Thus, the spectrum ranges from popular man-made fibers such as polyester and polypropylene, high performance fibers (Aramid fibers, PPS...) and natural fibers (cotton, wool, hemp, flax, etc.) all the way to glass and metal fibers.

Large working widths

Large web widths are advantageous for end uses such as geotextiles. For this reason we offer needling machines with a working width up to 8,000 mm. On the other end of the spectrum are small laboratory installations whose requirements are covered by fully functional needling machines with a working width as low as 1,000 mm.



Quick replacement of
needle boards



Flexible installation layouts

As illustrated on the next page, Trützschler Nonwovens offers various types of single board and double board needling machines. Since the machines can be combined and offer flexibility in terms of equipment, they ensure the reliable and efficient production of a large number of end products in an inline process. They are also ideally suited as pre-needling stage in offline processes with subsequent final needling or hydroentangling.

Needling

Cutting-edge technology in every respect

Versatile and durable

Trützschler Nonwovens offers no less than five machine types for needling in all directions. Thus, the ideal solution can be selected for every requirement. On a technical level, our needling technology convinces with highlights such as the patented swivel bearings: They operate absolutely free of wear

and maintenance, resulting in lower operating costs and higher productivity. Furthermore, the proverbial reliability of our installations is increased once again, even during 24/7 operation. In addition, the open and therefore easily accessible structure ensures maximum maintenance friendliness.

Installation for filter materials with scrim

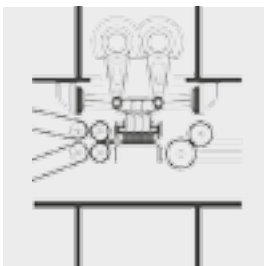




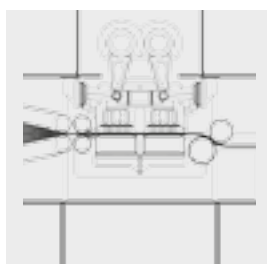
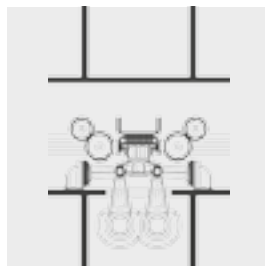
Patented, wear-free swivel bearings reduce maintenance and thus operating costs.

Demanding materials can be processed with a special suction emitting compressed air pulses to keep the essential areas of the machine clean. The con-rod main bearings feature simple and reliable air cooling with special filters. They ensure adequate cooling and prevent contamination in the drive system even in case of long maintenance intervals. All main bear-

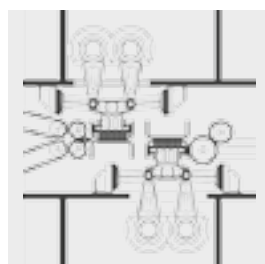
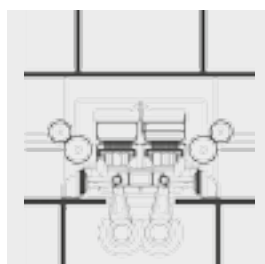
ings of the double-shaft system are supplied via a central minimum quantity lubrication. It offers freely selectable intervals with a specified amount of lubricant, thus reliably preventing machine contamination in the drive area.



Single-board needling machines



Double-board needling machines

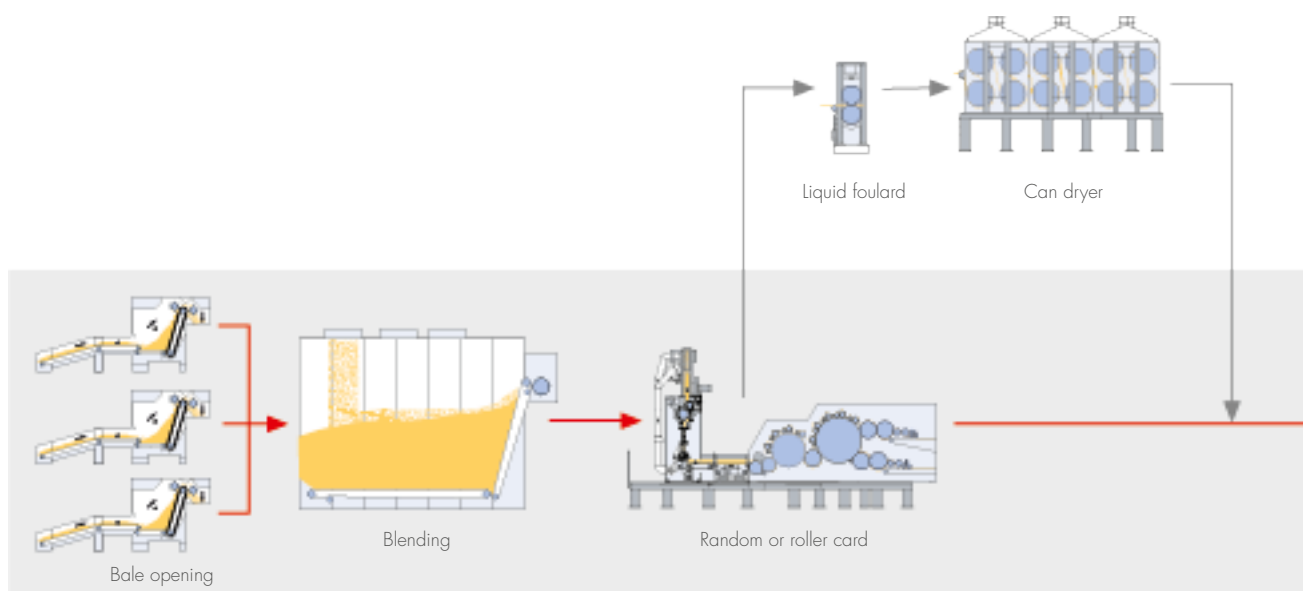


Thermo- and chemical bonding

Another application of the through-air principle

While needling and hydroentangling are based on entangling and knotting of fibers, here the single fibers are bonded by "glueing". Depending on process, the results are light webs (for example for diaper liners) or thick insulation materials.

A flexible installation configuration for the production of ADL (Acquisition & Distribution Layer)



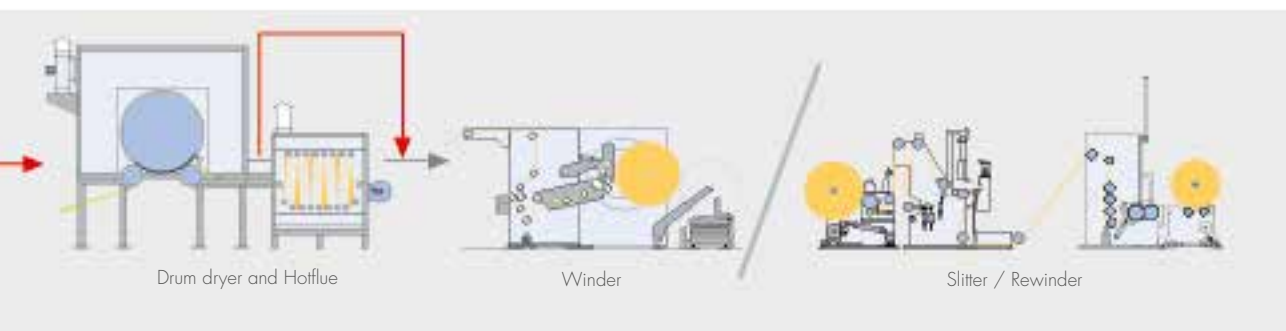
New: Structured nonwovens

Up to now, structured nonwovens are primarily spunlaced. Thermally bonded nonwovens can be structured by means of calendering, though this impairs the thickness and softness of the web, i.e. the popular textile feel. With the patent-pending structuring drum for the thermobonder it now is

possible to structure webs without losing bulkiness or softness. This inline process is similar to structuring via water jets: Bonding and structuring are carried out in one step in the thermobonding oven.



High-speed
liquid fouldard



 = standard installation

Material transport components and auxiliary units
have not been mentioned individually

New: High-speed fouldard

The new fouldard for the application of liquid bonding agents can be viewed as revolutionary: compared to conventional methods, it may increase line speed during the production of light-weight webs by up to 50%. This is due to the geometry and surface structure of newly developed sub-components.

New: Maximum flexibility

An interesting new development is a flexible installation configuration that allows thermo- as well as chemical bonding of light-weight webs. In thermo bonding, bicomponent fibers are used; in chemical bonding, the application of liquid bonding agents is performed by the high-speed fouldard.

Thermobonding

Optimal air flow



High-performance thermobonding line

Concerning oven technologies, energy efficiency is also more important than ever. Our drum ovens feature first-class insulation which reduces heat loss as efficiently as possible and thus also keeps heating costs at a minimum.

Thermobonding via through-air flow

The through-air principle has a double benefit: The suction effect created on the drum surface keeps the web on the drum; at the same time air flows through the web. High speeds with homogeneous bonding are achieved specially with light-weight to medium-weight products.

Chemical bonding

Absolutely uniform application



Reducing chemicals, but not quality – this is the "secret" of our foam foulards.



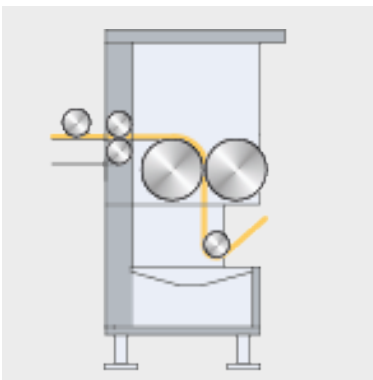
High-speed liquid foulard

Chemical bonding with foam

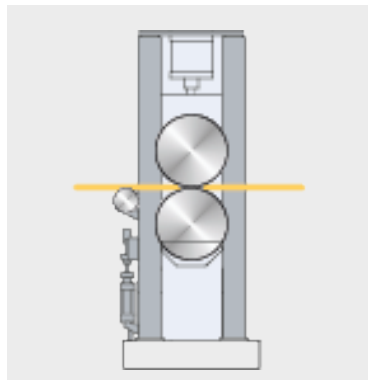
This method is characterized by the fact that the chemicals are applied with particular precision. First-class results are obtained with minimal use of bonding agents.

Chemical bonding with liquid binders

With speeds up to 50% higher than conventional components, the high-speed foulard is designed for high-performance installations. As a result, in particular the production of hygiene products becomes as economical as never before.



One-sided or double-sided foam application with 1 or 2 mixers



High-speed liquid foulard

Impregnation

Solutions for foam and liquid application



Impregnating by means of foam foulard

Impregnating according to requirements

For the impregnation of nonwovens and webs we offer foam or liquid application, according to requirements. The use of foam foulards is advantageous for light-weight webs with less density since complete saturation is easy to achieve. For increased production speeds as well as heavier and/or denser materials we recommend liquid binders.



Nonwoven with hydrophilic (left)
or hydrophobic finishing (right)

Smoothing/calibrating and heatsetting

Focus on uniformity



Calender and multi-drum dryer for roofing membranes



Flexible treatment via different operation modes

Targeted smoothing/calibrating

Smoothing of the surface and calibration of the nonwoven thickness are frequently used finishing steps. Our components create an absolutely uniform pressure over the entire working width. The rolls can be heated or cooled. In case of heated rolls, the double shell ensures excellent temperature distribution.

Precision heatsetting

Compared to a conventional two-roll calender, the heatsetting concept with drum oven offers decisive advantages: Needle rings hold the web in place, thus preventing the material from shrinking within the defined setting zone. At the same time the through-air principle ensures that web thickness, surface softness and bulkiness are maintained.



Uniform line pressure, in connection with identical gap width, ensures optimal results.



Needle rings ensure shrink-free setting.



Heatsetter in Omega design

Drum dryer

The right technology for every requirement



Ω -dryer in a spunbond line



Multi-drum dryer

Drum dryer

Advantages of the drum dryer are its variability and speed: due to its high specific drying performance it dries a wide variety of nonwoven types within shortest time. In addition it features a compact design and high uniformity of drying.

Ω -dryer

Ω -dryers have only one drum. Its long wrap length extends the dwell time of the moist material in the drying room, which explains the high drying performance of this system. The Streamliner is a new development of this dryer type.

Multi-drum dryer

Multi drum dryers are considered to be particularly efficient because air flows through the nonwoven from the top and bottom side. Multi-drum dryers are available in horizontal as well as vertical design.

The modified series features an intermediate chamber for controlled flow of exhaust air and fresh air.

Due to the intermediate chamber, they operate particularly energy efficient and have a high air flow and temperature uniformity. The intermediate chamber also opens up the opportunity to retrofit heat recovery at a later time.

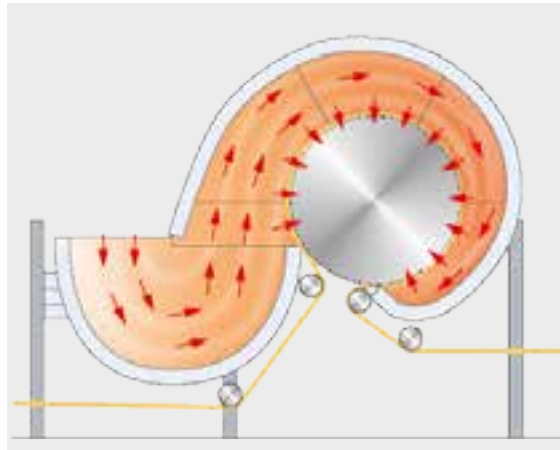


Streamliner

Streamliner

This spiral-shaped dryer type has the highest specific evaporation capacity. Correspondingly, its productivity is at the upper end of technological feasibility. Other convincing features are the optimized air flow with low pressure loss, the targeted fresh air supply that uses the temperature-dependent density change, as well as the optimized heating system.

Exhaust air heat exchangers can be integrated into the air duct for even more energy efficiency.



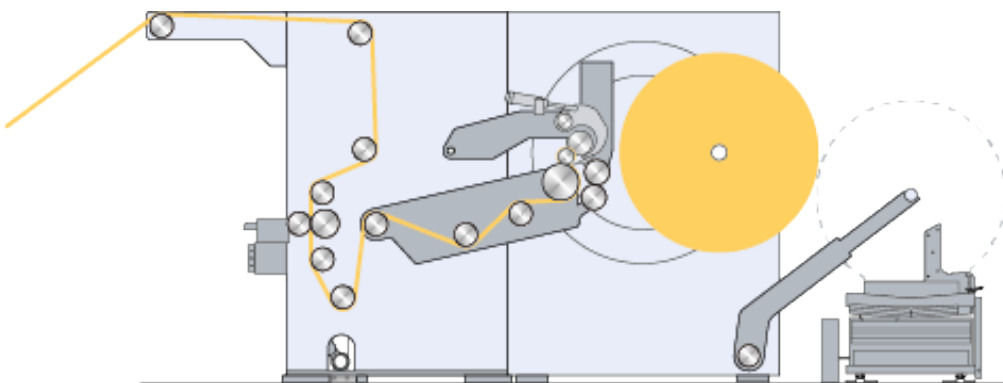
The Streamliner – designed for extremely uniform air flow and temperature.

Automatic winders

Ready-for-sale and master rolls

Nonwoven fabrics and the respective manufacturing processes differ greatly – accordingly, Trützschler Nonwovens offers various winding technologies.

Their advantage: all are based on the proven know-how of Bastian, the specialist in winding.



Material flow inside the automatic turret disc TWVW-TD







Automatic turret disc winder TWW-TD

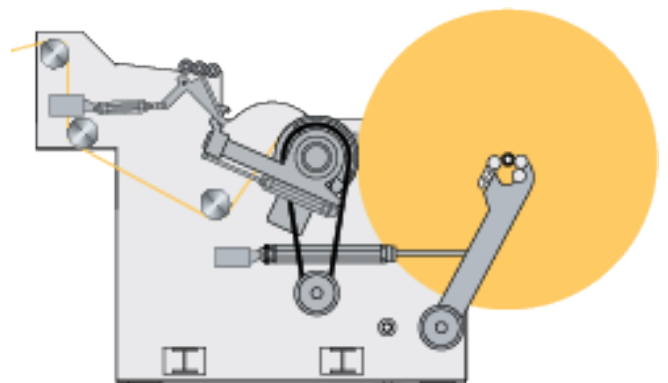
Fully-automatic turret disc winder with inline slitting capability

Since our automatic turret disc winders TWW-TD are equipped with an inline slitting system, ready-for-sale rolls can be produced directly in the manufacturing or finishing process. Inline slitting guarantees gentle material treatment since no additional rewinding is required. Further advantages compared to an offline solution are lower investment and labour costs as well as less space requirement.

Combining circumferential and axial drives results in rolls with optimal hardness. Thus it is possible to wind more material onto the rolls until the maximum diameter is reached to lower shipping costs. Since the tension is precisely adjusted to the material, it is also possible to process sensitive materials such as cotton pads and through-air bonded webs.

Master roll winder for high-volume spunlace lines

For offline configurations Trützschler Nonwovens now offers a dedicated master roll winder. The surface-driven TWW-SD is equipped with an integrated cross cutting and engagement system. The basic winder plus its several options meet the requirements of large-scale production lines for robust, hydroentangled materials.



Master roll winder TWW-SD

Automatic unwinders

Continuous results at highest speed



Automatic unwinder Bastian TWV-UW

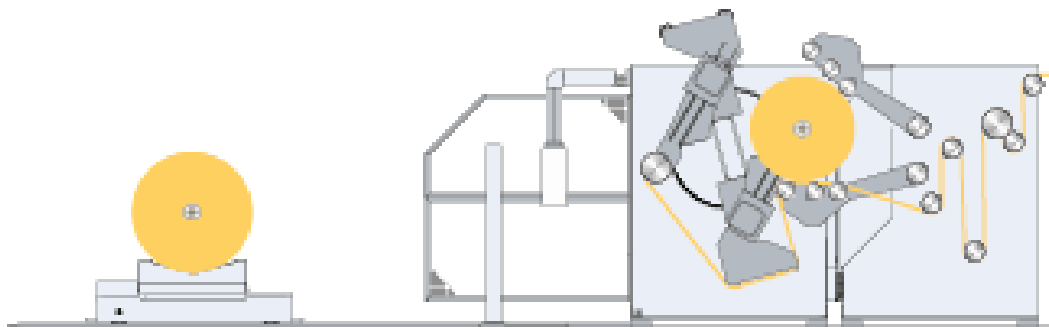


Portal arms

Automatic precision unwinding

Whether coating, laminating, embossing or printing – all these finishing processes begin with unwinding a nonwoven fabric. A task for the automatic turret unwinder TWV-UW. It takes up the master roll into the portal arms with their pneumatic chucking heads. The portal arms can be adjusted by motors and allow production of various material widths.

During production, an absolutely continuous material supply is ensured. The roll change is performed at production speed. Material from the new nonwoven roll is bonded to the web of the empty roll via the "flying splice" method. Accumulators which could affect the material are no longer necessary.



Automatic Unwinder Bastian TWV-UW

Slitter rewinders

Perfect semi-automatic or fully automatic rewinding



Slitter Rewinder with ready-for-sale-roles



Slitter rewriter



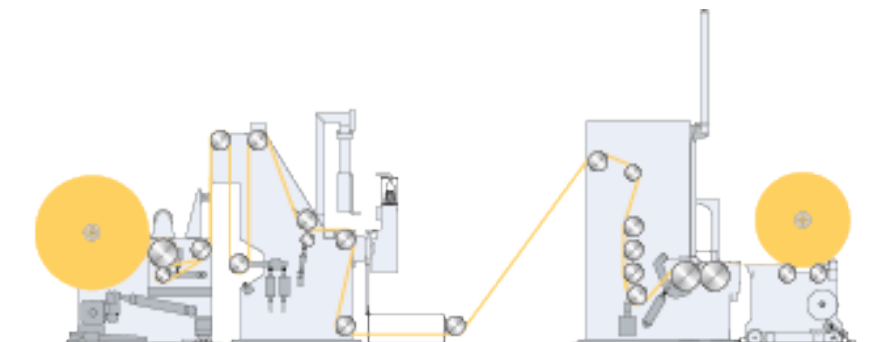
Longitudinal slitting equipment

Slitter rewinders

Slitter rewinders convert previously produced master rolls into ready-for-sale units. This technology is applied in converting, which includes coating, printing or embossing processes.

Drive combination

In addition to winding rolls with optimal hardness, the combination of circumferential and axial drive has the following advantages: gentle material handling, more material on the rolls as well as lower transportation and shipping costs.



Slitter Rewinder Bastian TNV-RW

Automation

Quality all the way to packaging



Complete installation supplied by Trützschler Nonwovens

Solutions for shipping and storage

At the end of the production line, the finished rolls need to be prepared for shipping or storage. For this final process step, Trützschler Nonwovens is able to provide every required level of automation for roll handling and packaging.

Semi-automatic basic designs are particularly suited for modest production speeds or low roll throughput. Thus, when transporting the rolls to the packaging unit, the operator is supported for instance by lifting devices. Another tool is pallet wrappers that prepare the material for shipping. They wrap stretch film around a manually stacked roll bundle on a pallet.

Automatic concepts are the answer when the focus is on maximum flexibility, handling of different roll dimensions or a high throughput. This includes installations that automatically take off finished rolls from the winder or the inline labelling unit. Systems for weighing, stacking and palletising as well as sorting of faulty rolls also increase productivity.



Automatic handling and packaging system

Trützschler Man-Made Fibers

Specialist for carpet yarns and industrial yarns



symTTex production line for BCF

Trützschler Man-Made Fibers is our specialist for filament extrusion of thermoplastic polymers such as polyamide, polypropylene and polyester. The branch provides tailored concepts for the production of carpet yarns (BCF) as well as of high-tenacity or low-shrinkage filaments for industrial applications.

Proven cutting-edge technology

Developments in the areas of extruder, spin packs, spin beams, quenching, drawing and winding allow maximum efficiency and yarn quality. A special characteristic is the excellent symmetry: The geometric identity of each spinning position ensures a uniform melt distribution and treats each thread exactly the same. The results are: uniform filament characteristics.



The core of BCF spinning: HPc texturing nozzle and cooling drum

Efficient manufacturing of demanding yarns

symTTex and symTTec are two proven concepts for BCF and industrial yarn spinning plants. Configured in a variety of ways, several hundred spinning positions worldwide, show how flexible, and cost effective the production of quality yarns can be.

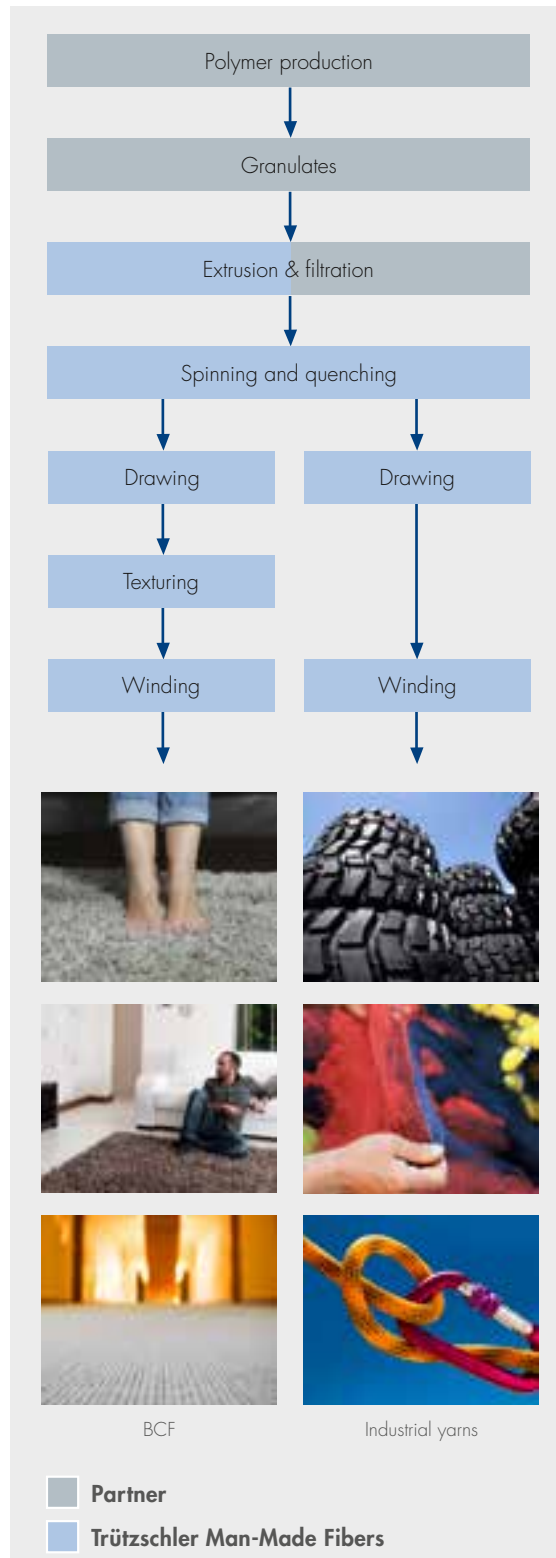
Modernisation and maintenance

Trützschler Man-Made Fibers offers a variety of modernisation packages and services to ensure that investments will remain profitable for many years. This includes for instance plasma coating of godets. Upgrade kits for winders and electrical equipment or for BCF texturing can also maintain or improve the performance of existing installations.



DSR godets during production

Filament processes



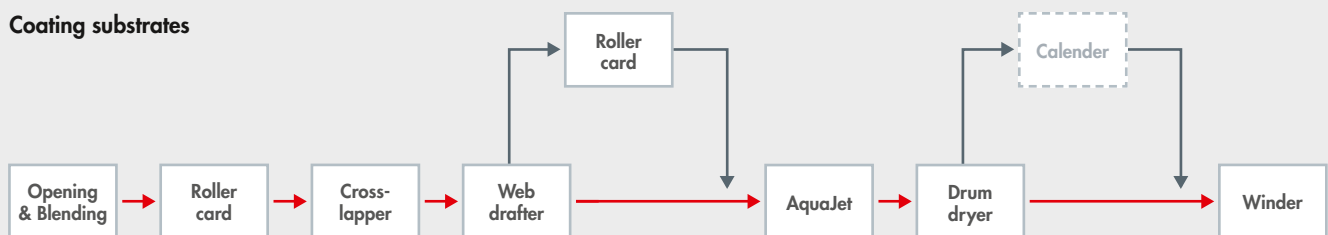
Spunlacing

Installation configurations

Automotive Headliner



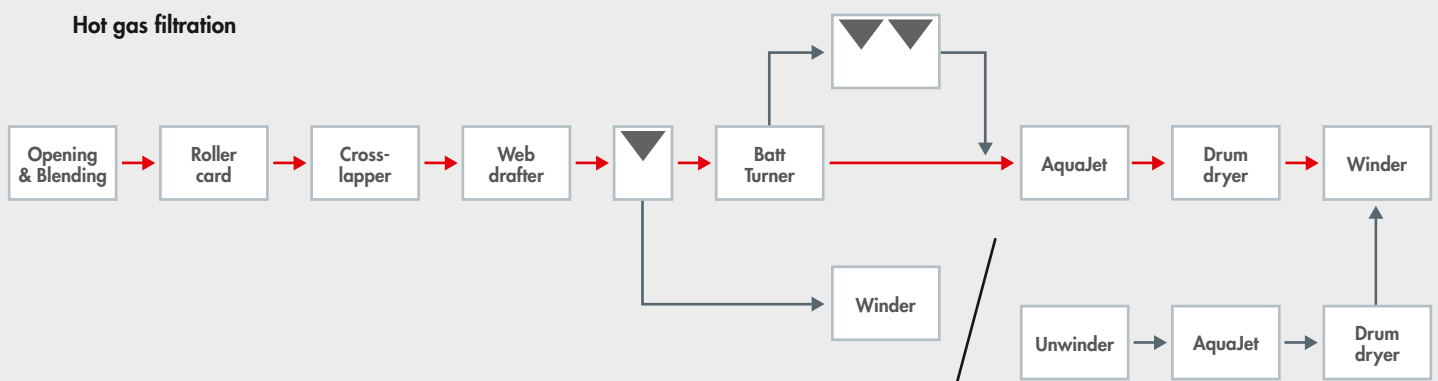
Coating substrates



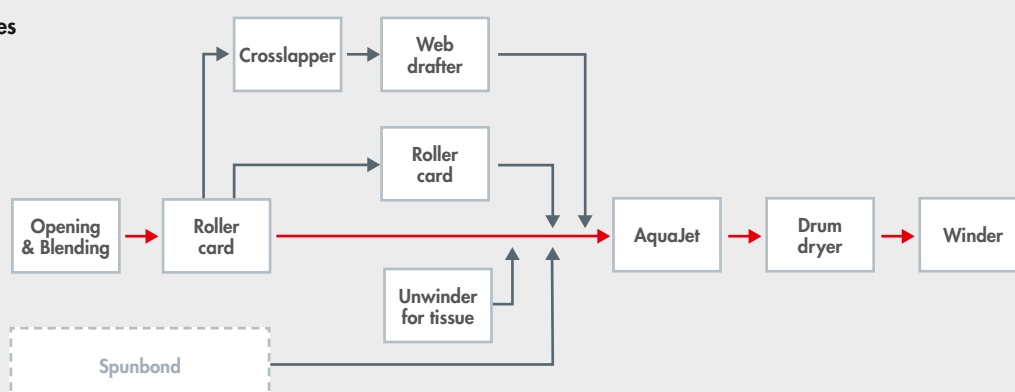
Geotextiles

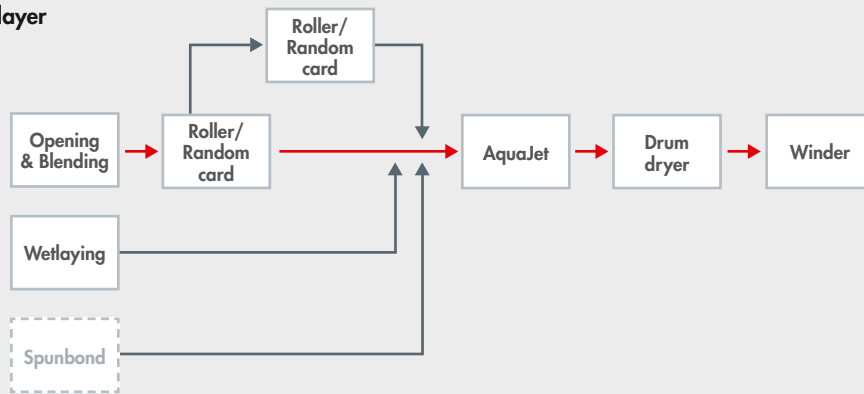
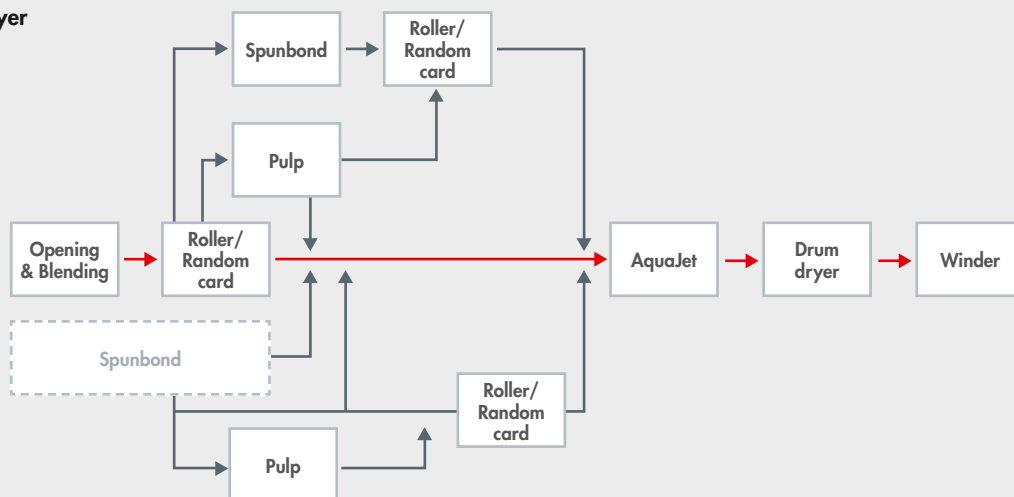
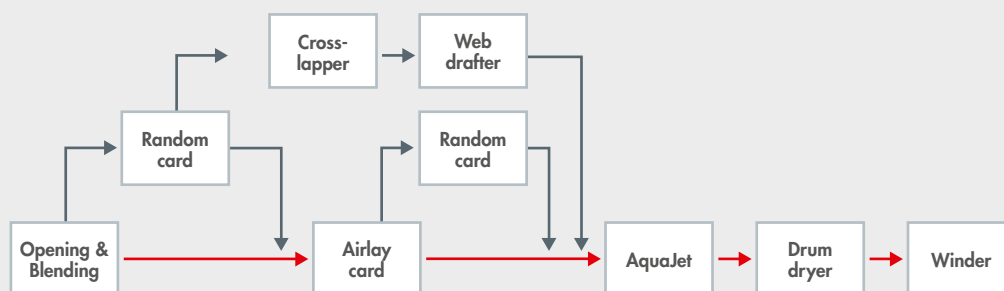
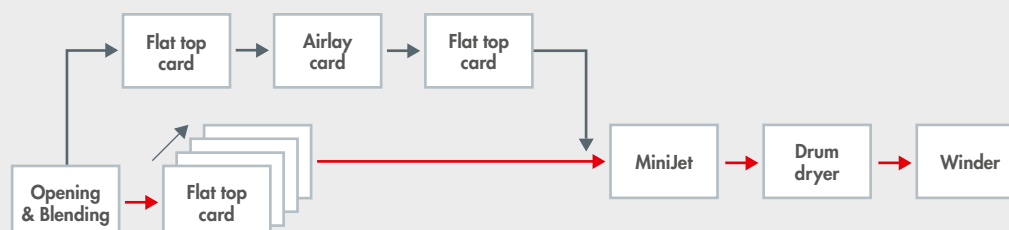


Hot gas filtration



Medical textiles



Wipes single layer**Wipes multilayer****Cotton pads****Cotton pads – alternative**

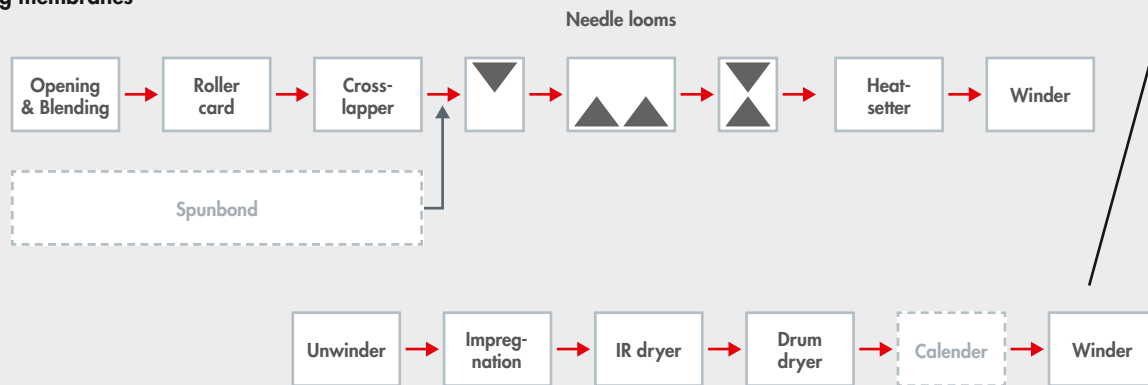
Mechanical needling

Installation configurations

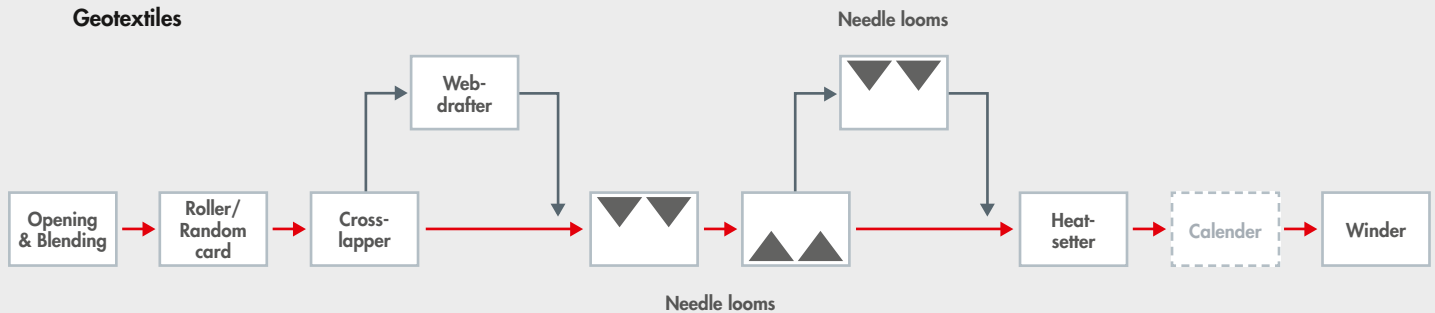
Automotive



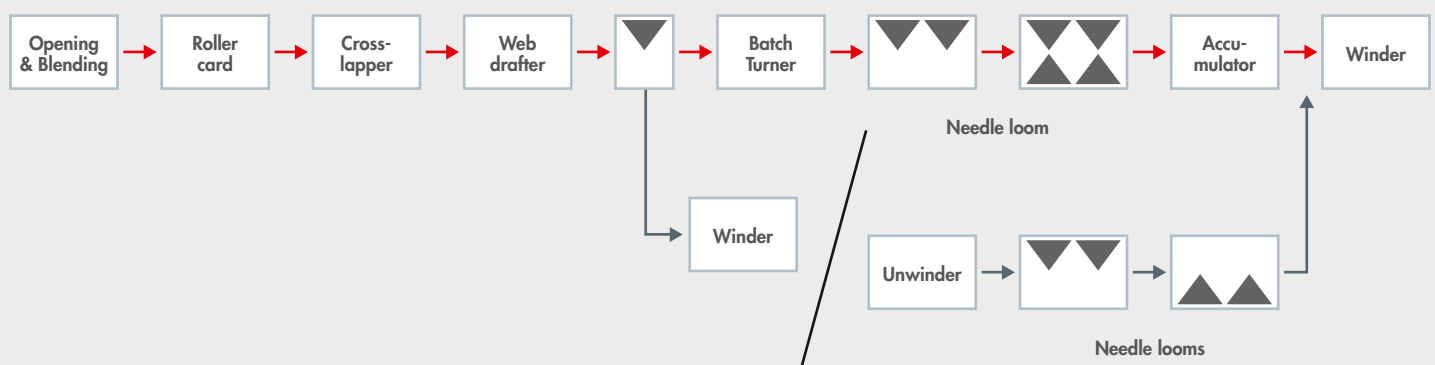
Roofing membranes



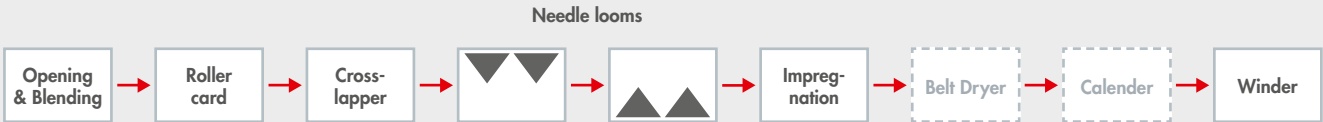
Geotextiles



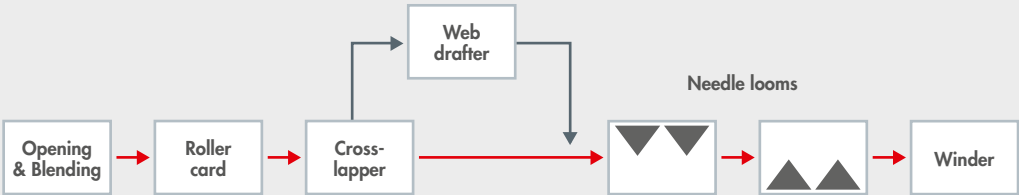
Hot gas filtration



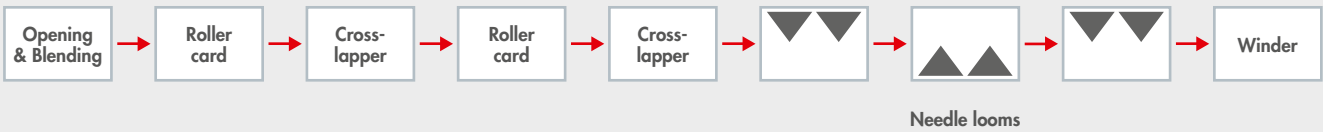
Wipes



Technical felts



Carpets



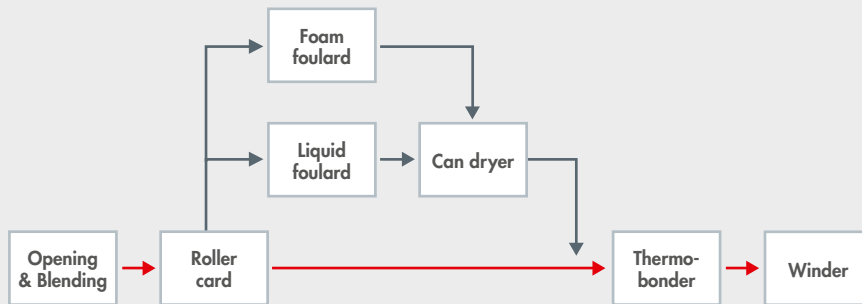
Carpet backings



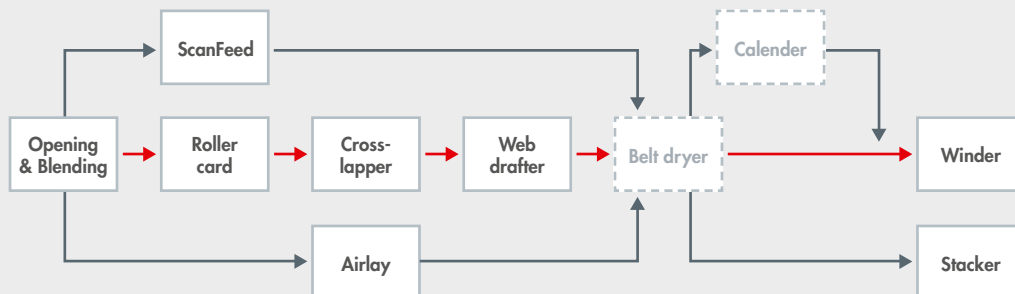
Thermo- and chemical bonding

Installation configurations

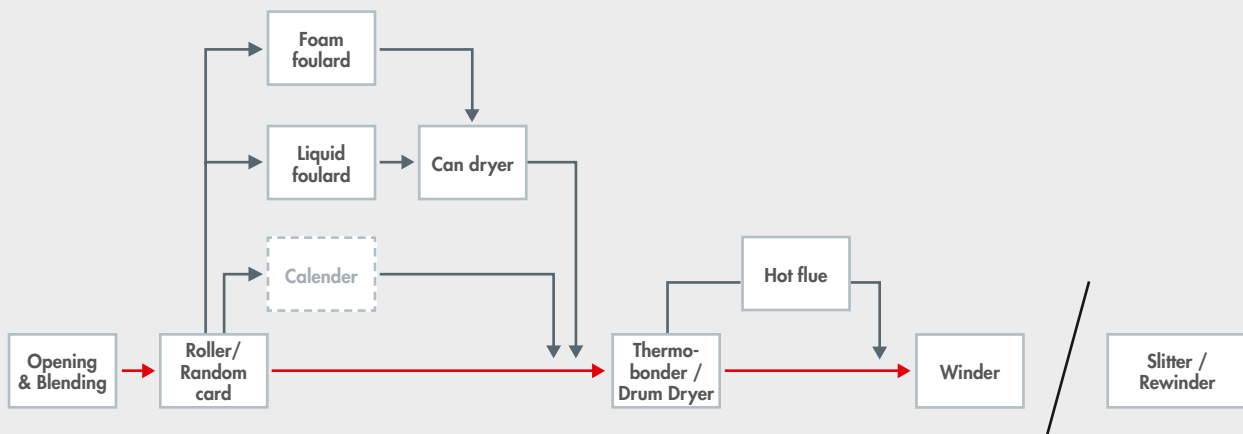
Interlinings



High loft nonwovens



Acquisition & Distribution layer (ADL)



Technical data

Opening and blending

PAN WEIGHER AND BELT WEIGHER	
Installation output	< 3,000 kg/h
Accuracy of weighing	+/- 1%
Mixing components	2–6
BLENDING CHAMBER	
Mixing components	2–20
Output per mixer	< 3,000 kg/h
FINE OPENER	
Working width	< 2,500 mm
Output	< 2,000 kg/h
FEED BOX	
Working width	< 1,500 mm
Output	< 2,000 kg/h
EDGE OPENER	
Working width	< 500 mm
Production speed	< 120 m/min

Web formation

TUFT FEEDER TWF-TF	
Web weight	300–1,500 gsm
Output	< 500 kg/hm
ROLLER CARD TWF-NC	
Installation output	0.7–100 dtex
Fiber length	14–150 mm
Output	< 450 kg/hm
Working width	≤ 4,200 mm

HIGHSPEED CARD TWF-NCT	
Fiber	1.0–3.0 dtex
Fiber length	< 60 mm
Web weight	14–55 gsm
Line Speed	≤ 300 m/min
Working width	≤ 4,000 mm
RANDOM CARD TWF-NCR	
Fiber	0.7–17 dtex
Fiber length	14–60 mm
Web weight	25–140 gsm
Output	< 260 kg/hm
Working width	≤ 3,800 mm
AIRLAY CARD TWF-NCA	
Fiber	0.7–17 dtex
Fiber length	12–60 mm
Web weight	20–400 gsm
Output	< 350 kg/hm
Working width	≤ 3,800 mm
CROSSLAPPERS	
Output	over 140 m/min
Laying width	< 8,000 mm
Number of layers	4–76 layers
WEB DRAFTER	
Drafting zones:	4–8
Working width	< 9,000 mm

Web bonding

AQUAJET	
Working width	500–5,000 mm
Speed	< 500 m/min (spunbond up to 1,000 m/min)

WET-IN-WET PROCESS (HYDROFORMER)	
Web weight	20–100 gsm
Material	pulp, viscose, PET... optional multilayer technology
Working width	3,600 mm; 4,350 mm
Output	< 400 m/min

NEEDLING	
Working width	500–7,500 mm
Strokes	< 1,600/min

THERMOBONDER	
Web weight	< 10–200 gsm
Working width	< 7,000 mm

CHEMICAL BONDING WITH FOAM	
Foam application	1-sided or 2-sided
Output	< 100 m/min
Working width	< 5,000 mm

CHEMICAL BONDING WITH LIQUID BINDERS	
Liquid fouldard	One-sided
Output	< 120 m/min
Working width	< 5,000 mm

Finishing

IMPREGNATING	
Foam application	Working width
Output	< 100 m/min
Working width	< 5,000 mm

SMOOTHENING/CALIBRATING	
Line pressure	50–600 N/cm
Output	< 100 m/min
Working width	< 7,000 mm

HEATSETTING	
Cylinder diameter	< 3,000 mm
Working width	< 7,000 mm

Drying

Ω-DRYER	
Output	< 1,500 m/min
Working width	< 5,400 mm

MULTI-DRUM DRYER	
Output	< 800 m/min
Working width	< 5,400 mm

STREAMLINER	
Output	< 1,500 m/min
Working width	< 5,400 mm

Winding and slitting

AUTOMATIC WINDER WITH INLINE SLITTING

Material width	< 3,400 mm
Lap diameter	< 1,500 mm
Production speed	< 450 m/min

SURFACEDRIVEN WINDERS

Material width	up to 3,600 mm
Lap diameter	< 1,800 mm
Production speed	< 200 m/min

AUTOMATIC UNWINDERS

Material width	< 4,500 mm
Unwinding diameter	< 2,400 mm
Unwinding speed	< 400 m/min

SLITTER/REWINDER WITH DRIVE COMBINATION

Material width	< 3,500 mm
Unwinding diameter	< 1,500 mm
Rewinding diameter	< 1,200 mm
Rewinding speed	< 340 m/min



www.machines-for-textiles.com/blue-competence

Trützschler Nonwovens & Man-Made Fibers GmbH

Wolfsgartenstraße 6 · 63329 Egelsbach, Germany
Telephone: +49 (0)6103 401-0 · Fax: +49 (0)6103 401-440
E-Mail: info-fleissner@truetzschler.de

Trützschler Nonwovens GmbH

Halterner Straße 70 · 48249 Dülmen, Germany
Telephone: +49 (0)2594 5099-0 · Fax: +49 (0)2594 5099-100
E-Mail: info-erko@truetzschler.de

Legal disclaimer:

The brochure has been compiled to the best of our knowledge and in good faith with the utmost care. However, it may be subject to type errors or technical changes for which we assume no liability. The photos and illustrations are purely informative in nature and in part show special equipment options which do not feature in the standard scope of delivery. We provide no guarantee as to the current nature, correctness, completeness or quality of the information provided. Warranty claims for material or immaterial damage against us or the respective author based on the use or forwarding of the information provided, even if the information is incorrect or incomplete, cannot be asserted. Our provided data is non-binding.

GETTING FIBERS INTO SHAPE – SINCE 1888

TRÜTZSCHLER SPINNING

Fiber preparation installations: Bale openers · Mixers · Cleaners/Openers
Foreign Part Separators · Dust separators · Tuft blenders
Waste cleaners | Cards | Draw frames | Combing machines

TRÜTZSCHLER NONWOVENS

Bale openers/Mixers | Card feeders | Cards/Crosslappers | Wet laying lines
Hydroentangling, needling, thermo- and chemical bonding lines
Finishing, drying, winding, slitting machinery

TRÜTZSCHLER MAN-MADE FIBERS

Filament lines: Carpet yarns (BCF) · Industrial yarns

TRÜTZSCHLER CARD CLOTHING

Metallic wires: Cards · Cards long staple · Cards nonwovens · Open-end spinning
Flat tops | Fillets
Carding segments | Service machines | Service 24/7

www.truetzschler.com