VOITH

HydroFormer and AquaJet
A powerful team for wet-laid spunlaced nonwovens

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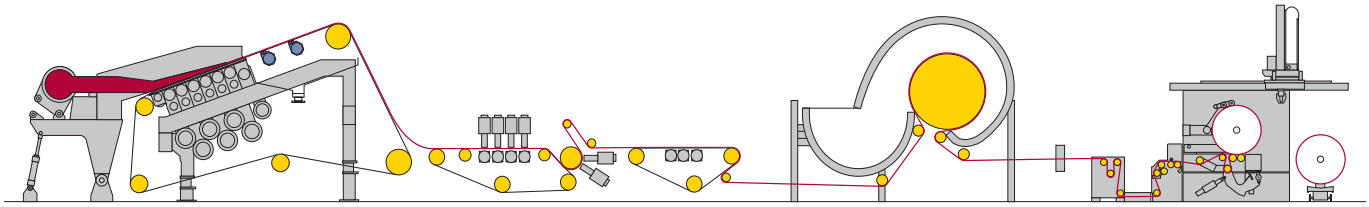
A solid partnership for a wealth of possibilities

Voith is offering solutions for manufacturing wet-laid nonwovens in collaboration with Trützschler Nonwovens, the pioneer and leading partner for nonwoven production. The wet-laid process for nonwovens is similar to the production process for paper: a suspension of fibers and water is passed over a wire belt on which a homogeneous fiber mat is formed. The spunlacing process performed by the AquaJet system results in nonwovens with a textile feel that can also be structured if required.

Highly efficient system concept by Voith and Trützschler Nonwovens



HydroFormer AquaJet Streamliner Winder

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1 Nonwoven production from renewable, cost-efficient cellulose feedstock thanks to the high dilution of the suspension.

2 Decades of experience with wet-laid processes.

The fibers are the key

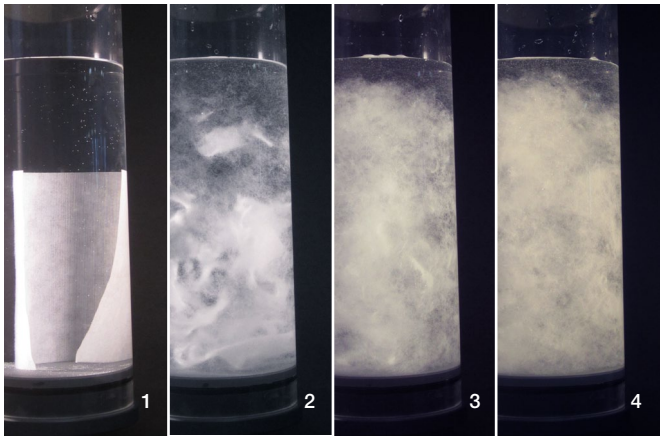
Nonwovens produced using wet-in-wet processes are suitable for a very wide range of applications. The use of long-fiber cellulose as feedstock results in a very special characteristic, as it enables the production of flushable wipes, i.e. wet personal hygiene and cleaning wipes that can be conveniently flushed down the toilet after use. The excellent homogeneity of wet-laid nonwovens in combination with spunlacing also makes them ideal for producing industrial cleaning cloths, filter materials or coating substrata.

The highly efficient system concept developed by Voith and Trützschler Nonwovens can be tailored to a wide range of fiber mixtures and product requirements. Potential applications range from single-ply cellulose cloths made from renewable, biodegradable raw materials to multi-ply composite nonwovens.

The complete plant comprises machinery and components for the wet-laying process, hydroentanglement (spunlacing), drying, winding as well as water treatment and fiber recovery.

Flushable Wipes INDA/EDANA compliant

Dispersal at the start (1) and after 12 (2), 30 (3) and 50 (4) cycles in the tube tester



HydroFormer and AquaJet for high-performance wet-laid spunlacing (WLS)

HydroFormer
Most conventional dry or air-laid sheet forming processes are based on the use of long fibers. This meant that in the past, it was often not possible to use less expensive and more environmentally compatible pulp fibers for nonwoven production.

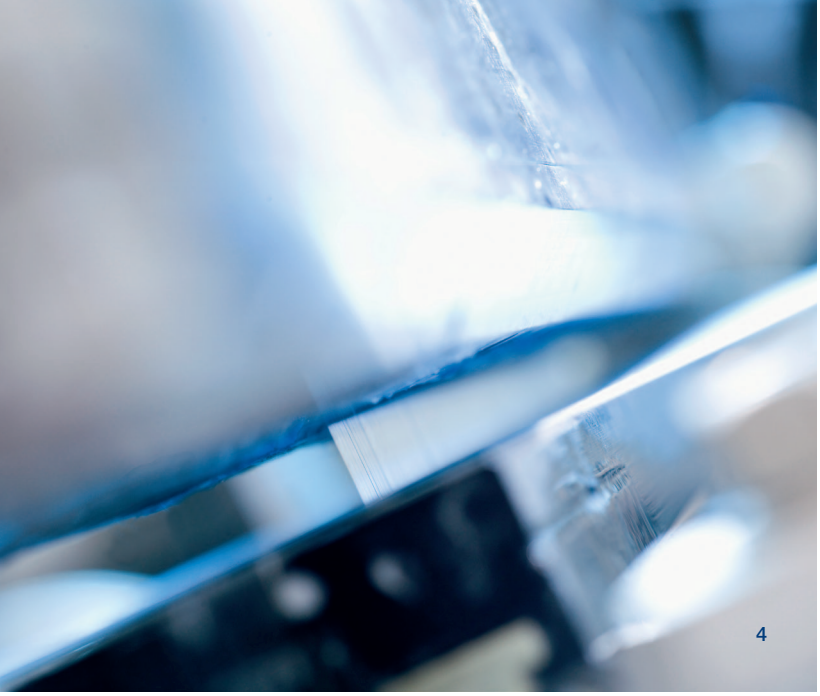
To close this gap, Voith has built a bridge between paper and nonwoven production. The versatile HydroFormer concept for wet-laid nonwovens builds on Voith's longstanding experience from the paper and pulp industry.

Inexpensive and biodegradable
Thanks to the very high dilution of the suspension, nonwovens can be produced entirely out of renewable, cost-efficient cellulose feedstock using HydroFormer technology. Apart from the obvious cost savings and environmental benefit, this process offers an especially homogeneous sheet formation and considerable flexibility for multi-ply end products. It also allows dispersible cleaning wipes to be produced from 100% biodegradable materials.

One-step process
The HydroFormer principle is ideal for producing multiple ply nonwovens. An intelligent system of baffles corrects the flow parameters of the individual plies and thus prevents turbulence and mixing of the suspension flows. This means that nonwovens can be produced directly and without further processing stages from several plies with different material combinations and properties.

In harmony with the environment
Compared with feedstock from oil-based materials, cellulose fibers do not burden the environment after use. Wipes produced entirely from these degradable fibers in a customized wet-laid spunlacing process can therefore be conveniently flushed down the toilet.

And the development process also takes account of the second important raw material, the water. The white water from the former is filtered via a shared water cycle with downstream production steps, treated and returned to the manufacturing process.



3 Simple production of multi-ply products in just one step.

4 The AquaJet spunlacing system from Trützschler Nonwovens is environmentally compatible and does not use expensive additives.

AquaJet for spunlacing

Compared with other web bonding methods, the AquaJet spunlacing process does not use chemical binding agents or bi-component fibers but relies only on the momentum of the water jets to entangle the fibers with one another. Continuous high-pressure water jets strike the loose nonwoven web, which is moved through on a belt underneath the water bar, while suction fans remove the water used. The bonding increases tensile strength and lends the material the soft feel of a textile. Structures and perforations can also be created if required.

Optimizing savings potential

Using AquaJet technology, pump output can be optimized by means of nozzle spacing. Measurements have confirmed equivalent strength and visual appearance despite pump output being reduced by 10%. Suction affects the quality of the nonwoven and energy consumption, which is why the suction fans in the AquaJet system are adjusted electronically without loss. When reducing fan speed to 90% of the rated speed, motor output falls by up to 27%.

HydroFormer Your benefits

+ More cost-effective use of raw materials
+ Exclusive use of renewable materials
+ Considerable minimization of fiber losses due to re-use
+ Simple manufacturing of multi-ply products in just one step
+ Decades of experience with wet-laid processes
+ Extensive flexibility in raw material use

AquaJet Your benefits

+ Use of environmentally compatible and inexpensive raw materials
+ Soft nonwovens
+ Natural bonding process using water only
+ High savings potential thanks to optimized pump and vacuum performance
+ More than a hundred reference systems worldwide

Integrated system for excellent nonwoven quality
For integrated, cost-efficient production of high-quality nonwovens Voith offers further components that provide ideal support for the production flow and get the most out of the process.

Textile support
The right kind of clothing is a crucial factor in achieving excellent sheet formation. The superlative performance of the HydroFormer is perfected by Voith's optimized clothing. A special feature of the fabric is the high initial dewatering capacity which results in a very high dry content.

During spunlacing, the web is given optimum support due to the low open area of the fabric. In addition, fiber loss is minimal during the process thanks to the low air permeability of the fabric. Maintaining the excellent performance of the fabric long-term is one of the key areas of focus of Voith's R&D. To keep contamination on a low level the fabric caliper was reduced to a minimum.

Everything under control
Voith offers a comprehensive quality control system that reliably measures and monitors all key parameters during production. The high traversing speed of Voith LSC scanners combined with fast digital signal processing provides high-resolution profiles for precise CD and MD profile control. The specially developed LSC sensor is based on the requirements of nonwoven production.

In addition, the production process is enhanced by other automation components. The innovative OnQ Profilmatic control software supplies optimum CD profiles for the former. OnQ GradeControl, an intelligent system for multi-variable control of parameters, ensures stable production quality in machine direction, controlling the individual strands according to the needs of the finished product in the event of multiple plies. All process-specific data are then archived and visualized in the OnView information system, whose intuitive interface allows a customized overview of the relevant data of the overall system.

5 Get the best out of your process with the right clothing from Voith.

6 Voith and Trützschler Nonwovens – a successful partnership.

Voith and Trützschler Nonwovens A solid partnership between two experts

Voith, expert in wet-laid materials

Founded in 1867, Voith today has more than 39,000 employees and earns 5.3 billion euros in sales. It has locations in over 50 countries in all regions of the world and is one of the large family-owned companies in Europe. Voith Paper is a corporate division of Voith and is one of the leading partners and pioneers in the paper industry. Through constant innovations, Voith Paper is optimizing the paper manufacturing process and focusing on developing resource-conserving products to reduce the use of energy, water and fibers. With the HydroFormer, Voith Paper is bringing the key component for the former section into the partnership. It was specially optimized for wet-laid nonwovens and is well-established worldwide with over 70 successful installations. Voith is also contributing its expertise in stock and water systems, headboxes, press concepts, calenders, automation and adapted clothing concepts.

Trützschler Nonwovens, expert in bonding nonwovens

Trützschler was established in 1888 and with its roughly 3,000-strong workforce is today a leading textile machine manufacturer. The family-owned company steeped in tradition specializes in machines, equipment and accessories for spinning preparation, nonwoven and man-made fiber industries.

Trützschler's know-how in web bonding is especially valuable. Once the nonwoven has been formed by the HydroFormer, it is bonded by the AquaJet, the leading machine solution for hydroentanglement. In this segment, Trützschler Nonwovens can draw on its experience in supplying more than 100 systems.

As experts in providing solutions along the entire nonwoven process chain, the company is also responsible for drying and winding.

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TRÜTZSCHLER NONWOVENS

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Engineered Reliability