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VOITH

Technologies for nonwovens
Air Systems


VOITH
Air Systems

For nonwovens manufacturing, a special product-oriented and stable air treatment is essential for constant quality of the end product.

We offer product-oriented process air-conditioning solutions considering all aspects of customer requirements, particularly energy efficiency. Their application positively influences the properties of the manufactured products and reduces production costs.

The more air-treatment parameters can be adapted to the specific requirements of the fibers, the more you can benefit in production from:

- **Higher machine speeds**
- **Constant product quality**
- **Higher productivity**
- **Higher profit**

Increase quality, output and efficiency with stable process air conditioning

Application: all dry laid processes for producing and processing nonwovens.

Unlike general air-conditioning systems (AC), the Process Air Conditioning System (PAC) from Voith acts directly on the processed fibers and thus has a positive effect on the products produced. Conditioned air is brought directly to the fibers or the processing zone inside the production machine. Hydrophilic fibers can therefore absorb substantially more moisture, and static charging of the fibers is substantially reduced. With our solution, all technologically relevant system components – from bale-opening to packaging the finished nonwovens – are included in one air conditioning system.

Customers are impressed by

- System-integrated concept and technology for process conditioning and energy flow
- Modern automation technology
- Many years of experience in a wide variety of applications

Your benefits

+ **Higher processing speeds by improving the process capability of the fibers**
+ **Lower production costs thanks to higher machine efficiencies and availability and increased machine output**
+ **Hygienically perfect products by minimizing influences from the periphery**
+ **Smaller installation footprints and lower investment costs due to reduced air flow**

Reduction of material input by intelligent fiber and dust control system

Application: all dry laid processes for producing and processing nonwovens; systems for cutting, handling, picking and packing; fiber preparation; and fiber disposal

One of the main components for fiber management is the recycling and filter unit. The systems from Voith are supplied according to requirements as prefabricated compact systems in one housing. The two-stage Twin Dust (TD) unit can be set up as a machine in the production area without extra construction work.

Customers are impressed by

- Synergistic process control by connecting fiber technology and energy expertise
- Professionalism from first contact through the entire planning process and even after commissioning and handover
- Integration into the overall air technology system

Your benefits

+ **Guaranteed clean and stable production conditions thanks to continuous and separate disposal of fibers and fine dust from the production machines**
+ **The vacuum at the suction connections and the air flow rates remain constant**
+ **The captured fibers are automatically fed to the production lines or to the compactors for disposal**
+ **Reduction of production costs due to recovery of reusable fibers**
+ **Return of the filtered air and the energy it contains to the production process**
+ **Improved industrial health and safety protection**

Save costs during production with heat recovery

Application: wet laid nonwoven lines, drying after spunlace sections, thermal and chemical bonding, etc.

Voith supports you with multi-stage heat recovery systems to utilize thermal energy from processes before it becomes “waste heat”. A very large amount of energy must be spent for drying the product, with both manufacturing wet laid and hydroentangled nonwovens. With outlet air temperatures above 100°C, heat recovery is highly suitable for supply air for the drying process and for the process air-conditioning.

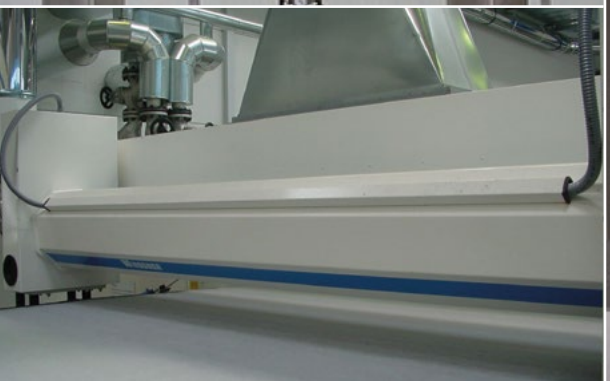
We do the complete planning, taking into account existing systems, additional sources of heat, noise and fire protection, the asset location, etc. An investment in such systems has typically a payback time of two years.

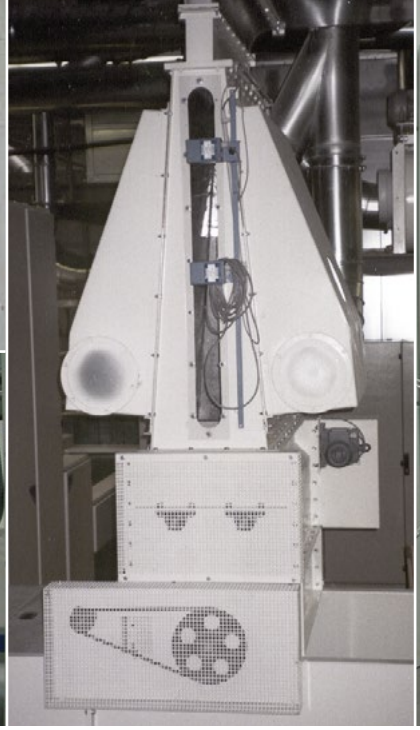
Customers are impressed by

- Transparency of the design and engineering including detailed amortization calculations
- Convincing overall energy concept that leads to keeping costs at a minimum

Your benefits

+ Saving valuable thermal energy for your processes and buildings
+ Reduction of CO_2 emissions
+ Reduction of production costs





Components intelligently matched to one another

Application: all dry processes in nonwoven production, edge cutting and disposal sections in textile recycling plants

Transporting fibers requires more than just pipes. We cover the entire engineering at the interfaces of your machines. You can expect an overall concept according to your specifications including the data from the machine manufacturers. Your nonwoven line will be equipped with components such as:

- Conveying fans
- Fiber separators
- Fiber compactors
- Cyclone separators
- Bagging equipment
- Pneumatic valves and gates

Customers are impressed by

- Complete handling of the fiber conveying and disposal process by a single source
- Consideration of the overall energy concept for production
- Engineering with modern 3-D CAD systems including 3-D laser scanning of the existing installation

Your benefits

+ Only one contact, other than the machine manufacturers, for all technological concerns
+ Reduction of project handling times
+ Reduction of planning costs

Process-oriented machine room air systems

Application: all manufacturing processes, particularly production plants with accumulation of dust and smoke and high thermal loads.

An air conditioning solution optimized for your process results from a supply air distribution matched to the thermal loads in your machine room. We use special displacement outlets and the air buoyancy driven by the heat from the machines. That leads to:

- Conditioned air, brought in directly and without drafts, displaces fibers, dust and heat from the working zone.
- The exhaust air removed at places with high accumulation of heat and dust, combined with filtering and disposal systems, enables an efficient removal of harmful substances and heat.

Customers are impressed by

- Highest efficiency with lowest possible system air flow
- Low investment costs by reducing system size
- Very high savings potential: recovery of energy is always considered
- Very competent consulting by comparing options

Your benefits

+ Stable air routing
+ High penetration depth
+ Draft-free air induction
+ Lint-free production areas
+ Assurance of product parameters by optimum microclimate in the process-relevant zone
+ Hygienically clean products
+ Improved industrial health and safety protection

Innovative automation solutions enable reduced operating costs

Application: particularly for large, modular-constructed, energy-intensive production plants where sub-processes can be operated individually.

Voith offers a needs-controlled adaptation of air quantities and conditions by using innovative sensor systems and actuators. Starting from the recipe for the fiber mixture, the total volume of circulated air is reduced by frequency converters of the supply air and exhaust air fans, as well as by closing air dampers in the individual lines. The system can be used in both new and existing plants for increased efficiency.

Customers are impressed by

- Short return on investment
- Flexibility in defining the digital interfaces for the production lines
- Competent consulting

Your benefits

+ Reduced electricity consumption
+ Maintaining the dust extraction system performance by constant pressure in the duct and pipeline system
+ Excess of supply air and minimum outside air ratio in the facilities in all conditions
+ Preventing influx of pollution-loaded outside air
+ Visualization of the air balance

Voith Air Systems

Our customer-specific solutions ensure an improvement of production conditions for nonwoven manufacturing, because they are focused on the customer's process. With development and execution from a single source, we embody transparency in the project phase. And with our many years of experience, we offer individual planning at the highest technical level and short payback periods.

Our product portfolio for the entire nonwoven industry

Air-conditioning and process air systems for all fields in nonwoven manufacturing

- Bale opening/stock preparation
- Fiber transport and blending
- Carding machines
- Crosslappers
- Needle looms / hydroentanglement
- Drying
- Edge trimming
- Blank cutting
- Warehouse

Automation

- Process and building automation based on SIEMENS Simatic S7/300, S7/1500 and corresponding operating and control station technology
- Technical consulting
- Software development
- Planning
- Electrical and MSR-Engineering (CAE)
- Interfaces to the nonwoven production process
- Electrical installation
- Production line optimization
- Refurbishment, retrofit and expansions
- Installation and startup
- Training

Process technology

- Process air systems:
  - Air outlets
  - Draft-free displacement ventilation
- Suction systems:
  - Filtering and separating systems
  - Fiber transport systems
  - Heat recovery systems
- Moisturization
- Drying
- Exhaust air treatment
- Cooling
- Emission reduction (sound / odor / dust)

Air conditioning and process engineering systems for all processes in nonwoven manufacturing, bonding and processing

- Dry laid and air laid processes
- Wet laid processes
- Spunlaid and meltblown processes

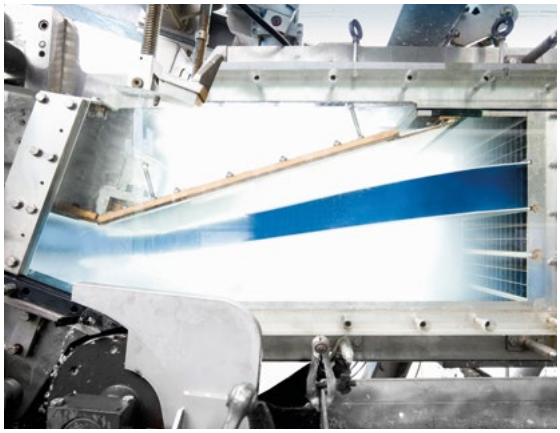
Service

- Maintenance
- Remote maintenance
- Hygiene checks
- Hygiene training
- 24-hour breakdown services
- Spare parts
- Measurement and optimization
- Consulting and training

Additional Voith technologies for nonwoven production

Voith supplies reliable products and service for the entire nonwoven manufacturing process. Thanks to many years experience in plant engineering in a variety of economic fields, we develop solutions that go beyond the usual limits and thus offer economic and ecological advantages.

Voith offers a versatile product range in the nonwoven manufacturing field

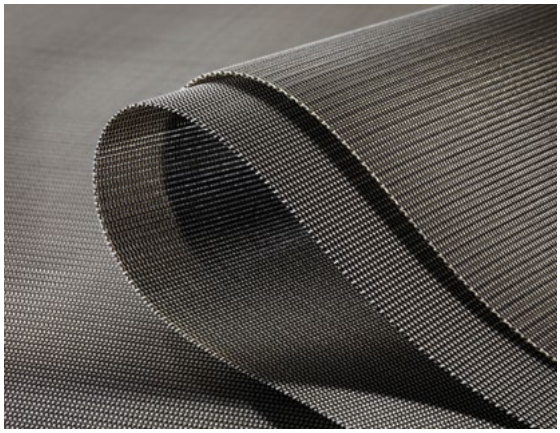


HydroFormer:
Wide variety of fibers up to 40 mm in length

The HydroFormer by Voith is a proven forming system for the production of specialty paper and wet laid nonwovens. It offers a homogenous sheet formation with long fibers and considerable flexibility especially for producing multi-ply end products.

Drying and hardening:
Optimal combination of air and infrared drying

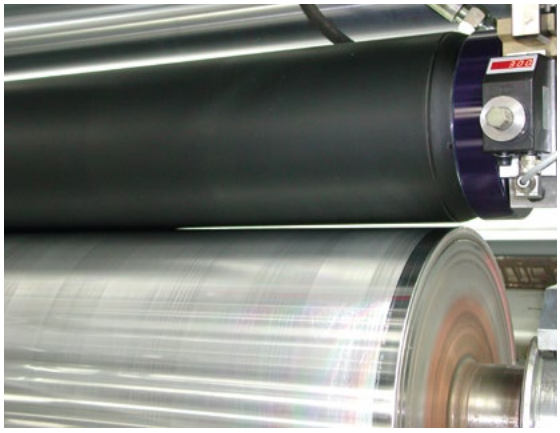
In order to achieve highest product quality at maximum drying performance, Voith experts individually combine infrared and hot air dryers when selecting the optimal drying and curing system.



Fabrics:
Efficient and reliable roll covers and service

Voith offers a comprehensive product range for all process steps in nonwoven manufacturing. From spiral fabrics, woven belts to rubber, PU and thermal roll covers.

The products – combined with decades of experience in mechanical roll service – make Voith your reliable partner in nonwoven manufacturing.



Calendering nonwovens:
No thickness variations thanks to deflection compensation

Voith offers extensive modular calender systems for nonwoven applications. They can be adapted to all customer requirements.

Specifically for this purpose, Voith has developed a zone-controlled Nipco™ roller. This allows a very precise pressure regulation in the nip. Thickness variations are reduced to a minimum. An integrated width adjustment enables an exact pressure control to the desired web width. In order to increase efficiency, Nipco™ rollers can also be retrofitted on existing calender systems.

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VOITH

Inspiring Technology
for Generations