PULP & PAPER
DRYING AND VENTILATION SOLUTIONS FOR PAPER AND BOARD
PrimeDry TECHNOLOGIES
PrimeDry drying and ventilation technologies for paper and board machines

We offer a broad range of technologies for paper and board machines meeting the challenges of drying and ventilation head-on: highest drying capacity, lowest energy consumption, and environmentally friendly production.

TRADITION COMBINED WITH INNOVATION

With more than 50 years of experience in all kinds of paper and board operations around the world, we offer advanced, competitive, and environmentally friendly drying and ventilation solutions for new lines, rebuilds or upgrades.

ANDRITZ recently acquired Novimpianti – the Italian specialist for air systems and reduction of energy consumption. With this acquisition, ANDRITZ can now serve all of its customers with new, innovative products for energy and air systems in paper and board mills.

ANDRITZ NOVIMPIANTI

ANDRITZ Novimpianti has more than 30 years of experience designing, installing, and servicing drying technology for all kinds of paper and board, MG, and tissue installations around the world.

The company provides the paper and board industry with innovative, heavy-duty, competitive, and eco-friendly hoods, steam and condensate systems, heat recovery units, mist elimination, and ventilation systems – for new machines or modernization of existing equipment.

ANDRITZ Novimpianti has a strong, customer-centered approach to engineering, manufacturing, installation, start-up, and service to enable its customers to maximize their return on investment as quickly as possible.

PrimeDry Yankee Hood
Steam or gas heated MG hood

PrimeDry MG
Steel Yankee with diameters up to 26 ft.

PrimeDry Heat Recovery
To bring energy back into the production process

PrimeDry SC
Steam and condensate system

PrimeAir Glide
PrimeDry AirGlide
Standard or heated solution to change the web direction without contact after film and size presses and in the coating section

PrimeDry AirFlow
Steam or gas heated air dryer for coating applications

Hall ventilation
For clean and safe working conditions

PrimeDry Hood C
Closed hood for pre-dryer sections with steel cylinders, web stabilizers, and pocket ventilation

PrimeDry Hood C
Closed hood for post-dryer sections with steel cylinders, web stabilizers, and pocket ventilation
Pre- and post-dryer sections: Boost drying performance

Our PrimeDry systems improve the performance and economics of the drying process and increase drying capacity, with the advantage of a better moisture cross-profile.

PrimeDry Hood C
CLOSED PAPER MACHINE HOOD
The PrimeDry Hood C encloses the pre- and post-dryer sections with insulated panel elements down to the machine floor level. Cold air is prevented from entering the drying section by the basement enclosure, which creates a virtually closed hot area inside the paper machine hall. There are lifting gates on the operator side so that free access is available to the dryer section.

The hood keeps heat losses in the dryer section low, prevents condensation, and prevents room air from entering. As a result, the temperature and humidity throughout the machine hall are improved.

VENTILATION SYSTEM
The hood and its air system both control ventilation of the drying section with a uniform inflow of heated air in the area surrounding the paper web so that the water vapor produced is absorbed quickly. This vapor is discharged with the exhaust air at high humidity levels.

PrimeDry Steel cylinders
The thermal conductivity of the steel alloy in a steel cylinder is similar to that of cast iron, but the steel has superior strength. This means that the cylinder shell thickness can be optimized to give less resistance to the heat flux. As a result, the PrimeDry Steel cylinder performs up to 10% better than the same sized cast iron cylinder at the same operating pressure – enabling the papermaker to either increase production or reduce energy consumption. In addition, the web is dried uniformly without bad edges.

In practice, steel cylinders can be run at a higher operating pressure than comparable cast iron cylinders. This is beneficial in rebuilds and upgrades because it is possible to increase production without extending the dryer section. New machines, therefore, will have a shorter dryer section and still achieve a desired production level. The elasticity of steel provides a substantial benefit over cast iron material because there can be no explosions due to overpressure or material faults.

PrimeRun Evo web stabilizers
At the beginning of the drying section where the paper web has low strength there are various forces acting on the web, especially in the web release zone. This can lead to an unstable web run, creases, widening and edge problems following sheet breaks. ANDRITZ has created a concept with the PrimeRun Evo that supports trouble-free operation, even at high machine speeds. It does so by gradually reducing the vacuum from the opening nip. Not only does this improve web control, it also reduces energy consumption by up to 50% compared to classic runnability concepts.

POCKET VENTILATION
Every type of paper and board machine must replace the air containing the evaporated water from the drying process with fresh and heated supply air. It is very important to distribute this air properly in the machine in order to maintain high drying rates and an even moisture profile, as well as to obtain a high-quality end product. ANDRITZ pocket ventilation systems enable uniform air distribution within the usual pocket geometry of the machine, ensuring easy maintenance and reliable performance.
Hoods and giants made of steel for MG paper production

For MG production we offer MG Yankee hoods as well as the world’s largest MG steel Yankees for high-quality, energy-efficient production and safe operation.

**PrimeDry MG Hood**

**OIL OR GAS HEATED YANKEE HOOD**

Today, a high-performance hood is a must on all MG Yankees in order to achieve maximum production at lowest cost. It is estimated that sheet contact with the Yankee itself accounts for about 40–60% of total drying, while the hot air impinged by the hood provides the remaining 60–40%.

Depending upon the fuel source available, ANDRITZ Novimpianti supplies oil- or gas-heated hoods that typically operate at 530° C.

**PrimeDry MG Hood ST**

**STEAM-HEATED YANKEE HOOD**

When steam is available, cheaper, and preferred over oil or gas, ANDRITZ Novimpianti supplies the PrimeDry MG Hood ST, which is engineered with a steam-heated air system. The PrimeDry MG Hood ST operates in a temperature range of around 200° C in the impingement air, which can provide an additional 15–25% of drying capacity compared to the Yankee cylinder alone.

**PrimeDry MG Steel Yankee**

**DIAMETERS UP TO 26 FT.**

ANDRITZ is the only supplier worldwide who is able to deliver steel Yankees with diameters up to 26 ft. These high-performance drying cylinders are made entirely of steel, resulting in improved safety and better machine performance than cast Yankees. The performance of an ANDRITZ PrimeDry MG Steel Yankee exceeds the performance of a cast iron Yankee of the same size. Steel Yankees have an evaporation rate that is 10–15% higher than that of cast iron models, which results in 8–10% better machine performance.

**MANUFACTURE OF THE GIANTS**

A unique, patented, and – for cast iron Yankees – inconceivable concept was developed by ANDRITZ to manufacture Yankees with up to 26 ft. diameter. To handle transport over narrow roads and through tunnels, these Yankees are manufactured in two halves at the ANDRITZ workshops in Europe and China and then the two halves are delivered to the customer and assembled on site.

**WATCH THE VIDEO**

with our expert
Franz Harrer
Heat recovery, steam and condensate system

Paper and board production is an energy-intensive process. We offer state-of-the-art technologies like systems for heat recovery and steam and condensate systems for energy savings.

**PrimeDry Heat Recovery system**
**BRINGING ENERGY BACK TO PRODUCTION**
Irrespective of customer location and latitude, the excess heat from the drying sections must be recovered in order to reduce steam consumption – over 10% is possible here. This reduction can be achieved with an air-to-air heat exchanger system (exhaust air to supply air). The remaining heat can be recovered additionally by water heat exchangers operating indirectly (plate type) and/or directly (scrubber with spray nozzles). This could be used to heat circulating water for the PM hall ventilation system and/or process water. A sequel tower combination of two or more of these heat exchangers is also possible.

**PrimeDry SC system**
**STEAM AND CONDENSATE SYSTEM**
ANDRITZ supplies all types of steam and condensate systems in accordance with the required drying curve. We use thermocompressor, cascade or mixed solutions.

- Reliable steam and condensate architecture for different dryer sections
- Proven drying curve adapted to the paper grade
- Higher drying efficiency
- Lower and PM hood-integrated steam consumption
- Better paper quality
- Better runnability and overall machine efficiency
- Reduced maintenance and longer system life

**PrimeAir Glide AND PrimeDry AirGlide**
**CONTACTLESS CHANGE OF WEB DIRECTION**
The two ANDRITZ AirGlide systems change the direction of a continuous web without contact. They are used especially when the web is coated and has to be deflected when the coating is still wet, without touching any rolls. In this way, the coated surface is not damaged.

The AirGlide consists of a set of air nozzles creating the air cushion pressure between the paper web and the AirGlide structure, thus making the paper float over the entire nozzle construction. The air volume flow from the nozzles can be set precisely by means of the fan speed. This ensures that the web floats at the required distance and does not come into contact with the nozzles. For the web feed, there are rope pulleys installed on the operator side.

The **PrimeAir Glide** can be installed in the film press, size press, or coating section of a paper machine.

The **PrimeDry AirGlide** has an additional heating function for paper drying with a circulating air system. It can only be installed in the coating section.

**WATCH THE VIDEO** with our expert Nenad Milosavljević
Drying in paper finishing: coating

**PrimeDry AirFlow**

**EFFICIENT DRYING FOR COATING**

Ensuring the successful production of coated products is of major importance. With PrimeDry AirFlow, ANDRITZ offers an efficient air dryer that is easy to handle and flexible regarding selection of heat source and air nozzles.

The effective air distribution system and optimized nozzle geometry enables optimum web guidance and drying, as well as ensuring uniform extraction of return air over the full width. This leads to even moisture profiles and prevents excessive drying of the web edges. The high efficiency of the dryer reduces energy and production costs.

PrimeDry AirFlow is easy to adjust and balances the airflow between upper and lower air dryer by means of dampers. A frequency converter regulates the fan speed and, therefore, the air volume. This makes it very easy to adjust air velocities to coatings and web tensions. Windows provided all along the dryer make the web behavior visible. A wide opening in the top air dryer enables safe threading of the web and easy maintenance.

The PrimeDry AirFlow can be operated with any type of heat source, especially gas, steam or electricity.

Benefits of the PrimeDry AirFlow are:
- High drying rate due to optimized efficient nozzle geometry
- Effective air system for optimum web guidance
- Uniform extraction of return air over complete width
- Suitable for the use with any type of heating media
- Simple to use, with easy access

A circulation air fan supplies the top and bottom air dryers with hot air. Dampers help to balance the air flow to and from the top and bottom air dryers. An exhaust air fan extracts the evaporated water from the coat drying process and removes it from the building. Filtered fresh air from the surrounding area is controlled by a damper. To save energy, an exhaust air/fresh air heat exchanger can be used to preheat the fresh air. If a gas burner is available as heat source, a by-pass air system is necessary to maintain air circulation when the hood is opened. This enables a quick restart of the drying process.

Machine hall ventilation

Creating a suitable machine hall climate for the process and the operating personnel as well as protecting the building itself

In halls for tissue, paper and board machines, the operators, the building and the ancillary equipment can face serious problems during the papermaking process. These problems are caused by higher and lower temperatures, humidity, and uncontrolled air, dust and door movements or by migration creating production, safety and environmental issues.

The most important success factors in the design and supply of ventilation systems for machine shops are:
- Maintaining optimum conditions for the operating environment
- Protecting buildings and auxiliary machinery against corrosion and general deterioration
- Optimization of energy consumption for effective hall heating/ventilation

Machine room equipment and processes release a lot of heat and moisture inside the building. Ventilation systems adjust the temperature and humidity inside the machine hall. Improved air quality protects equipment and building structures against corrosion as well as providing a better and more productive work environment for the people inside the machine hall.

Comprehensive services

With our services and audits, we are able to identify bottlenecks and find potential for energy saving and upgrades to your mill.

We are able to conduct audits for ventilation and drying on your existing paper, board or tissue machine. On the basis of these measurements, we can calculate reliable production rates for upgrades:
- Investigation of the current situation
- Measurement of air status (volume, temperature, moisture content, pressure)
- Measurement of pocket air condition
- Cylinder surface temperature
- Paper web temperature
- Mechanical inspection
- Identify bottlenecks
- Energy-saving potential
- Upgrade actions
DISCOVER OUR FULL-RANGE PORTFOLIO FROM FIBER PROCESSING TO PAPERMAKING

An outstanding paper product requires outstanding production – matched with the particular needs of raw material and final product. Discover the full-range portfolio from ANDRITZ: Excellent stock preparation that allows best fiber development according to furnish and with economical use of resources. PrimeLine paper machines that are a synonym for producing top-quality tissue, paper, and board grades. Complete lines or single units, upgrades, and modernizations. Contact us and benefit from your individual package in papermaking technology.

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