Fläkt Dryer
World leading pulp drying technology

We accept the challenge!
The Fläkt Dryer for High Quality Pulp

The Fläkt Dryer is the result of experience gained from more than 500 pulp dryer installations since 1928 and a continuous research and development work in the pulp drying field. More than two-thirds of the world's pulp is dried in Fläkt dryers today. Customers around the world are benefiting from our unique experience to produce high quality pulp efficiently and reliably in cost-saving dryer systems.

Many mills choose to replace their old drying equipment to increase pulp production. Higher pulp brightness reduced maintenance, labour and energy costs are other motives. A new Fläkt Dryer can satisfy all of these requirements.

More capacity in less space....

The Fläkt Dryer requires less space for a specific production rate or provides more capacity in a given machine room when replacing an old dryer.

...... due to an efficient heat transfer system

The Fläkt Dryer is compact because of its high-efficiency air impingement system on both sides of the pulp web. The system provides uniform and high heat transfer to the pulp web.

Due to the close distance between the web and further improved bottom Bernoulli blow boxes, heat is transferred efficiently to the bottom surface of the web. The top blow boxes allow the transfer of additional heat to increase drying efficiency and cut drying time. The overall result is a compact dryer design.

Low web tension for high operating reliability

The bottom blow boxes, an exclusive Fläkt design utilizing the Bernoulli principle, lift the web clear of the drying deck and locate it at a fixed distance above the bottom blow boxes.

With this design, the sheet can be dried with minimal web tension, without sheet flutter.

Because the Fläkt Dryer operates with web tensions substantially below those of other air and cylinder dryers, it can handle pulp sheets of lowest tensile strength.

........ for CTMP, too

Birch, beech, eucalyptus, mixed tropical hardwood and CTMP are examples of low tensile strength pulps that are being effectively dried in Fläkt dryers today.
Low pulp web temperature for high quality pulp and brightness

The Fläkt Dryer utilizes heated air to dry and support the pulp web. The web is fed into the upper deck of the dryer, where it is supported by air while making several horizontal passes back and forth along the entire length of the dryer. The web never touches any heated steel surfaces.

Brightness is maintained because of a low pulp-web temperature during air drying. The evaporative cooling effect permits evaporation to take place at the low wet bulb temperature of the drying air.

The Fläkt impingement system allows gentle drying at low temperatures for the production of consistently high quality pulp with uniform dryness across the width of the sheet.

Sheet cooler for fully bleached pulp

The Fläkt Dryer can be equipped with a sheet cooler that cools bleached pulp before it is conveyed to the cutter. There are a number of advantages to installing a sheet cooler:

- Minimum brightness reversion during storage
- No condensation during pulp storage and transport
- Longer cutter knife life
- More uniform bales

The Fläkt Sheet Cooler is normally integrated with the dryer but can be supplied as a separate unit. In the integrated unit, the bottom deck is equipped with cooling air blow boxes and isolated from the drying decks by insulated panels and the supply air plenum. This arrangement provides a hot and dry interface between the dryer and cooler to eliminate condensation.

Internal air circulation system

The dryer is designed with a number of identical vertical sections with steam coils for heating the drying air. Axial fans distribute the drying air to the blow boxes. The steam coils and fans are specially designed and manufactured for the Fläkt Dryer.

Air enters the fan through the steam coils. After air is distributed onto the sheet by the blow boxes, it is returned between the blow boxes to the steam coil compartment. The humidity of the air increases as it circulates upward in the dryer. To optimize heat economy, only a small percentage of the circulation air is exhausted and replaced with make-up air.
Fläkt Dryer model FCG

FCG is the fully equipped Fläkt Dryer for high production rates. It has all the auxiliary equipment necessary for dryers of this size such as movable platforms, broke removal device, Fläkt Tail Cutter and the unique Fläkt folded tape threading system.

The folded tape threading system makes it possible to thread the tail at normal machine speed up to 200 meters per minute. The tape runs on separate pulleys and the tape system is only engaged during the threading.

Dryer model FCG equipped with an integrated cooler is designated FCGC.

Fläkt Dryer model FCS

FCS is the economy version dryer for lower production rates up to about 500 tpd. This dryer has certain limitations when it comes to machine height and web width. It has the single tape threading system suited for lower threading speeds. The basic design and the operating ability of FCS is however the same as for model FCG.

FCS Dryer equipped with an integrated cooler is designated FCSC.

Easy inspection

The top blow boxes of the Fläkt Dryer can be lifted to allow inspection of the drying decks.

Feeding of pulp tail into tape
Web tension control

The pulp web travels over the dryer decks via turning rolls at the end sections. The turning rolls are equipped with over-running clutches that are free-running during normal operation, with the web pulled by a nip roll arrangement at the outlet end.

The pull roll motor is controlled by web-tension load cells located at the inlet end of the dryer. Control panels are located at each end of the dryer. The web tension can be set up to the desired value by means of the electronic equipment in the control panel at the inlet end.

Cost-saving design with low energy consumption

Drying in a Fläkt Dryer results in low production costs, due to reduced energy consumption and maintenance.

Since costs for heat energy for drying pulp account for a large portion of overall operating expenses for a drying line, the optimum solution is normally to install the dryer offering the lowest heat consumption.

With its closed recirculating and reheating system, the Fläkt Dryer consumes much less energy than cylinder machines. The well-insulated panels and the compact design also minimizes the heat losses.

Drying air entering the bottom of the dryer is continuously recirculated and reheated in the internal air circuits before it is exhausted into the heat recovery system. The heat in the humid exhaust air is utilized primarily to heat the make-up air supplied to the dryer. It can be further used to heat water and ventilation air for the machine room and other sections of the mill.

Approximately two-thirds of all initial heat energy used for drying can be recovered economically to heat process water and ventilation air. Steam consumption can be further reduced by using blow-through steam from the dryer condensate system - or the condensate itself - to raise the temperature of the process water.

Maintenance costs are low, due to the robust design of the Fläkt Dryer and its few moving parts (only the fan impellers and rolls move during operation). One mill with a 750 tpd Fläkt Dryer reports that maintenance costs, including labour and materials, averaged less than USD 0.05 per ton of pulp during the first five years of operation.
Examples of Fläkt Dryer installations

Fläkt Dryer FCGC, Veracel Brazil.

Fläkt Dryer FCGC, 2756 admt/d, Aracruz Celulose S.A., Brazil

Fläkt Dryer FCGC, capacity 3230 admt/d, Hainan Changxiang Trading Co. Ltd., China

Auxiliary equipment Fläkt Web Guide

Low web tension throughout the entire dryer is one of the unique features of Fläkt Dryers. When operating with low web tension, it is important to guide the web properly to obtain uniform bales, or to minimize trimming when using reels.

The Fläkt Web Guide controls the lateral web movement. The position of the web edge is detected by an electronic sensor. This ensures a stable web run under different operating conditions.

Fläkt Tail Cutter

The Fläkt Tail Cutter using a water jet knife has proven to be a very useful tool to facilitate the feeding of pulp into the cutter lay-boy.

A high-pressure water nozzle is mounted on a carriage powered by a frequency-controlled motor. The water jet cuts the tail while the carriage moves across the web at a preset speed. A collector located directly in front of the nozzle takes care of the used water and pulp fibers.

For easy operation of the Fläkt Tail Cutter, the entire cutting sequence is controlled by a PLC system and only one operator is required to thread the cutter lay-boy.
Increase production with minimum downtime

Dryer replacements

Keeping production downtime to a minimum is usually essential when an old dryer section is replaced. Several pre-erection methods have therefore been engineered, in which the dryer is partly, or completely, assembled outside the machine room.

One frequently used method is to build the dryer in modules and then move each module into place by means of a crane, or by sliding the modules on rails.

Dryer extensions

All Fläkt Dryers can be extended in height or length by adding drying decks or drying sections. Experience has been gained over the past 30 years from more than 30 dryer extensions all over the world. We have developed special pre-erection and lifting techniques enabling us to extend a dryer within a normal maintenance shut-down period.

Booster dryer

When used as a booster dryer or cooler in an existing dryer line, the flexible Fläkt Dryer design has proven to be very cost-effective by providing maximum drying capacity in the available machine room space. The booster dryer can be erected during operation thereby minimizing downtime. The booster can be delivered with an integrated cooler. For a separate Fläkt Sheet Cooler the same layout as for the booster can be used.
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