Extraction and Separation in the Wood-Based Panel Industry

THE TASK

A variety of air pollutants are created in particleboard and MDF (Medium Density Fiberboard) factories. Pneumatic extraction and conveying equipment with appropriate separation and disposal of excess matter have become basic components of the production process. Our expertise in this complex task ensures optimal results for trouble-free separation of pollutants, even in large volumes.

SOLUTIONS FOR

De-dusting

Press fumes

Pneumatic conveying equipment

DEDUSTING

Based on preset standard data, the size of the system is calculated, and a suitable system is selected. Depending on location we recommend central installations or single filtration units, and detailed disposal methods up to the recycling of material into the production process.

YOUR ADVANTAGES

- Solid design suitable for industrial applications
- Constructive explosion protection according to VDI 3673/2263
- Fire protection with spark detection and extinguishing device according to VDS directive 2106
- Complies with the Accident Prevention Regulation
- Filter systems with H2 and H3 test levels for 50 % or 100 % air return
- Optimal conveyor capability
- Simple, effective engineering for safe and economical separation
- Continuously cleaned filters with high separation efficiency and continuous operating processes
- Optimal efficiency achieved through an energy analysis of the system and low compressed air consumption
- Environmentally-friendly and economic disposal of filter elements and separated dusts
- Complete range of services

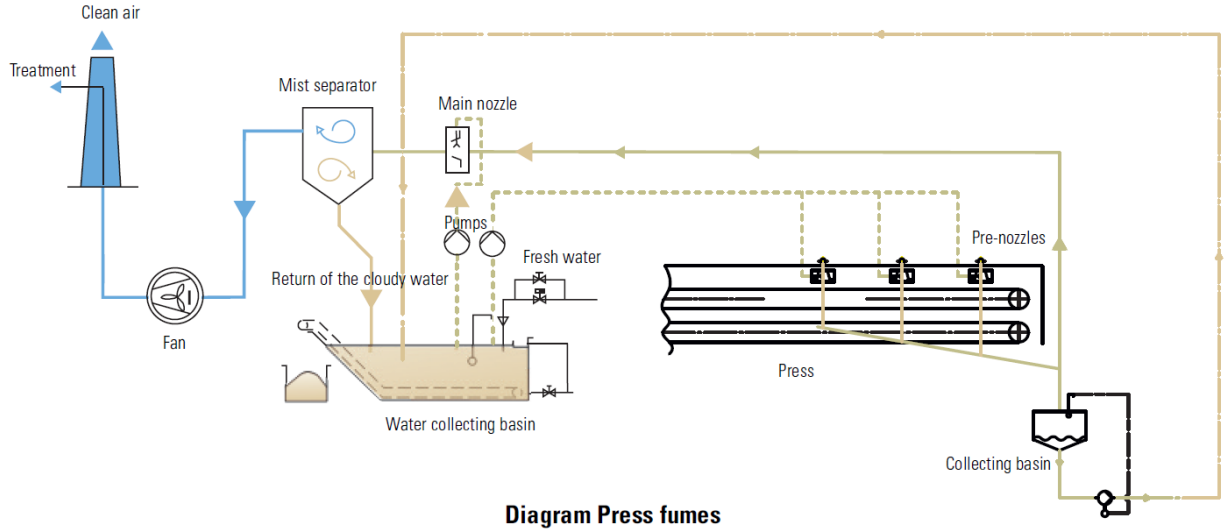

Diagram Press fumes

PRESS FUME TREATMENT BY MEANS OF A STAGING SYSTEM

First stage: Collection and pre-spraying

All emissions are gathered effectively in the collection points located at the press inlet and drain, the cooling tunnel, and possibly the blade cover. Immediately after collection, (the covers can be adjusted suitably by the press manufacturer or specially designed by Keller) - water is sprayed into the ductwork through pre-nozzles. The water is pumped from the water collecting basin and into the nozzles, i.e., re-circulated. Emissions are thereby partially washed by means of intensive spraying. Gaseous pollutants are cooled below dew point and condensed.

Pre-spraying has two additional functions: the pipes are washed with water continuously, effectively preventing sedimentation and the risk of fire in the pipework. The extracted air is conveyed to the main cleaning location via two collecting pipes, installed alongside the press.

Pre-spraying process

Second stage: Separation
The air volume is cleaned once more intensively by a second cleaning stage consisting of a Venturi nozzle and a downstream drop separator. The remaining pollutants are sprayed with circulating water and separated from the air flow inside the mist separator. The separated process water drains into a container directly beneath the droplet separator. It is possible to direct the air volume through the fan that is attached to the clean air side, and into an existing treatment stage (dryer de-dusting, combustion) or, depending on the degree of cleanliness, directly into the air.

Third stage: Process water cleaning
Discharge water is collected in a basin installed below ground and leads to a central water collecting basin by means of a pump. At that point the process water is cleared of solid particles. Lighter particles such as sparks and wood fibers rise to the surface and are discharged mechanically from the basin through a strainer. Sediment can be cleared from the basin with an integrated clearing chain. Depending on the application, either particleboard, MDF or OSB, additional sieving devices are used to ensure trouble-free discharge and pump function. Furthermore, acidity is created in the collecting basin by the separated emissions and particulate. It is possible to neutralize the Ph value of the water with additives such as sodium hydroxide. In addition, we recommend that any components which could come in contact with process water be manufactured in stainless steel.

Fourth Stage: Post-treatment
Caking and sedimentation from condensation can occur inside the fan and in the pipeline. As a result, the fan impeller is flushed at intervals with fresh water from the water collection basin. Impeller and fan housings are stainless steel, as well.

If necessary, the sprayed water can also be separated by an additional axial drop separator and returned to the water collection basin.


Separator


Process water cleaning

SUMMARY
Fumes created during the pressing process at continuous presses are directly collected and extracted at the source. Immediately following collection, the dirty air is cooled and cleaned. Additional cleaning is accomplished by a Venturi wet scrubber. This process which is patent protected ensures optimal fire protection and guarantees maintenance and trouble-free operation.

PNEUMATIC CONVEYING SYSTEMS

Our pneumatic conveying systems are designed for large volumes of shavings and fibers. By using rotary lobe blowers, efficiencies of up to 100 t/h across distances of several hundred meters can be achieved.

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