Veneer Drying Systems

The control and management of the heated airflow define the quality and consistency of dried veneer and cost effectiveness of the drying process.

Overview

There are two primary goals for a veneer drying system. First, to consistently produce high quality veneer that has a uniform dry moisture content, an aesthetic appearance, and is supple enough to minimize damage during the stacking process. Second, dry the veneer in the most cost effective and environmentally friendly manner. This implies using the least amount of thermal energy and producing a minimum of volume dryer exhaust.

Dryer Sections and Jet Tubes

The basic subsystem of the veneer dryer is the dryer section. Typically six feet long, it has its own fan for moving the heated air throughout the module. The critical component within each section for controlling the heated airflow is the nozzle or jet tube. It is a long, tapered metal tube with 303 precisely aligned jet orifices which evenly diffuse the thermal energy across and along the veneer sheets being transported through the dryer.

A unique “dimple-out” design provides optimum nozzle efficiency and maximum dryer productivity. The airflow out of the orifices at any point along the length of this tube is uniform in speed and volume. The veneer is impinged with jets of hot air on its top and bottom surfaces as it is conveyed throughout the length of the dryer.

The heat, speed and even distribution of the impinging air flow define the efficiency of the drying process and the quality of the veneer that is produced. Our current jet tube design is the result of over 20,000 laboratory hours of research and development. Customers have reported 5-8% improvements in production of dry veneer by replacing older jet tubes with this new technology.

Dryer Zones

Each dryer zone is made up of 4-8 sections. It has its own bank of heat exchangers and heat control system. The dryer zone’s interior walls and baffling are designed such that a particular temperature can be maintained in that zone.

The first zone has the highest temperature and each succeeding zone has an incrementally lower temperature. In this way the maximum amount of thermal energy is applied where the veneer has the most moisture. As the veneer moves further downstream in the dryer, a more subtle application of heat is applied to assure a uniform moisture content, while at the same time minimizing cracks, splits and discoloration of the veneer.
Veneer Drying Systems

**Automatic Dryer Efficiency Control (ADEC) System**
The ADEC System automatically controls the total volume of dryer exhaust under all operating conditions. It ensures effective control of moisture venting and the virtual elimination of tramp, unheated air from entering the hot sections of the dryer.

**Automatic Cooler Pressure Balance System**
The Automatic Cooler Pressure Balance System automatically controls the cooler exhaust volume under all operating conditions to minimize the flow of heated process air from the dryer into the cooler or cooler air into the hot dryer. The result is to minimize pitch buildup.

The benefits are a more uniform application of the thermal mass, a lower thermal energy requirement, and reduced volume dryer exhaust.

**PLC Dryer Controls**
The integrated PLC dryer control system provides for total machine control with easy customization for specific customer needs.

The touch-screen master console with an easy-to-understand graphical operator interface provides control for fans, dryer drive, dryer exhaust, zone temperatures and sequencing of dryer feeding and unloading equipment.

**Fans**
USNR Veneer Dryers use offset-design, plug-type airfoil centrifugal main dryer fans for the most uniform velocity pressure and lowest possible horsepower requirement.

**Construction**
Veneer Dryer plenums are designed for maximum airflow, strength, and safe access to jet tubes for cleanout and ease of handling. All stainless steel panel construction ensures durability. Maximum thermal efficiency achieved through 3”, 4”, and 5” dryer insulation systems with 8 pound Rock Wool insulation.

**Complete Dryer Systems**
- Four or six deck jet and longitudinal dryers
- Steam, natural gas, hot oil and direct fired wood waste heat systems
- Automatic feeders with accumulating and overlap mechanisms
- Sequential unloaders, aprons and cross transfers
- Dry veneer grading systems
- Multibin dry veneer stackers

**Experience**
- Over 300 steam heated veneer jet dryers
- Over 200 natural gas dryers
- Over 50 direct-fired wood waste dryers
- Over 400 longitudinal dryers