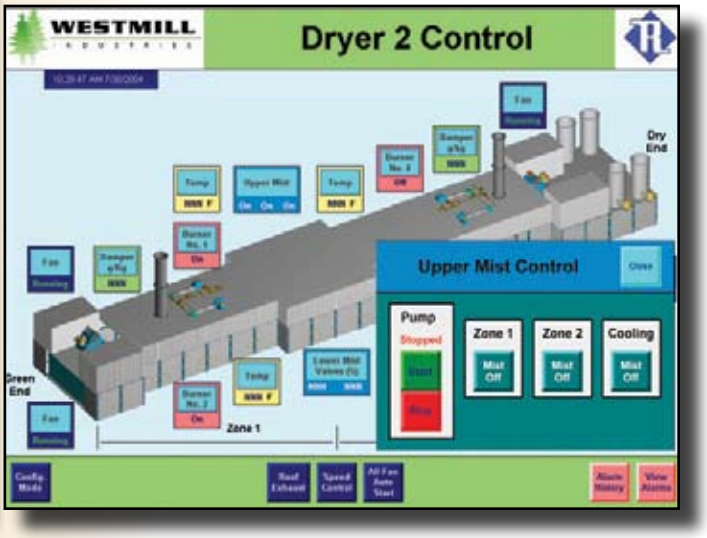
DRYER HUMIDITY CONTROL & FIRE PREVENTION

Westmill's Electro-Pneumatic Exhaust Stack Damper.

Above, Upper Duct Misting System tank and valves. Right, the Vaisala dewpoint transmitter. Below, the Dryer touch-screen image.



The Humidity Monitoring and Spray Control System monitors the humidity inside the veneer drying chamber and can be operated as a stand-alone system.

The basic philosophy behind increasing the humidity level inside a Dryer is that more BTUs of Heat energy are available in humid, moisture-laden air than in hot, dry air. Increasing and controlling the humidity level yields a more productive Dryer, while simultaneously providing better veneer quality.

System Components

The complete Dryer Humidity Control System consists of all, or parts of, the following in each heated zone of your Dryer:

- One "Vaisala" dewpoint transmitter for humidity measurement
- One Electro-Pneumatic Exhaust Stack Damper Assembly to control zone venting
- One perimeter Water Spray system for humidity regulation and fire suppression

Also available is Westmill's Upper Duct Fogging System, useful for humidity regulation and fire suppression.

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Humidity Measurement

The Vaisala dewpoint transmitter measures the amount of water vapor (humidity) in the Dryer's air and sends a signal to the PLC.

The PLC is then able to modulate the stack damper, in an attempt to reach the desired humidity "set point", which is programmed by the Dryer Supervisor. If the moisture level in the air is lower than desired, the stack damper will shut gradually until the set point is reached. Conversely, if the moisture level in the air is higher than desired, the stack damper will open gradually until the set point is reached.

Exhaust Stack Damper Control

The Stack Damper regulates the amount of Dryer exhaust to atmosphere and controls the emissions from the Dryer's end walls. It's available as a retrofit module to your existing hot stack, or simply keep your existing damper and install the special Electro-Pneumatic air cylinder.

Westmill™ uses an Electro-Pneumatic cylinder to modulate the damper blade inside the stack. An "Instrument-to-Pressure, I/P" converter is used to modulate air delivery to the cylinder. The cylinder ports come equipped with pilot-operated check valves, to maintain the position of the cylinder rod, as back pressure from the air vented in the stack can try to force the damper blade open.

Perimeter Water Spray System

Using a controlled water spray line within the Dryer increases the humidity level, which raises the 'flash point' significantly. This results in a drastic reduction of Dryer fires normally found in a hot, 'tinder-dry' Veneer Dryer.

Westmill Industries supplies a fire suppression spray system along the perimeter of the Dryer's lower section. Supplied is a steel piping system with brass spray heads. The spray heads spray along the Dryer doors, and against the infeed and outfeed end walls of the hot section, to assist in preventing nuisance fires arising from accumulated wood fines and chips that collect in these problem areas. Westmill™ also supplies automated valves and one Y-strainer per zone.

Perimeter water pipe and spray nozzle

Upper Duct and Cooler Misting System

The upper duct misting system is intended to produce a fogging effect, which has three main purposes:

- Add humidity to the Veneer Dryer (to be able to dry in a more humid environment, to improve veneer quality and flatness)
- Rapidly increase the amount of water vapor (with respect to oxygen content) in the Dryer's air, to assist in preventing fires from starting or spreading.
- When installed in the Cooler section, the incoming air temperature is lowered to improve veneer cooling

On steam-heated Dryers, low-pressure flash steam can be used to achieve the fogging effect. Westmill™ supplies header pipes, steam valves, other hardware and control (including touch screen interface).

On Dryers other than steam heated, Westmill™ provides a high-pressure water atomizing system to achieve the fogging effect. Included is:

- Pump unit with tank, filters and valves
- Spray lines, nozzles, solenoid valves, and pipe entries to Dryer

Controls and Integration

Westmill™ provides complete automation solutions for the above products. Whether your Dryer is PLC-controlled or not, Westmill™ can modernize your Dryer and humidity control system, or work with the components that you already have.

With humidity control systems in new and rebuilt Westmill™ Dryers, this proven technology works to increase production, reduce the incidence of fires and improve the overall quality of the veneer.

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