MAXIMIZING THE LIFETIME VALUE OF YOUR VENEER DRYING SOLUTION

If achieving consistent veneer sheet quality is essential to the success of your plywood or LVL manufacturing operation, then the veneer drying process is critical to those quality assurance efforts.

Overdrying veneer results in defects (such as cracking, splits, and waviness) that can compromise the wood's ability to hold glue. Underdrying veneer requires redrying or standing off the dried sheets to allow the moisture to equalize within each load. By contrast, optimally dried veneer is more easily manipulable and useful across a wide range of decorative and industrial applications.

Experienced producers know there is no such thing as a "one size fits all" veneer dryer. However, they also appreciate that sourcing a custom solution can be extremely time-consuming. But the process can be fast-tracked provided you know the right questions to ask and which veneer dryer features to evaluate most closely.

Chief among these features is longevity, as recent advancements in veneer drying technology have rendered many legacy veneer drying lines obsolete. In this article, we will examine four key considerations mill operators should keep in mind as they seek to identify the veneer drying solution that makes the most sense for their business.

1) Set your standards for robustness.

What does "heavy-duty" mean in the context of your mill? More importantly, what does it mean in the context of modern veneer drying best practices?

The most reliable and efficient veneer dryers on the market take full advantage of humid air's unique thermal properties. They are consequently more capable of consistently — and thoroughly — drying veneer sheets of higher quality.

Therefore, the dryer you select must stand up to

the high temperatures, high pressure, and high humidity needed to boost yield and produce high-quality veneer at volume. As such, the proper vetting of high-moisture drying equipment requires an understanding of the following factors.

Robustness is more than a question of capacity. It's a matter of longevity.

The specific materials used in dryer construction. Leading manufacturers prefer stainless steel, both for its durability and rust resistance. Pay special attention to steel grade and thickness when assessing inner sheeting material and conveyor frames. These materials should demonstrate superior heat expansion and corrosion resistance properties.

How the dryer is built. Reducing the number of welds required for assembly can accelerate the installation process. Doing so also minimizes the risk of cracks and weak joints. Any leaks will impair the dryer's performance.

The quantity and types of components employed. Every moving part in your drying line is subject to wear and tear. The dryer conveyance system, including the rollers, can be especially susceptible in this regard. Meanwhile, pre-heating components, sealant cells, make-up air valves, and misting systems are especially critical to ensuring the stable temperature, pressure, and humidity levels that affect the drying process.

In short, the ideal dryer should provide sophisticated functionality but not at the expense of straightforward, rugged design.

2) Strike the right balance between capacity and efficiency.

When it comes to gauging actual output, drying times and sheets per minute are valuable metrics. But they only tell part of the story. Guaranteeing successful veneer drying outcomes also depends upon balancing the continuous flow of veneer from the lathe with the appropriate level of veneer drying capacity, the most suitable heating requirements, and strategic automation.

Six-deck, four-load-wide dryers are not yet common in North American mills, but they have become the high-capacity standard in other parts of the world. By utilizing best-in-class jet-box technology, these large industrial dryers offer

increased capacity without sacrificing efficiency. In contrast, conventional longitudinal drying technology handles airflow differently, making it more difficult to achieve a uniform application of the thermal mass, lower energy consumption, and reductions in the overall volume of dryer exhaust.

Extended lifecycle veneer dryers are also compatible with a variety of heating options. The most robust of modern dryers achieve additional efficiency via a hybrid approach to heat management. For example, one dryer zone may be powered by gas, while the remainder might rely on steam.

From sheet feeding to grading, sorting, and stacking, the most advanced drying processes employ machine vision to deliver optimal results. The right mix of analyzers can generate invaluable insights on the quality, strength, and moisture content of your veneer sheets. Real-time data allows for the continuous calibration of dryer parameters crucial to ensuring the consistently high quality of your veneer.

3) Define quality independent of your raw materials.

All wood species — hardwood and softwood — are different. This simple fact can complicate every stage of the veneer manufacturing process. In fact, moisture variation between sapwood and heartwood can vary from 60% - 100% in most broad-leaf trees to 50% - 200% in some conifers.

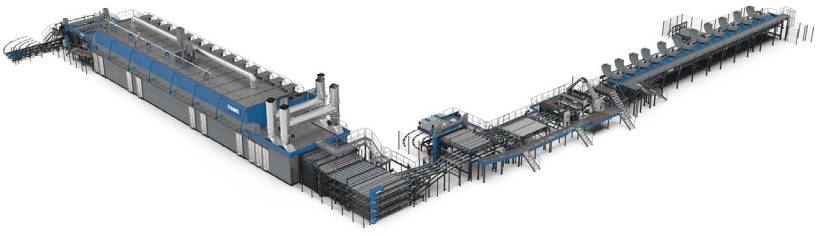
Moreover, species such as aspen and Southern yellow pine (SYP) are particularly prone to moisture spotting and streaking. Processing these woods comes with an elevated risk of over-drying, cracking, shrinkage, and warping. Your drying solution should be able to condition these woods to a level suitable for efficient gluing and pressing.

A robust veneer drying solution is thus one that is species-agnostic, flexible enough to support the production of virtually any end product, and adaptable even under the most changeable and challenging circumstances.

4) Connect the dots between waste, maintenance, and operating costs.

How does your drying line equipment handle the byproducts of the drying process? The answer to this question can have major implications for both the longevity of the equipment itself and the sustainability of your operations.

Overcome the challenges of species-dependent variations in moisture content.



Ensure the safety and sustainability of your operation by eliminating fugitive VOC emissions and minimizing pitch buildup.

Controlling the volatile organic compounds (VOCs) released during the drying process is crucial to meeting modern health and safety standards. Tight construction, sealant cells, and innovative humidity make-up air control systems can help effectively eliminate fugitive VOC emissions.

Pitch buildup is a primary concern for mill operators who specialize in manufacturing veneer from SYP. Like the tannic acidic that can condense in the process of drying oak or beech, pitch is a corrosive substance that degrades drying equipment. It is also highly flammable, necessitating frequent cleaning and line stoppages. Pitch can also cause you to incur additional labor costs, as more operators may be needed to keep your drying line online and driving revenue.

Meet the new Veneer Drying Line R7 from Raute.

With the Veneer Drying Line R7, we've built upon our extensive legacy of veneer production innovation to create the most efficient and robust solution of its kind on the market. For as long as our engineers have been designing drying line equipment, they've adhered to the philosophy that the best way to dry veneer is in a high-moisture environment. Doing so results in a more efficient drying process and significant improvements in veneer quality.

We've collaborated closely with our customers in developing the Veneer Drying Line R7. That feedback has led to significant improvements to essential components such as floors, doors, jet boxes, heating solutions, and sealant cells. We've also increased capacity beyond what standard jet dryers offer and added deeper integration with our MillSIGHTS data collection and management information system.

Operators who choose the Veneer Drying Line R7 can expect a significant return on their long-term investment, including a 10% boost in drying capacity and 15% in energy savings per m3 of produced veneer. The Veneer Drying Line R7 achieves this by directing between 25% and 30% more hot air to the surface of each veneer sheet. And, via meticulous rebalancing of air pressure within the dryer, we've also significantly reduced the amount of air exchange contributing to pitch buildup.

Boost capacity and efficiency while achieving consistently exceptional dry veneer sheet quality.

Speak to one of our experts today to learn how Raute's robust drying solutions can help you maximize the lifetime value of your entire veneer manufacturing line.

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Making wood matter