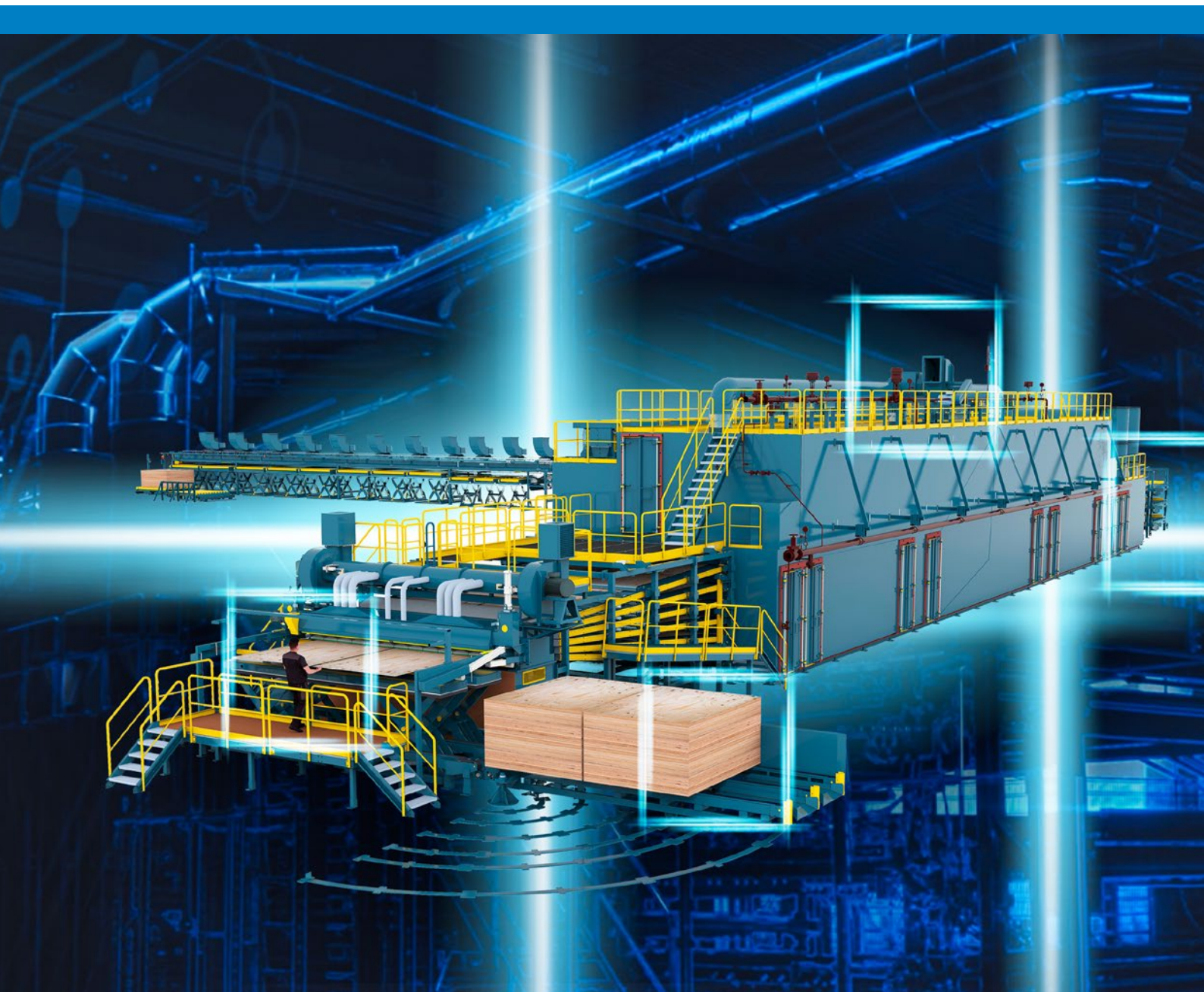


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VENEER DRYING – WHY TO DO IT AND HOW TO DO IT?



In this Raute Educational general article on veneer drying, we will go through the basics of the veneer drying process. We will look over the drying process and the fundamentals of why you should dry the veneer. After reading this short article, you know what industrial veneer drying is, how it is done, and what benefits it gives to you and your production in terms of efficiency, savings, and quality.

THE BASICS OF THE INDUSTRIAL VENEER DRYING

To many veneer producers, the whole drying phase is a bit unclear as it is comprehensive. Drying is one of the key elements in veneer production and mastering it takes your whole production to the next modern and high-quality level.

The two most important take-aways of this article are the outcomes of successful veneer drying: savings in production costs and the meaning of drying.

The basics

Veneer drying means, in general, to dissipate water out from green veneer sheets using hot and humid air inside a dryer. In other words: Removing water from veneer and decreasing its moisture content to a suitable level for efficient gluing and pressing process. Veneer drying is part of a complete plywood and LVL production process.

One main finding to veneer drying is that the veneer sheet should be left as damp as possible but still dry enough for gluing. The optimal, targeted end moisture content varies depending on the wood material and end product, so this should be considered in every situation. To get the best drying results, the process measurement, optimized process control and conditions guarantee the perfect moisture content per sheet.

When the drying process is at the optimal level, you see the results immediately. Keeping the dryer at an optimal level, you produce a minimum amount of waste (as in raw material or wasted energy) when the dryer operates continually without stoppages.



THE OUTCOME OF A SUCCESSFUL VENEER DRYING

The successful veneer drying has many positive impacts on your production and veneer quality. With optimized veneer drying conditions, equipment, and process, you produce more high-quality veneer with less energy consumption and raw material usage and waste.

1. Higher humidity inside the dryer and sheet's end moisture decrease energy consumption because no extra energy is used in replacement air heating or removing water from the sheet
2. The drying becomes more efficient with up to +5% more operating hours available
3. Up to +10% more high-quality veneer in general per stack
4. Up to +3 % more valuable face veneer that increases the sheet's value and your profits
5. With even veneer moisture content you reduce glue usage up to 20% in the later stage of the production process
6. Less over-drying of veneer sheets

PRE-SORTING AND STACKING BY MOISTURE

Before drying veneer sheets, they need to be sorted and stacked by their natural moisture content. Usually, the initial moisture content of veneers varies considerably. That is why before drying the veneer sheets, they need to be sorted and stacked in the peeling line by their natural, initial moisture content. So to optimize the drying result, by sorting and stacking the sheets by moisture content you get smaller deviation and thereby a better outcome.

By only stacking the sheets into two different moisture groups you get significant savings and more optimized drying result compared to not dividing the sheets. The savings come from energy consumption in heating and operating the dryer. Increasing the number of the moisture groups, you concurrently increase savings, drying capacity, and the veneer quality.

If the sheets are divided into three or more moisture classes, you inevitably increase your savings, drying capacity, and what's more, the veneer quality.

What if I don't do the sorting?

The short answer is that you are still capable to do the drying, but the production efficiency and the veneer quality decrease. The only way to minimize the deviation of the end-moisture content, in general, is to lower the veneer sheet's end-moisture content. This leads to over-drying some sheets.

Respectively, if the sheets are sorted, the average moisture content can be increased without having to increase the number of wet sheets. This sorting results in increased veneer sheet quality. With this action, the increased quality is reflected, and the savings and complete quality improvements recur.

How to do the sorting?

The sorting needs to be done with analyzers. This is the only way the sorting is accurate. Pressing the sheets can be done for high moisture veneer stacks after the moisture sorting and before drying.

Reduce drying time and cost with wet veneer pressing. Using this technique before the dryer, the veneer sheet's starting moisture content decreases which means that there is less water inside the sheet that needs to be evaporated. Naturally, this means lower energy consumption. This also levels the moisture content between the sheets which results in a better drying outcome.

With analyzers. The moisture content is measured with a specified moisture analyzer, and the sheet's visual quality is measured with a visual analyzer. With this information, the sheets are sorted into the correct categories before drying. In this stage, poor quality sheets can be separated into different stacks to avoid messing up the drying of the good quality sheets.



VENEER SHEET DRYING

To dry the sheet optimally, you should use an automated veneer sheet dryer. The automated drying process aims to dry the green veneers to a moisture content suitable for gluing. Too high veneer moisture hampers gluing and generates steam during hot pressing. Automatic process control maintains the speed, temperature, and humidity inside the dryer at an optimal level.

Drying is simple and easy when the sheets have been correctly pre-sorted by initial moisture content. The foundation for successful veneer drying is proper pre-sorting of the sheets. This is the step where major savings and improvements can be done. Drying should aim at correct end-moisture content depending on the product and raw material, as discussed before but not too dry (over-drying) as this makes the veneer fragile, wavy and increases glue consumption when making panels.

One also notable thing to look for, is rotten parts in a sheet, as we mentioned before. The rot is seemingly difficult and consuming to dry, so these sheets with rot should be stacked separately from good-quality sheets.

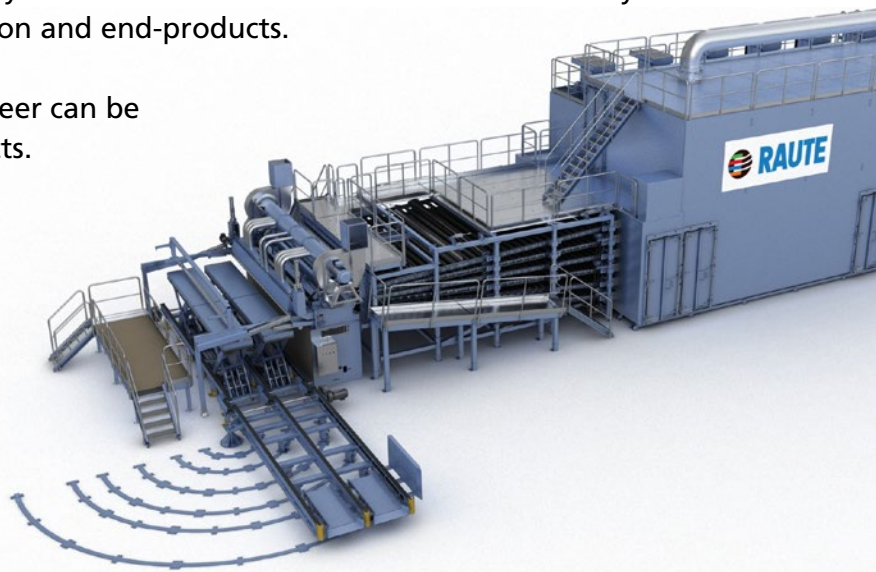
Continuous feeding flow and consistent conditions are the way to success

The sheet feeding to the dryer needs to be continuous and therefore you should pay close attention to the stacks that come from the lathe. Also, the operators' fast reactions when removing possible trash or unwanted particles are crucial at this point to enable the high-quality, continuous process. Overlapping the veneers has been proved to increase the drying capacity to maximize the production.

Successful drying outcome is ensured with consistent drying conditions and high humidity inside the dryer. In the long run, you need to be sure that the veneer drying line is maintained correctly and continually, so the conditions stay the same despite other factors. One good way to ensure this is to modernize old machinery to guarantee high-quality production and end-products.

The energy required to dry the veneer can be produced from the mill's by-products.

As a result, you get high-quality, even humidity content veneer sheets that are ready to be glued and processed further as LVL beams and panels, or other end-use products.



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