

AUTOMATIC STAIR COATING SYSTEM

The new automatic coating system for a medium-sized carpenter's workshop coats workpieces with water-based UV coating materials and water-based stain in an environment-friendly manner and offers quick drying times as well as high surface quality.

CUSTOMER PROFILE



Gesamtansicht der Anlage

ETS Treppenbau und Schreinerei GmbH is a family-owned company with a more than 100-year-old tradition of craftsmanship. At its location in Dingdorf in the German state of Rhineland-Palatinate, 26 employees manufacture approx. 600 wooden stairs per year. These stairs are made to measure and customized, primarily for private customers, prefabricated house builders and other carpenter's workshops. „Stairs that inspire“ is the traditional company's motto. The family-owned company is well-known and highly recommended across the region. But they, too, have been hit by the skills shortage and therefore began considering how to automate the surface finishing process for the stair components.

THE REQUIREMENTS

Increased quality and saved time

The roller coating system available at the workshop could only be used to apply clear coat. Even so, the edges had to be coated by hand. The company's decision was guided largely by the aim of increasing quality and saving time, as the end customers' demands for the colors of stairs and furniture components are becoming ever more diverse. The company wanted the new system to be able to produce all required clear and colored surface coats and color designs for stained surfaces efficiently and in an environment-friendly manner in accordance with the most recent directives.

THE IMPLEMENTATION

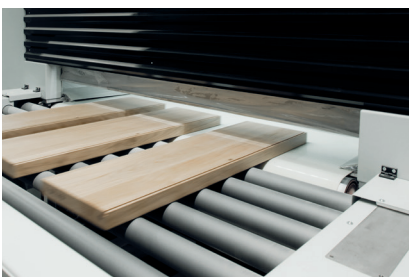


Feeding

System complies fully with EU environmental directives

The new coating line - including the conveyor system - was designed and implemented according to the customer's requests. The line transports workpieces in a U shape with a grid cross transfer, a design that is highly suitable for the low ceiling. The conveyor belt in use, designed as a batch loading belt, has length markings to simplify workpiece positioning.

The entire coating system – from the spraying machine with three coating supply lines to the UV drying channel – is designed to use the desired water-based UV coatings and water-based stain, while complying fully with EU environmental directives. The material recovery system returns uncontaminated overspray to a collection container.



Infeed

The spray booth has doors equipped with large inspection windows on the operating side, making it possible to monitor the coating process. The central control unit, which is used to access previously stored coating recipes, is installed above the doors. All important parameters, e.g. drying times, were carefully coordinated with the customer and the coating material manufacturer and stored in the recipe management.

ETS TREPPENBAU UND SCHREINEREI GMBH | SUCCESS STORY

THE PROCESS



Coating



Supply System

Workpieces ready to be stacked when leaving the system

The workpieces are placed manually on the belt conveyor. First, any dust is removed automatically and the workpieces are pre-heated by an IR preheating module. They are then transported into the Ven Spray Smart spraying machine by the conveyor belt. This machine is equipped with one coating supply line each for UV clear coatings, UV color coatings, and for stains. Coating is performed by four spray guns, which coat both the surfaces and edges.

After coating, the workpieces are transported by a temperature-resistant belt conveyor through a covered evaporation zone into the drying channel heated with water. The channel consists of two jet drying channels built on a cross transfer for transferring the batches. The next step features a UV drying channel where the workpieces coated with clear or colored coating materials are cured. The goal was for the workpieces to come out of the system dry after being primed with paint or clear coats, so that the intermediate sanding of the coat and application of the top coat can immediately take place. The time for a coating run from the placement of the workpieces to acceptance is around fifteen minutes.

FACTS AND FIGURES

Operating width:

1,300 mm

Workpiece dimensions (L x W x H):

min. 300 x 100 x 10 mm, max. 5300 x 1300 x 100 mm

Spray medium types:

UV water-based coats, water-based stain

Complete throughput time (from placing till removing):

approx. 15 minutes

SPECIAL FEATURES AT A GLANCE

- Turnkey system, planned completely together with the customer
- Simple operation of the system with recipe management
- Space-saving system design
- Coating complies fully with EU environmental directives
- Short drying times and high surface quality
- Even coating of faces and edges
- Reduction in coating material consumption thanks to material recovery system
- Remote maintenance modem permits quick support in the event of a system malfunction