RWD SCHLATTER AG | SUCCESS STORY



FLEXIBLE SURFACE COATING IN BATCH OPERATION

Cost awareness, quality aspects and greater flexibility in the production process were important reasons for the Swiss company RWD Schlatter to perform surface processing in-house. The requirement was a highly dynamic and flexible surface processing center with a significant degree of automation.



CUSTOMER PROFILE

RWD Schlatter develops and produces door blanks for fire, smoke, and sound protection. The diversity of buildings, which is typical for Switzerland, results in a high demand for a wide range of functional doors. Standard doors tend to play a minor role. RWD Schlatter produces about 80,000 door blanks per year.

With in-house product development and its own testing laboratories accredited to European standards, as well as a high degree of automation in the production process, RWD Schlatter serves its customers individually and efficiently from batch sizes of one door blank. The company has a total of 180 employees at three locations in Switzerland.

THE REQUIREMENT

Economical overall concept with interface integration

Before deciding to coat the doors in-house, the door manufacturer resorted to external partners. "Too cost-intensive," found Anton Zöchbauer, head of process technology at RWD Schlatter. In addition, they were also not satisfied with the quality. The coated door leaves became more often damaged during transportation. The manual spray coating did not meet the standards required by the market for a repeatable surface quality.

A company-owned door coating line was intended to remedy this situation and to provide the flexibility required for custom production. Depending on the order, the stacks of door blanks to be processed are often completely different in terms of length, width, thickness, material, and in their requirements for coating and further assembly.

Requested was a highly dynamic, flexible surface processing center with a high significant degree of automation and the possibility of integrating the sanding machine of a third-party manufacturer via an interface. The door coating line also had to be installed and started up during ongoing production.

THE IMPLEMENTATION



Automatic door coating system VEN SPRAY *PERFECT* with quick color change management system



View inside the spray booth with paint recovery device



Trockenkanal VEN DRY OIR - drying oven for particularly gentle drying

Everything designed for speed and flexibility.

Venjakob served as general contractor and developed an economical and cost-effective overall concept. From the conveyor technology via the control system to the heart of the installation, the fully automatic spray coating machine VEN SPRAY *PERFECT* and subsequent drying systems.

Venjakob

For RWD Schlatter, it was the first time they worked with Venjakob. Good references in the door and furniture industry, as well as preliminary tests in the Venjakob technical laboratory contributed positively to the decision-making process.

For the door manufacturer, to react flexible to the design requirements of its customers, the spraying machine was designed for all colors. The reinforced high-performance linear drive can be operated with up to 12 spray guns. All spray guns are connected to a circular rinsing system for fast spray material changes. In addition, a special color change management system for 2K and 3K coatings has been installed. This enables fully automatic color changes in a short time. A paint recovery system also reduces coating consumption.

The system partly runs in 3-shift operation, and coats approx. 95 percent of doors and 5 percent of door panels, lining strips and door bolts. On customer request, a stand-alone wide belt sander from a third-party manufacturer was fully integrated into the line via interfaces. A Venjakob door edge sanding machine, which sands both the longitudinal and the top edge in continuous operation, rounds off the sanding process.

The drying system of the coating line with four different drying units is also designed for flexibility. It allows to use different types of coatings with different requirements regarding to drying time and method.

Via a remote maintenance system, possible system malfunctions can be quickly diagnosed. This enables rapid assistance and ensures a high machine availability. Several digital cameras monitor the entire machine line. All components required for maintenance are easily accessible or easy to remove.

THE PROCESS



Compiling the batches before the coating process

Doors and door elements are sanded, coated and evenly dried

The workpieces are barcoded so that the programs can be called up automatically via the machine line control. The batches are compiled manually before the process flow.

Batches include any number of parts of different lengths, provided they meet the specified conditions (thickness and maximum weight).

In most cases, two doors with a maximum door length of 2,600 mm are run one behind the other in one batch. Longer doors are run individually per batch. In the case of door batches which vary greatly in their sequence, it is also possible to operate one door batch sizes.

The batch loading conveyor with longitudinal and transverse markings is fed with the aid of a manual lifting device. A stop ensures the correct alignment of the door. The workpieces pass through the 180° rake angle transfer and the drum turning device, which are still inoperative during the first pass through of the complete machining process. The workpieces are only returned to the infeed via the angular transfer before

RWD SCHLATTER AG | SUCCESS STORY



Angular transfer



VEN DRY UV: used for curing the UV coatings

the second sanding, coating, and drying pass. The drum turning device rotates the batch by 360° to coat it from the other side.

The processing procedure begins - depending on the batch - with sanding. After sanding, the workpieces are transported via an intermediate conveyor belt to the completely enclosed compressed air de-dusting system with five individual rotating blast bars. An ionizing device eliminates static charges on the workpiece surfaces. The integrated roller conveyor transports the workpieces through the cleaning process. The cleaned doors or door elements are conveyed to the VEN SPRAY PEREFCT spray booth via the batch loading conveyor. Workpiece shape and position are determined by means of a photocell bridge and the data is provided for the subsequent processes by a part tracking system. Consequently, the spray guns are switched on and off precisely above the workpiece. After the coating process, the workpieces enter the drying system, which consists of four different drying units for different types of coating material. Beside infrared, UV and air-jet drying channels, a 10-level dryer is available for workpieces with special coating types or special colors, that require long drying times. After drying, the batch is transported via a belt conveyor to the unload area. There, the workpieces are removed manually or turned by the drum turner about 180° and fed into another pass.

FACTS AND FIGURES

Specifications for batch operation:

Different numbers of workpieces can be prepared for one batch. The overall **dimension of 5,500 mm x 1,600 mm** must be adhered to. **The weight of the entire batch may not exceed 300 kg**; the thickness of workpieces must be the same.

| Line parameters: | |
|--|----------|
| Working width: | 1,600 mm |
| Production speed: | 5 m/min |
| Workpieces to be coated: | |
| Wooden doors, door panels, lining strips, door bolts | |

Spraying media:

solvent-based coatings and 2K water-based UV coatings

Venjakob Maschinenbau GmbH & Co. KG Augsburger Straße 2-6 33378 Rheda-Wiedenbrueck Germany Phone +49 5242 9603-0 Fax +49 5242 9603-40 info@venjakob.de www.venjakob.com

SPECIAL FEATURES OF THE DOOR COATING LINE AT A GLANCE

- Fully automated handling
- Batch operation from one door batch size

Venjakob

- Integration of a stand-alone machine from a third-party manufacturer
- Flexible designed drying system with four different drying technologies: Infrared, UV, Air-jet dryer channels as well as 10-level dryer
- Color management system to achieve fast color changes
- V-belt paint recovery unit
- Conveyor technology, completely designed matching the process
- Coating supply with individual designed equipment
- Camera monitoring to support quality control