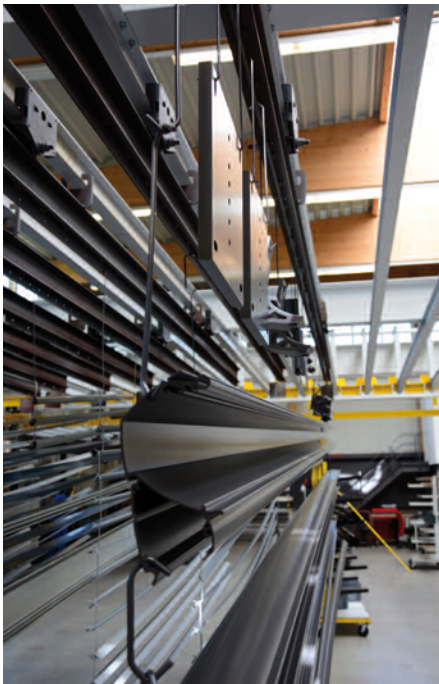


Applying up to 35 different colours per day

Sun protection manufacturer Reflexa commissions powder-coating plant for special colours

In addition to a high surface quality, flexibility and short cycle times were top priority when designing the powder-coating plant for the manufacturer of sun-protection equipment Reflexa. MEEH Jumbo Coat developed a plant with very short cycle times.

We have approximately 140 different colours in stock and we are coating a surface of approximately 100,000 m² each year," reports Manfred Gross, factory manager of the Rettenbach-based site of Reflexa. The company produces a wide range of sun-protection equipment ranging from blinds and folding curtains to shutters and awnings, even including oblique shutters and insect protection. "In the past, we had our profiles, faceplates and fasteners coated externally. In recent years, ar-



Reflexa manufactures sun-protection elements and uses its new plant only for the application of special colours.

chitecture has become more colourful, however, and people want their shadowing devices to have the same colour as their windows or facades." Moreover, customers expect short delivery times. For these reasons, Reflexa decided to invest in a powder-coating plant for the application of special colours. Standard colours will be applied by a coating contractor also in the future. The demands placed on the in-house plant were quite high: fast change of colour, highest achievable flexibility, high surface quality and extremely short cycle times, allowing the subsequent processing of the



An overview of the plant, from the left to the right: pre-treatment, adhesive water dryer, enamelling furnace, powder-coating booth. The intermediate floor accommodates the components of the pre-treatment and exhaust-air systems.

coated components within the shortest delays. After Reflexa had gathered information about the technical options and solutions available in the market and had visited a reference plant of a business partner, the company decided in favour of MEEH Jumbo Coat GmbH. The Winsheim-based company has designed and constructed custom-made powder-coating plants since 1985. Their products are characterized by a well-structured layout, simple and easy manipulation, solid quality and an outstanding flexibility with regard to their use. MEEH focuses on the design and construction of full-scale powder-coating plants for large parts of up to 8,000 kilogrammes in weight. The in-house contract-coating department provides the company with extended knowledge and practical skills in the field of powder coating.

The Reflexa plant, which MEEH built as the general contractor, covers a floor space of ap-



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prox. 650 m² and has a T-shape layout. The area of the vertical T-bar accommodates the loading and unloading section; to the right, the buffer storage lots, needed for special sizes, are located outside of the actual working area. In the lower area of the horizontal T-bar, the design engineer located the traversing gantry with five branch rails. In the upper area of the T-bar, the pre-treatment booth, the adhesive-water dryer, the enamelling furnace and the paint-spray booth are aligned next to each other from the left to the right. Since the workshop has a clear height of approximately ten metres, it made sense to install the technical components for pre-treatment and air extraction at a higher level. This intermediate floor offers sufficient space for the tanks with the pre-treatment agents, the components for wastewater treatment and the ductwork of the air-extraction system. As an additional benefit, this arrangement ensured short utility lines in and out of the booths.



For the handling of profiles, faceplates and fasteners, a variety of product carriers are available, which can be suspended from the lifting beams.

Because of the wide range of different parts, a variety of object carriers is available to Reflexa which can be suspended from the six-meter-long lifting beams as required for the parts to be coated. The central hub of the plant is the traversing gantry which allows the operators to transport the lifting beams with the workpieces to the different process sections. The lifting beams are moved manually to the traversing gantry; the transport on the traversing gantry is handled electrically. "The plant is designed for workpieces with a size of up to six metres in length and 1.50 metres in height," explains Helmuth Schultheiß, sales engineer at MEEH. "Since the plant is very flexible we have already coated parts with a length of

6.50 metres,” adds Manfred Gross. Which material thicknesses are processed? “The majority of the workpieces has a material thickness between three and four millimetres.”

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degreasing, washing 1, washing 2, de-mineralised washing and passivating. Pickling/degreasing is not necessary for steel parts, which are processed infrequently. The pre-treatment process is handled fully automatically and uses a mobile spraying ring and a central lance. “For small parts, we sometimes remove the lance in order to handle three lifting beams at a time instead of two as usual,” explains Manfred Gross. Does this not affect quality? The factory manager shakes his head. “No. On the one hand, we hang the workpiece carriers in a staggered arrangement and, on the other hand, the spraying pressure is high enough to reach all parts reliably.” The waste water is treated in a vacuum evaporator. Therefore, the plant operates without producing any wastewater. The distillate is used for the washing cycles in the pre-treatment section.



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The air flow is guided in a vertical direction, which allows the application of two colours per lifting beam.

For drying, the workpieces are transported to the adhesive water dryer, which is located immediately next to the enamelling furnace not only to optimize process efficiency but also to save energy. “Both furnaces are fitted with their own air-recirculation systems. The air in the enamelling furnace is much hotter than that in the adhesive water dryer. Therefore, we conduct the hot exhaust air of the enamelling furnace into the adhesive water dryer, which considerably reduces gas consumption,” explains Helmut Schultheiß.

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Reflexa handles 30 to 35 changes in colour every day. Therefore, the equipment fitted in the powder-coating booth was optimized for

fast colour changes. A manual application system by GEMA is used, which allows a colour switch in less than a minute. How is the overspray extracted? The air flows in a vertical direction (flow rate of 14,000 m²/h), which allows the application of two different colours when using the long lifting beams. The overspray is extracted through the grating floor to laterally fitted self-cleaning filter units. “Due to the frequent changes in colour we decided not to recycle the powder,” explains Manfred Gross. “Changes of colour in combination with powder recycling take too much time.”

Pre-gelling and final enamelling complete the coating process. The air flow is guided in such a way that a single lifting beam with two colours or several lifting beams with different colours applied to the workpieces can be moved into the furnace simultaneously and the powder can be stoved without any carry-over of colour. After cooling down, the workpieces are immediately unloaded and transported for further processing.

The entire powder-coating cycle in the plant takes three, maximum four hours. Does the plant satisfy your expectations? “The powder-coating plant is the hub of our production,” says Manfred Gross. “The installation of the plant was completed in December 2014 and production started at the beginning of 2015.” – “We are very satisfied because we can react spontaneously to our customer’s demands and use the plant in a very flexible way,” adds the plant operator Karl Hain.



Plant operator Karl Hain: “The plant is easy to operate and can be used flexibly. If the order volume keeps growing we will be able to add a second powder-coating booth.”

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