POWER+FREE CONVEYORS FOR ALL KINDS OF WORKPIECES

Flexibility on a large scale

A metal processing plant has recently installed a new, dual-level Power+Free conveyor system, which allows workpieces of different weights and sizes to be easily conveyed.

Caldan has developed a large Power+Free conveyor system (P+F 400) for the new coating centre at the Swedish company Jitech AB. The project includes the Power+Free conveyor as well as the dual-level steel structure and the complete electronic control unit including a SCADA (Supervisory Control and Data Acquisition) system which collects data, and controls and monitors the system. The Power+Free system comprises a chain length of 1500 m and 120 carrier trains, as well as a steel structure to elevate the transport system. The WLAN integrated control unit, complete with wagon tracing and data monitoring, has also been planned and implemented by Caldan.

Conveying different components

Flexibility was particularly important for Jitech while designing their new system, because the Swedish factory processes very different types of products, from thin sheet metal plates to welded structures. As a service provider to the manufacturing and construction sector, Jitech also offers small-series and mass-produced products to customers worldwide.

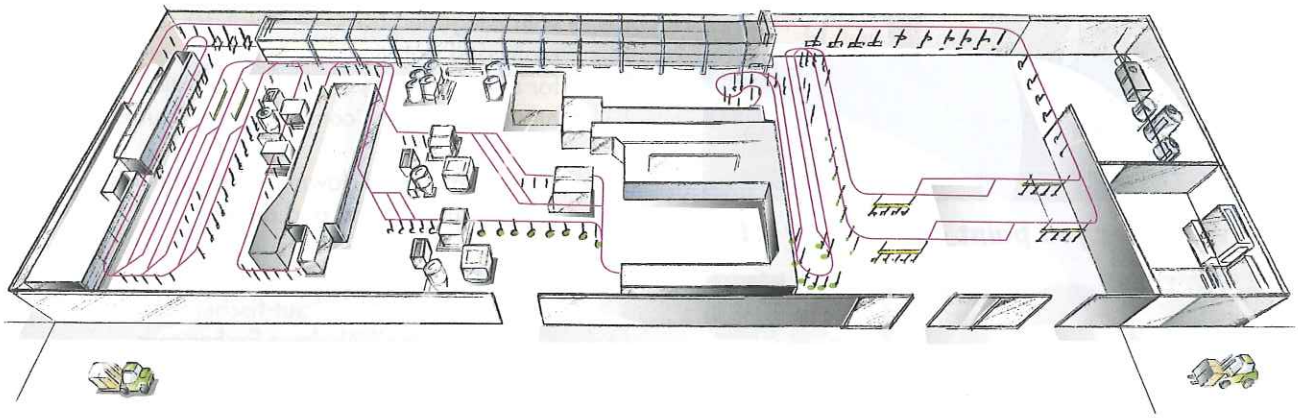
The coating plant equipped with the new Power+Free system is divided into a wet chemical pre-treatment area and a coating area with the following sections:

- Powder coating booth for base coat, with intermediate curing
- Powder coating booth 1
- Powder coating booth 2
- Manual coating booth for special components

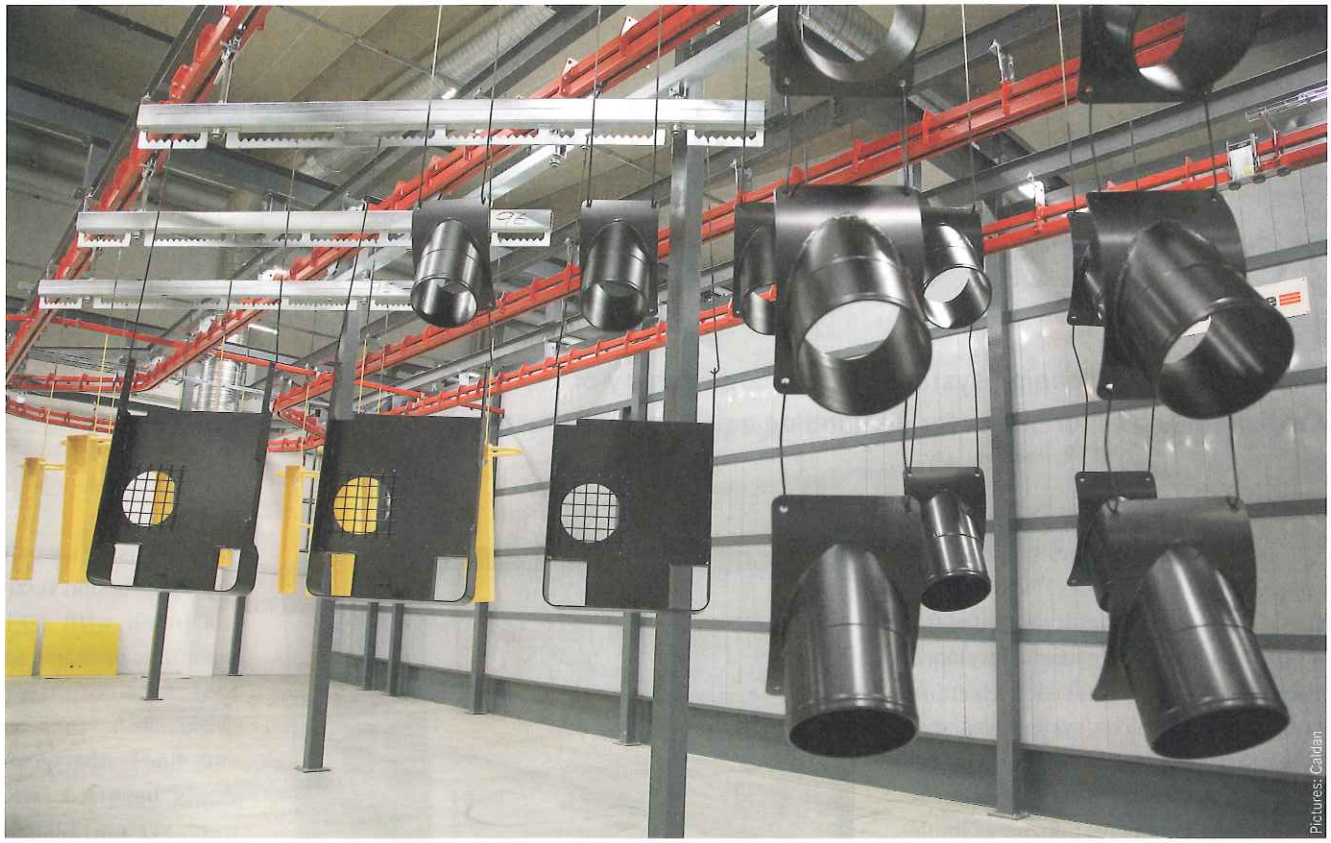
From the raw material supply area, which is separate from the coating area, the components to be coated are hung up in the conveying system using a lifting and lowering station. Each component is assigned a number, under which the entire process is saved. It also includes all system parameters that must be adhered to during the process. In the hours that follow, the progress of the workpiece through the plant can be observed and corrected from the control unit at any time.

After delivery, the workpieces are brought into the pre-treatment area. The workpieces arrive at three sorting buffer zones via a retained water dryer and a cooling zone and can then be sorted according to type. Masking can also be carried out in this area. Lifting and lowering stations are available to assist in the masking of heavy components.

Usually, the components are then brought to the base coating area. Other components are conveyed directly to the finishing area. After the base coat is cured and cooled, most components are



▲ The dual-level Power+Free conveyor system extends over 1500 m from the loading of the components to their unloading. At present, it has 120 carrier trains, but this capacity can be doubled if needed.



Pictures: Caldan

◄ ▲ The new conveyor technology allows workpieces of different shapes and sizes to be conveyed.

finish-coated in an automatic or manual powder booth.

The transfer speed in the automatic booths can be individually adjusted as needed. The curing oven is divided into two zones, for thick and thin walled workpieces respectively. The cooling zone and sorting buffer zone are connected to the curing oven, which means that the components can be sorted according to product or product group and then unloaded. To save space, the wagons in the empty wagon buffer zones, in contrast to when they are loaded, are parked only half a stacking distance apart.

Potential for increased capacity

The system has seven chain circuits and six lifting and lowering stations. The cycle time is 2 minutes; the maximum carrying capacity per carrier train is 500 kg. The system can be used at an ambient temperature of up to 250 °C. It has been operating smoothly at the Swedish company since the summer of 2009. Right from the planning stage, the system has been designed to accommodate a doubling in output capacity to cope with an increase in orders.

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