

Power+Free Floor Conveyor – A Versatile System

Power+Free floor conveyors are solutions that are suitable for a wide range of applications. The various options are demonstrated on the basis of two examples.

It would be hard to imagine applications that differ more, but the coating of add-on parts for the premium Bentley brand and the coating of counterweights for forklift trucks from the company Jungheinrich are carried out using the same transport system – a Power+Free System 100 floor conveyor from Caldan. Whereas the former system makes high demands on the position and rotation of the palettes, the Jungheinrich system has to be able to transport parts weighing up to 2000 kg.

Versatile for Add-On Vehicle Parts

The English company Paintbox coats add-on parts for Bentley cars in high quality. To achieve the standard required, Paintbox invested in a new coating system in the spring of this year. In view of the high demands made on the purity of the parts and the specifications of the process flow, Paintbox and the plant engineers decided on a Power+Free floor conveyor system from Caldan.

System 100 meets the high-precision requirements for robot application, even with large parts. The new coating system coats one set of vehicle parts at a time on a hanger with the dimensions 2000 x 700 x 1500 mm.

The system consists of a primer and a topcoat area, each of which includes a coating booth. In the intermediate drying areas, a crossover allows a second coating run. The necessary process and the part type are assigned to the trolley at the input via coding. Various different processes can be carried out in the



Product carrier with set of vehicle parts in the coating booth. The conveyor allows the exact positioning necessary for robot application, even with large parts.

CONVEYOR TECHNOLOGY USED BY PAINTBOX

Conveyor:	Caldan Power+Free 100
Conveyor length:	165 m
Number of drives:	32
Rotating stations:	8
Conveyor supplier:	Caldan A/S
Plant construction:	Moldow A/S

spray booths. This allowed the following demands of the service provider to be met:

- ◆ Continuous coating at controllable speed
- ◆ Continuous coating at controllable speed with rotation of the product carrier
- ◆ Stop-and-go coating with or without rotation of the product carrier.

In the dryers and in the input and output conveyor lines, the Power+Free

trolleys are controlled via stoppers in order to comply with the necessary process and handling times. The product carriers are rotated by 90° in the dryer for this purpose. This allows a shorter batch length and a significant reduction in the length of the dryer.

The system has been operating under production conditions to the full satisfaction of the customer since April 2003. Caldan was in charge of planning and implementing the conveyor, including the control system. The building site was additionally attended to by the English branch.

Safe Transport of Heavy Weights

A completely different solution was required for the German company Jungheinrich. Jungheinrich, one of the leading manufacturers of fork-lift trucks, has installed a new plant for coating counterweights. The whole plant was planned by the planning department of the company in Moos-

burg. Co-operation with the supplier of the conveyor technology goes back as far as the planning phase. On the basis of the Power+Free System100 floor conveyor, a solution for transporting weights of up to 1800 kg was found.

Here, the Power+Free floor conveyor system virtually functions as a drive unit for a transport trolley. The transport trolley was developed by Jungheinrich and Caldan in close coordination with all participating companies. Later, Jungheinrich tested the conveyor system in a test setup at Caldan in Denmark.

The transport trolley is connected via axles to a double drive. This drive makes it possible to buffer the transport trolleys in the input and output conveyor lines and to position them in the area of the coating booths. The parts are positioned at the input by a crane and the part number is passed on to the drive by means of a parts code.

After passing through a timer-controlled preheating chamber, the parts enter a sanding booth with three workplaces. All places can be cleared independently and individually by the worker. When the basic position in the coating booth is free, the next part enters and is coated automatically by a robot.

In the case of special parts, coating can also be carried out manually. For this purpose, the robot must be locked and the booth cleared. Once the robot has coated a part, the part is cleared to move on to the intermediate dryer and the robot finishes coating another part in the other section of the booth. After coating, the parts move into an oven



Photo: Jungheinrich

At Jungheinrich, the weights of up to 1800 kg move through the plant on transport trolleys. The Power+Free floor conveyor virtually acts as a drive unit for the transport trolleys.

CONVEYOR TECHNOLOGY USED BY JUNGHEINRICH

Planning:	Jungheinrich, Moosburg (Germany)
Conveyor:	Caldan A/S, Bad Hersfeld (Germany)
Plant:	Wolf, Geisenfeld (Germany)
Robots:	B+M, Eiterfeld (Germany)
Conveyor:	P+F 100 special type
Chain length:	Approx. 100 m
Trolleys:	20
Load:	A maximum of 1800 kg per counterweight
Cycle time:	15 min

and are dried for a controlled time via a stopper and a batch line. Due to the large dimensions of the booth, one booth and one robot are quite sufficient for Moosburg.

The conveying system including the control was implemented by Caldan. The good coordination of all partners had a considerable effect on the success of the project. ■

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