

Conveying class

Caldan has introduced new floor conveyor technology in an automated paint facility

Robots paint large, heavy plastic components for the automotive industry in the new paint line belonging to British supplier Mitras. A new power & free floor conveyor with a low investment cost provides high levels of automation and precision in the painting process.

Mitras Automotive, is the largest British supplier of moulded components and assemblies to the European automotive industry. At its site in Winsford, it has gained extensive experience of painting plastic parts for the automotive industry over a number of years. Until recently, a Caldan HD100 floor conveyor met the company's needs with regard to the component sizes and the painting process. In 2013, new customers and new products led Mitras to prioritize the construction of a new paint line. As the parts to be painted in the new facility were of high quality, the customer specified the need for a floor conveyor. The new system was to be used for painting even larger and heavier components. In addition, the conveyor system had to offer a high level of precision, because robots were to be used in the painting process.



loading process, depending on whether one or two large or small parts are being transported. The maximum load per wagon is 150 kg.

Rotary tables allow for loading from both sides

A special feature of the Mitras conveyor is the rotary tables installed in both the loading and unloading areas, which enable the complete wagon unit to be rotated 180 degrees, as operators sometimes have to load and unload parts from both sides. These rotating units allow for the same workflows, which would be possible with skid systems. On its route to the pre-treatment area, the conveyor system has to accommodate a change in floor levels. In contrast to skid conveyors this can easily be managed with a power & free system, using an incline section. As mentioned above, the entire pre-treatment process, including drying and cooling, is run on the continuously running process chain circuit. The wagons re-connect with the stop/go transportation chain after this process has been completed.

Transporting large parts safely

As Mitras had positive experiences during its initial projects with Caldan Conveyor, it chose Caldan to supply the new system. Because of the ceiling heights and the maximum size of the parts, Mitras opted for a power & free floor conveyor (P&F140).

The design is similar to the well-known P&F100/HD100 systems, but with its wider track and larger wagons is able to meet the increased requirements. The new conveyor at

Mitras can transport parts up to 3000 mm in length, and with a cross section of 2000 x 2000 mm it also guarantees the necessary precision for the robot application system in the spray booths. The cycle time of the painting system is four minutes and the conveyor is fitted with two separate chain systems, a transport chain and a process chain, to accommodate this. In the power wash section, the conveyor has a constant speed of 1.25 m/min, but it is in stop position during the loading, unloading and painting processes.

The parts are transported on P&F140 double wagons with work jigs. Jigs in various sizes can be loaded during the manual

Floor conveyor with high availability

Outside the spray booths, the wagons are separated via a transfer system so that they can be allocated quickly to the robot booths. Only one wagon is in each booth during the spraying process to ensure that the coating has the required quality. The transfer system moves one wagon out of the booth and one wagon into the booth at the same time to allow for as long a painting time as possible.

The wagons are transported to the areas following the painting booths, such as the flash-off area and drying oven, by the power & free system in stop/go operation. The painting facility at Mitras has been in operation since early 2014 and meets all the company's requirements, in particular with regard to the availability of the conveyor. The benefits of the floor conveyor were evident in terms of planning, investment costs and operation. The advantages include limited use of drive units and sensors. Therefore the final results is a considerably lower investment costs for the automation compared to a traditional skid conveyor solution.