

Automotive painting on plastics specialist installs state-of-the-art robot spray plant

One of Europe's leading specialists in the painting of plastics automotive components and assemblies — M&S Automotive Coatings Ltd — has recently installed a fully automatic state-of-the-art robot wet spray plant at its main finishing facility in Newcastle upon Tyne. M&S Automotive Coatings, which started as a small family operation some 15 years ago, remains family owned and has since grown to become a major supplier to automotive OEMs and first-tier companies, including Land Rover, Nissan, Saab, Visteon and MKL.

The installation, which has now been fully up and running for seven months and is already achieving impressive "first-time-okay" rates of around 98%, was project managed by M&S managing director, Mick Ford and his production team, in close co-operation with highly experienced paint plant supplier, Delta Process Systems, and conveyor manufacturer, Caldan Conveyors.

It is based on a 121-metre long Caldan 'HD 100' floor conveyor system, which provides highly accurate positioning of the paint jigs and can operate on a batch "stop-go" or continuous basis, depending on production requirements. A floor-based system was selected in preference to an overhead conveyor as it minimises the risk of contamination of the parts — when coating plastics, optimum cleanliness is of paramount importance. The conveyor includes automatic lubrication to ensure smooth running, and also has the adaptability to be converted to power-and-free operation.

The special component jigs, designed by Perry Plating Jigs, project vertically from the conveyor pendants or "wagons" and can be rotated automatically through 180 degrees to orientate the parts in the correct position for total surface coverage.

The parts are loaded manually and given an initial anti-static deionised air wash to remove dust. Positive air flow in the loading area also helps to minimise contamination. They then enter a secondary clean-down cell in a clean-room area, followed by robotic plasma flame pretreatment cell. The parts then progress to the 5-metre Delta 'Aqua-Flow' water-wash spray booth, where they are sprayed automatically by an ABB robot. The robot was installed and commissioned by Marc Robotic Support and the ITW Binks paint mixing and distribution equipment was supplied by Sedco (North West).

A Delta 'Aqua-Cleanse' de-sludging unit ensures that all "dirty" water is removed from the booth, cleaned and recycled.

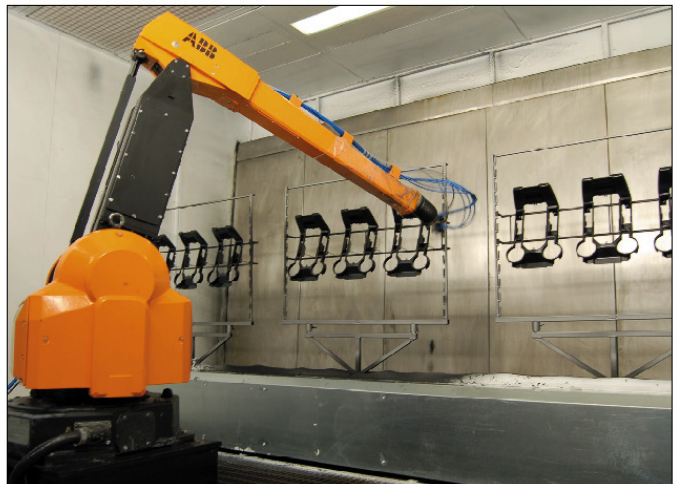
A flash-off area follows the spraying cycle and the jigs then move through an oven for a 30-minute curing period, prior to final inspection and manual unloading.

Process management system

The whole system is masterminded by a sophisticated process management system, developed by Caldan in conjunction with M&S, which controls and monitors the finishing process throughout all its stages. The focal point of this "total interface" is a 42in plasma screen display and control panel in the load/unload zone.

Currently, some 120 different products are programmed into the system for batch processing, each with its own dedicated painting program, including the paint system/recipe to be used, the robot configuration and the number of wagons in the batch. The system can provide detailed information on any part of the process on screen at any time. Automatic alarms and emergency stop features are also incorporated.

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The parts are sprayed in a Delta 'Aqua-Flow' 5-metre modular water-wash spray booth by an ABB robot. The booth operates in conjunction with Delta's 'Aqua-Cleanse' sludge removal system, to form an integrated and highly cost-effective paint spraying and effluent treatment system. The Aqua-Cleanse unit removes 100% of the contaminated water from the booth and replaces it with clean, treated water, saving downtime and maintenance and enhancing the environmental impact of the paint plant.

PAINT AND POWDER COATING . . .

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The parts are loaded manually onto rotating jigs and given a anti-static deionised air wash to remove dust. Positive air flow in the loading area also helps to minimise contamination.



The paint mixing and distribution room. The ITW Binks equipment was supplied by Sedco (North West). Like most of the installation, this section utilised standard modular panels from Delta Process Systems.



The paint line at M&S Automotive Coatings is based on a 121-metre long Caldan 'HD 100' floor conveyor system, which provides highly accurate positioning of the paint jigs and can operate on a batch "stop-go" or continuous basis, depending on production requirements. A floor-based system was selected in preference to an overhead conveyor as it minimises the risk of contamination of the parts — when coating plastics, optimum cleanliness is of paramount importance. Extremely stable and low in noise, the conveyor has a load capacity of up to 400kg per wagon and operates in temperatures of up to 250...C. It includes automatic lubrication to ensure smooth running, and also has the adaptability to be converted to power-and-free operation.

M&S Automotive Coatings Ltd — *(full address to be inserted)*

Caldan Conveyors UK — South Tees Business Centre, Puddlers Road, Middlesborough, TS6 6TL. Tel: 01642 438435. www.caldan.dk

Delta Process Systems Ltd — Old Wasall Road, Hamsted, Birmingham, B42 1EA. Tel: 0121 358 0606. www.deltaprocesssystems.com

Enquiry Card No xxx M&S Automotive Coatings

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