

Ford Ontario Truck Plant and Kawasaki Robotics (USA), Inc. Liquid-Applied Sound Deadener (LASD) Case Study

By John Weber and Jon Stevens

Ford Motor Company's Ontario Truck Plant, located in Oakville, Ontario (30 miles from Toronto), manufactures the F150 line of Ford trucks.

Early in 2000, Kawasaki Robotics (USA), Inc. was asked to develop and quote a system for the Ontario Truck Plant to spray a water-based EFTEC sound-deadener into truck cabs during assembly. Requirements included the ability to change pad location, surface area and thickness as needed, and the ability to spray on a vertical surface.

Additional requirements also included integrating Kawasaki robots with Ford-supplied material pumps, header system, and Graco PrecisionSwirl™ applicators, mass flow meters, and control panels, on the existing, altered truck conveyor system.

With the experience gained from a previous installation at Ford's Norfolk, Virginia assembly plant, Kawasaki initially quoted the system in May of 2000.

Kawasaki began development at their headquarters in Wixom, Michigan, in October of 2000. In-house assembly started in November, and customer run-off was completed in January of 2001.

Installation and programming touch-ups were completed at the Ontario Truck Plant, and the system was ready to run on February 1st.

Installation support and user training from Kawasaki continued through March of 2001.

The system is based around a Kawasaki UT150 robot, with a second unit as backup. Each UT150 robot is equipped with three Graco PrecisionSwirl

applicators, using PrecisionSwirl for SD control assembly panels.

Along with custom mounting the PrecisionSwirl applicators to the UT150 robots, Kawasaki designed full safety guarding, including light screens, a custom designed operator interface panel with custom touchscreen display to control the system, and robot risers. Kawasaki also integrated the core PLC controller into an existing cabinet.

Starting at the HOME position, the Kawasaki UT150 robot receives a signal from the cell controller, telling it that a cab is in place, whether the cab is a regular or extended cab, and if the completed truck will have an automatic or manual transmission.

The robot arm extends out and down, entering the cab through the windshield opening. The Graco guns are turned on, and between two to seven areas inside the cab are sprayed with sound deadener.

When spraying is complete, the robot arm returns to the HOME position, and sends a signal to the cell controller that it is clear of the cab. The robot then waits for the cell to clear, and for the next start signal from the cell controller.

The system is also equipped with an automatic purge system to prevent spraying material from drying inside the equipment. If sealer isn't sprayed for 15 minutes, the robot arm automatically moves to the PURGE position, dispenses material for three seconds, and returns to the HOME position.

Only one robot can purge at a time. If the purge cycle repeats three times in 45 minutes, the auto purge program shuts down until it is reset by either manual purging,

or running another job through the cell.

When necessary, a manually called maintenance program moves both robot arms to safe, clear locations. This allows for access to all equipment in the cells.

At a production speed of over 60 jobs per hour, the combined Kawasaki-Graco system reduces the necessary man-hours, and related repetitive motion worker injuries.

Other benefits include decreased material costs, lower scrap and rework rates, improved quality and consistency, and the ability to spray on a vertical surface, which previously could only be done with adhesives. ■