Solving the sequenced part delivery problem with RFID

Executive Summary

Sequenced Part Delivery (SPD) allows automotive manufacturers to outsource whole sections of their assembly process essentially creating a 'factory without borders'. Key to this method of outsourcing is absolute synchronization of the delivery of the outsourced part to the automotive assembly line.

Intier Seating has solved this problem of highly reliable process synchronization using industrial RFID. The ability of industrial RFID to reduce identification errors on automated lines to nearly zero as well as record test and assembly data in process is key to Inlier's solution to their SPD supporting Ford's assembly line for Ford's new Edge models.

Problem Statement

Automotive manufacturers that outsource some of their car and truck components to third parties require a precise mixture of component products to be delivered at the main assembly plant according to a Sequenced Part Delivery (SPD) plan, just in time for the parts to be added into the final car or truck assembly. Suppliers must be able to precisely and reliably track their product flow during manufacturing through shipping, so that the order that goods are built and the shipment loading exactly matches the main assembly plant's delivery requirements.

SPD works great providing one thing: the outsource supplier execution must be FLAWLESS. Heavy penalties may be levied on the supplier any time the automotive production line is held up due to late or incorrect deliveries.

Intier Seating, of Mississauga, Ontario, engaged Escort Memory Systems to help them develop a solution for Ford's Sequenced Part Delivery requirements. Says Jeff Fuller, assistant general manager of Intier Seating, 'Today's automotive climate demands our plants to have the capability to run many vehicle types on the same line. The EMS RFID system provides Mississauga Seating Systems (a division of Magna-Intier Seating) with a smart pallets containing the product type and giving the MES the ability to load the respective torques, scans, oven heat %, tact times, and test requirements. Our system drives our operators to produce quality products with complete parts traceability. The EMS RFID system is the core of our flexibility and competitiveness.'

Sequenced Part Delivery at Intier Seating

The automotive industry uses Sequenced Part Delivery (SPD) to create a 'factory without borders'. This advanced JIT parts delivery technique was developed to enable outsourcing of some operations within the auto assembly process. When done correctly, Ford can back a trailer into the assembly area with the correct finished components ready to build into a particular car as it moves down the line.

Ford is beginning to manufacture two new models: the Ford Edge and the Mercury MKX. Intier Seating of Mississauga, Ontario, is building the seats for these cars as an SPD outsourced part that must arrive at the Ford assembly plant at exactly the right time and exactly the right sequence. Traditionally, this scheduling has been done within the walls of the main assembly plant with coordination of parts handled by the internal scheduling programs.

The SPD schedule is sent to Intier Seating from Ford one week in advance of delivery. This information broadcast includes the VIN number of the final installed vehicle and the required sequence of delivery.

Intier Seatings' Sequenced Part Delivery Solution

Escort Memory Systems worked with the Quality Team at Intier to develop a product tracking system for process automation based on RFID (Radio Frequency Identification) technology. The RFID systems have been in use for several months now for both the seat assembly process and for the shipment preparation process.