Ecoplastic Streamlines Manufacturing Processes with Sophisticated RFID Solution

ECOPLASTIC Corp.

Ecoplastic Corporation
Kyungbook, Korea
www.eco-plastic.com

Industry:
Automotive

Annual Revenue:
US$300 million

Employees:
630

Oracle Products & Services:

Oracle Application Server
Oracle Sensor Edge Server

Oracle Partner:

INTOWN
INTELLIGENCE & OWNERSHIP

Intown
www.intown.co.kr

"We have experienced significant improvements in efficiency and product quality as a result of implementing the RFID solution. Oracle Sensor Edge Server enabled us to develop and deploy the system in a short amount of time, so the benefits were felt almost immediately." – Si-Kook Bang, Head of Information Division, Ecoplastic Corporation

Founded in 1984, Ecoplastic Corporation is one of the leading suppliers of automotive components in Korea. The company's main product is front and rear fenders, which contributed almost 50% of its revenue in 2005. It also manufactures consoles, wheel covers, instrument panel pads, back panels, radiator grilles, rear garnishes, cowl top covers, and other related products.

Although Ecoplastic was using an enterprise-wide business management system, the company was keen to improve the availability of real-time information. The inability to access accurate, up-to-date data with ease was affecting operational efficiency, leading to increased costs.

To address these problems, Ecoplastic implemented an advanced production management system based on radio frequency identification (RFID) technology. Developed using Oracle Sensor Edge Server, the system is currently being used to monitor the painting process. This ensures staff can keep track of every stage in the process and that products meet specifications and standards.

The result has been increased efficiency, lower costs, improved customer service, and enhanced product quality.

Delivering Information in Real Time

Ecoplastic has a complicated manufacturing process and needs to closely manage each stage of the production lifecycle. The company was dissatisfied with the performance of its enterprise resource planning (ERP) system, which was not delivering data in a timely manner. This hampered real-time communication between business divisions and the production department, and also prevented staff from tracking orders from beginning to end.

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Key Benefits:

- Provided staff with real-time access to production information by implementing an advanced RFID solution to track the fender painting process
- Improved quality control by ensuring adherence to local and international production standards
- Enhanced customer service by addressing issues before they affect delivery deadlines
- Strengthened business management by streamlining reporting processes and giving managers the ability to view accurate, current data

To fix these problems, Ecoplastic developed an RFID solution using Oracle Sensor Edge Server to be applied to the painting stage during the manufacturing process. The company added RFID tags and readers from EMS to the production line.

At the start point, the production specifications (e.g. car model, fender color) and instructions are entered onto the RFID tags, which are affixed to the jigs (the trays on which the bumpers sit as they move through the production line). An RFID reader will relay the information on the tag back to a manual operator to ensure the data was successfully written. Only then will the production process begin.

RFID readers are set up at every stage of the manufacturing process. The Oracle Sensor Edge Server software embedded in the RFID readers reads the information on the tags and sends instructions to programmable logic controllers (PLCs) that operate the robots on the production line. In the painting stage of the process, the data tells the robots what color the fenders need to be.

Automating the production process in this way has led to dramatic improvements in productivity. For example, Ecoplastic can now include information on the tag that tells robots where to send a job batch when it reaches a particular point. The readers can also detect defects in an item, and send an alert to production staff.

During the inspection stage, production staff visually checks that an item has been completed to specifications. The information is entered into a system that is integrated with Oracle Sensor Edge Server. The data is then written into the tag, allowing staff to check whether an item has passed inspection.

“Oracle Sensor Edge Server has the plug-and-play drivers that enabled us to integrate the software with existing production systems, the RFID readers, and PLCs,” said Si-Kook Bang, head of the information division at Ecoplastic Corporation. “It allowed us to develop and deploy the system in a short amount of time, so the benefits were felt almost immediately. We have experienced significant improvements in efficiency and product quality.”

Enhanced Business Management

Better insight into the production process has helped Ecoplastic improve quality control. By keeping a close eye on the painting lifecycle, the company can ensure adherence to local and international production and environmental standards.

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Business planning has also improved now that senior managers have access to accurate, current data. Streamlined reporting processes ensure decisions can be made quickly and with confidence.

Why Oracle?

Ecoplastic chose Oracle Sensor Edge Server, a component of Oracle Application Server 10*g*, as the best middleware software on which to build its RFID solution. The Oracle product is powerful enough to process and integrate information from numerous data sources. Combined with high availability and easy scalability, Oracle Sensor Edge Server provides 24/7 reliability and the flexibility to grow with the company.

Oracle's open standards architecture also ensures interoperability with Ecoplastic's existing database and applications, cutting down implementation time.

Why Intown?

Ecoplastic engaged Intown to develop and implement the RFID solution. Intown has more than 10 years' experience in designing and deploying such solutions, and recently worked with Busan National University, one of the leading universities in Korea, on the development of RFID technology. The company's credentials convinced Ecoplastic that Intown had the skills and resources to develop a system fit for its business.

Implementation Process

The RFID-based production management system was developed over five months between January and May 2005.

Founded in 1984, Ecoplastic Corporation manufactures a range of automotive components, including fenders, consoles, wheel covers, instrument panel pads, back panels, radiator grilles, rear garnishes, and cowl top covers, for local and global markets.

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