Oracle Manufacturing Operations Center Provides Real-time Benefits for Leading Gear Manufacturer in Asia

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Keywords

Enterprise Manufacturing Intelligence (EMI), Shop Floor Data, Real-Time Data, Big Data, Integration, Machinery, Oracle, Manufacturing Operations Center, MOC, Elecon Gear Division, Inspirage

Overview

The Oracle OpenWorld Conference in San Francisco last fall featured a record number of client presentations highlighting the real-world benefits obtained from using Oracle technologies. One particularly interesting presentation involved integrating real-time shop floor data into the largely transactional manufacturing system. While not unique, this is still often challenging due to the proprietary nature of many of the installed machines and systems.

> This report describes how Elecon, a leading gear manufacturer in India, implemented Oracle Manufacturing Operations Center (MOC) to integrate shop floor data into its supply chain ERP to improve productivity and operational performance.
> While this particular case study discusses a discrete manufacturer, all manufacturers — discrete or process — share similar challenges when it comes to transforming massive amounts of production data into actionable enterprise manufacturing intelligence.

Strategies for Optimizing Manufacturing Performance

By using accurate, real-time information from the shop or plant floor, manufacturers can improve processes, reduce costs, and address other challenges. Today's manufacturers need to ensure that the right information is available to make the right products at the right time. This increases demand for modern enterprise manufacturing intelligence (EMI) solutions. These incorporate technology and practices that tap into the vast amount of available plant data; contextualize it, and expose it to the right people across an enterprise with analytics, dashboards, and other visualization tools for improved decision support.

ARC
Advisory Group

ARC Advisory Group research indicates that companies that make extensive use of enterprise manufacturing intelligence can realize real benefits. The technology is helping improve manufacturing performance by enabling companies to use the data and information they're already collecting in real time. While EMI is not a new technology, its use is growing. This is partly due to the emergence of "big data"; the need to transform these data into real-time integrated, accurate and actionable information; and the

> Elecon Engineering Co. Ltd., with headquarters in Vallabh Vidya Nagar, Anand, Gujarat, India, is a global manufacturer of material handling equipment, industrial gears, mining equipment, casting processes, steel mill gear boxes, high-speed turbines, and satellites for India's Space Research Program and aircraft carriers. It is one of Asia's largest gear manufacturers.

availability of new enabling tools. These include social-based collaboration tools, operational analytics, visualization technologies, and better integration capabilities. ARC believes that EMI solutions have the potential to transform industry.

At Oracle OpenWorld, Mr. Vilas Kalyankar, Chief Executive Officer, Gear Division, of Elecon Engineering Co., Ltd. and Arup Chatterjee, Managing Director of Inspirage, presented an Oracle Manufacturing Operations Center (MOC) implementation that, according to Mr. Kalyankar, has put the company a step ahead of its competitors. Elecon's vision is to be a technologically advanced, automated gear manufacturing facility that incorporates global best practices.

The Challenges

Prior to the Oracle Manufacturing Operations Center EMI implementation, Elecon's Gear Division captured shop floor data manually using spreadsheets; a time-consuming, error-prone, and often costly process. The company knew it could improve its efficiency and production operations if it could automate the data capture and access data in real time. This would also make it easier to provide customers and suppliers with accurate and timely information. Entering data manually resulted in data errors that were costly if not caught early on. By involving employees in the change process, Elecon succeeded in developing a culture in which employees embrace the new process.

Elecon's Manufacturing Facility in Ahmedabad, Gujarat

Supply Chain Planning and Production Scheduling

Elecon's Gear Division and Inspirage have been working together for the past two years deploying Oracle software on applications that enable the company to improve visibility and efficiencies in procurement and manufacturing planning. The solution was integrated to the shop floor machinery to provide production planners with real-time visibility. In addition, the software helps Elecon manage scheduling and planning by sharing components across different divisions. This frees up working capital by reducing inventory and increasing manufacturing capacity.

Elecon's top management commitment to the new solution and the Inspirage management of the changes contributed to the success of the implementation. According to Mr. Kalyanka, working with Inspirage helped eliminate obstacles. These included managing change within the organization to enable the planners and schedulers to adapt to these advanced solutions. While there is still room to increase the comfort levels of the planners and schedulers, the solution has already enabled positive behaviors. These include improved master data management, discipline in recording transactions (such as closing work in progress jobs) in a timely manner, ensuring the current stock and physical stock matches up, managing the key planning attributes, maintaining engineering bills of material in an up-to-date manner, etc.

Solution for Improving Production Efficiency

Elecon, Inspirage, and Oracle worked together to integrate the shop floor data directly into Oracle Manufacturing Operations Center EMI solution to help improve production efficiencies, reduce silos, improve collaboration, and increase overall manufacturing performance. Other operational goals the solution helped meet include:

- Improved visibility into both manufacturing and business performance
- Reducing manual data entry and errors
- Standardizing and simplifying business processes and workflow
- Improving productivity
- Greater control on quality parameters, reducing rework and scraps
- Reducing raw material usage
- Improving change management
- Reducing inventory costs

Improved Shop Floor Data Accuracy

According to Mr. Kalyankar, process and operations improvements include the ability to identify machine downtime, raw material issues, idle time, speed variations, and other machine-related issues.

Oracle Manufacturing Operations Center captures and collects data directly from multiple automation systems, including Mazak, GE Fanuc, Siemens, and others. Control, cycle, alarm and other information is collected from the shop floor machines.

> ### About Oracle MOC
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> Oracle designed its Manufacturing Operations Center (MOC) solution to help manufacturers improve efficiency and quality through increased shop floor visibility using a standardized and simplified integration across enterprise, shop floor, and systems. The solution enables plant managers to monitor production operations in real time and provides data and analytics for improvement programs. Oracle Manufacturing Operations Center resides between the ERP and shop or plant floor.

Improving Workflow and Change Management

Oracle Manufacturing Operations Center enables a highly configurable and rigorous change control workflow process that helps enforce methodologies and core best practices for engineering. The solution also involved changing an existing business process, an activity that Inspirage managed. Supported by the real-time information, this new business process has helped Elecon improve its on-time delivery, reduce inventory, and optimize material usage by providing an ideal product mix for over nine different business units. "Having a variety of different work cycles that span two or three days can make planning complex. But with the Oracle solution we reduced inventory and lead times for raw materials. The system will help our current clients and also helps us attract new clients. The company's profitability will increase and our costs will decrease," commented Mr. Kalyankar. According to Elecon, the solution helped it clean up the data, enabled change management, allowed the company to integrate the shop floor information to the business, and enhance operational capabilities to "face the competition more effectively."

The software also enables the company to accommodate process interruptions and special product

Equipment Idle Time Analysis on Oracle MOC Dashboard

orders. According to a company representative, the application provides direct cost savings by helping improve throughput, reduce waste, and reduce inventory, while minimizing human errors.

Recommendations

The ability to capture shop floor data in real time 24/7 and route it directly to the right person to make timely comparisons and other analysis has helped Elecon transform its processes and make its operations more efficient. Future project plans include integrating an additional 15 shop floor machines.

ARC has the following recommendations for other manufacturers that face similar challenges integrating shop floor or other real-time production data into the business:

- Consider implementing and deploying EMI solutions to provide employees with greater visibility into shop or plant floor processes and rapid access to accurate, real-time information for decision support.

- Use EMI to incorporate best practices, to compare data and information, and to improve efficiency.

- EMI should be driven by management with the ultimate goal to empower employees with improved information and decision-support tools.

- Perform a thorough cost analysis in advance to determine whether or not the value derived from the solution will outweigh its cost

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