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How Schneider Electric deployed AVEVA Discrete Lean Management at 70 manufacturing plants in two years for real-time production response and continuous improvement

Company Name - Schneider Electric
Industry - Discrete Manufacturing

Goals

- Digitize Lean manufacturing practices and work information to improve performance across 100 global manufacturing sites as part of Schneider Electric's Smart Factory Programme.

- Standardize measures of equipment and labor effectiveness to generate best practices and global benchmarks.

- Enable faster decision making, issue escalation, and analysis through collection and visualization of production data.

- Improve customer satisfaction by improving product quality and on-time delivery.

Challenges

- Use of legacy systems and individual plant solutions resulting in high IT costs and non-standard data.

- Heavy reliance on paper-based processes and manual work instruction slowing issue response.

- Lack of visibility on shop floor operations for decision making and performance analysis.

- Availability of a manufacturing solution able to handle Schneider Electric's wide variety of manufacturing lines and products.

Results

- Deployed AVEVA Discrete Lean Management to more than 70 manufacturing sites.

- Increased productivity 10% due to downtime mitigation.

- Enabled 70% faster response time through automated escalation.

- Increased worker effectiveness by eliminating paper-based work order management and instruction.

Digitalization of Lean management

Schneider Electric is the leading industrial manufacturer of power management solutions for medium voltage, low voltage, secure power, and automation systems that enable energy management and automation in homes, buildings, data centers, infrastructure and industries. The company has a global presence in over 100 countries and more than 100 manufacturing sites.

Schneider Electric's Global Supply Chain group oversees the company's large industrial footprint, and launched a Smart Factory initiative to harness Industry 4.0 opportunities to improve operational effectiveness of its plants. The team collaborated with AVEVA to develop a lightweight, flexible software system purpose built to rapidly digitize Lean and work management practices to enable data-driven performance improvement in their discrete manufacturing environments.

The result was AVEVA Discrete Lean Management, a novel software application enabling complex analysis of Schneider Electric's vast manufacturing operations that delivered 70% faster response time for downtime mitigation and a 10% increase in productivity. Following pilot projects, Schneider Electric has scaled deployment to more than 70 manufacturing sites in two years and continues to roll out the solution across the business.

"AVEVA software solutions provide tremendous value to Schneider Electric factories. We see productivity, uptime, and efficiency improvement, and we're deploying to our other remaining sites."

–
Sylvain Gire,
Vice President, GSC Transformation-Industrialisation
Schneider Electric

Transforming shop floor operations at global scale

Under Schneider Electric's Smart Factory program, the company launched an initiative to transform its global network of manufacturing sites through the digitization of work information and Lean management practices to improve plant performance.

The company required a solution to replace paper-based processes in its manufacturing operations, to digitally measure equipment and labor effectiveness on the shop floor, and to scale across its diverse network of 100 independently operating sites.

At the plant level, work order (WO) dispatching was accomplished through access to enterprise resource planning (ERP) information on the shop floor, via paper printouts and reprints of the order every time updates were required. Similarly, work instructions were documented on paper and difficult to keep current using manual means. Tracking operational performance manually in the fab area on the lines was time consuming, prevented visibility on actual work order progress, and provided poor response time to real-time manufacturing issues.

Lean manufacturing was a standard practice at all sites through the Schneider Performance System, a successful performance enabler for more than 15 years. Lean practices include Kanban, escalation systems, short interval management and performance measurement. However, plant performance was mostly measured based on ERP information which lacked sufficient shop floor details to be able to effectively analyze and understand the causes of performance loss or to design improvement plans. Additionally, across Schneider Electric's global sites, teams used many immature or nonstandard manufacturing solutions globally – both homegrown as well as from different vendors.

The Schneider Electric Global Supply Chain group identified a large opportunity to improve the performance of its sizeable industrial footprint by digitizing the largely paper-based operational processes to enable visibility into shop floor events and generate corresponding data to analyse the root causes impacting plant performance.

Several factories had developed their own solutions to drive plant performance but there was no consistent approach and system which allowed for standardization across sites. The company also projected difficulty to support these bespoke applications over the long term.

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The challenge: standardizing Lean practices across diverse discrete manufacturing environments

With its large and diverse product lines, Schneider Electric required a highly flexible and configurable digital system with the ability to:

- Manage a wide variation of manufacturing processes ranging from standard and volume product manufacturing to engineered-to-order to fabrication, moulding, and painting.

- Collect production data, visualize production KPI's and enable team collaboration in response to production issues through easy-to-use user interfaces and dashboards that can be managed by anybody.

- Support data collection for all different levels of automation across manufacturing lines – from completely manual assembly lines to fully automated processes or production equipment.

- Deploy and run the solution in many plants within a short timeframe

Digitalizing lean and best practices for reuse across the business

In close collaboration with the Schneider Electric Smart Factory team, AVEVA developed a Discrete Lean Management solution leveraging the rich visualization and device integrations of AVEVA's industrial software platform.

The application was designed by selecting a pilot factory with proven performance and a team of experts to identify the shop floor requirements and to define a best practices model for standardization.

The team identified four core modules for the digital Lean solution:

- Andon – production issues notification and visualization to trigger fast response and team collaboration

- Performance – to capture labor and equipment effectiveness for visualization and analysis

- Work Instructions – digital work instructions and context-based training and assistance

- Work Order Management – digital production work order management and reporting

Each functional module was initially specified at a minimum requirements level and has been enhanced in multiple improvement cycles according to the needs of additional and ongoing plant deployments to more than 70 sites.

The functional modules are provided as configurable standard software which is adaptable to different plant environments. A user-friendly interface enables fast training and proficiency, empowers operators and technicians to improve productivity with visibility into production gaps, and allows supervisors and managers to monitor production dashboards and plant performance KPI's from any computer or mobile device.

The result is an out-of-the-box digital Lean solution for fast, lightweight deployments which local plant teams can configure and further maintain.

Fast global implementation and training

To scale deployment of AVEVA Discrete Lean Management, all factories appointed a smart factory leader, and each global region deployed the software solution at one site to demonstrate the value, and to train and share best practices in deployment and change management with all regional sites.

For further deployment all factories selected one product line to pilot the solution for local training and to rollout the application to all teams and areas in each of the factories.

The software deployment itself was completed in 1-5 days with an average three month time to full proficiency through training and adoption.

Benefits of digital Lean management

The AVEVA Discrete Lean Management system increased productivity on the shop floor and improved efficiency of support functions due to higher reactivity, visibility, and access to current information.

Solution benefits included:

- Improved productivity through visibility into reasons for performance losses through root cause analyses. Discrete Lean Management enabled more accurate measurement and tracking of micro events for time-based performance management delivered by the performance module. This module became the core capability for productivity improvements at Schneider Electric sites.

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- Rapid response to shop floor events through digital escalation and decision-making support to prioritize actions with event and pareto analytics. Using the Andon module, Schneider Electric teams gained full shop floor visibility on all events related to machine, quality, and material.

- Always up-to-date work instructions on the workstation and reduced training lead time as the work instruction module offers video work instructions as a step-by-step breakdown of instructions.

- Access to plant performance information across sites for support functions and the feasibility to benchmark sites through the standardisation of KPI's.

- Consistent and simultaneous improvement of manufacturing processes globally through the standardization of processes and common versions of application in all factories.

The improvements drove better on-time delivery and ultimately translated into a higher level of customer satisfaction.

With the AVEVA Discrete Lean Management software application standardized across plants, Schneider Electric has a sustainable platform for continuous process improvement and competency management to reduce production losses and to continuously improve discrete production line effectiveness in real-time.

10% increase in productivity

Following implementation, Schneider Electric's sites report a 10% increase in productivity due to downtime mitigation, and 70% faster response time due to automated escalation of issues. Teams have complete visibility across production lines and machine assets with the means to measure and improve both equipment effectiveness and labor effectiveness. As a result, plants reduced downtime while also increasing worker effectiveness by eliminating paper-based work order management and work instructions. Finally, the Smart Factory Programme drastically reduced IT costs by cutting local solution development and standardizing on a global platform across Schneider Electric's global manufacturing network.

Sample Plant Profile: Schneider Electric Pacifico Plant

- 1,800 employees

- 50+ production lines

- 3,800 products and product variations

- Labor intensive plant with 3 shifts

- Three months to implement solution without the need to assign an additional dedicated implementation team

- HOMB Breaker line increased average daily output 10%

- Achieved 74% labor efficiency (increase from 65%)

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