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Conquering the data mountain in manufacturing industry

The amount of data pouring out of plant operations on a daily basis is a familiar challenge for process manufacturers today

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Collecting and preparing data for analysis consumes 50 percent of the time and effort. That slow process is a barrier to reducing the severity and duration of process upsets. Being able to successfully manage mountains of data is being able to reach the summit of production efficiency. The amount of data pouring out of plant operations on a daily basis is a familiar challenge for process manufacturers today. It can be an exhaustive and painstaking environment for engineers and operators having to wade through vast amounts of information generated from various sources and collected across disparate systems.

To conquer data complexity, progressive organisations are standardising on integrated manufacturing execution systems (MES) to reach the pinnacle of best practices in data management. The ability to unearth relevant information, capture, contextualise, visualise and analyse content is crucial to understanding plant behaviour and to make critical operational decisions.

Planning the journey
The explorer, Freya Stark, once said, '*There can be no happiness if the things we believe in are different from the things we do*'. It is also true that when production operators execute in ways that differ from the vision and goals set by company leaders there will be big disappointments in business performance.

A belief in business alignment is vital to efficiency. Sophisticated MES analytics tools help drive greater collaboration across the enterprise by enabling benchmarking and sharing of best practices for faster decision-making. Millions of dollars are lost every year due to production disruptions and unplanned shutdowns.

Delivering real-time data intelligence from the plant floor to the boardroom helps to achieve continuous improvement in manufacturing operational excellence. The use of MES leverages innovations that help key stakeholders to make timely decisions that affect plant operational performance and close the gap between plant execution and business plans.

The pinnacle of success for operators is their ability to reliably meet production targets. This requires them to transition capital projects into efficient producing assets and to be able to improve day-to-day asset uptime whilst minimising unplanned downtime. MES tracks and documents the transformation of raw materials to finished goods and provides information that helps decision-makers understand how current plant conditions can be optimised to improve production output of quality products.

Integrated MES offer powerful capabilities that operate across multiple functional areas, including the management of product definitions across the product life-cycle, resource scheduling, order execution and dispatch, production analysis and downtime management for improvement of overall equipment effectiveness (OEE).

Being equipped

MES provides access to real-time plant production data and includes scalable, flexible solutions enabling operators to respond quickly to challenges that may negatively influence efficiency, quality and regulatory compliance. Many leading companies have adopted

MES software solutions to increase profitability, reduce variability and improve overall asset utilisation.

The right tool will provide data management capabilities to put information at your fingertips, anytime and anywhere, by collecting and organising data across disparate systems and distribute it across the enterprise to make it easy to optimie the value of that data. This data foundation provides a solution to managing large volumes of real-time and historical data from process control, manufacturing operations, laboratory systems and business systems, which form the foundation for an enterprise-level platform.

Rich calculations, analysis and visualisation tools unlock the data's value, allowing operators to compare performance across a range of assets and disseminate best practices to processes and sites that require improvement. As a scalable and flexible solution, the data historian software delivers enterprise-wide global deployments across hundreds of locations.

As such, chemical companies around the globe use MES tools to make better and faster decisions, driven by a comprehensive view of production operations to maximise asset effectiveness. Adding context to analyses helps identify root causes, such as batch variability, for faster problem resolution and enables operators to take corrective actions to preserve product quality.

A cutting edge MES software solution can deliver real-time feedback of plant condition changes and a range of benefits to manufacturers, including:

- Searching across a wide set of data sources and content types, including production records, alarms, graphics, trends, adhoc tag lists and comments to locate all pertinent information;
- Looking at data by production segment, event or batch within a single tool;
- Giving mobile workers, managers and executives access to current production information on their laptops, desktop, tablet or smartphone with a true thin-client solution;
- Producing dashboards tailored for different users' needs within minutes;
- Understanding batch variability – overtime, within batch and batch-to-batch more easily;
- Reducing product waste and production downtime;
- Increasing uptime, production throughput and product quality;
- Analysing production performance and gaining a better understanding of actual production capacity for predictable order fulfillment;
- Eliminating exhaustive hours of labor intensive, manual processing of data;
- Increasing overall productivity and profitability

Reaching the summit of success
Conquering data management is a crucial task for chemical, petrochemical companies and refineries today. Industry leaders must not see mastering data management as an unreachable goal, but as an opportunity to improve processes and adopt cutting-edge technology to overcome complexity.

With the right equipment, operators can capture real-time data, monitor plant conditions and respond swiftly to increase productivity, address improvements in product quality and minimise unnecessary downtime costs. With effective MES solutions, plant floor staff and management teams can scrutinise operational behaviour more effectively in line with business plans and reach the peak of operational excellence.

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