/COMMENT

The DNA of decision-making

Luc Chantepy discusses achieving operational excellence through rich data visualisation

Data is the DNA of decision-making. It is the lifeblood of operational excellence that determines successful business outcomes. The origins of production performance derive from actions taken based upon information gathered from the plant, which affects the design, planning through execution functions across the business.

The mega-trend of Big Data has hit the Middle East region and organisations are working towards how they can leverage the data effectively. Big Data and analytics enables engineers and operators to gain deeper insights into plant behaviour and intervene to positively impact production performance and consistent product quality. Contextualised data allows companies to be more proactive in addressing customer issues and to respond quickly to market changes.

Many chemical companies, for example, are standardising on integrated manufacturing and execution systems (MES) to collect, manage, analyse and leverage data generated on a day-to-day, minute-by-minute and second-by-second basis. Advanced MES delivers efficient data management, operational intelligence via rich visualisation and analytics that improves production execution, enabling process manufacturers to turn data into profit.

THE MANUFACTURING ECOSYSTEM

Production systems and networks are becoming more sophisticated. A crucial measure of any MES system is performance metrics that allow users to determine how well the plant is achieving business targets. The entire manufacturing ecosystem is becoming more inter-connected and innovative with the use of technology. Smart manufacturing leverages a digital automated environment that can push the boundaries of production and help maximise efficiencies that deliver consistent quality products.

A recent Goldman Sachs report focused on The Factory

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of the Future highlighted, "Manufacturing is undergoing its greatest transformation since the Industrial Revolution. A wave of intelligent technologies is shaping a more connected, flexible and efficient factory floor - and redefining the ecosystem of equipment providers in the process."

Today, however, many factories are still operating departments and functions in silos. This disconnection leads to inefficiencies that can be costly both in time and production quality. As pressures continue to mount on chemicals companies to be more streamlined, manufacturing needs to embrace this new wave of technology revolution and adopt best practice to optimise across the enterprise.

The DNA of decision-making - Data, Networks, Analytics - gets to the root cause of manufacturing issues quickly. Advanced tools offer rich visualisation capabilities and analytical solutions

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on all time horizons designed to suit the way operations work today. The software tools are integrated and are extremely fast, requiring no client-side software to install or manage. Easy and convenient to use, operators can access and analyse tag data, process characteristics and unstructured data, using the most innovative operations data visualisation platforms on the market in a web application with desktop power and performance.

By being able to easily trace the source of operational problems, it is possible to significantly improve the overall asset effectiveness by benchmarking performance baselines and ranking assets according to improvement priorities. Overall equipment effectiveness (OEE) functionalities track asset availability, utilisation and product quality issues.

GREATER VISIBILITY

Being able to predict, manage, control and monitor production behaviour is the key to successful manufacturing. Users of big data are increasingly challenged with too many manual processes and having to cope with enormous volumes of information. Greater visibility of what is happening to the plant enables operational staff and management to make decisions knowing that they have up-to-the-minute data, which is contextualised, analysed and documented in a meaningful way and that maps to the core manufacturing goals.

DATA

Data management is fundamental to production performance. Many companies standardise on MES solutions to aggregate process, production and business information into a cohesive context with fast data discovery tools, automated workflow and order tracking, as well as extensive analytical, notification and visualisation capabilities. Covering all aspects of the ISA-S95 activity model, manufacturers are able to easily exchange real-time information between the shop floor and the rest of the enterprise to create actionable intelligence and optimise manufacturing excellence. The end result is lower operating costs, reduced variability and improved asset utilisation that increase bottom line profitability.

NETWORKS

As manufacturing environments become more complex, it is important to understand the functions of different technologies and how they interact with each other. Crucially, data historians provide current and historical manufacturing information to plant operations and enterprise personnel. Process data gets released to the MES system, which contains vital detailed manufacturing information that shows how the plant is behaving. All target recipe data and all actual data from production are captured by the MES system for analysis, reporting and higher level performance management. Typical KPIs captured include OEE, energy, quality and yield. Historians, such as AspenTech's Aspen InfoPlus.21, are architected to pull data from a variety of systems and across multiple levels. The data historian collects and

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stores 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.

ANALYTICS

Intelligent solutions such as aspenONE Process Explorer (a1PE) that helps to access, visualise, analyse and monitor plant operations data is thin client and device agnostic. It provides secure access without requiring client-side software installation.

MES delivers powerful capabilities by providing automated workflows and order tracking to facilitate improved consistency, better production tracking and reduced errors. Consistent, repeatable work processes maximise the efficiency of the production asset, assuring faster time-to-market.

PREDICTABLE PERFORMANCE

Effective data management eliminates erroneous information and delivers deeper, real-time insights into asset conditions. Automation is key in transforming the way manufacturers maintain and control their systems. Today, chemical companies need to increase their adoption of innovative solutions to be capable of responding faster to operational issues and keep pace with global competition.

With integrated MES, operators can contextualise data into meaningful information that will help them to conduct comprehensive analyses, easily troubleshoot and take timely corrective actions that will keep production on course to meet quality standards and client schedules. Bringing data to life and having a complete view of plant operations helps operators to make the best use of global assets, which drives efficient plant performance. Progressive manufacturers embrace smart technologies to seamlessly integrate physical and digital systems. It is in their DNA. As they transform their businesses, integrated technology helps them achieve excellence in execution, together with consistent and predictable performance. ■

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