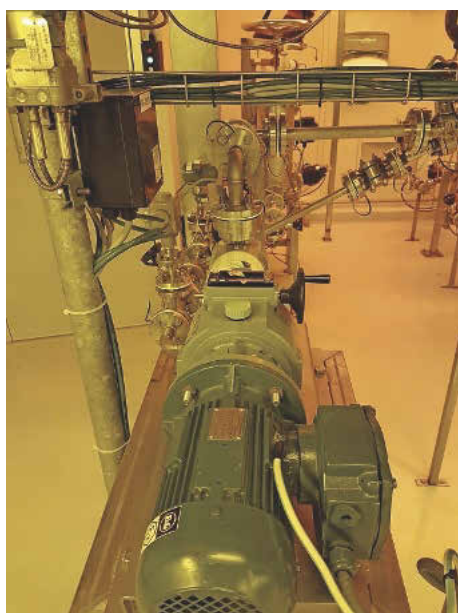


MES supports electronic batch record

Precise control of polymer production

Manufacturing execution systems are widely deployed within the pharmaceutical industry to support FDA-compliant, paperless production. Emerson Syncade Smart Operations Management Suite has now been successfully installed in the equally demanding high-tech chemical sector, where precision manufacturing and reliable, complete process traceability are increasingly important.



The Syncade system allows precise control of polymer production through synchronisation with the DeltaV system

JSR Micro NV is a subsidiary of the Tokyo-based JSR Corporation, a leading materials supplier to a variety of technology driven markets. At its Leuven manufacturing facility in Belgium, the company manufactures a range of polymer based products as part of its electronic and semiconductor materials business. Among the highly specialised materials it produces are KrF resists for 248 nm lithography applications. JSR Micro is the only plant in Europe currently manufacturing those materials. In operation since 2001, the Leuven plant was facing increased demand for higher quality

products as well as a growing need to maintain detailed batch records and guarantee process accountability and traceability. While product quality was already extremely high, many of the existing processes were based on paper records and some steps in the manufacturing process, like for example the weighing of raw materials, required several manual operations. Over recent years and in response to stricter regulatory compliance reporting requirements along with cost and pricing pressures on profitability, automation suppliers have developed manufacturing execution systems (MES) for production automation. MES offers the ability to integrate sophisticated enterprise resource planning with real-time production data, enabling managers to schedule production, manage raw materials and optimise equipment functionality, bridging the information gap between process control and enterprise planning.

Digitalised processes

JSR Micro was seeking an MES that could be integrated with its existing control system to facilitate improvements in the KrF and multi-layer manufacturing processes. Specifically, it would assist with the consistency of production and product quality, enable traceable products and raw materials, digitalise the paper records and minimise manual intervention for a more efficient process.

JSR Micro has a long relationship with Emerson, who were the main automation contractor when the facility was first constructed, installing its DeltaV distributed control system (DCS) to manage multiple units of the Leuven

plant. The success of those automation projects was a key reason why Emerson was approached again to provide an appropriate solution. Emerson's Syncade Smart Operations Management Suite was selected to meet JSR Micro's needs. Originally designed to satisfy the rigorous regulatory compliance requirements of the pharmaceutical industry, including electronic batch recording, the Syncade system is ideally suited for the similarly increased demands of speciality chemical production. As part of a 14-month project, Emerson installed Syncade alongside the DeltaV system and was responsible for the design, engineering, installation, commissioning, testing and start-up.

Workflow control

Syncade allows finer and more precise control of polymer production through synchronisation with the DeltaV system. In the production process, the system plays a key role in workflow execution, starting with the import of the initial bill of materials (BOM) from Microsoft Excel, followed by monitoring and control of the standard operating procedures involved in the product recipe with the help of electronic work instructions, up until when the tanks are set up and the raw materials weighed and dispensed. It guides the operator by means of the DeltaV system's intuitive user interface and by monitoring and recording deviations for predefined procedures. Syncade also prompts sample selection and automatically prints barcodes for effective tracking. Furthermore, the system controls the bottling and packaging process including scanning, weighing, labelling and barcoding of each

bottle produced in conjunction with SAP. All actions carried out in the course of the order are fully tracked and combined in the manufacturing batch record (BR). The BR automatically collects all manufacturing data and information as designed in the recipe as well as any comments or attachments, which can be



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manually edited or uploaded by the operator at any time during production. At the end of the production phase the Syncade system enables the BR to be routed into a review and approval process. Once the BR has been approved, an electronic version of the report can be archived and shared with the JSR's end customers.

Numerous interfaces

Syncade provides interfaces to a number of JSR Micro systems including Microsoft Excel, Windows Active Directory and barcode and weighing systems. In addition, it supports efficient production resource management across the plant with control over personnel authentication and process authorisation as well as equipment tracking and maintenance statuses.

Overall, the enhanced MES facilitated by the Syncade system allows JSR Micro to offer customers full visibility on the production process, with detailed digitalised batch records and customer audit trail tracking immediately

available – something that could previously have taken weeks. As a result, JSR Micro can provide easier traceability within the production process and demonstrate total conformance to customer quality requirements. As these requirements increase, JSR Micro is able to respond faster.

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