MES for Metals Applications

Alleviate obsolescence, address workforce challenges and align metals operations with customer needs

Features and Benefits

Modern MES puts real-time information at the fingertips of operators, technicians, engineers and plant managers. They can use these insights to get more from their workers, equipment and materials, which allows them to better meet the changing needs of customers.

Operations

- Reduce unplanned downtime as much as 20 percent
- Drive down scrap 5 to 10 percent
- Use production intelligence for continuous improvement
- Integrate production with scheduling and capacity planning
- Retain retiring workers' tribal knowledge

Competitiveness

- Address equipment obsolescence issues
- Improve flexibility to meet evolving customer demands
- Protect against late-delivery penalties and fines
- Incorporate traceability and genealogy

Quality

- Reduce production variability and rework
- Identify issues early in process rather than after the fact
- Create standard job worksheets
- Ensure successful completion of quality samples

Inventory

- Reduce days-on-hand inventory and overproduction
- Reduce time spent looking for and moving inventory
- Improve tracking of materials between sites and suppliers

Challenges

Many of today's metals companies are trying to compete using yesterday's technologies. These decades-old systems often fall short of business needs and introduce obsolescence risks, with limited-to-no spare-parts availability. Meanwhile, the workers with the most experience operating and maintaining these aging systems are nearing retirement. There is a real risk that these retirees may take critical "tribal knowledge" about the legacy systems with them when they go.

The challenges of obsolete equipment and a retiring workforce present liabilities in today's highly competitive metals market. Challenges include:

- Aging systems, retiring workers and a lack of diagnostics make downtime a constant concern. This can lead to missed production targets and costly late-delivery penalties.
- A lack of production intelligence prevents metals companies from spotting quality issues as they happen. It also restricts the ability to monitor key metrics, such as OEE, and to track inventory and work in progress.
- Legacy systems can be rigid and difficult to change. This conflicts with the growing need for greater operations flexibility to respond to changing input commodity prices and meet customer demands for more advanced materials.
- Manual recipe and order management can be time consuming. It also can increase the likelihood of errors and result in performance variations between shifts.
- Unconnected, aging systems cannot meet emerging customer requirements for product traceability or genealogy.

Solution

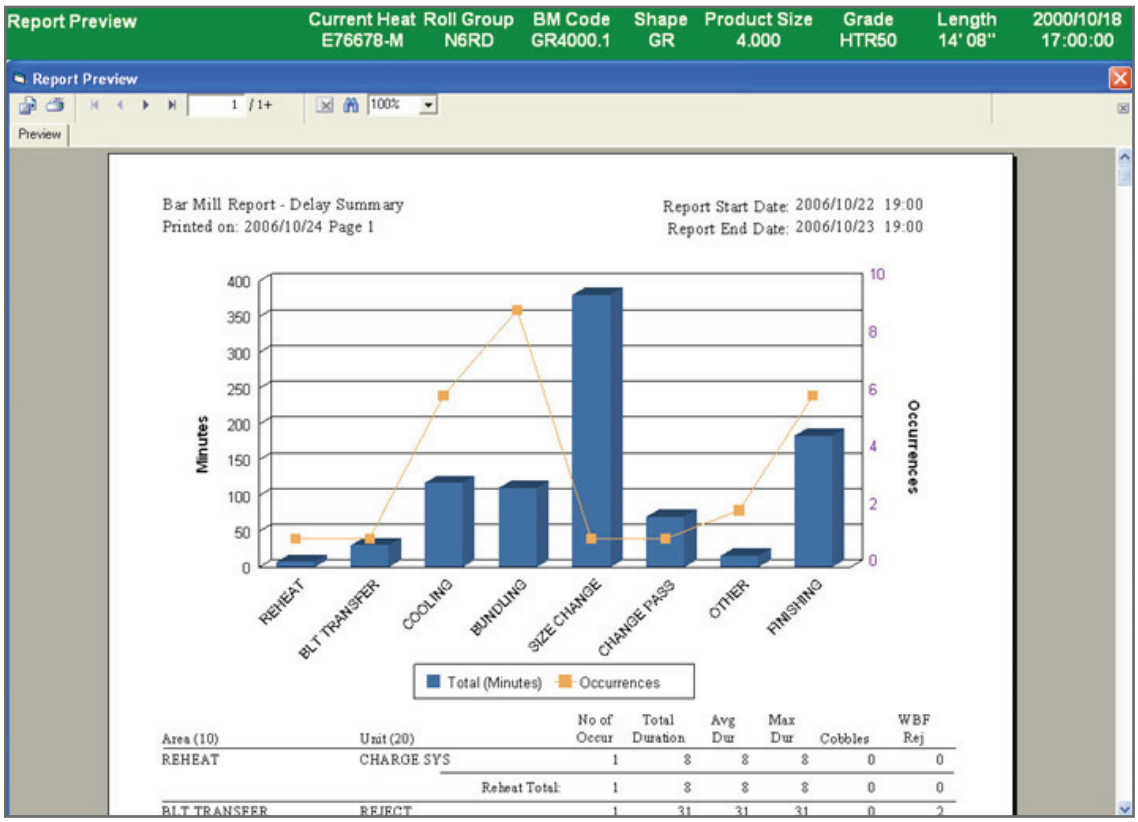
Modern manufacturing execution systems (MES) can help metals companies gain deeper insights into their operations, get more from their assets, and be more responsive to customer needs.

Modern MES links business systems, such as an ERP system, with real-time, operational, plant-control systems, such as PLCs, while providing enhanced user experience. The manufacturing process becomes information-driven to help trigger actions or execute operations, activities, rules and more. Modern MES also enables metals companies to move their stand-alone databases, legacy custom systems and spreadsheets into a more integrated, holistic solution. This can help drive business value across their enterprise.

MES for Metals Applications

Deployed at any level of the metals supply chain, such as integrated mills, bar mills, pipe mills or plate mills, MES can deliver operational and competitive advantages for metals applications:

Reduce Downtime: Improved visibility can reduce downtime as much as 20 percent. The ability to track running versus idle operations and scheduled versus unscheduled downtime can help identify areas that need to be addressed. Also, the ability to monitor downtime by plant, shift and flow path can help uncover discrepancies across operations.



Improve Quality Management: When quality tests are performed, MES can collect quality data from equipment and operators who are required to sign off that they read or followed a quality test. This can improve first-pass quality and reduce rework, and create electronic records that confirm products meet specified quality standards.

ProductAcceptance - Report Manager - Windows Internet Explorer provided by Rockwell Automation

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Start Date 8/12/2014 7:03:45 AM End Date 8/12/2014 10:03:45 AM View Report

Owner Type Order Product Name WorkOrder1

Available Equipment1, Equipment2, Equipr State Open, Expired, Completed

1 of 1 100% Find | Next

Product Acceptance

Date Range: 8/12/2014 7:03:45 AM -- 8/12/2014 10:03:45 AM

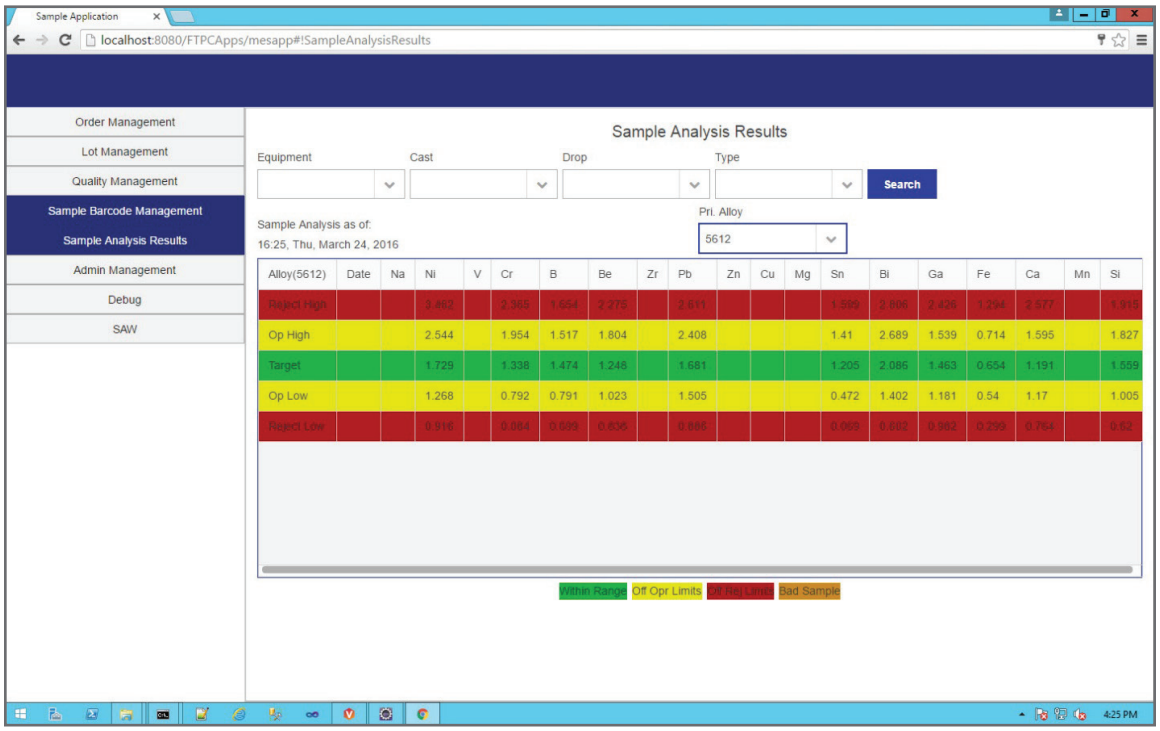
Owner Type: WorkOrder1

Plant Model: Equipment1, Equipment2, Equipment3, Equipment4, Equipment5

Plan	State	Owner	Material	Collection Time	Expiration Time
⊟ EQ_Check_Normal (8/6/2014 11:40:53 AM)	Open	Equipment1	Test.1		
	Item		Value	Result	View Instruction
	Oven Temperature		100	Fail	No
	Motor Speed		100	Pass	No
	Color		100	Pass	No
⊟ EQ_Check_Escalated (8/6/2014 12:40:53 PM)	Open	Equipment1	Test.1		
	Item		Value	Result	View Instruction
	Oven Temperature		100	Pass	No
	Motor Speed		100	Pass	No
	Torque		100	Pass	No
	Humidity		100	Pass	No
	Reflectivity		100	Pass	No
⊟ EQ_Check_Normal (8/6/2014 1:40:53 PM)	Open	Equipment1	Test.1		
	Item		Value	Result	View Instruction
	Oven Temperature		100	Pass	Yes
	Motor Speed		100	Pass	No
	Color		100	Pass	Yes

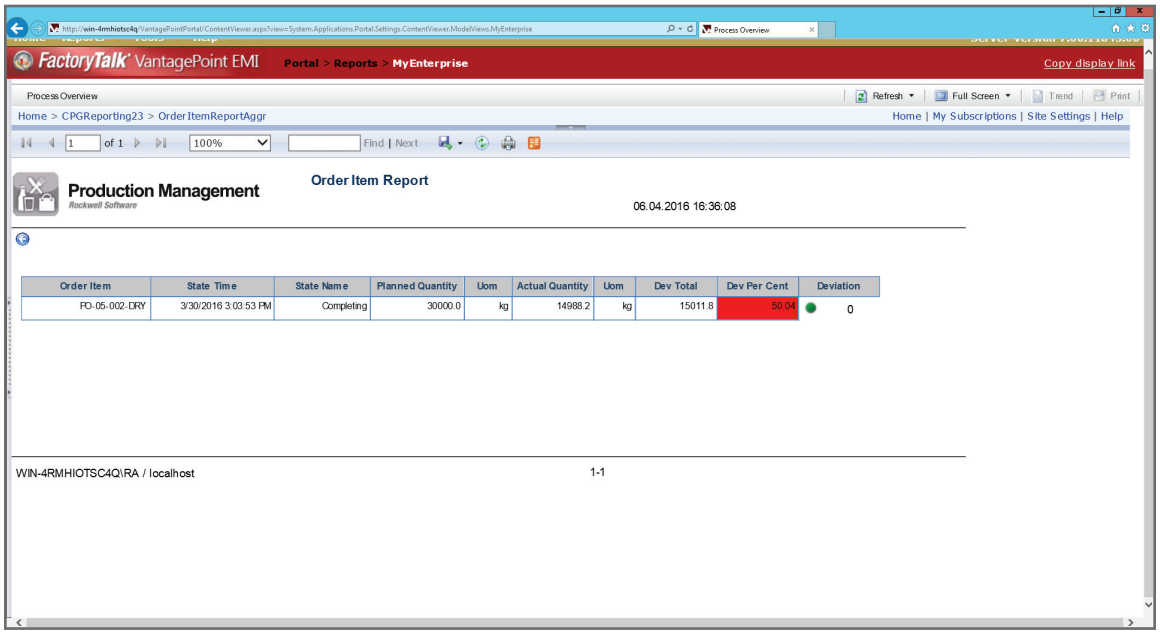
Quality management reports can display the status of completed quality tests, noting those passed, failed, escalated, and aborted; note the corrective actions required; and show overall quality KPIs including First Pass Quality and Final Release Index.

Improve Performance Management: The ability to access, view and log data from nearly any production point offers continuous-improvement opportunities. Operators can track key metrics, such as OEE, and better monitor material stock flows. Technicians can improve uptime by investigating production anomalies and minor machine delays. Plant managers can monitor energy consumption and identify areas for reduction.

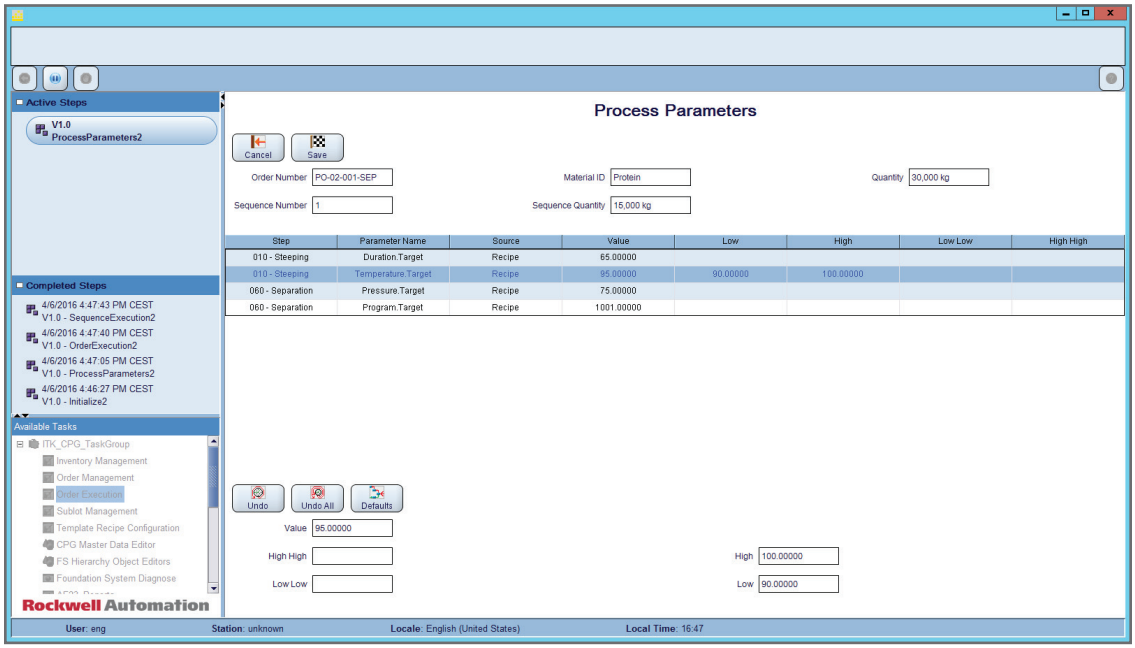


Daily downtime reports help maintenance invest in areas where the effort is most impactful to business goals.

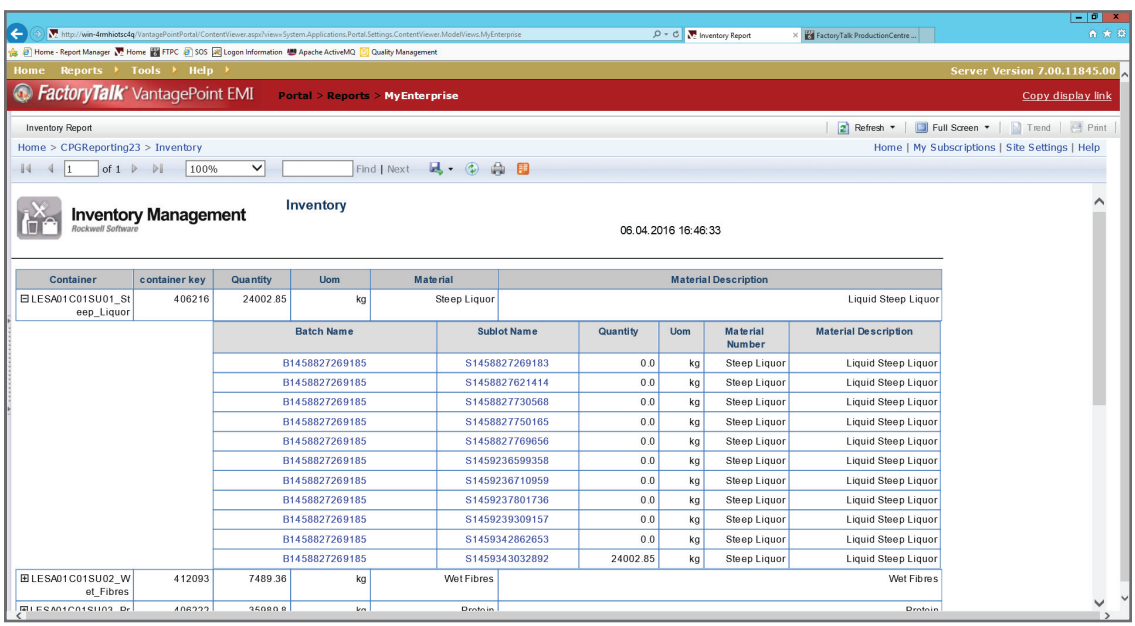
Protect Against Penalties: Improved performance and quality management can help metals companies meet their contractual obligations. This can help build reputations with customers and protect against penalties for not delivering product at the right quantity or quality. Collected production information also can be used to clarify any contractual disputes that arise about the volume or quality of delivered products.



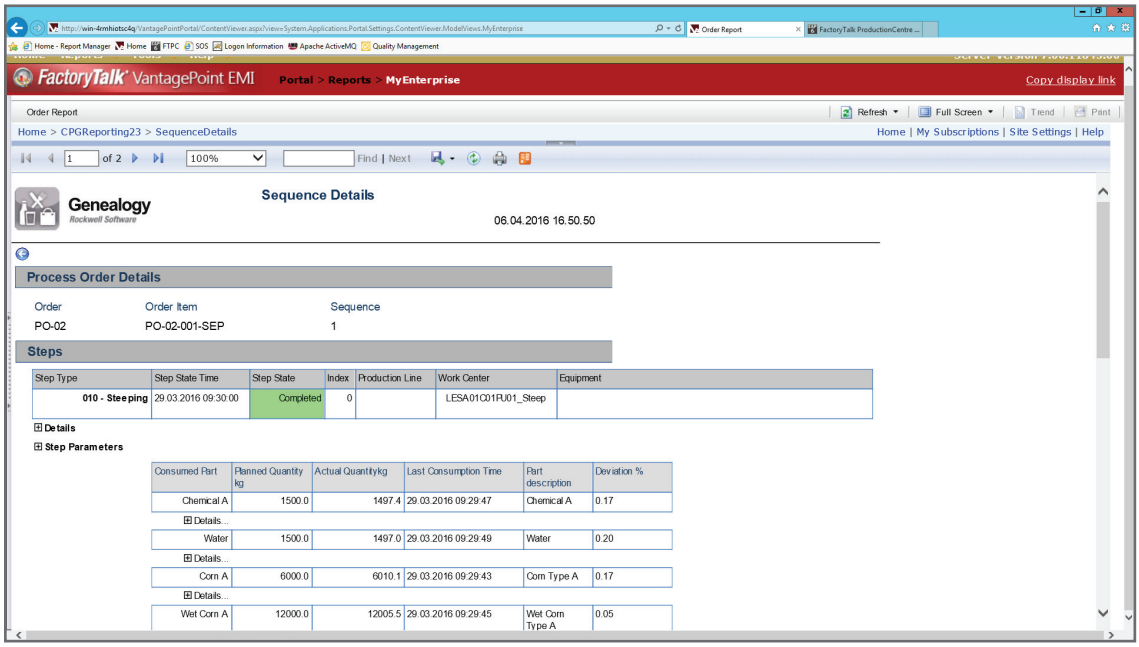
Automate Work Flows: MES can electronically manage recipes and jobs to help ensure products are consistently built to specification. MES can pull information from the ERP system and create a job worksheet that lays out all the steps for workers. At the same time, it can set the values on machines where parameters have changed.



Improve Inventory and Order Visibility: Operators can use MES to gain visibility into inventory and work in progress at every stage. They can identify all product on the mill floor, as well as any quality alerts or holds associated with it, and ensure it gets routed to the right equipment at the right time.



Incorporate Genealogy and Traceability: Unique identifiers, such as heat or lot numbers, can be assigned to each product and electronically tracked. This gives metals operators and their customers access to key historical information, including manufacturing origin and chain-of-custody history. It also enables customers to confirm the integrity of products upon delivery.



Retain Tribal Knowledge: The crucial tribal knowledge that only exists in the heads of workers who will soon retire can be captured with MES. That knowledge can then be embedded into work instructions; ensuring equipment continues to run as if its most-experienced operator were at the controls, even after they've retired.

The Right Time

Metals operations are ideally positioned to implement modern MES as they transition to advanced materials, incorporate new equipment and more complex processes, and confront a looming skills shortage. Operational savings, such as reduced downtime and scrap, more consistent quality and on-time deliveries, further justify an MES investment in the highly competitive metals industry. In addition as the metals industry starts to recover and demand increases, metals companies will need to be ready to quickly take advantage of increased market demand.

The Right Team

Rockwell Automation and Brock Solutions have joined forces to help metals producers as no one else can. With proven automation expertise and long-cultivated domain knowledge, these two companies are helping metals producers address their most pressing needs and gain new competitive advantages with a modern MES.

- Rockwell Automation is the world's largest company dedicated to industrial automation and information, and has extensive metals experience and a dedicated team serving the metals industry.
- Brock Solutions is one of North America's largest systems integrators, with a deep, rich history providing a range of real-time operation systems and other services to the metals industry for more than 30 years.

Rockwell Automation and Brock Solutions collaborate to help you develop an ongoing approach to plantwide optimization, improve your machine performance, and achieve your sustainability objectives.

Make the Move

To learn more about MES and how it can benefit your operations, contact your Rockwell Automation representative or visit **http://bit.ly/1LJM74h.**

www.rockwellautomation.com

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