Simine Automation and MES

Seamless integration increases productivity

Over the past decades, mining companies have focused their investments on program logic controllers (PLCs) and SCADA systems on the plant floor to improve processes and remain competitive. On the business side, investments in Enterprise Resource Planning (ERP) systems have made commercial processes better. Simine Automation and MES links these two levels and thus becomes the key element for discovering optimization potential and closing the information gap between the production floor and ERP. This is the basis for enabling greater productivity improvements and financial benefits in a shorter period of time.

With an increasing level of automation and with the deployment of sensors and mechatronics, mines and preparation plants produce better and more reliable data. The range includes the status of a single motor or intelligent field instrument on the shop floor up to a wide variety of process parameters and mathematical models for beneficiation and materials handling. This information ensures the transparency of complex processes, helps to control production on the basis of new targets, and allows a faster and easier maintenance in order to reduce unplanned downtimes. Developments in information technology contribute significantly to optimizing workflows and to saving energy and reducing costs.

At the business level, investments are focused on Enterprise Resource Planning (ERP) systems that aim to better manage business logistics. However, this tends to result in an information gap between the business processes run by ERP and the production processes and equipment used in automation and operations. To close the gap and make production more efficient, Siemens developed Simine Automation and MES, a seamlessly integrated solution for the mining industry.

Out-of-the-box solution for mining

Simine Automation and MES covers the whole automation and IT landscape, from sensors to business decisions and from excavation to shipping. It merges the technological processes with the business processes in combining the high potential of ERP systems in the area of financial management, procurement, human resource management, marketing and sales with the different production processes typically found in the mining industry. The Siemens system increases the transparency of the manufacturing process along the complete supply chain and is the centralized information platform for operators as well as for management. The company-wide supply chain capacity planning system includes integrated maintenance planning, which can be provided along with plant- and area-specific
Simine Automation and MES is the solution to increase your profit

Simine Automation and MES links the plant floor with the business side and closes the information gap.

Real-time scheduling for berths, stockyards, railways, beneficiation and mines with blending optimization. This results in maximized throughput, higher product quality, and fulfillment and delivery performance – and reduces the supply-chain costs associated with bringing output in line with demand. Detailed port scheduling shortens ship lay times and helps avoid huge penalties for delivery delays. The material tracking and quality management system combined with a laboratory information management system gives operators clear quality routing with blending functionalities. The result is qualified, ready-to-ship ore, accompanied by the required certification. This minimizes the necessary assets, inventory and energy requirements.

Using the latest industry standards for MES systems (ISA S 95), typical functions are available, for example for production order management, inventory and equipment handling, data history, KPIs like overall equipment effectiveness (OEE), energy management, mobile and web-based HMI, and enhanced reporting tools. The offering also extends to fleet management, 3-D stockpile handling and statistical process control. The modular approach permits step-by-step implementation according to the needs of the mining company. Furthermore, it allows future extensions and upgrades, and a short implementation time.

Simine Automation and MES is equipped with pre-configured applications and now covers at least 80 percent of the requirements for production processes – from excavating and transport to crushing, shipping.
Mining out of the box: pre-configured applications are at the heart of Simine MES
This overview is showing all MES functions which are covered with the Mining in a Box concept. In the ERP area the functions are shown which need to be connected with the Execution Level. Simine MES provides standard connectors for different ERP-Interfaces. Behind each of this MES function blocks one or more libraries are used to fulfill the required functionality.

This approach enables scalable MES solutions with a fast ROI and low total costs of ownership.

and secondary processes such as water treatment. This approach reduces the configuration effort and enables scalable MES solutions with a fast ROI and low total costs of ownership.

New minerals automation standard based on Simatic PCS7
Simine Automation is based on Simatic PCS7, the process control system from Siemens for all process industries and one of the leading process control solutions worldwide. The specific minerals automation standard and the minerals library provides a predefined engineering approach with a process-oriented configuration and engineering strategy for the mine process. It includes typical functionalities for the control and visualization level and helps to streamline and optimize the engineering process. Open system architecture in line with industrial standards supports seamless integration of equipment like field devices, drives,
motors, MCC’s, CCTV and vendor packages based on third-party controllers. Fieldbus Foundation and Profibus PA are fully integrated and guarantee – together with Industrial Ethernet, Profinet, OPC, IEC61850, Modbus and Industrial WLAN – the open system architecture of the minerals automation standard. An automation controller with highest IO performance, extremely reliable components and the possibility for full redundancy on all automation levels ensures highest availability whenever needed.

Special solutions like remote operation center, plant asset management, power control integration and advanced process control are seamlessly integrated in the minerals automation standard. A single system for process and power control leads to an easier and faster engineering approach, reduced training efforts for operator and maintenance personnel, and better process transparency.

Integrated asset management including mechanical equipment with automatic generation of the asset information based on the process hierarchy and the automatic feedback of intelligent devices helps to avoid unplanned downtime and supports the planning of preventive and predictive maintenance. A free-of-charge advanced process library (APC) helps to easily and cost-efficiently implement APC applications. These offer the full advantage of an integrated solution with the same look and feel for operators. Furthermore, predefined APC packages for several process steps are available.

With nearly 100 years of experience in the minerals industry Siemens is the perfect partner in optimizing your operational efficiency.