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Case Study: ALUMINUM CAN MANUFACTURING

Project Overview

A major independent manufacturer of beverage containers added a new production line in St. Petersburg, Russia. The client's goal of a highly maintainable and highly available line was met by Roeslein and Tegron.

The new 2,400 can per minute two piece aluminum can line was commissioned on schedule in St. Petersburg, Russia. The system utilized a world class control and information system architecture with several key elements that contributed to Rostar's goal:

- Line Control using a modular design with distributed power and control components to provide lowest cost of ownership
- Line Awareness to annunciate line conditions and production information to provide operation staff with what they needed to operate the line at and above design capacity
- Data Management to provide historical and real-time web based access to critical operational information

Scope Of Supply

Roeslein and Tegron provided full turn-key project delivery services for this client including:

- Project Management
- Electrical Controls and Power Distribution Design
- CAD Documentation
- PLC Software Design, Development, & Testing
- HMI Design, Development, & Testing
- Electrical Construction Management
- Start-up and Commissioning
- System Training

Scope Of Supply *continued*

Line Control

The line control system was built using the industry's latest PLC and on-machine variable frequency drive (VFD) technologies. The PLC and distributed input/output (I/O) architecture provided the client with a modular and highly scalable architecture. The distributed PLC and I/O structure also lowered the cost of installation and allowed the system to be commissioned in a fraction of the time required by traditional centralized control designs. The on-machine variable frequency drive design provided a smaller overall control system footprint. All control panels (motor control and I/O) were smaller because the space utilized for mounting the VFDs would have been unutilized otherwise. The distributed VFD design also puts the power components and I/O geographically as close as possible to the portion of the process that is being controled making the system much easier to maintain and troubleshoot.

Line Awareness

Having the right information in the right place is the key to getting the most out of production and maintenance support resources. The line awareness system delivered this through several large multi-line LED and industrial graphic displays. The displays provded:

- Real-time OEM equipment and conveyance states
- Real-time OEM equipment and conveyance faults
- Real-time system diagnostic displays including area alarms, detailed rack I/O views, and localized calibration functionality for conveyor tracking
- Real-time production goal monitoring
- Dual language support on all displays for English and Russian

The right line awareness system turns data chaos into clear actioinable information.

Data Management

The data management system provided a historical and real-time view of information from low level details like how many equipment stops during a given time period to the overall efficiency of the can line. Roeslein and Tegron's proprietary data management system called Op-Master provided via a highly scalable web based architecture the following:

- **Production Report:** Production reporting that provided views from as small a timeframe as a single minute to several days with no practical limit on expanding this time frame through custom report development.
- **Machine Fault Report :** Fault reporting that provided a list of every stop that a selected piece of process equipment made during a user specified period of time. The system allows up to 255 user-defined reasons for stoppage per machine.
- **Shift Performance Report :** The system provided a graphical representation of production counts by shift over a user-defined period of time.

Ongoing Improvement through rapid isolation of product quality and process flow issues were made possible by the Op-Master system. This allowed rapid commissioning of the line during start-up and rapid improvement of overall can line efficiency since commissioning.

The Outcome

The can line was commissioned and brought to design speed ahead of expectation. Utilizing the tools provided by the system the overall efficiency of the line continues to improve. Roeslein and Tegron delivered a world class design and implementation that continues to pay dividends for our client.

Sustaining Technical Support

Our team continues to provide support via the world wide web to the operations team in St. Petersburg. The data management and remote monitoring system provides our client with the right information in the right context on an ongoing basis to raise the productivity of their equipment even as customer requirements and the productioin environment continue to change.