



Products and systems from Eaton offer us a high level of flexibility, compatibility, efficiency and safety.

Daniel Janusz, Managing Director Ferrum

Mieczysław Mietelski, Production Plant Director, Ferrum

The Whole Grain Solution

Location:

Chojnów, Poland

Segment:

MOEM

Problem:

Automation of a grain handling system with optimum reliability and availability

Solution:

XV100 and XV400 touch display, XC200 PLC and 4 CANopen gateways SmartWire-DT, MSC motor starter with SmartWire-DT, Control circuit devices with SmartWire-DT DS soft starter, FAZ miniature circuit-breaker, NZM circuit-breaker

Results:

The seamless connection and communication system guarantees a highly reliable system

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Background

Based in Chojnów (Poland) Feerum S.A. is a company that is active in grain processing: This ranges from transportation from the field, to initial cleaning, drying, final cleaning, right through to storage. All the machines, plants and systems used in these processes are manufactured in Poland, so that Feerum produces grain dryers, silos, chain and belt conveyors (redler and conveyor lines) as well as elevators. For years Feerum has primarily used components and solutions from Eaton for both the electrical engineering and the automation.

The Polish company Feerum places importance on the use of the most advanced technical solutions in its plants; the success of the machine and system manufacturer is based on its many years of experience as well as the practical input from the agricultural sector. The greatest importance is placed on ensuring the highest degree

of care in grain handling processes, as well as an extensive natural environment for drying, conveying and storage.

Challenges

Ferrum had the following requirements for the automation of a new grain handling system: In order to ensure optimum system reliability and availability, more than 150 drives had to be controlled, protected and continuously monitored via DOL and soft starters. The system also had to be equipped with central and remote operator stations, and all process data had to be fed centrally to the LabView-based SCADA system. A manual and automatic setup of the system were also required.

Solution

Compared to conventional solutions, Eaton offers powerful alternatives that are consistently based on the lean

philosophy: The core of the Lean Solution philosophy is to identify work processes in machine and system building in order to eliminate waste and fully leverage optimization potential for customers. Waste can apply to several areas such as long routes, waiting times, overproduction, faults, as well as complicated processes and unused potential. The Lean Solution philosophy covers three areas: Lean Connectivity, Lean Automation and Lean Power:

Lean Connectivity eliminates the complex and error-prone point-to-point wiring in the control cabinet and in the periphery. SmartWire-DT thus uses a single "green" standard cable connection to replace the individual wiring of the motor starters used at Ferrum to the central controller. In many switchgear systems, this reduces the effort required for wiring, testing and commissioning by up to 85 %. SmartWire-DT is not only used in the control



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cabinet but also in the periphery, and connects up to 99 SmartWire-DT slaves such as RMQ control circuit devices over a maximum network length of 600 meters.

Lean Automation eliminates the need for entire device layers such as the I/O modules of a central PLC, as well as the associated acquisition and maintenance costs. The HMI/PLC of the XV100 series used at Feerum features an integrated SmartWire-DT interface. This drastically reduces the time required for mounting and wiring, and excludes the possibility of wiring errors. The visualization on the XV100 touch display PLC is implemented with the intuitive Galileo design tool. The devices are programmed as PLCs with the CoDeSys-based xSoft-Codesys-2 programming system in accordance with IEC61131-3.

Lean Power targets the use of energy efficient components and standardized control wiring. The energy efficiency of a machine or plant is also increased – thanks to the inherent data transparency provided by SmartWire-DT: The actual current values as well as the energy consumption of all motor starters are continuously monitored. This kind of innovative control system enables the optimum coordination of all individual plants at Feerum, as well as the continuous monitoring of their trouble-free operation. It also ensures process safety.

Results

Thanks to Lean Connectivity with SmartWire-DT, users can enjoy the benefits of the Lean Solution philosophy both in terms of their products as well as in their manufacture. Highly qualified specialists are no longer required for integrating drives in the control system. The distinctive features of SmartWire-DT are the simple structures and easy handling on the one hand, and system immanent manipulation protection on the other. The seamless connection and communication system from Eaton speeds up the planning and commissioning of machines or plants and at the same time ensures fewer downtimes; it also simplifies process optimization and facilitates the efficient, intelligent and careful use of resources.

The managing director (CEO) Daniel Janusz and production plant director Mieczysław Mietelski explain: “We produce highly innovative machines and plants in Poland. We design and implement a wide range of automation requirements that are based on the Lean Solution philosophy from Eaton. If required, we also combine the existing PLC and control system of the customer with new and modern ones. We have found Eaton to be a reliable partner and supplier for electrical engineering, drive engineering and automation over several years. Products and systems from Eaton offer us a high level of flexibility, compatibility, efficiency and safety – and are naturally always state-of-the-art, as well as providing the required approvals and certificates.”

