OMRON

First ever distributed safety control on very large system

Reducing wiring, assembly, and commissioning time by up to 50%

Company:
IDEAL – Trade Service, Czech Republic

Application:
Painting lines + Sysmac Safety

IDEAL - Trade Service (ITS) in the Czeck Republic is a producer of finishing system technology for the surface treatment industry. It supplies complete painting lines, which can cover more than 5,000m2. These production lines are very large and complex, and include dip pre-treatment lines, drying boxes, painting boxes, tunnel ovens, cooling areas, conveyor systems, water treatment plants, and air handling systems.

Distributed safety control made possible by Sysmac

Before Sysmac, the safety control of such a huge and complex production line could only be achieved using many different localized control strategies. However, because Sysmac Safety can use the same communications network as machine control, the safety control system can now be distributed. In this case safety control across more than ten cabinets, and the IO system is across 21 nodes. This reduces wiring, assembly, and commissioning time by up to 50% compared to the previous localized safety control systems.

The Sysmac machine project includes more than 600 standard IO signals and more than 100 Safety Signals, many frequency inverters, six Human Machine Interfaces, and the Manufacturing Execution Information System with SQL database. EtherCAT and FailSafe over EtherCAT (FSoE) is used as the fieldbus technology and Ethernet/IP as factory information network.

Customization – lightning fast

"Every system we build is unique and different," says Milan Kalivoda, Technical Manager at ITS. "So anything that helps us reduce engineering time, modification and debugging time is a great help. Fortunately, with Sysmac Safety, those activities are now done in lightning fast time compared to the previous system of test-debug-test. We know the outcome of any modification before it's made – thanks to the unified communications system. With Sysmac there is no need to even change hardware – all modifications are easily done via software."

All safety functions on one interface

The ITS paint line started production in February 2014 and includes a Sysmac NJ CPU, numerous standard Inputs and outputs, EtherCAT network, FailSafe over EtherCAT(FSoE), EtherNet/IP, Programmable safety, numerous Emergency Stop Pushbuttons, Reset pushbuttons by areas, Operating Modes, many Safety Light Curtains, combined according to the production or product need flexibility. It also includes frequency Inverters with safety inputs to ensure that it stops all dangerous movements, and many diverse Safety Switches.

The result is a safety performance level of PLc and some parts PLd. The status of each safety sensor, safety actuator and safety

![OMRON](OMRON logo)
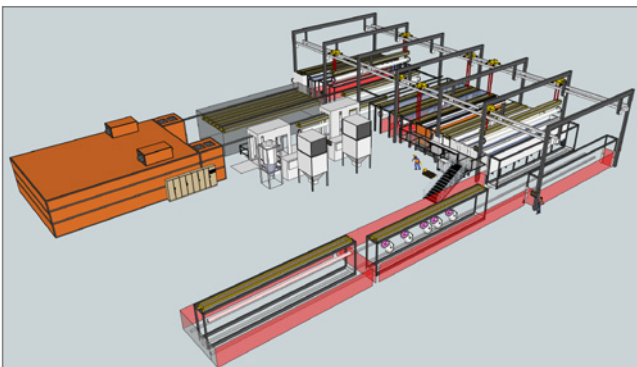
function is effortlessly monitored through standard EtherCAT communication.

The production line is divided into five main areas, each area with an NS touch panel operator interface, and the safety functions actuating independently. Each control panel provides status information on each safety element installed on production line and provides clear instructions to the users to avoid mistakes. This information is available on the main industrial PC with CX-Supervisor, and all the information is also logged to MS SQL database. Collecting all data is really helpful to check and monitor all regular safety inspections of the safety functions.

During the commissioning of this highly flexible system, it is possible to work safely with already installed parts without bypassing the safety of the parts that aren't installed, and a soon they are in service, they are easily added to the entire line.

"We are very happy with Sysmac Safety," says Milan. "It gives us easy data communication between standard and safety applications so diagnostics is easy. There's also simpler project and cabinet assembling, with an easy standard and safety modules combination. All of which saves space, time and costs. The result is also an easy to maintain machine," says Milan.

Benefits at-a-glance
- All safety functions on one interface
- Fast and easy customization
- Less space, time and cost
- Better diagnostics – trace any fault in production line
- Fast access to information stored in SQL database
- Better product documentation.

"There are many benefits in using Sysmac, but I think the stand-out ones include easy and reliable communication with SQL DB. There's also easy programming, easy and high-speed communication setting with frequency inverters / servo systems. These enable us to create complex drive diagnostics and online parameters changing. The DataTrace tool is also a very useful tool for diagnostic and commissioning."
Martin Šátek
SW & HW Specialist

See the video on
http://ulozto.cz/xNYTD8rR/dlouha-verze-1full-mp4
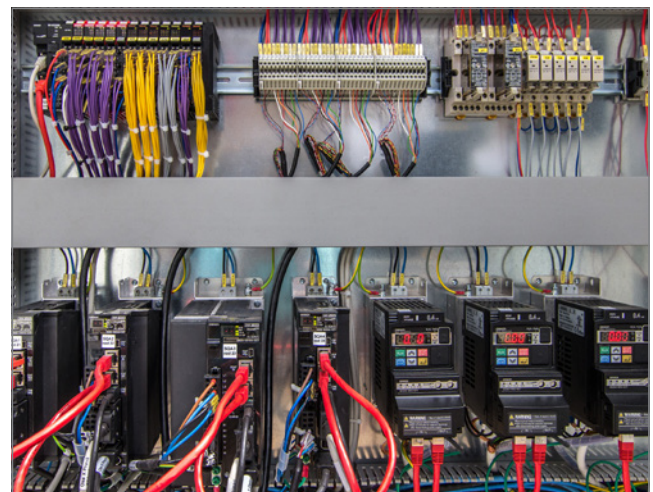
About IDEAL-Trade Service
The company IDEAL-Trade Service, spol. s.r.o. has more than 20 years of experience in supply of technological units and chemicals for surface treatment, compressors, compressed air and other ancillary products and services. In all these areas, ITS ranks among the most important partners for both customers and suppliers. ITS is able to serve from offices located in the eastern Slovak, Central Bohemia and Prague.

About Omron
Omron Industrial Automation is a leading manufacturer of high-tech products and solutions for industrial automation. The company is part of the Omron Corporation founded in 1933 in Kyoto, Japan, and employs more than 36,000 people worldwide. The wide product range includes control, drive and safety technology, image processing and sensor systems, as well as control and switching components. The aim is to provide mechanical engineers with demand-driven, integrated automation solutions from a single source. In addition, Omron offers its customers comprehensive application know-how. as well as region-wide on-site service. In Europe alone, Omron has 19 sales offices and operates its own production sites.