Plant automation with zenon future-proofs speck production

Automation meets tradition at speck producer HANDL TYROL

5,000 tonnes of bacon a year are shipped from the state-of-the-art production facility of HANDL TYROL GmbH in Haiming in the Austrian Tyrol. The overall plant automation solution implemented by COPA-DATA's Silver Partner ematric gmbh, based on the zenon software platform, enables highly efficient production of traditional delicacies.

For thousands of years, humankind has cultivated the art of preserving meat through curing, drying and smoking. The combination of meat with salt, fire, air and spices creates the specialty known as Tiroler Speck, an authentic Tyrolean cured ham. It is particularly popular in alpine regions as an energy-rich snack. Speck is made using a mixture of the Nordic smoker and Mediterranean dry cure methods with a little salt and cold smoke, lots of fresh air and an aging period of several weeks. It is identifiable by an EU Protected Geographical Indication (PGI).

The best-known and largest producer of Tiroler Speck PGI is HANDL TYROL. Founded in 1902, the family-owned company employs around 550 people at four locations. It produces annually some 15,000 tonnes of original Tyrolean bacon, ham, raw sausage and roast meat products which it exports to 25 countries. In addition to the highest quality standards and the great taste of the products, HANDL TYROL owes its success to frequent innovation in production technology and product variants.

With a high level of automation, HANDL TYROL makes Tiroler Speck PGI from pork at the Haiming plant.

In one control room at each location, all operating states are clearly displayed on multiple monitors.

TRADITION WITH A TWIST

The process of making Tiroler Speck PGI for retail sale takes several months. After being salted, the meat arrives in the curing room where it remains for three weeks. It is then cold-smoked with beech wood at around 20 degrees. The meat is then air-dried for eight to sixteen weeks. By this point, it has lost about 40 percent of its original mass. After the meat has been shaped and trimmed, it is cut and packaged.

To exploit the opportunities of new markets and rising demand, HANDL TYROL decided to set up a new production facility for its core ham and loin bacon products. It would do things the old way with a twist, as per its own definition of innovation. „The proven, efficient and partly prescribed production processes will be maintained," explains Karl Christian Handl, Managing Partner of HANDL TYROL GmbH, discussing the objectives of the project. „At the same time, a high level of automation in line with Industry 4.0 will enable the flexible and energy-efficient production of large quantities, and make it easier to meet high quality standards and reporting obligations."

TRIED AND TESTED IN EXISTING PLANTS

With the aim of integrating the building technology within the overall automation, HANDL had already equipped its existing locations with a control system before the construction of the new speck production facility. „The inventory showed the wide variety of existing control and automation systems that had to be integrated," recalls Rainer Haag, Managing Director of COPA-DATA's Silver Partner ematric gmbh. „Because of its ability to communicate with virtually every imaginable third-party system, we knew we wanted to use zenon."

On the basis of COPA-DATA's proven software platform, a control system for heating, ventilation, cooling and other building services had been created, which has had a direct impact on production. Over several years, the automation specialists at ematric gradually integrated more existing systems using zenon. This resulted in a comprehensive, multi-site production and building management system.

UNIFORM SYSTEM ENVIRONMENT

One goal of the planning for the new production plant was to integrate production equipment and building technology in a complete plant automation system. HANDL sought a uniform system environment with a higher-order control center that would control the production processes and ensure a simple and error-free data exchange with the ERP system. Another expectation of the system equipment was to significantly reduce the effort required to compile the extensive necessary documentation.

„We have had excellent experiences in existing plants with the zenon software platform and its implementation by ematric," says Karl Christian Handl. „That's why we decided to follow this path for the new building as well." Unlike the earlier projects, all the process equipment, production machines and conveyor systems, including an automated guided vehicle system, were included here.

HANDL had planned the system in great detail to ensure the project's objectives were achieved. The machines, systems and
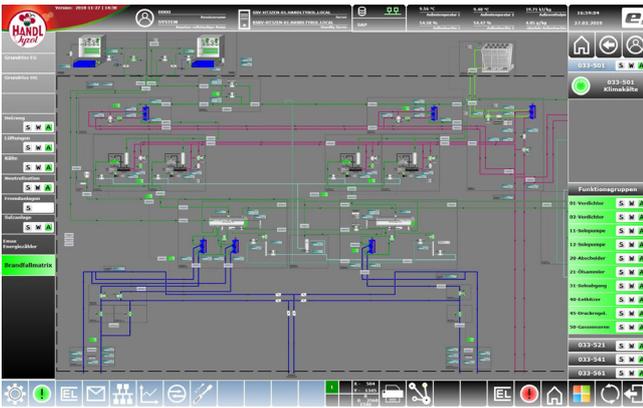
The entire plant, including all machines, systems and building technology, is displayed in zenon.
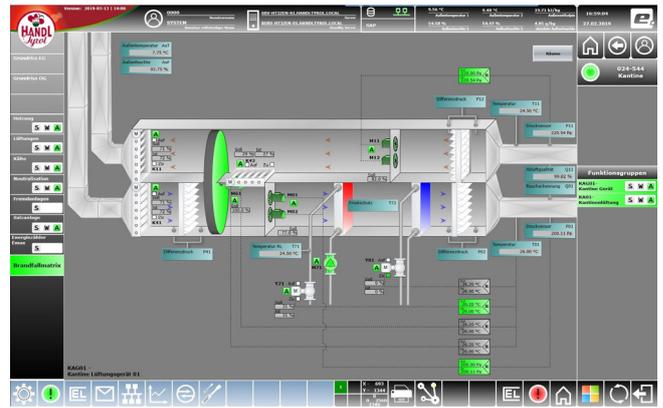
zenon gives users control of all equipment – from stand-alone machines to complete production sites or the entire multi-site enterprise.

auxiliary units were designed only after computer simulations of the expected goods flows were mapped by an external organization. Dimensioning and building design then followed. A digital twin of the system, based on the computer models, provided an excellent basis for ematric's project work.

TRANSFORMATION OF THE AUTOMATION PYRAMID

In addition to proving itself in the existing plants and the capability of direct connection between the ERP and SCADA systems, zenon's redundancy and security were important selection criteria. The software can be operated with redundant servers and has numerous options for operation directly from the client system. „We designed the entire system in such a way that even in the event of a total server failure, each of the individual machines can continue to function effectively," explains HMI / SCADA specialist Daniel Weiskopf from ematric. „This also allows for maintenance and update activities without interruption to manufacturing processes or data."

In order to ensure seamless data consistency with high operational reliability, HANDL and ematric turned the traditional automation pyramid on its head. After consultation with COPA-DATA, they replaced everything between the ERP and MES systems and the machines and units with one platform: zenon. The comprehensive software for the highly automated operation of machines and systems covers the traditional SCADA, HMI and PLC levels of a process control system.

This form of implementation significantly reduces the number of interfaces between different systems. It simplifies the configuration and maintenance of the overall system, and minimizes the number of possible sources of error.

BRINGING TRADITION INTO THE FUTURE

The ematric technicians used a large number of the many features offered by zenon. In addition to the SAP interface, they utilized Equipment Modeling and the Extended Trend module, to name just a few. Since there are around 40 PLCs from different manufacturers in the overall system, ematric engineers also used the integrated software modules for VSTA and the soft PLC zenon Logic to optimally integrate all hardware.

The implementation occurred in parallel with the construction of the new production facility. In addition to PLC programming and the customization of zenon, it also included setting up a control center at each location. In the control centers, all of the operating states are clearly displayed on multiple monitors. Malfunctions and faults can be detected immediately, and the steps necessary to efficiently troubleshoot an issue can be initiated quickly. Thanks to alerts from zenon Message Control and access via web services, faults can be resolved very quickly and downtime avoided.

With a standardized user interface and extensive reporting options which can incorporate historical data, the zenon implementation supports employees with optimized production control. „The fully integrated data flow across all systems enables us to control the entire plant with minimal effort,"
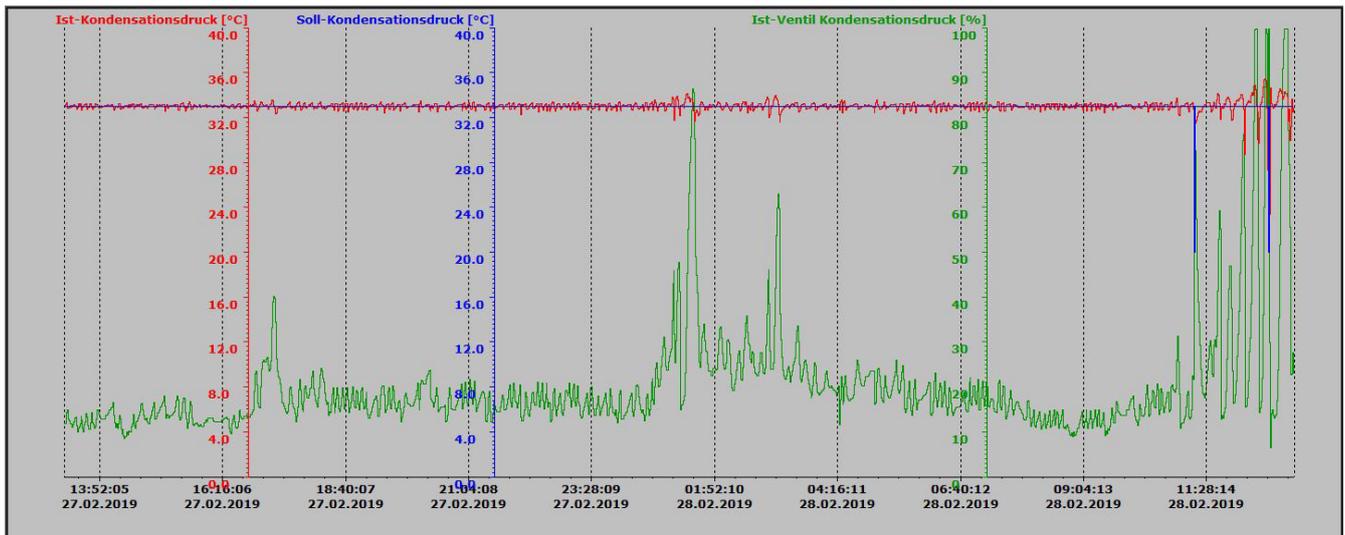
*Data collected from testing, production and consumption can be
used to improve quality and optimize costs.*

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**KARL CHRISTIAN HANDL,
MANAGING PARTNER, HANDL TYROL GMBH**

confirms Karl Christian Handl. „By integrating all systems in
zenon, we can respond quickly to faults and carry out process
optimization." In addition, quality and cost optimizations
can be derived from testing, production and the use of data
collected in a variety of reports.

After a one-month trial run, the plant went into full
operation without the need for any further updates. Since then,
Tiroler Speck PGI is being made at HANDL TYROL's Haiming
plant using an unbeatable combination of traditional methods
and state-of-the-art technology. Complete automation with
zenon ensures highly efficient operation, enables further
growth, and ensures a consistently high-quality end product.
As Karl Christian Handl commented at the opening ceremony:
"A vision was made a reality – tradition became the future."

HIGHLIGHTS:

▸ Site-wide equipment control and monitoring
▸ Intuitive operation via one control room per
  location
▸ High level of automation
▸ High energy efficiency and overall system
  efficiency (OEE)
▸ Simplified quality assurance and verification
▸ Comprehensive, automated reporting process