



Westfälische Fleischwarenfabrik Stockmeyer GmbH

Central production control despite numerous machine interfaces



Central control and process data visualization despite a multitude of the most diverse interfaces.

Due to strict statutory regulations, the food processing industry places high demands on reliability, traceability and the quality of manufacturing processes.

Therefore, the industry is mostly skeptical of changes. Its rule of thumb is: Never touch a running system. However, whoever strives to keep up with today's economic demands, requires both the highest level of quality as well as optimized production processes. In order to achieve this, modern automated solutions are virtually indispensable. When used practically, such solutions not only allow you to improve production processes, but they also save energy and therefore help reduce production costs.

The Stockmeyer Group has been producing traditional meat and sausage products since 1913. Back in the 1960s,

the company was one of the front-runners for self-service counters in the sausage sector as it first introduced pre-packed sausage products into the German market. Anton Riedl Spezialitäten GmbH and the Polish manufacturer Balcerzak, along with Westfälische Fleischwarenfabrik Stockmeyer GmbH constitute the Stockmeyer group which represents the meat processing business segment of heristo ag.

Its meat products plant in Füchtorf, located in Westphalia, Germany, has played a decisive role in keeping the company at the front of the pack. The plant's production of cooked, raw and boiled sausage is supported by the latest automated technology.

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– Uwe Rosenski, Head of the Electrical Engineering Department Stockmeyer GmbH



The Results

- Increase in data quality by approximately 70%
- Flexible display of process data in daily, weekly or annual diagrams
- Additional security through OPC collectors which temporarily save process data in a decentralized, redundant database
- Products comply with 21 CFR Part 11
- No programming efforts due to parameterization
- Thanks to flexibility and scalability, gradual changeover is possible with no downtimes
- Allows future vertical integration into ERP system
- Process data can be used as control variables for the ERP system
- Solution allows energy management and can be implemented company-wide
- Straightforward costs

Variety presents challenges

Nearly 100 different types of cooked, raw and boiled sausage are produced in a one-shift operation and packed in a two-shift operation at the Westphalian plant. Approximately 4,000 tons of sausage are produced monthly. In the process, the multitude of processes place extreme challenges for its automated technology. There are different recipes for the contents and manufacturing processes, such as filling, cooking, autoclaving or ripening for nearly every type of sausage.

Previously, the most diverse machines operated independently of one another as stand-alone solutions and were equipped with a wide range of PLC controllers. These were being used for the individual production stages. In order to optimize the manufacturing processes and to facilitate the required traceability, the stand-alone solutions had to be gradually changed over to a complete, networked automated solution. In doing so, the goal was not only to link together the individual system components at the field level, but also to create, for example, the requirements for vertical integration into the ERP system.

Gradual changeover

With nearly 300 machines and systems used in the production process, it is obvious that a changeover could not be performed overnight. The team at the Westphalia plant therefore searched for a flexible and scalable solution that could be gradually expanded and at the same time, supported the wide range of existing interfaces, as well as allowed integration into an ERP system further down the road. The decision was made to use MES and process control components from GE. The process control software and

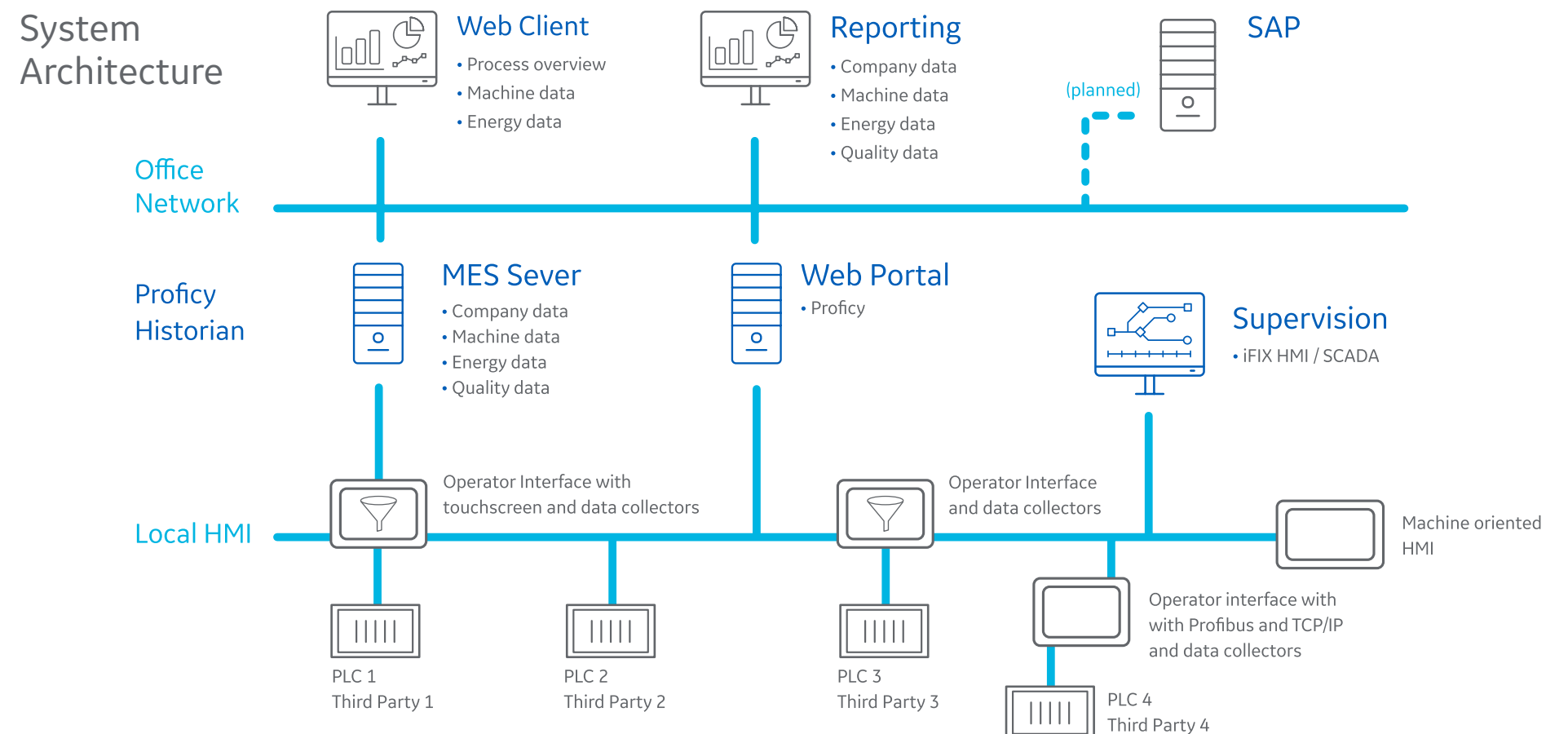
controller experts from the NFT Automatisierungs-systeme GmbH implemented the on-site system integration.

With the new automated solution, the Proficy Historian server saves all process data, such as temperatures, moistures or PH and guide values into a database that is optimally matched to the industrial requirements. A Proficy dashboard relies on and allows access to all historical and current data from anywhere using the company intranet

thanks to its web-based construction. iFIX HMI/SCADA, also part of the Proficy family, carries out the visualization of the individual production processes, such as filling systems, cooking systems or smoking and ripening systems. Access is password-protected and different processing levels can also be created. Finally, approximately 20 Operator Panels currently allow the visualization and control functions to be carried out directly on the individual system components.

“Although many different controllers from a broad range of manufacturers were being used at Stockmeyer, all process production data along with infrastructure data needed to be archived at one common location. In this case, GE products are highly suitable, since their software provides numerous possibilities to accommodate the most diverse data. At the same time, the products meet the requirements stipulated for the food processing industry in the important logging directive 21 CFR Part 11.”

– Dipl.-Ing Klaus Lühn, Managing Director at the system integrator NFT.



The new solution was constructed in parallel to the old system components. The old system was dismantled and the changeover was first implemented after the new system was fully functional. Therefore, all data was available during the changeover process.

“Everything began with the concept planning. The implementation then started. Initially there were 100 process nodes connected, and then little by little, we continually added more. In the meantime, we have connected more than 3,600 data points. That means we have converted 50% of the old systems. Of course, newly-acquired systems are immediately integrated into the new process control system.”

– Uwe Rosenski, Head of the Electrical Engineering Department Stockmeyer GmbH

Standardization creates flexibility

Linking the various machines with a wide range of different interfaces presented a challenge. *“That was certainly one of the most important reasons why GE was chosen,”* says GE's product leader for MES systems. *“In this specific project, we were dealing with approximately 30 different interfaces. There were also machines that were more than 10 years old and whose interfaces are no longer used at all today. Since we have more than 300 different drivers in our standard program, we could easily solve this problem and were able to process various data formats or time stamps, for example.”*

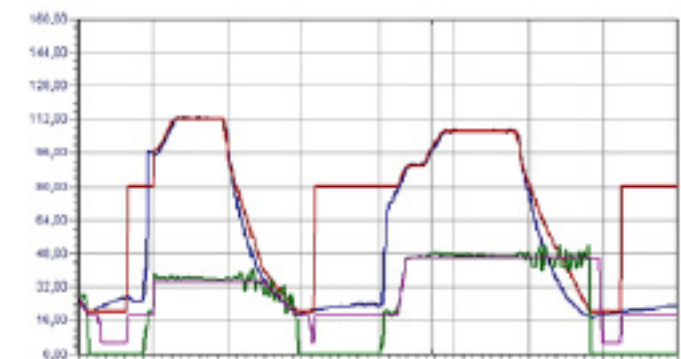
The actual system integration was carried out by the NFT Automatisierungssysteme GmbH. *“We have been working with NFT for many years”,* reports Stockmeyer's Rosenski. *“Their staff had also already programmed our machine controllers in the past. We notice again and again how good it is that they not only understand MES and process control systems, but that they are also well versed with the actual field levels and processes.”*

Thanks to past experience, the team at the Westphalia plant emphasized the importance of standards when implementing the automated solution: the manufacturers of new machines are now required to provide a standardized data record interface based on OPC. Furthermore, it was important to them that the new system did not require programming, but could be set using parameters. That brings numerous advantages: no expert who commands a specific programming language is required. At the same time, the entire system is considerably less error-prone and the maintenance is also significantly simplified. If you rely on standards, you can also act independently of the system integrator and are therefore more flexible.

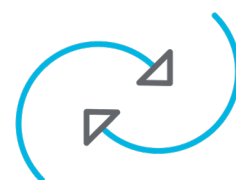
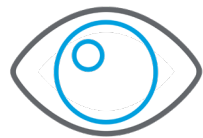
Security through redundancy

The Operator Interfaces from GE perform the visualization and control the individual system components. In addition, using the integrated data collectors, they also record process, operating and quality data as well as alarms over an extended time period. The data generated in this manner can either be forwarded directly or following a delay (depending on the network connection) to the central data server. This decentralized redundancy creates additional data security. If the server actually fails once, the data is temporarily saved on the collectors until the server is running again. That could also be over a period of several days. Once the server has been restarted, the data is automatically synchronized.

At first, Uwe Rosenski was very skeptical as to whether this could actually work. *“But early on, a server actually failed on the weekend. As we restarted the system on Monday, the synchronization with the OPC collectors also started automatically. And we did not lose any data at all – neither the quality data along with the time stamp, nor was the process data lost.”*



Data that is recorded at one-second intervals can, for example, be displayed in hourly, daily or weekly diagrams. (Stockmeyer image)



Creating information from data

The decisive factor for a company's productivity is the ability to create meaningful information from the large quantity of existing data.

To successfully manage the flood of data, many systems consolidate the calculated data from the very start. In doing so, however, information is inevitably lost.

The Proficy Historian server takes another path: the calculated data is compressed and requires considerably less space.

"We have all the process data on the server that we have recorded for years and have no storage space problems at all," reports Rosenski.

All the same, the iFIX HMI/SCADA visualization offers a broad range of possibilities on how the data can be displayed. Data that is recorded at one second intervals can, for example, be displayed in hourly, daily or weekly diagrams.

Compared to the past when data was still manually assessed, this method provides a major advantage in the shortened reaction times.



In addition, various alarms also immediately indicate if a system fault occurs: for instance, if a valve does not open or the temperature in a cold storage is not correct. At the same time, in compliance with the statutory directives, all production data is available in its original state even years later. Not only can the data of the individual systems be viewed, but all process data involved in a batch can be comparatively displayed. Therefore, the entire production process can be tracked at all times; as a result, the required traceability poses no problem.

Process data closes the control cycle

The new automated solution provides more functionality than process data monitoring. In addition, the new solution allows Stockmeyer to operate a practical energy management system and monitor the central building control system. An energy management system, for example, allows management to avoid expensive peak demands. If the current energy consumption is permanently monitored and if the process is well-known, regulatory measures can be initiated and, for example, a cold storage can be switched off for a specific period as long as the inside temperature remains below the prescribed value. Therefore, the process data can be used as control variables for the energy management system. At the same time, using the system allows energy to be posted to cost centers and also allows unnecessary "power guzzlers" to be detected.

The data from the process is also scheduled to be integrated in the company's ERP system over the medium-term. In this manner, the plan is to determine the future Overall Equipment Effectiveness (OEE) figures for efficiency, quality and energy with which the control cycle in the MES can be automatically closed.

"From the very beginning, we were hoping to subsequently incorporate the vertical integration of the process data into the ERP as we chose the new system," says Rosenski. "The system has grown from the bottom upward. Everything started with the machine visualization and we have now also implemented the process control technology. The next step is to implement a meaningful MES concept."

"Up until now, it often took us one to two working days to create such diagrams", says Rosenski. "Using the GE Proficy software, I can now create data diagrams in the most diverse formats at the touch of a button and I immediately notice when anything gets out of control and can react immediately."

— Uwe Rosenski, engineer responsible for the automation at Stockmeyer





About GE

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.

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