



The Wonderware system helped Rügen Fisch increase production efficiency and product quality and double its annual sales.

Rügen Fisch Deploys Wonderware System to Streamline Fish-Packing Production and Track Product Genealogy

Sassnitz, Germany — Rügen Island, located on Germany's Baltic Coast, was settled more than 1,000 years ago and has a long history of trading and seafaring. Today it's better known as a vacation destination for Europeans seeking the healing respite of its numerous spas and resorts. The oldest of these seaside resorts is Sassnitz, which is located on the northeastern coast of Rügen Island and is famous for its chalk cliffs.

Sassnitz is also the home of one of Europe's largest fish-packing companies, which is aptly named Rügen Fisch. Founded in 1949, Rügen Fisch originally began as a local Baltic fish packer. Over the past half-century, the company has grown to offer approximately 150 different varieties of canned fish, from herring to mackerel, sardines, salmon and more, packed in an array of sauces and condiments. Rügen Fisch is now ranked as the second-largest fish supplier in Germany, and 12% of its production is exported.

To meet this growing demand, the company began a modernization program in the late 1990s to build a completely new "green" factory for processing fish. Design and planning began in 1999.

Construction of the new plant, adjacent to the existing plant along Sassnitz's scenic harbor, began in early 2000, and production was launched in January 2001.

In today's modern Rügen Fisch plant, the fish arrive by ship and truck from worldwide suppliers. A key element for increasing productivity and thus meeting growing customer demand - while maintaining the highest levels of product quality -- has been the installation of a real-time plant information system using software from Wonderware, a business unit of Invensys Systems, Inc.



The Rügen Fisch fish-packing company of Sassnitz, Germany

The new system includes InTouch human-machine interface (HMI) software for process visualization, InTrack resource tracking software and the IndustrialSQL Server real-time plant historian. The new real-time production information system helps plant personnel optimize the plant and increase production efficiency.



Plant-floor operator views a work order on an InTrack screen.

System integrator Marine und Automatisierungstechnik Rostock GmbH (MAR), located in nearby Rostock, developed a real-time plant information system for Rügen Fisch. MAR implemented the system on the new production lines one at a time and the entire system now runs as a single entity on 24 workstations throughout the plant. All workers use the same system and access it using their operator IDs and passwords. The InTouch HMI is used to provide an on-screen overview of production-line activities, but most worker interaction is at the direction of the InTrack software. The IndustrialSQL Server historian gathers all system data and makes it available for trending and reporting.

Wonderware's InTrack resource tracking software interfaces with the company's enterprise resource planning (ERP) system to provide real-time data to business and inventory systems. It also enables fish suppliers to interact with the supply-chain system. Customer order information is entered into the ERP system via InTouch workstations in both the purine and ephedrine plants. The ruggedized, PC-based system and data on finished-goods inventories are matched to bulk order requirements. If the inventory for a particular product is projected to be too low, the system calculates what raw materials and supplies will be needed to sufficiently rebuild the product inventory, and messages indicating the necessary materials are then sent to Rügen Fisch's suppliers.

This bill of materials information is then passed to the InTrack resource tracking software for scheduling production lines and daily work orders. The information also goes to programmable logic controllers (PLCs), machinery and control devices that employees use to process the fish. The InTrack software monitors all

production activities and helps plant personnel optimize the production process for optimum efficiency. To improve traceability, the InTrack software also collects data on every can produced, building a unique product genealogy. All data is archived in the IndustrialSQL Server historian to ensure that product information is available for process optimization and/or troubleshooting efforts whenever required.

Complex Food Processing

Fish packing begins with incoming shipments of raw fish, which have been pre-cleaned and frozen. This inventory is stored in freezers and thawed shortly before being processed on the packing lines. The new Rügen Fisch plant incorporates seven production lines -- five for fresh fish and two for smoked fish. The fish are salted before processing to tenderize the meat and prepare it for packing.

Preparation for 81 different kinds of sauces is controlled and made more efficient by the InTrack software. Operators view each day's work orders on screen and download the sauce recipes from the ERP system. Bulk ingredients -- such as oils, tomato sauce or mustard -- are then piped into the mixing vessels from storage tanks. Spices, herbs and other seasonings, which are used in smaller quantities, are weighed and hand-mixed before they are added to the vessels. The InTrack software records every liquid ingredient, which is classified by batch ID. The system also supplies the data to the ERP system to update bulk ingredient inventories, for reorder purposes. In addition, the empty tin cans are loaded into conveyors to match specific products on the main floor, and are automatically fed to the lines.

Most of the fish packing is done manually, since the fish are natural products that aren't uniform in size, making handling difficult to automate. Workers unload the fillets from transports, check them for quality and place them on a conveyor for steam cooking. As the fish exit the cooker, experienced workers place precisely the right amount of fish in the tins, and each can is weighed to assure that it's within proper quality limits. Each can must meet and not exceed specific weight requirements. Tins that do not exceed the weight limit are automatically shunted aside for rework. Finally, sauces or oils are added to the fish, and the top of the can is sealed. InTrack software monitors this critical process to quickly detect potential problems in the packing operation, helping plant employees to drive maximum production and provide top-quality products.



Fish tins are conveyed to final packaging area.

Every package is printed with a lot ID number, which is the master record identifier that indicates the raw fish batch and who packed each lot. This information is gathered and archived. Each can, box and pallet of finished goods has its own set of records, helping Rügen Fisch maintain a complete product genealogy.

If there were ever a question about a batch of fish, management could trace the problem all the way back to the individual container of raw fish and who supplied it through a quick and comprehensive information-gathering process provided by the Wonderware system. In addition, data from quality tests is stored with each batch and lab technicians can monitor product quality at every step of the process.

Up to 1,200 cans are placed in movable transports at one time, for loading into autoclaves, where the tins are cooked for 45 minutes at 120° C. This heating process concurrently completes the cooking of the fish and sterilizes the packages.

Next, the tins are conveyed to the final packaging area, where robots pack them in cartons for shipping. Operators check the InTrack software to see what kind of packing materials they need for each type of product. They can also view the quantity they must pack for each order and its target completion date. The cartons are palletized and warehoused prior to truck shipment to wholesale and retail customers throughout Germany and the rest of the world. All products are scanned before they go into the warehouse for optimal inventory management.

Rügen Fisch packs fish products for warehouse stocking, not to meet individual customer orders, and all orders are shipped directly from the warehouse. Plant managers review sales reports to project future demand by product line. Production staff members use InTrack software as well as to monitor the plant's inventory and verify that there is enough product for at least seven days' worth of orders. Whenever a customer order is entered in the InTrack software, the quantities of warehouse materials are checked and someone calculates whether additional product production is necessary. If so, the InTrack software generates a new production order. There are some specialty products that are produced exclusively on demand, but these are very few. The InTrack software helps to minimize Rügen Fisch's inventory costs and maximize plant profitability.

While production is taking place, managers can analyze quality-test and production data to maintain complete genealogy records for every can of fish that is produced. The IndustrialSQL Server historian consolidates the production data so that Rügen Fisch has the detailed production information it needs to efficiently produce high-quality products.

Because Rügen Fisch does not carry large inventories, staff members closely monitor the maximum and minimum inventory levels needed to match order trends. Although the plant's maximum capacity is approximately 320,000 packages per day, the company produces an average of 250,000 packages per day -- during only two shifts, from 6:00 a.m. to 10:00 p.m.

The overnight shift is used solely for cleaning. All production equipment is disassembled every night so that any machine that comes in contact with fish is cleaned every day. The InTrack software also stores data on the plant's maintenance activities, which helps plant managers improve production scheduling and consistently meet production goals.

The Wonderware system has already allowed staff to make significant advances in production efficiency. Since opening the new facility, Rügen Fisch's sales have doubled from 17 million to more than 35 million Euros annually, with the additional benefits of increased production efficiency and product quality.



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