Econo-Pak implemented a powerful system solution in record time. This solution quickly and reliably packages sensitive frozen products in the new The Seafood Traders factory. A modular motion concept is used with a high degree of scalability and integration.

Several million fish sticks – this is certainly an impressive number that The Seafood Traders GmbH (TST) processes in its new production facility in Riepe, close to Emden. Here, in the far north of Germany, fish sticks and frozen products are produced for discount retail stores and franchised food outlets. Sensitive fresh food products such as these must be quickly and reliably packaged so that consumers can enjoy them, undamaged and with the required quality. Econo-PAK GmbH is a company that specializes in constructing machines specifically for this purpose. In the new TST processing plant, three packaging lines from this machine OEM are used to package fish sticks, crunchy fish filets and fish filets with tasty toppings. The focus is on speed, hygiene and product quality.

Reliably packaging frozen, battered fresh fish places huge demands on the machines and the associated technology. Only a few suppliers in Europe can take on this challenge.

**Modular solution with a high performance**

Each line comprises different units, depending on the product type – fish sticks, crunchy fish filets and fish with tasty toppings. After they have passed through the froster, the fish sticks are distributed, grouped and automatically transferred to the product conveyor chain of the boxing machine. These groups are fixed in such a way that the fish sticks do not fall over so they can be inserted in the folded cardboard containers that have been precisely aligned.
The packaged frozen products are sealed, checked and weighed and then packed by a group packer in commercially available units and placed on pallets in cardboard boxes ready to be shipped. For the fish filets with topping, instead of the grouping unit, a unit is integrated in the line that places the filets in a dish and packages them. Here, the machine manufacturer uses a modular line concept, equipped with a standard and flexible automation solution from Siemens. This means that the company is in a position to implement individual lines to address each specific requirement efficiently and with a high project quality. A big challenge in Riepe was to process and package the huge number of fish sticks every minute. Further, the seafood processing company places considerable emphasis on a high degree of availability and process reliability of the system. This is because the fish sticks must be packaged in an extremely tight time window and transferred to the next station in the cooling chain. This process depends on machines that operate safely and reliably, which in this form and with the high-performance required, has not been able to be achieved up until now.

Motion control: precise coordination

A total of 120 servo axes are controlled in the three lines. Each of the total of nine equipment modules of the lines is equipped with its own SIMOTION D control, so that the functionality of the modules is logically separated from one another. This corresponds to the modular approach that the machinery OEM employs in the lines. The controls are integrated in the high-performance SINAMICS S120 drives and connected with one another through PROFINET. "Scalable drive-based SIMOTION D systems with a high dynamic performance are the appropriate solution here for complex systems such as these, where precise coordination, synchronous operation of the axes and system components as well as fast communication are crucial" explained Jörg Lange, a Siemens sales engineer. In addition to SINAMICS S inverters, for the more basic drive tasks, standard SINAMICS G120 inverters are used in the machine. Further, there are about 350 sensors and 20 encoders in and on the machines that have to be managed. SIMATIC HMI panels are used as machine-related visualization solution. Especially for machines with many axes and time critical requirements regarding axis couplings, as is the case in the TST plant, the requirements placed on the performance of the motion control systems are especially high. All components must run reliably in absolute synchronism. This really represents an enormous challenge when dealing with such a high number of axes. "SIMOTION is the optimum solution and couldn't be achieved with any other drive control", explained Markus Zerbe, Sales Manager for Econo-Pak.

The automation solution offers the optimum drive concept for every quantity structure and for every performance class. According to the seafood processing company, this scalability, the high degree of integration and the fact that the components are optimally harmonized and coordinated with one another certainly paid off. This is because costs have been able to be reduced as a result of the compact design along with smaller control cabinet envelope dimensions.

Implemented in just a few months

An additional challenge that had to be tackled in this project was the short amount of time to implement the packaging lines. "The complete production plant was implemented from the grassroots in just six months" explained Ulrich Oppermann, technology boss of TST.

Highlights

- A modular line concept for a high degree of standardization and modularity
- High availability and process reliability of the system
- Compact design and reduced cabinet envelope dimensions resulting in lower costs
- Reliable synchronism, precise coordination and fast communication for high product quality and efficiency
- Short implementation time