

All-in-one fat standardisation solution excels



The advantages of continuous process control of fat content in meat products are broadly recognised. Implementing a monitoring and control solution is no simple matter when you have to assemble the various hardware, software and calibration elements and then make them all work together.

By Richard Mills, Foss

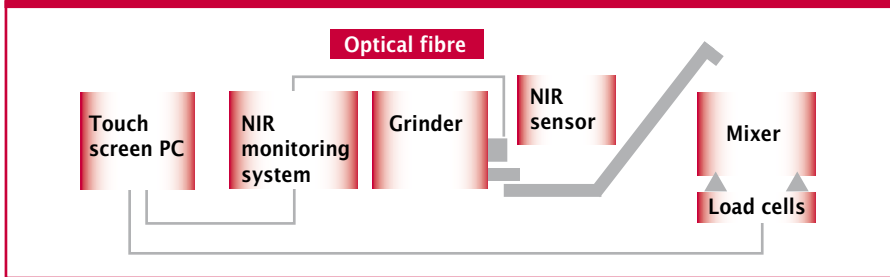
A Finnish processing plant has found a new and more convenient approach with a ready-to-go solution providing everything needed to implement standardisation monitoring. The Jyväskylä meat processing plant is a part of the Finnish Saarioinen group that takes pride in a range of healthy, high quality food products. The plant must constantly meet the company's strict standards, and this made the decision about whether to invest in new technology to monitor fat content quite easy. However, with limited in-house technical knowledge, the next question about how to implement a system was a little tougher.

Jyväskylä production manager, Heimo Viitamäki, recalls how a number of suppliers were contacted during the search for a means of making fat content more consistent. "The decision to go with analytical solutions provider FOSS was made because of its total solution concept that includes the analyser and the monitoring software, which was modified to meet the needs of the production line," he said.

How it works

At the heart of the system are a number of near infrared (NIR) analysers placed at the outlet of the meat grinders as shown in *Figure 1*. These provide the fat measurement part of the total solution

Figure 1 - Total fat solution containing monitoring with NIR instrument sensor and weight signal from load cells



concept. The ground meat is measured continuously and the measuring head sensor of the NIR analysers is integrated with the grinders in a way that does not interfere with the normal process. Load cells placed under the mixers provide additional measurements of weight. The information is fed to a sturdy monitoring system which includes a touch screen PC and is attached to a wall in the processing plant.

The monitoring system receives fat content and batch weight information continuously from the sensors. The solution is designed to run unattended leaving production operators free to concentrate on the main production issues.

Before starting a batch production, the operator chooses a ready-made recipe that may be modified if necessary. The measurement results are displayed on the touch screen display in the form of a graph together with information about achieved fat content and batch weight.

The system also continuously calculates the remaining parts of lean and fat meat required to meet the target. This is presented as a recommendation to the operator (*Figure 2*).

An integrated system

Calibration of the system was done according to the diameter of outlet pipe from the grinder. Researchers investigating the subject have found a clear correlation between the grinder hole plate and possible accuracy. Most findings agree on a recommended diameter of less than 15 mm for optimal accuracy.

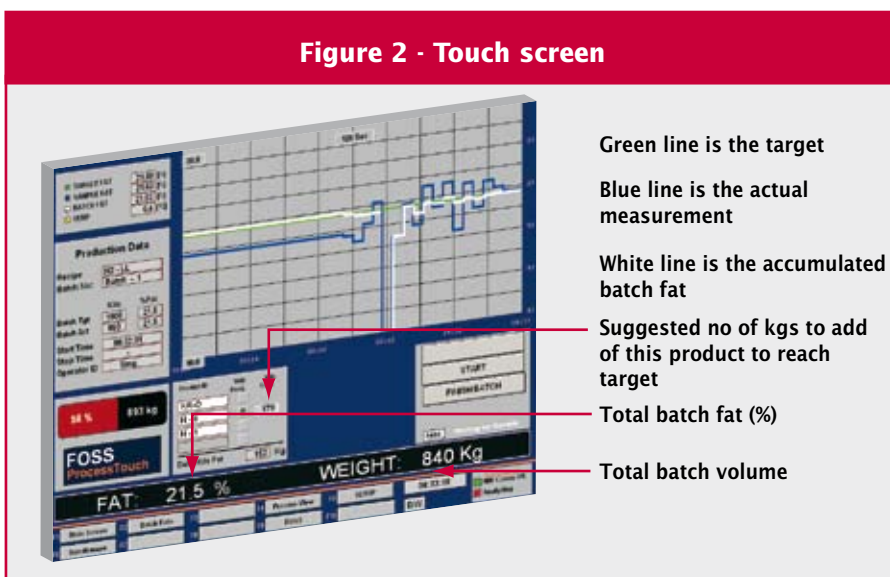
The system has become an integrated part of the Jyväskylä plant, and according to Viitamäki the investment has been worthwhile. “We produce more consistently than before and we are satisfied with the system since it makes the discussions about delivered fat level to customers internally and externally almost obsolete,” he stated. “We already have the possibility to check historically



The NIR sensor above the grinder outlet in idle position.

on production data one year back.” Future possibilities include expansion of the system to include automatic control of the grinder, which would make the monitoring system into a closed loop control system. **MI**

Figure 2 - Touch screen



Green line is the target

Blue line is the actual measurement

White line is the accumulated batch fat

Suggested no of kgs to add of this product to reach target

Total batch fat (%)

Total batch volume

Saarioinen

Saarioinen is a privately owned food industry group and one of Finland's leading food manufacturers. The raw material for the products is supplied by the contract suppliers and originates in the pure Finnish countryside. Saarioinen's goal is to offer high-quality, safe food that tastes great and is easy to use.

Saarioinen's familiar slogan Delicious Food from Nature's Garden also obliges them to take good care of environmental issues. Saarioinen has put this slogan into practice by taking the environment into account throughout the life of their operations.