

# MAP LEAK TESTING AND STATISTICS PROCEDURES ENHANCE FOOD QUALITY

## Automatic leak detection of packages makes customers say cheese about quality

When foods are packed using MAP (Modified Atmosphere Packaging) technology, it is crucial that the packaging is not leaking. Even tiny leaks are disastrous for product appearance and shelf life. One of Denmark's leading cheese makers is delighted with the possibilities for in-line leak detection offered by Dansensor® LeakMatic from MOCON Europe. Dansensor LeakMatic ensures that leaky packaging is discovered immediately. And what is more, the cause of any leaks can be identified at once because leak testing is performed as soon as individual packs of cheese are produced.

Dansensor LeakMatic is a fully automatic in-line leak detector. Using CO<sub>2</sub> as a trace gas, it allows all kinds of MAP packaged food to be tested before leaving the production line. In conventional production lines, Dansensor LeakMatic

tests all the packages in a carton simultaneously. Dansensor LeakMatic is therefore available with a variety of test chamber sizes and is capable of performing up to five tests per minute. All cartons can be tested or, as in this case, samples can be randomly selected and moved from the production line to a parallel conveyor containing Dansensor LeakMatic. The packaging is tested by lowering a chamber over the carton and establishing a user-defined vacuum within the chamber.

A highly sensitive sensor then records any change in the concentration of CO<sub>2</sub> inside the chamber. The difference in pressure between the chamber and the package will cause CO<sub>2</sub> to escape into the chamber through any micro leaks in the packaging. So if CO<sub>2</sub> is recorded in the test chamber, one of the packages in the carton must be leaking.

### Leak testing of individual packages

But which package is defective? Generally, there are two main types of fault. Either the package has been incorrectly welded or a fault has occurred in the machine that places the cheese slices in the package. The Danish cheese maker tests about every tenth package for leaks as this gives a reliable result for the packages on the production line. In practice, the individual packages to be tested are pushed onto a parallel conveyor on which Dansensor LeakMatic is installed.



*Packages are tested on a parallel conveyor containing Dansensor LeakMatic.*



If the package passes the CO<sub>2</sub> test, it is returned to the production line and a new package is loaded into the test chamber. If, on the other hand, the package is leaking, it is pushed into a reject box. All the processes are fully automatic.

### Statistics procedures ensure rapid fault finding

The Danish cheese maker uses Dansensor LeakMatic together with a procedure for handling the production line and the defect cheese packages which ensures that the cause of any leaks occurring is corrected as quickly as possible. The system is set up in such a way that operators are notified as soon as leaks are determined. Fault finding is therefore extremely rapid, occurring immediately after the packages leave the packing and welding module, and leaks are discovered as soon as they occur. Percentage waste is thus reduced and – in comparison with the conventional set up – it is no longer necessary to spend precious time identifying which individual packages in the carton are defective. The frequency and duration of production stoppages are thus greatly reduced.

### Helps operators enhance quality

Rapid identification of leaks in the packs of cheese makes it easier for operators to locate the cause and optimise the production line set up, for example by adjusting the module that positions the cheese slices in the package or by altering the temperature in the module that seals the packaging.

Dansensor LeakMatic thus functions as a reliable system for testing packaging integrity in situations where the operators adjust various parameters themselves – ensuring faster and better production line optimisation.

### Fewer leaks – broader smiles

The Danish cheese maker is delighted with Dansensor LeakMatic, saying that their production lines would not be the same without it. And all new production lines will in future be equipped with Dansensor LeakMatic. Compared with similar production lines at the cheese factory, the line with Dansensor LeakMatic has fewest leaks and fewest costly repackings.

The MAP CO<sub>2</sub> test ensures non-leaking cheese packages providing retailers and consumers alike with constant reassurance that the cheese maker supplies products of exceptional quality. Retailers avoid the inconvenience of having to return defective products and consumers experience that their favourite cheese is always available. And the quality? No doubt about it: it is always excellent.

### Follow-up 2008 - 2014

Since the first Dansensor LeakMatic installation in 2008 the cheese producer has decided to invest in two more similar lines, which were installed in 2013. Today the producer has three identical lines running with Dansensor LeakMatic II. Before the first installation a 3% leakage was the acceptable level, however, after working with Dansensor LeakMatic for some years the level is below 0.1%. The savings using Dansensor LeakMatic fully justify the investment.

In addition to the Dansensor LeakMatics in the factory they also have Dansensor® LeakPointers for the rest of their production lines.