

## Wiring fault detected during verification SITRANS F M MAGFLO verifcator



Case Study - July 2001

# food & beverage

Test operations run at Arla Foods Samden in Aabenraa in Denmark prove the MAGFLO Verifcator from Siemens Flow Instruments capable of checking both the accuracy of a flowmeter and of detecting wiring faults.

**SIEMENS**

At Arla Foods Samden in Aabenraa there are flowmeters everywhere. They are used for different procedures such as weighing and evaporation. The flowmeters also measure water supply, seawater for cooling, CIP system and wastewater system, just to mention a few. There are more than 100 flowmeters installed all over the factory.

### The product

The flowmeters are SITRANS FM MAGFLO electromagnetic flowmeters from Siemens. Especially for these meters, Siemens Flow Instruments has developed the MAGFLO Verificator – a performance tool, which is capable of checking all of the flowmeter i.e. sensor, transmitter and connecting cabling alone by having access to the transmitter.

A test run using the new verificator verifies the flowmeter parameters: are they as they were when the meter was first calibrated before delivery? At the same time the test shows the flowmeter settings. Furthermore, the test routines comprise an insulation test of the entire measuring system including wiring.

### The challenge

As part of the procedure when testing the new device the Siemens engineering department contacted Arla Foods Samden. The fact that this manufacturer of milk powder uses flowmeters to a great extent made him a very useful contact for testing of the new verification method.

Arla Foods Samden agreed at once to a “health check” of the installations with a view to having any inaccurate measurement or irregularity in connection with the flowmetering detected. At some point during the testing procedure the verificator failed one of the flowmeters, which registers the weighing of milk.

When examining the meter more closely, it turned out that the cabling between the sensor in the terminal box and the transmitter on the wall below had not been made properly - electrode and coil cables were cross-mounted. This resulted in an unstable signal causing an inaccurate measurement.

### The perspective of verification

To the Power Distribution Manager at Arla Foods Samden, Mr. Allan Petersen, this diagnosis was good news. For some time he had been aware of the flowmeter irregularities, however, so far the problem had been put down to electric noise (EMC). One “solution” would have been to increase the ‘Cut Off’ frequency until the signal had stabilized.

However, such an adjustment would affect the measuring accuracy – not least at low flow. “Luckily the meters were not for custody transfer, therefore the harm done was limited to us operating with wrong capacities; we thought that more milk was passing through than was actually the case. Also it took a bit longer than necessary to complete the weighing procedure, due to the fact that the frequency converter signal was wrong – this affects the pumps,” Allan Petersen says.

He is most pleased that his “noise problem” has now been solved. In addition to that there is perspective in verifying your flowmeters at frequent intervals both with and without calibration obligation, he says. “It would be a huge advantage if re-calibration could be avoided. Not only does this process involve money. It is also very disturbing to have to close down production for that reason - and the meters, which are not re-calibrated – well, we have several meters in the line, which we simply just believe to measure properly, Allan Petersen ponders. Therefore he sees verification as a contribution to increasing quality control in the production.



*Flowmetering of the weighing procedure is managed by seven MAGFLO electromagnetic flowmeters. One of these meters was inaccurate because of cross-mounted cables.*

### Fair billing with flowmeters for custody transfer

When it comes to the flowmeters for custody transfer installed at Arla Foods Samden the perspectives are very real, Allan Petersen estimates. "Take for instance our meter used for waste water disposal. This meter is being checked once a year. However, verification at shorter intervals would detect any inaccuracy early on. Furthermore, the custody transfer would be one hundred percent accurate and probably it would be possible to extend the intervals at which the meter has to be replaced", the Power Distribution Manager estimates.

Also he takes into consideration that the company has quite a few flow-meters used for custody transfer, which are not subject to a re-calibration. "On that point it would be nice with a thorough verification. There is much money involved even if the inaccuracies are minor", Allan Petersen emphasizes.

Therefore he looks forward to an offer from Siemens in which a scheduled verification procedure is an integrated part of the existing service agreement he has already entered into regarding his MAGFLO electromagnetic flowmeters.



Allan Petersen standing next to two of the Arla Food Samden flowmeters for custody transfer: "There is much money involved even if the inaccuracies are minor".

### Arla Foods Samden in brief

Arla Foods Samden Milk Condensation in Aabenraa, Denmark belongs to the Danish-Swedish dairy giant **Arla Foods**. On an annual basis the company in Aabenraa processes 300 million kg of milk/whey into different kinds of milk powder such as:

- Skim-milk powder
- Buttermilk powder
- Full-cream milk powder
- Whey powder
- Permeat powder
- Compound

The turnover results from approx. 100 people, who have a highly automatic production plant at their disposal – i.e. all of the process plant is controlled by 30 individual PLC/PPC systems, which communicate via one common network. For monitoring a graphic supervision, operating and reporting system is being used – this system is accessible via 16 decentralized operator stations.