



QUADBEAM
TECHNOLOGIES

Industry – Dairy Processing

Application – Product Loss Monitoring

Increase Yields and Profit by reducing losses and reducing waste.

Product – Quadbeam Technologies S20 Immersion Suspended Solids Sensor.

With international milk solids prices forecast to hit record highs, getting control of product loss in the Dairy Industry has never been so important.

Quadbeam Technologies Ltd Suspended Solids Sensors provide accurate, reliable and repeatable monitoring. Monitoring that is used by plant managers as part of their performance improvement programs by reducing process waste, increasing yields and decreasing cost of waste disposal.

Continuous monitoring with data displayed directly in the Control Room immediately alerts operators to unexpected loss of milk or other dairy product with a component of suspended solids. Trending analysis of the same data can also lead operators to find minor leaks, for example worn valve seats or hatch seals.

While competitive sensors stop working or drift as a result of leaking or fouling, Quadbeam Technologies Sensors do not. Designed to cope with the rigors of the highly efficient New Zealand Dairy Industry, Quadbeam's Sensors have a "one piece" construction, there are no lenses to leak as a result of changing temperature providing a very reliable instrument. Four beams of attenuating light is used ratio-metrically to ensure the sensor self compensates as it becomes fouled or ages ensuring an accurate and repeatable signal.

Loss Monitoring is standard in by far the majority of New Zealand Dairy Process Plants.

Installation

A simple calibration process will ensure the system is calibrated to the product it is monitoring. Then install the Quadbeam S20 Sensor into the plant drain, preferably where flow is monitored as well. In situations where there are exposed flumes or weirs use a S20-IMM. For Pipe Installation a S20-3HY can be used.

Where there is no full pipe or exposed flume or weir available it is common to continuously pump a sample from the drain into a manifold where a range of measurements can be made including Solids, Conductivity and pH.

Alarms can be set on Transmitter relays or within the plant system.

Because of the Quadbeam's ratio-metric four beam method of measurement the instrument effectively self compensates for variation in temperature and fouling of the fingers, providing an accurate and repeatable signal. It should not require regular cleaning

The Sensors' transmitter will provide a 4-20mA output to connect to a PLC or DCS.

$$\text{Solids Concentration} \times \text{Flow} = \text{Volume}$$

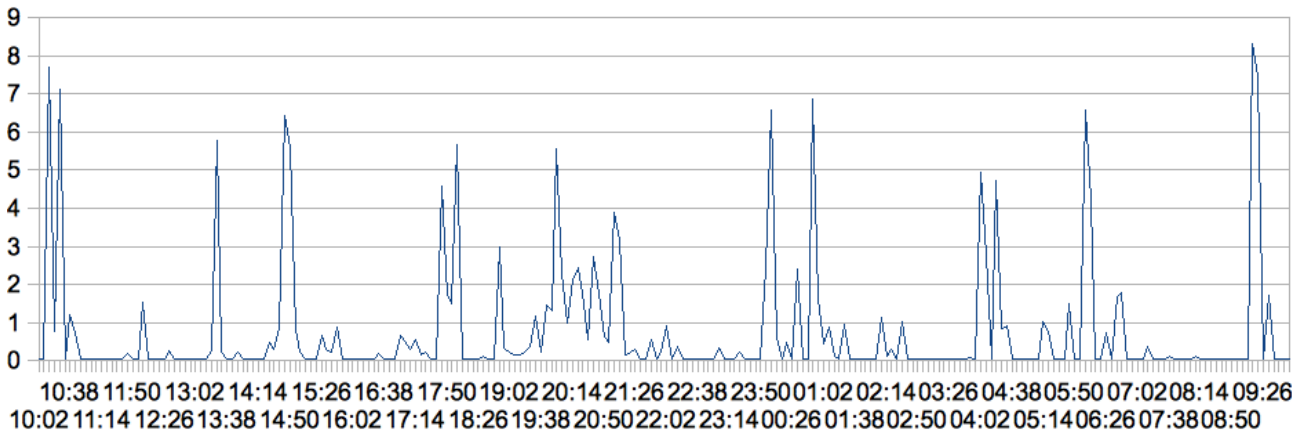
Different plants set up there systems according to their standards and targets. For best results they will always show the information as solids and flow, some as one output on a chart some as separate with a combined additional trend.

Returns

This type of monitoring is now standard in many advanced Dairy processing plants. Large savings have been made by plants catching small leaking valves or pumps long before maintenance checks, right through to early warning of large comprehensive product spills. Savings can easily be tens of thousands of dollars in just one event. Product Loss is also often used as a Key Performance Indicator and linked to performance in many plants.

Example;

This chart shows solids loading from a Powder Plant Drain over 1 day. The line represents the % of total suspended solids concentration they chose for calibration x flow.



This chart shows the same Powder Plant over a 7 day period. Some significantly higher solids events happened later in the week. A trend line has been added showing a trend up in solids loss.

