QUADBEAM TECHNOLOGIES

NEXT LEVEL EFFICIENCY

Application: Cheese Curd Cutting

Get control of Product Loss / Control your Efficiencies / Control your Risk /Save Money

Product – Quadbeam Technologies S20 Suspended Solids Sensor.

Application:

In the making of cheese a coagulant is added to the milk to coagulate the solids creating a curd. At an optimum point of coagulation, cutters are run through the cheese curd releasing whey. There are various ways the cut point is found, some quite sophisticated and some very simple. It can be challenging to get a repeatable cutting point from batch to batch therefore quality can vary resulting in waste and loss of solids.

As cheese curd coagulates the ability to transmit light though it diminishes.

Quadbeam Technologies four beam ratio-metric infra-red, self compensating light attenuation sensor can accurately detect the change in the transmission of light through the curd and therefore be used as a tool to repeatedly identify a predetermined point in which to begin cutting.

The Quadbeam Technologies sensor emits alternating pulsed infra-red light from two different sources and detects light at two points. The sensor's transmitter provides a 4-20mA output signal that can be fed into a PCL or DCS. The signal reflects the change in ability for light to be transmitted through the curd, effectively giving a readout of the coagulation process.

S20-3HY

Raw Milk

In this example non standardised raw milk was used, the level of solids in raw milk varies therefore so does the light attenuation. This means the start point for the instrument in each batch is different. In this case the operators monitor the percentage change in signal.

In this example the signal varied at the start due to movement of solids in the vat for the first few minutes however settled and the start point was taken at 4 minutes after the addition of rennet. A study was done of different batches and it was found that the optimum point was a change of 11.25% in signal from start (4mins) to finish. This provided a very repeatable point to start cutting no matter the solids level at the start of the batch.
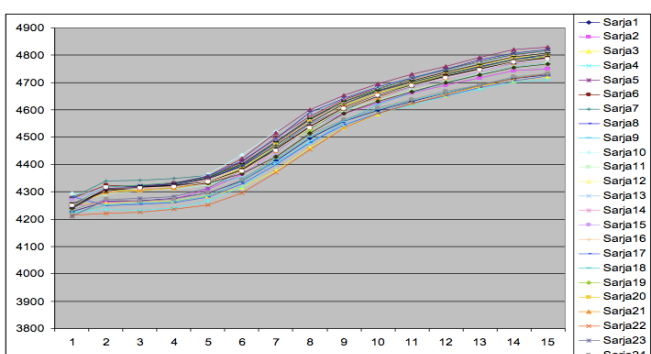
Application – Cheese Curd Cutting, cont...

Standardised Milk

Where milk is standardised prior to cheese making the start and finish points can be very repeatable as the example shows.

In the two examples the cheeses are different and the factories in different continents. The percentage change from the start to the finish is also different. The optimum point has to be established, once established operators can repeatedly get to that point with the use of Quadbeam Technologies sensors.

VAT Measurements with QUADBEAM S20-3HY

Y-axis: Probe Signals (PS), X-axis: Time (minutes)
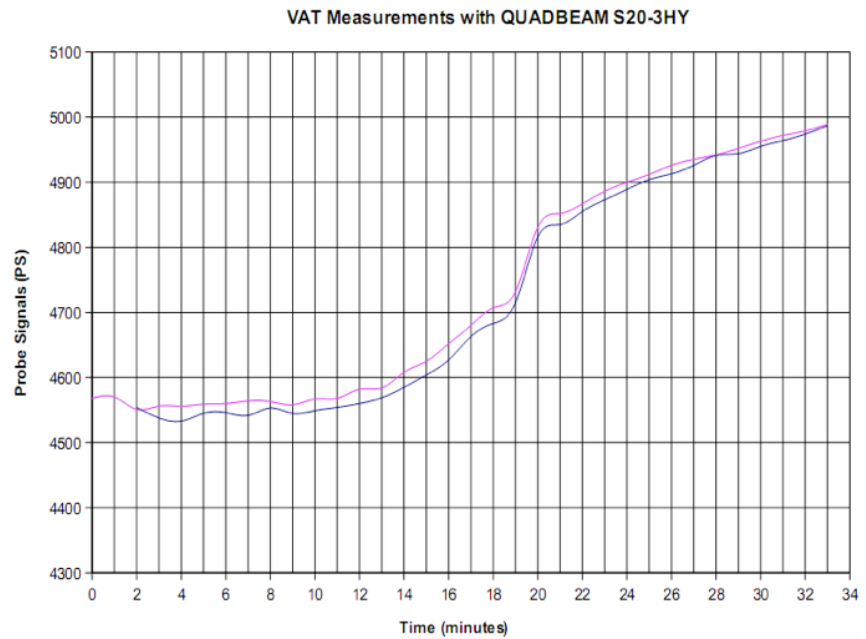
S20-IMM

Returns

Improved quality and retention of the optimum level of solids in the cheese through being able to establish the predetermined cutting point in a repeatable and accurate way.
This will reduce product waste costs and provide the customer with the repeated quality product they expect.

Installation

More commonly a Quadbeam Technologies S20-3HY Hygienic sensor is mounted into a 3" triclover fitting onto the side of the vat.
In some cases a S20-IMM Immersion style sensor is mounted on the end of a stainless pipe and manually dipped into the cheese vat by the operator . In this case information is not necessarily transmitted back to a PLC or DCS but data is collected manually directly from the transmitter readout.

T30-3HY

Whey Monitoring

Using either a Quadbeam Technologies S40 or T30 it is also possible to monitor solids levels in the whey being released from the cheese.