CHEESEMAKING

Monitoring TOC/COD to Categorize Effluent in Cheese Production

In cheese production, wastewater treatment costs can be reduced by separating the low-strength waste - which can be field applied - from waste that requires treatment. The fat, solids and salt content is a monitoring challenge, but non-fouling high-temperature TOC and COD analyzers from LAR have proven an ability to categorize effluent as milk concentrate, whey, cow water, or milk. At one Wisconsin plant, where treatment costs are about six cents per gallon, with up to 20K gallons per hour, separating low-strength waste can be a significant savings.

The high concentrations of salt, milk fat, and suspended solids in dairy effluent easily coats the optics of reflectometers, and requiring maintenance several times per day to prevent false high readings that cause low strength waste to be mis-categorized as high strength and channeled to the treatment plant.

Maintenance down-time can cost a plant thousands of dollars per day on top of unnecessary treatment costs. The appropriate monitoring system needs to be reliable, accurate and low-maintenance.

LAR has shown that a correlation can be made between TOC and effluent concentration. It is also possible to correlate TOC to COD or CBOD (carbonaceous Biological Oxygen Demand). LAR's high temperature method, operating in a range of 100 – 10,000 mg/L TOC, easily performs the needed correlation.

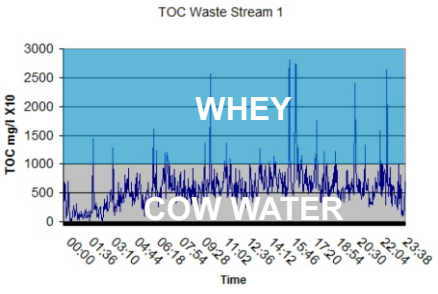
High salt concentrations are another challenge. Here, the QuickTOC's large reaction chamber and 1200°C operating temperature enable salts to pass through the analyzer. At 1200°C sodium chloride (salt) passes through the reaction chamber reducing the maintenance time required. The non-fouling sampling method easily handles high solids without pre-filtration, enabling measurement of representative samples, including the high concentration suspended solids.

By identifying specific TOC values that easily differentiate between concentrate, milk, whey and cow water the QuickTOCultra stands out as an ideal monitoring solution for dairy waste.

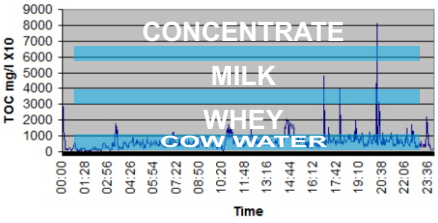
The greatest value of the QuickTOCultra is achieved when undiluted, representative sample is delivered to the analyzer. To assist in this task, LAR has developed the patented FlowSampler, which draws sample counter-current to capture high concentration suspended solids in a waste stream without pre-filtration. This in conjunction with the large bore tubing used for sample transfer and an innovative method of delivering the sample into the reaction chamber proves to be the lowest maintenance and the most reliable measurement method.

During a five-month evaluation the QuickTOC demonstrated consistent, low-maintenance performance, only requiring changing a set of pump tubing and cleaning of the sample vial - a total of 15 minutes in maintenance over 5-months. The QuickTOC was designed from the ground up to be a robust on-line system not a converted lab unit and has proven itself in application after application.

0 –1000 mg/l TOC . . . . . Cow Water
1000 – 3000 mg/l TOC . . . Whey
4000 – 6000 mg/l TOC . . . Milk
7000 – 10000 mg/l TOC . . Concentrate



TOC Waste Stream 1



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