

Online COD measurement in dairy effluent

Reliable and cost-effective COD monitoring with optical sensor



Benefits at a glance

- Closer process monitoring enables faster reaction in case of adverse events.
- Charges for high COD loads can be avoided due to the alarm function.
- Time and cost savings thanks to online measurements.
- In contrast to traditional lab measurements the results are not operator-dependent.

By monitoring the COD load of the effluent in a dairy, Viomax CAS51D can raise the alarm in case of product leakage or other adverse events, thus avoiding additional sewage charges. It is installed directly in the effluent shaft and offers several advantages over the traditional measurement in the lab.

The challenge Our customer is a big dairy that produces cheese and concentrated whey from around 900,000 l milk every day. During the delivery of the milk, in the cheese production and in the CIP process, COD loaded effluent arises. This effluent is collected and led into the wastewater system of the dairy. It may happen that products as well as pre-products get into the effluent. At the end the collected wastewater is discharged into the municipal sewage system. If the COD load is too high, extra charges may arise.

The aim of the COD measurement is

- to get an overview of the total COD load in the wastewater

- to monitor different operating conditions
- to detect failures, such as product leakage.

Our customer used to collect samples manually in order to measure the COD value in the lab. This is quite time consuming and thus expensive.

Our solution Viomax CAS51D (SAC, 2mm version) was installed in an open channel. Due to the fat content in the wastewater the TSP cleaning solution which uses phosphoric acid has been chosen to keep the optics clean. The sensor was commissioned using the factory calibration based on KHP, displaying the COD value. A comparison with lab analysis (cuvette tests) showed that there is a factor of 6 between the CAS51D measurement and the lab results. It has to be taken into account that several samples need to be measured in order to receive a



The Memosens sensor Viomax CAS51D is installed in a sewage shaft for the monitoring of COD in dairy effluent.

profound result. The factor is then an average of these measurement results. Sometimes the sample concentration was so high that the limit of the cuvette tests was reached. The calculated factor was then entered into the customer's process control system (PCS). Furthermore, the lab results showed that the Viomax CAS51D results are plausible up to values of 2 g/l.

The temperature specification of the sensor needs to be considered when it is installed in the dairy effluent. The sensor should not be installed directly after the CIP effluent to avoid high temperatures. Moreover, the CAS51D requires regular maintenance (filter and lamp exchange) and its cuvette should always stay in the medium.

The results Thanks to the optical online measurement, our customer can now monitor the process more closely and react immediately to failures. Charges for high COD loads can be avoided due to the alarm function. Furthermore, costs are saved for the expensive and time-consuming lab investigation. The results are more reliable as they are not operator-dependent. Altogether, this is an important improvement in comparison to the lab measurements.

Solution details

- CAS51D-AAC3**
- CM44X-AA****FZ*** (with 2 relays)
- CTSP-VR1CR1 Modification No. 71204384
- 71110787 Cleaning head CAS51D 6 or 8mm
- 71072583 Cleaning unit, 230 V (compressor)

Chemical oxygen demand (COD)

The COD value is an important parameter for wastewater monitoring. It indicates the amount of oxygen needed for the oxidation of all organic substances. In this way it gives information about the total organic load of the wastewater.

The constant monitoring of the chemical oxygen demand (COD) increases process safety and supports a load-based billing system for industrial wastewater treatment plants.



Viomax CAS51D

- Easy, chemical-free handling
- Extremely fast response time
- Sensor comes precalibrated and preconfigured ex factory.
- Intelligent design and automatic air-cleaning functionality maximize availability and minimize maintenance.
- Perfect adaption to open basins: Fast and flexible sensor positioning with Flexdip CYH112 holder and CYA112 assembly system.

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