for continuous in-line monitoring of COD in industrial wastewater treatment plants

MODEL 9585 – COD METER
PRODUCT INFORMATION
INTRODUCTION

In-line and continuous monitoring of COD (Chemical Oxygen Demand) in the influent flow of wastewater plants is essential for improving the efficiency of biological treatment plants. Rhosonics introduces an extremely efficient method to measure the COD of industrial wastewater, eliminating high operating costs and frequent and complex maintenance tasks.

DESCRIPTION

The Model 9585 is a reliable tool to monitor and control influent streams of the wastewater treatment plant.

The main control purposes are:

- Protecting the wastewater plant against high COD peaks
- Improvement of wastewater process control
- Inventory of material balance
- Easier compliance with discharge consent
- Efficiency monitoring of solids filtration

FEATURES AND BENEFITS

The Model 9585 COD meter protects against failures that could lead to a plant shutdown. Additionally the instrument will help to reduce the overall operating costs and makes it simple to comply with conditions for discharge consent. Upset process conditions – resulting in the destruction of the biological process – is prevented and unintended spillage of raw material can be detected immediately.

Major features and benefits of the Model 9585 COD Meter are:

- Protection against destruction of the biological process
- Optimizing the COD of the influent flow
- Detection of process spills
- Efficiency verification of solids filters
- Highly accurate COD measurements
- No moving parts
- No reagents needed
- Maintenance free
- Easy in-line installation into pipelines
- No bypass required
- Very short pay-back time
- Low cost of ownership

INDUSTRIES

The Model 9585 COD meter can be used in the following industries:

- Breweries, distilleries, sugar industry
- Pulp and paper industry
- Oil and petrochemical industry
- Food products, vegetable oil
- Any other application where COD measurement of homogenous industry wastewater is required.
TECHNOLOGY

The COD measurement is based on the hybrid ultrasonic / conductivity technology. The COD value is continuously available using in-line sensors and is not affected by the hardness, the presence of detergents like caustic nor suspended solids in the influent stream. Besides COD, the suspended solids load of the water can be made available as additional process parameter.

The factory programmed calibration is an advanced regression model, based on the ultrasonic properties of a variety of most common organic materials, such as alcohols and sugars. The ultrasonic properties are not affected by vibration, transparency and viscosity.

The most important ultrasonic technology is the measurement of the sound velocity. The speed of sound is determined by measuring the time (time of flight) that the ultrasonic signal is traveling over a known distance.

The graph below shows the relationship between the ultrasonic equivalent value, conductivity and the COD in grams per liter at a temperature of 25°C. The calibration is fully temperature compensated from 15°C to 50°C.

COD in g/l at 25°C by ultrasonic and conductivity values
APPLICATIONS

The Model 9585 is used for some typical applications in a Wastewater treatment plant. The figure below shows some of the possible locations for sensor installation.

Typical applications:
1. In the overflow of a grit chamber
2. Before the primary settling tank

INSTALLATION

This optimization tool of your biological purification process can be installed in a pipeline, reservoir or launder.

The pipe installation is done by means of a spool piece. Fixed diver sensors will be used for installation in a grit chamber. Both installation methods are in-line, without a bypass and thus providing real-time COD measurements.

REFERENCES

Rhosonics has developed and validated the application in cooperation with the Heineken brewery in Zoeterwoude, the Netherlands. Almost 90% of the Rhosonics COD meters are used in WWTP’s of breweries.
**TECHNICAL DATA**

**PERFORMANCE SPECIFICATIONS**

- **Method:** Ultrasonic sound velocity, Electrical Conductivity and Pt100 temperature measurement
- **Measuring range:** 0 - 50 g/l, 0 - 50 mS/cm
- **Readings:** COD in g/l, Conductivity in mS/cm, Temperature in °Celsius
- **Accuracy:** Up to 0.1 g/l COD, up to 0.1 mS/cm
- **Display:** 5.7” Color Touch Screen
- **Operation:** Touch Screen Display, Computer

**GENERAL SPECIFICATIONS**

**Process conditions**
- **Max pressure:** 4 bar
- **Temperature range:** 0 °C … 110 °C (32 °F to 230 °F)
- **Wetted materials:** 316L, PEEK

**Electrical specifications**
- **Power supply:** 24VDC or 100-240VAC 50/60Hz
- **Communication & Output:** 4-20mA outputs (2x), Alarm output (2x), RS485/RS422 using Modbus
  Optional: Ethernet, HART, Profibus
- **Data logging:** USB data logging & fault reporting
- **Cable entries:** 5 pieces of M20x1.5 cable glands for Ø5-9 mm cable

**Ambient conditions**
- **Ambient temperature:** -20 °C to +65 °C (-4 °F to 149 °F)
- **Humidity:** < 95% at 40 °C (noncondensing)
- **Sensor protection:** IP68, NEMA 6P

**Housing dimensions and weight**
- **Weight:** Weather proof (WPF) housing approx. 6.2 kg, sensors and cells various weight depending on type
- **Housing materials:** WPF housing coated steel
- **Dimensions:** WPF housing 300 x 300 x 120 (L x W x H in mm)
- **Process connection:** UFTC Spool piece with 3 ports or UDP Sensor (Diver / tank probe) and ECMP Series (Conductivity probe)
- **Standards:** DIN/ANSI
- **Nominal pipe size:** 4” up to 8” or in launder

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MEASURING BEYOND LIMITS

Rhosonics is based in the Netherlands near Amsterdam. We design, produce and supply state-of-the-art measuring instruments for virtually any industry. The company cooperates with partners worldwide to offer the best technology solutions. We use craftsmanship, capability and creativity to create measurement beyond limits.

CONTACT

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