

*The benefits of in-line COD
measurement in industrial
wastewater*



**BENEFITS OF COD MEASUREMENT
WHITEPAPER**

INTRODUCTION

In this whitepaper we discuss the most important reasons for COD measurement in industrial wastewater processes.

To protect the health of ecosystems, wastewater treatment is essential. It is important because the water supply is restored and the planet is protected from toxins. Good wastewater treatment makes it possible to reuse the maximum amount of water, instead of wasting it. A good operated and maintained wastewater treatment system saves a lot of money in the long term. Also, good control of the WWTP can optimize the production of a brewery, because it can be detected what is being discharged and when.

In wastewater treatment, the Chemical Oxygen Demand (COD) is an important measurement for the amount of oxygen that is required to break down pollutants (organic substances) in water.

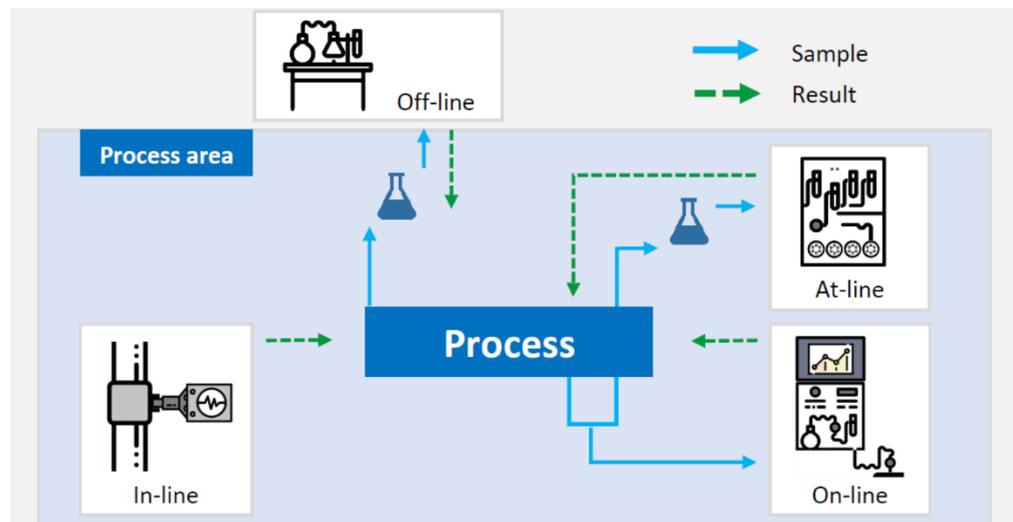
CHEMICAL OXYGEN DEMAND

The Chemical Oxygen Demand can be measured using different methods, direct or indirect. Regularly the COD value is determined by means of samples that are analysed using laboratory test methods. These off-line methods can be time consuming while the COD value is an essential parameter in the biological treatment process.

Fortunately, there are some alternatives for laboratory test methods, for example automated COD analyser systems. These on-line instruments are used in a sample stream of the wastewater process and are automatically providing a number of measurements in a period of time.

Compared to off-line measurement this method is much quicker providing an easier way to analyse the Chemical Oxygen Demand. However, on-line analysers are normally used in a bypass of the process stream which makes this an indirect measuring method.

Figure 1: Different methods for COD measurement in the WWTP



OFF-LINE, AT-LINE OR IN-LINE

The quickest method for COD measurement is through the use of in-line process equipment such as the Model 9585 COD Meter of Rhosonics. The sensor of this instrument is placed directly into the process stream, which means that the Chemical Oxygen Demand can be monitored continuously, directly and real-time.

The COD value is displayed at the instrument without any time delay and can be used for process control purposes, improving the efficiency of the biological treatment process. This analyser is developed to be used as an early warning system in case of unexpected process changes and to immediately prevent the WWTP from becoming inactive.

BREWERY WASTEWATER

Wastewater treatment plants (WWTP's) of breweries choose in-line COD measurement to protect their treatment facility against high COD peaks. This measuring method helps to reduce the overall operating costs and makes it easier to comply with conditions for discharge consent. Upset process conditions – resulting in the destruction of the biological process – are prevented and unintended spillage of raw material can be detected immediately.

Beer is 95% water, which makes it a critical resource for breweries. Beer giants like Heineken are focusing on water efficiency and are working on reducing their impact on the increasing global demand for water. Investments in brewery wastewater treatment are contributing to this goal and in-line COD instruments, like the Model 9585 COD Meter, are used to ensure the high standard of wastewater treatment.

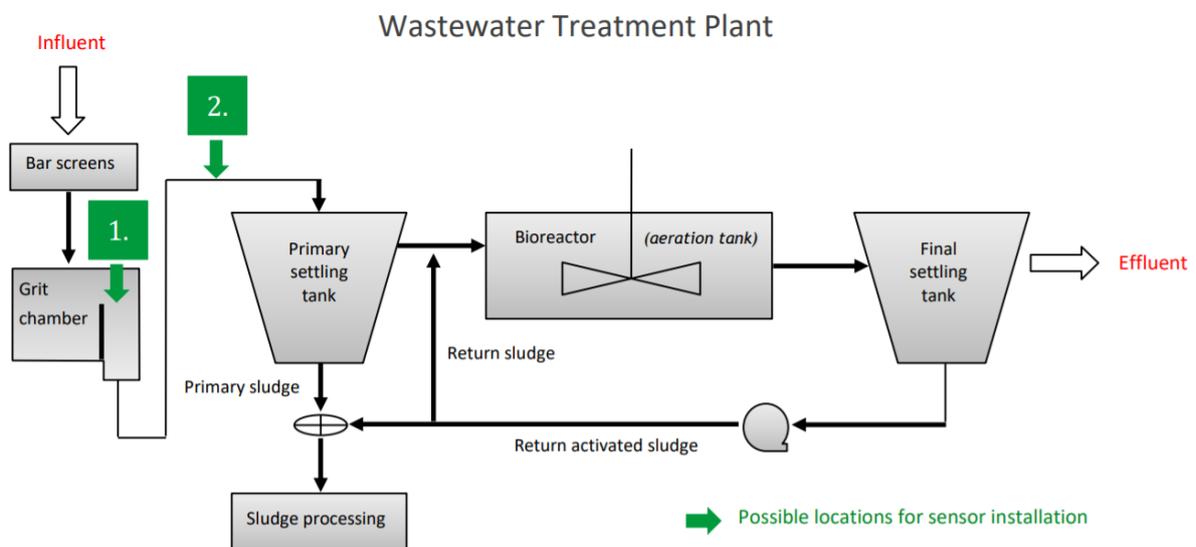


Figure 2: places of installation in a WWTP

The COD Meter has been developed in close collaboration with Heineken. Due to the policy of Heineken, Rhosonics became the preferred supplier for in-line COD instruments. The Model 9585 COD Meter is used at WWTP's of Heineken breweries all over the world.

MODEL 9585 COD METER

Wastewater Treatment Plants are using the Model 9585 COD Meter of Rhosonics in a pipe line, reservoir or launder to optimise and protect their biological purification process. All applications of this model are found in the influent stream of the treatment facility. The COD value is continuously available (on the screen of the analyser) and is not affected by the hardness, the presence of detergents like caustic nor suspended solids. Besides COD, the suspended solids load of the water can also be monitored as additional process parameter.



Figure 3: installation in a pipeline

The COD measurement of the Model 9585 is based on the hybrid ultrasonic / conductivity technology of which sound velocity is the most important measurement. The factory calibration is based on the ultrasonic properties of a variety of most common organic materials, such as alcohols and sugars. These properties are not affected by vibration, transparency or viscosity.



Figure 4: installation in the overflow of a grit chamber

CONCLUSION

In-line COD measurement will optimize the WWTP by determine immediately, real-time any changes of COD and suspended solids in the waste water stream of the brewery. One alarm detection of a high COD peak will already results in the Return Of Investment of the complete COD analyser. The in-line COD analyser also contributes to a greener and safer environment by controlling water spills.

Please contact us if you want to learn more about COD measurement. Our team is ready to help.



ABOUT US

Rhosonics helps the industry to use ultrasonic technology for in-line measurements. The real-time process data allows operators to achieve process optimization in a safe, reliable, sustainable and cost effective way. This is how Rhosonics contributes to a greener and smarter industry.

CONTACT US

Rhosonics

Hoge Eng West 30, 3882 TR Putten, NL

+31 341 – 37 00 73

info@rhosonics.com

www.rhosonics.com

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