

Determining microorganisms online in real-time – is that possible?



For companies that use water during production, for the purpose of heating or for cooling, the fight against microbial load is a recurring challenge that can take up a great deal of time and money.

Cooling cycles, such as those used in the chemical industry, are particularly affected by this.

Challenges posed by microorganisms

Time

Many companies manage to keep a constant eye on the current situation by taking manual samples as often as possible. This may happen up to several times a day. Taking these samples is very time-consuming for the operating personnel – time that could be devoted to other important activities in their day-to-day work.

Safety

The process for determining the total microbial count is carried out in an incubator and takes 1 – 2 days. However, germs can multiply quickly, frequently within minutes, which can cause critical and potentially hazardous situations to arise. Therefore, a direct process for measuring microbial contamination is the best way of ensuring that the appropriate countermeasures can be taken quickly.

- Dangers to the system: e.g. pipes clogging, loss of efficiency in heat exchangers etc. as well as disruptions in the production process up to the failure of individual production parts.
- Potential threats to health: e.g. inhaling aerosols from open cooling cycles in which legionella bacteria are present can lead to serious diseases, such as legionellosis (see also VDI 2047 Open re cooler systems - Securing hygienically sound operation of evaporative cooling systems (VDI Cooling Tower Code of Practice)).

Optimisation

Directly measuring the presence of microorganisms has two decisive advantages:

- Real-time results real-time allow for a quick response, thus helping to avoid damage to people's health and/or to equipment.
- Optimal amount of biocides can be added, as an insufficient dosage can be reliably and quickly detected and an excess dosage can be avoided. This will help to eliminate potential health risks and keep downstream plant components protected.

Cooling cycle: Microbial load

EZ7300 ATP Analysers

The analysers work online to monitor the microbial load of water by measuring the ATP (adenosine triphosphate) content. It is therefore possible to differentiate between living and non-living biomass, thus showing whether biocides have been added successfully.

Measuring range: 0.5 to 250 pg/mL

Options include:

- Multiple stream analysis (1-8 streams) reducing cost per sampling point
- Analogue and/or digital outputs for communication

More information regarding the 'firefly method' conform with ASTM D4012-81 is available on our website.



EZ7300 ATP Analyser

Other options for cooling water monitoring in the laboratory or in the field

2100Q Turbidimeter



DR1900 Photometer



HQD pH/conductivity meter



SL1000 Portable Parallel Analyser



You want to measure ATP or other parameters? Our application experts will support you in finding the best solution for your specific situation. Just contact us via phone, e-mail or the website.