BioSense

Biofilm Monitor

The BioSense range of qualitative biofouling monitors provide a relative measure of "activity" of biofilm being present in your process, allowing you to dose your biocide accordingly or take other appropriate remedial action.

- **Legionella control**
- **Automatic Biocide control**
- **Can be combined with other sensors**
- **No maintenance**
- **Cooling towers and any water circuit**
- **Seawater option**
- **Reduced chemical costs**
- **Up to 10 Bar**

"Using the BioSense allows us to monitor for biofilm development and then to dose the appropriate biocide" **Dr Craig Stracey, UK**

The BioSense sensors are available with different controllers to give you the same great performance with different communication, display, and control options. With the BioSense range of biofilm analyzers, you can simply monitor and alarm for biofilm in your water system, or you can implement a sophisticated monitoring and control regimen with biofilm and residual disinfectant monitoring all available online via the integrated remote access over LAN or GPRS modem.

CRONOS® BioSense

- High Quality - Low Cost
- Multilingual
- High resolution grayscale display
- 9 buttons for easy navigation
- Graphing and datalogging
- Enclosure; wall, panel, pipe or pole mounting. IP65/Nema 4x.
- Options:
  - **Modbus RS485/LAN**
  - **Profibus**
  - **Up to 2 sensors**
  - **PID/flow proportional controls**
  - **Remote sensors**
  - **Color display**
  - **Downloadable data logs**

CRIUS® BioSense

- Highest Quality - Low Cost
- Multilingual
- High resolution color display
- Intuitive user interface
- Customizable home pages
- All CRONOS® options plus:
  - **Up to 4 sensors**
  - **Remote access via LAN**
  - **Remote access via GPRS**
  - **Expandable to 16 sensors**

For more information please see the individual brochures - CRONOS® and CRIUS®

Biofilm

HSE HSG274 Legionnaires' disease: Technical guidance Part 1, 2013, Pg. 31 – "Biofilm can impair heat transfer efficiency, cause severe localized corrosion and the growth of legionella and should be considered a high risk contamination."

Options include:

- **NPT or BSP fittings**
- **Flow cell**
- **Stainless steel electrodes**
- **Titanium electrodes for sea water**

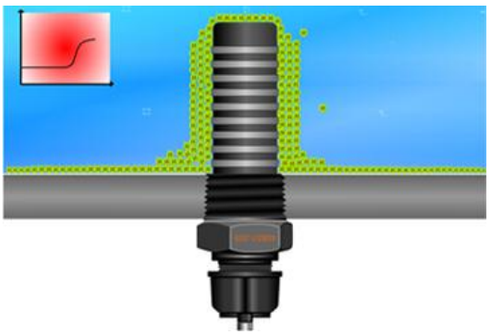
Siam Pollutek Co., Ltd 40/25 Soi Wachiratham-satit 8, Sukmvit 101/1 , Bangna , Bangkok 10260
Tel 02- 7478234, Fax 02-7477566, E-mail : info@siampollutek.com Web : www.siampollutek.com, Line ID : siam.pollutek

Principle of Operation

The controller applies a potential between the probe electrodes that encourages microorganisms to grow on the surface of the probe before they would grow on the surfaces of a pipe or a vessel. The biological activity of the biofilm creates a signal.

A BioSense controller collects and monitors that signal continually. An increasing trend in the signal indicates the onset of biofilm activity on the probe. The controller can then take remedial action automatically by, for example, increasing or decreasing the biocide levels.

The CRONOS® BioSense is a low cost controller capable of automatically changing dosing regimes etc. with the more sophisticated CRIUS® controller providing; data logging, email and text alarms, remote access and control via GPRS/LAN.



To view a flash animation of the BioSense go to:
http://www.processinstruments.net/products/biofilm-monitor

Automatic Biocide Control

Measuring the residual biocide in a body of water only tells half the story. It tells you that there is little or no biological activity in the bulk water. This doesn't necessarily mean that biofilm isn't building up on the walls of pipes and vessels with the possibility of the development of harmful bacterial colonies. The CRIUS® BioSense can come equipped with its own integrated GSM/GPRS modem, which allows anyone, with the appropriate security level, to receive text alarms or emails relating to the chemistry of the treated water. It also allows you to monitor the build up of any biofilm and in turn take the appropriate action AUTOMATICALLY to return the system to a clean condition. This could be as simple as triggering an alarm for a manual intervention or as complex as increasing biocide levels or shock dosing, all controlled by the BioSense controller.

The BioSense gives you:

- **Control of system surface biological activity**
- **Treatment effectiveness monitoring**
- **Biocide program optimization**
- **Indication of a "clean" state**

Both of the biofilm controllers: CRONOS® and CRIUS® can also come equipped with sensors such as pH, temperature, conductivity, chlorine dioxide, chlorine, bromine etc. for a fully integrated water treatment control system including biofilm monitoring.

Legionella and Pseudomonas

Risk Management

Cooling systems and heating systems in e.g. hospitals, airports and hotels can be a source of the Legionella or Pseudomonas bacterium. The bacteria often grow in biofilms that adhere to the walls of water systems. The BioSense allows you to monitor for the development of these biofilms and dose the appropriate chemicals to reduce and disperse the biofilm prior to building up to a dangerous level of Legionella or Pseudomonas. Biofilms can also induce corrosion and reduce heat exchange efficiencies all of which can be expensive if not controlled appropriately.

Biofilm - The solution

Fig. 1 High risk contamination, cooling tower pack (HSE HSG274 Legionnaires' disease: Technical guidance Part 1, 2013, Pg. 33)

The BioSense sensor was developed to provide on-line and real-time indication of biofilm activity on typical surfaces. The probe is designed and operated so that microorganisms in the environment will settle and reproduce on probe surfaces before they settle and reproduce on vessel walls or piping. This gives an early warning of potentially dangerous biological activity in the process, by closely tracking biofilm activity on the probe, the BioSense can take remedial action such as increasing the dosing of a biocide or dispersant. The BioSense biofilm controller can also be used to assess the effectiveness of a treatment, or to schedule maintenance activities. By monitoring biofilm activity on surfaces very precisely, costly over-treatment can be avoided and chemical treatments can be optimized, therefore BioSense can:

- **Reduce the risk of Legionella growth**
- **Reduce the cost of chemical treatment**
- **Reduce maintenance**
- **Reduce the time taken to fix problems**
- **Increase the efficiency of process equipment**

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