

Third Party Evaluation of OnGuard™ 3B Analyzer



ClearPoint™ biofilm detection and control program from Solenis is a one-of-a-kind microbiological control solution for industrial cooling towers. This novel program brings together proprietary chemistry, advanced monitoring equipment, and expert service and support to provide a comprehensive safeguard against the biofilm threat.

While the chemistry and service components play a pivotal role in the success of the ClearPoint program, the equipment component is what truly differentiates the technology from other competitive offerings.

This new-to-the-world monitoring device, which is only available as part of a ClearPoint program, is marketed as the OnGuard™ 3B analyzer. This device employs an advanced ultrasonic probe to detect biofilm growth in cooling systems earlier than any other commercially available technology. In fact, in 2016, Solenis engaged the Center for Biofilm Engineering (CBE) at Montana State University to evaluate the ultrasonic measurement capabilities of the OnGuard 3B analyzer against a proven laboratory measurement technique. Results from this evaluation not only confirm the early detection capability of the OnGuard 3B analyzer but also the measurement accuracy of the device to be around 10 μm with a resolution of $\pm 5 \mu\text{m}$.

The evaluation conducted by the CBE is described on the back of this page. Summary results from the evaluation are provided and excerpts from the report prepared by the CBE are included as well.

For more information about ClearPoint biofilm detection and control program or the OnGuard 3B analyzer, please visit solenis.com/ClearPointCBE.



CBE Evaluation, Results and Report

The testing arrangement shown in Figure 1 was used by the CBE during its evaluation of the OnGuard 3B analyzer.

During the evaluation the CBE imaged one coupon per day from its bioreactor using confocal laser scanning microscopy (CLSM).

Results from the CBE evaluation of the OnGuard 3B analyzer are summarized in Figure 2.

The following are excerpts from the report prepared by the CBE following its evaluation of the OnGuard 3B analyzer:

- Biofilm is visible by the sixth day of operation. Although not visible at 1.25X magnification, small clusters of cells are developing by Day 4 that are visible at 63X magnification.
- The overall trend seemed to correlate well between the CDC reactor and the OnGuard system in that as growth began to accumulate by day 4, as demonstrated by cell counts and confocal measurement and confirmed by the OnGuard system ΔT measurement.
- Of note is the reaction of the OnGuard system to the early stages of biofilm accumulation (days 4-6). Biofilm growth during this period expands from insignificance to prominence, representing a critical time point for biofilm control via the addition of antimicrobial treatments.
- Close monitoring of the OnGuard system ΔT could provide operators with an advance warning of the initial stages of biofilm growth, before the accumulation of a significant biofilm makes treatment significantly more difficult.

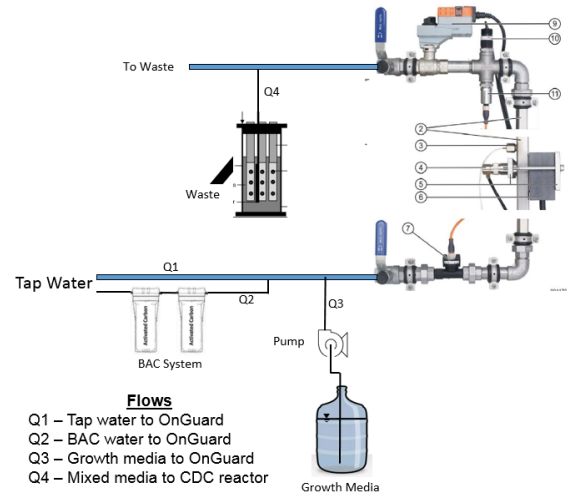


Figure 1: Laboratory testing arrangement.

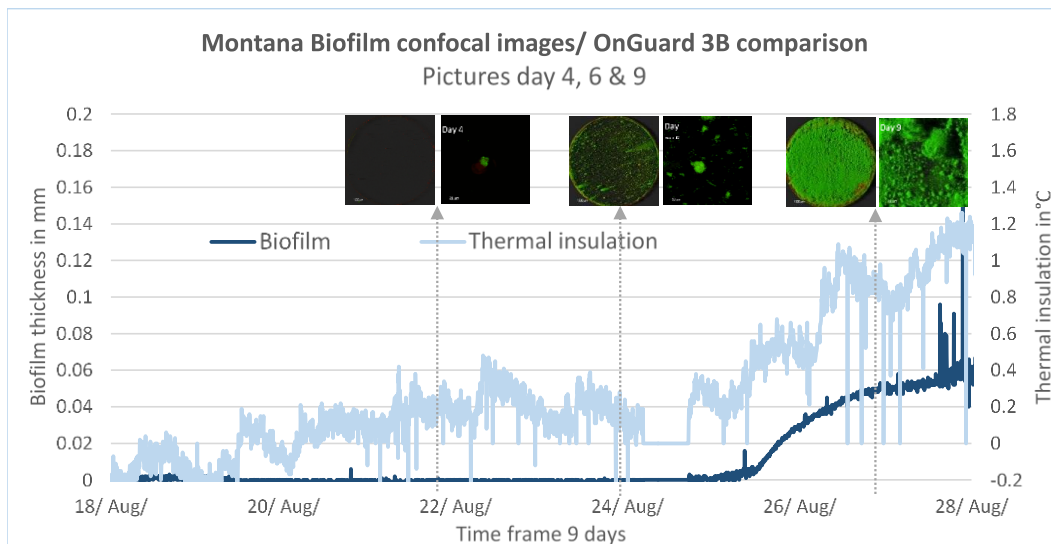


Figure 2: Experimental results and CLSM photographs.

About the CBE

The Center for Biofilm Engineering (CBE) is an interdisciplinary research, education, and technology transfer institution located on the central campus of Montana State University in Bozeman, Montana. The CBE integrates faculty from multiple university departments to lead multidisciplinary research teams to advance fundamental biofilm knowledge, develop beneficial uses for microbial biofilms, and find solutions to industrially relevant biofilm problems.