

AQUARIUS

Biofilm Legionella Trap

Simple and Inexpensive Device
to allow for
Biofilm Evaluation
and Legionella presence
on Cooling Water Systems



Model - BLT100

- √ Simple and easy device to install
- √ UV resistant, Corrosion resistant and Inexpensive
- √ Allows Biofilm to grow on glass beads,
for laboratory evaluation
- √ NATA Microbiological Laboratory can determine
The biofilm thickness in microns
Presence of Protozoa or Amoebae
LDB count as cfu/cm² surface area
HPC count as cfu/cm² surface area



**Test for the presence of Legionella in its preferred habitat in the biofilm.
Improve Heat Transfer efficiency with reduced biofilm growths.**

ADVANCED TECHNOLOGY FOR THE NEW MILLENNIUM

Biofilm Legionella Trap

Features and Benefits

The **Aquarius Biofilm Legionella Trap** has been designed as a low cost solution to allow easy access to cooling water biofilm growths, and to allow for a NATA microbiological laboratory report of both the quantity and thickness of biofilm, but also the microbiological population inhabiting the biofilm and in particular for Legionella bacteria.

It had long been established that it is biofilm growths which harbour legionella, - see Technical Bulletin No. 32. They also reduce heat transfer, so there is two fold benefit in eliminating biofilm growth with a carefully programmed biocide program.

The **Biofilm Legionella Trap** is installed in the vicinity of the cooling tower and a flow rate of 2 - 3 lts per minute of cooling water, taken from the pressure side of condenser pump, and allowed to circulate through the trap and return to the cooling system suction side or tower basin.

Biofilm growth will usually establish and grow a film on the glass beads within 7 - 10 days where the HPC counts are in excess of 10^5 . On systems with low HPC's, e.g. 10^3 and below, the unit should be allowed 30 days or more to establish a biofilm (or lack of biofilm) before presenting the trap to the NATA microbiology laboratory for full evaluation.

On cooling systems which have recently been introduced to ORP and continuous oxidising biocide treatment the **Biofilm Legionella Trap** should be allowed a minimum of 30 days exposure before Laboratory evaluation, to demonstrate the dramatic reduction in both quantity of biofilm and in the microbiological population.

Specifications

Biofilm Legionella Trap

Pressure Rating	=	500 kPa.
Temperature Rating	=	Max. 50 °C
Bead Diameter	=	3.0 mm.
Bead Surface Area	=	approx. 100 cm ²
Flow Rate	=	2.0 - 3.0 lts/minute
Flow Velocity	=	0.25-0.37 metres/second.

Suggested Technique

The following steps are suggested as a technique, but those skilled in the art will be able to modify these steps to obtain the end result, i.e. how much biofilm is present on the wetted surfaces of the cooling system? and what is the microbial population of the biofilm.?

1. Install the **Biofilm Legionella Trap** in the vicinity of the cooling tower, measure the flow rate and set flow at 2 - 3 lts/minute, 2.0 l/m equals a velocity of 0.25 m/sec and flow rates in excess of 3.0 l/m may be sufficient to agitate the glass beads sufficiently to dislodge some of the biofilm to be swept back in main system.

2. Allow the trap sufficient exposure time to form a biofilm representative of the system as a whole, e.g. where there has been a LDB positive, or HPC is 10^5 or greater, 7 -10 days exposure is likely to grow a biofilm in equilibrium with the system. On systems with low HPC of 10^3 or less at least 30 days exposure should be allowed.

3. After the exposure period the **Biofilm Legionella Trap** with glass beads and biofilm is taken to the laboratory in its entirety for evaluation.

4. The microbiological laboratory should allow the trap to drain in an upright position for about 30 minutes before unscrewing the end cap, and emptying the glass beads into a tared beaker and established the damp weight of the beads and biofilm.

5. A known amount of sterile liquid (50 - 100 ml) is added to the beads, and then sonicated to remove the biofilm and adhering bacteria. This known volume of sonicated liquid is used for bacterial estimations.

6. The glass beads are further washed in a strong "hypo" solution, rinsed, dried and reweighed.

7. The surface area of the glass beads is calculated from weight of clean dry beads multiplied by 0.9214 = cm² surface area

(b) the weight of biofilm is "damp beads and biofilm" minus "clean dry beads weight" in gms.

(c) the thickness of the biofilm in microns (assuming the density is very close to 1.0) is as follows

(Mass of biofilm in gms / surface area in cm²) x 10000 equals avg microns thickness of biofilm.

8. Microscopic evaluation of the sonicated liquid should be carried out for protozoa, amoebae, worms, etc., and population and numbers reported.

9. A LDB should be carried out but reported as cfu/cm² of glass bead surface area as per step 7 above.

10. A HPC should be carried out and reported as cfu/cm² of glass bead surface area.

11. The clean glass beads are returned to the trap and the unit is ready for a further installation and exposure.

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MANUFACTURER'S PRODUCT WARRANTY

AQUARIUS TECHNOLOGIES PTY LTD. manufactures a range of equipment under a Quality Assurance system to ISO9001:1994 standards and warrants equipment of its manufacture to be free of defects in material or workmanship.

Liability under this policy extends for 12 months from the date of installation, or 24 months from the date of shipment from our factory, whichever ever occurs first. The manufacturer's liability is limited to repair or replacement of any failed equipment or part of, which is proven to be defective in material or workmanship upon the manufacturer's examination. This warranty does not include removal or installation costs and in no event shall the manufacturer's liability exceed its selling price of such equipment or part.

Aquarius Technologies Pty Ltd. disclaims all liability for damage to its products through improper installation, maintenance, use or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorised repair. Aquarius Technologies Pty Ltd. will not be responsible for any consequential or other damages, injuries, or expense incurred through use of its products.

This warranty is in lieu of any other warranty, either expressed or implied. Aquarius Technologies Pty Ltd. make no warranty of fitness or merchantability. No agent of ours is authorised to provide any warranty other than above.

This warranty does not exclude any condition or warranty implied by the Trade Practices Act 1974 or separate State Laws in Australia and is in addition to any other right that the original purchaser or any subsequent purchaser may have under Australian law.

Should a unit fail to function normally, please contact our Customer Service Department by phone or fax quoting, Model Number, and Serial Number, for initial discussion of the problems encountered, and if it is necessary to return the item to the factory, a Return Authorisation number will be given to facilitate return, and repair or replacement of the item.

The item for return should be carefully packaged to prevent any damage in transit, contain the Return Authorisation identification number, customer identification, and return delivery details, and the freight prepaid to our factory. If in the opinion of our factory, after examination, the failure was due to materials or workmanship, repair or replacement will be made without charge for parts, labour and return freight. A reasonable service charge will be made for diagnosis and/or repairs due to normal wear, abuse, tampering or damage in transit.

AQUARIUS TECHNOLOGIES PTY LTD. reserve the right to continue development and improvement of the entire range of our equipment, and therefore minor changes may occur due to these improvements and the continuing development.

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Aquarius Technologies Pty Ltd Commissioning & Warranty Validation Report

*This form should be completed by the Equipment OWNER ,
promptly after installation & commissioning
duly signed and faxed to Aquarius on (07) 3274 4736
to enable the equipment installation date and details
to be logged to our confidential Warranty Database
and to validate your 12 months warranty registration.*

Please print all details except for signatures

Model :- **Serial No.**

The above equipment was satisfactorily commissioned for :-

Equipment Owner - Company Name

Address.....

State **Date of Installation**

by

Commissioning - Company Name.....

Address.....

State

Technician Name **Signature.....**

Signed for and on behalf of the Equipment OWNER

Name.....

Signature.....

Date.....

Thank you for your very valuable support, purchase and installation

Aquarius Technologies Pty Ltd