

# SAFE WATER

Legionella from a "Hands on" perspective

**Guldager**   
*Wise Water Treatment*

## Guldager

Guldager A/S is a Danish, family owned company with more than 60 years of experience within water treatment.

Our expertise lies within corrosion protection, softening and desalination of water, protection against growth of algae for oil platforms and Legionella prevention.

With the combination of well-educated and experienced technicians and innovative technology we offer a competent and updated service of all Guldager plants.

With our main office in Denmark, subsidiaries in Belgium and Switzerland and sales office in Germany, we are ready to serve customers worldwide.

For more details, please visit our homepage: [www.guldager.com](http://www.guldager.com)

## Safe water

Fighting Legionella in hot water systems requires knowledge in two very different subjects: microbiology and water installation technique.

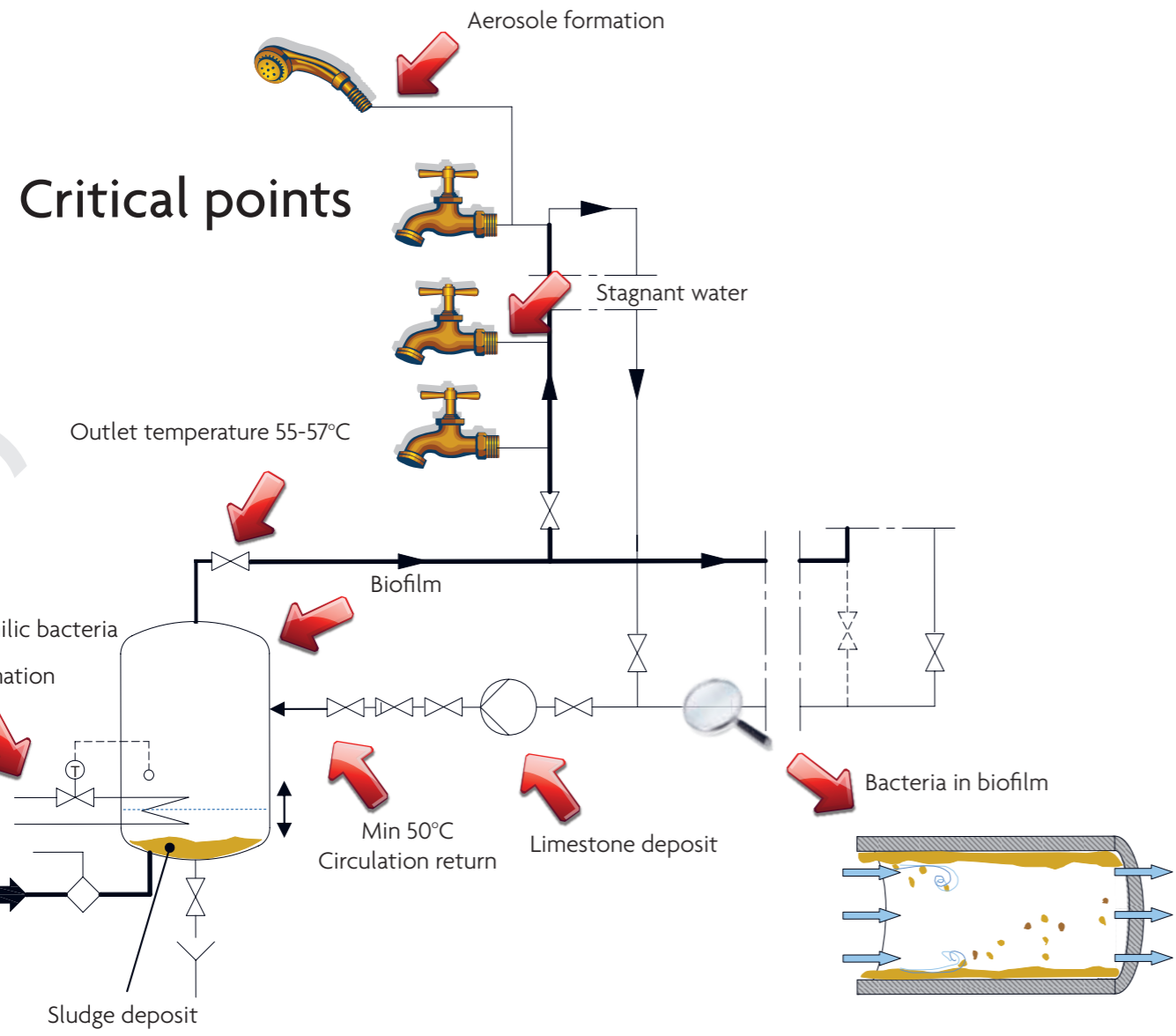
In 2004 Guldager was in charge of an EU project on different approaches to Legionella prevention in European countries. A large number of European private companies and approved technological service companies took part of the project.

Guldager's Service Concept has been practiced on more than 40.000 water installations throughout 60 years. The sum of decades of everyday experiences has generated a unique insight in the design, operation and maintenance of water installations.

Safe Water – outlines Guldager's suggestion to a Legionella prevention program based on a holistic approach to troubleshooting.

The concept offers solutions to the different phases in Legionella prevention:

Design:	Components for water installations
Operation:	Consulting and supervising services
Maintenance:	Preventive and repairing initiatives

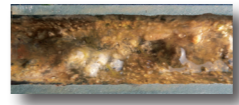


### Critical points

### Identify risks

As for most problems, the first challenge is to form an overview of the case. A preliminary risk assessment is crucial for the purpose of fighting Legionella growth in water installations. The examination forms the base for the subsequent initiatives whether this is changing or adding components in the system, adjusting operational parameters or cleaning actions.

### Pipe flushing



The most efficient way to remove bioslime is to flush backwards through all hot water pipes at high water pressure resulting in a much higher water flow. Guldager A/S flushes in supply direction and reverse in the system in combination with compressed air. Each line will be flushed separately.

### Softening



Most frequently temperatures are discussed in a case of legionella prevention. High temperatures will minimize the bacteria growth but also increase the scale formation. The limestone can act as a breeding ground for bacteria or as a barrier for heat transfer. Lower flow rates can follow from blocked pipes or valves which will increase the rate of biofilm formation. Softening will eliminate the above problems as well as offering a low energy operation of the water installation.

### Boiler disinfection

A warm water boiler is the single component in the installation with the largest water volume and the slowest water movement. This makes the water boiler a rational place to clean-up which is effectively done with a chlorine dioxide solution.

### Alpha-B valve



The new dynamic control valve from Guldager ensures hot, clear and bacteria free water in the taps. The valve is the answer to the most frequent problems in hot water installations, which often come from the circulation system. A dynamic regulation of the circulation ensures the correct flow rate (determined by the dimensioning of the plant) in the plant at any time. The flow rate will typically be higher than by thermostatic regulation resulting in fewer problems caused by bioslime, bacteria, metal discharge or corrosion.





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