





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

Safe water

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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:

	Components for water installations
	Consulting and supervising services
ce:	Preventive and repairing initiatives



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.

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.

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.

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

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.

Responsibility

The responsibility for a water installation and Legionella prevention most often lie with the owner of the building. In most European countries, there is no specific legislation regarding the responsibility of preventing Legionella and what to do if Legionella is found in a water installation or how to handle the accident after an outbreak of Legionnaires' disease. Several national and regional instructions on how to prevent or eliminate Legionella are at disposal, but only a few of these texts have been adapted to law. Over time, cases have shown that prevention of Legionella is well-known by professionals since neglect is considered actionable.

To hold track of initiatives and document state of affairs it can be relevant with a file of written documentation.

Legionella Control Program

Personnel responsible for water installations can be very capable technically e.g. works managers in swimming pools. A tool for these professionals can be an written program which act both as a script for Legionella prevention and as an ongoing documentation report.

Report - risk assessment

Water analysis report

A risk assessment will document its findings in a written report. That document will act as a working paper for recommended initiatives as well as a documentation of the risk profile at the date of the examination.

Certificate

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Guldager can, by the issue of a certificate, verify that a building owner actively works on Legionella prevention. The premise for title to the document is engagement in a Guldager Safe Water service contract.

A quantitative determination of Legionella can act as a snapshot of the conditions in a water installation but never as a true picture of the situation.

The analysis is however an important tool in the effects of selected initiatives. "Tell us the desired result of the analysis and we will take the water sample with that result".

Although this is an exaggeration there is some truth to this statement.

The message is that knowledge about water installations and therefore the influence of the sampling point on the test result is essential.

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