



AquaProtect T

Heat exchanger system – Anti-legionella

AquaProtect T

Studies have shown that many hot water systems contain legionella bacteria. The AquaProtect system is designed for thermal disinfection of hot water to eliminate these bacteria. Since the system includes heat recovery, the disinfection process consumes no extra energy. In systems in which previous attempts were made to reduce the bacteria count by raising the system temperature, the energy costs can be substantially reduced by installing the AquaProtect system and lowering the water temperature back to its original value.

How do bacteria cause infection?

The legionella bacterium occurs naturally in lakes and water sources and enters our water systems with the cold water. Different materials, deposits that promote growth, and certain temperature levels encourage legionella bacteria to propagate. These bacteria breed most actively at temperatures between 20 and 45°C. People are infected by inhaling the bacteria with water vapour when showering or washing. Legionella bacteria cause Legionnaires' disease, the symptoms of which are similar to pneumonia, and the disease may be fatal unless treated in time.

Which systems should be disinfected?

The larger and the more complex the hot water system, the greater the probability or risk of high bacteria contents. If the hot water temperature in the system is low and if the system has been modified so that the water is stagnant in certain pipe connections, the risk of infection will be very high. The hot water systems in hospitals, hotels, schools, public baths and also in shower rooms in work places and sports facilities are typical examples of systems that should be checked and remedied as necessary.

Reliable performance

Legionella bacteria are temperature sensitive. The AquaProtect system heats the water to 70°C and keeps it at this temperature for about six minutes, which kills the bacteria. The water is then cooled to the required system temperature. The AquaProtect system is rated so that it has the capacity for periodic disinfection of the entire hot water system by heating the water to a high temperature.



AquaProtect T

Advantages

- Safe eradication of the legionella at a temperature of 70°C at six minutes holding time.
- Continuous disinfection of all circulating water
- Temperature safety function, e.g. low capacity on primary side or worse heat transfer. Depending on the set point of the controller the distribution valve limits the flow entering the combined reaction tank at the right temperature of 70°C all other flow is recirculated to the charging loop.
- Net disinfection
- Heat exchangers for waters with low/high lime content
- Standardised capacity ranges for different tapping flow rates
- Compact-system ready to be connected
- Electronic control device

Options

- Protection against capacity overload, shut-off valve on the inlet of the storage tank, while the charging capacity is still available for the tapping.
- AlfaNova compact heat exchanger (100% stainless steel)

Operation of the AquaProtect system

The cold water entering the hot water system is heated to 70°C in a heat exchanger. This water then flows through a reaction tank which is rated and designed so that the water takes six minutes to flow through it. Legionella bacteria are temperature sensitive and are killed during these six minutes. From the reaction tank, the water flows to a storage tank in the usual manner.

When hot water is drawn off in the system, the 70°C hot water is taken from the storage tank. However, instead of being diluted with cold water to the appropriate system temperature, the 70°C water gives up some of its heat in a heat exchanger to the incoming cold water. The cold water is thus preheated before being heated to the disinfection temperature. All of the energy used for the disinfection process is thus recovered, and energy consumed by the AquaProtect system is merely that needed for driving the pump.

The water between the heat exchanger, reaction tank and storage tank is continuously kept in circulation. When hot water is drawn off, the storage tank or tanks are used for storing the preheated water. When draw-off has ceased, the circulation is reversed and the stored preheated water flows to the heat exchanger, where it is heated to 70°C and then flows through the reaction tank for disinfection. The water then returns to the storage tank, but now to the top of the tank.

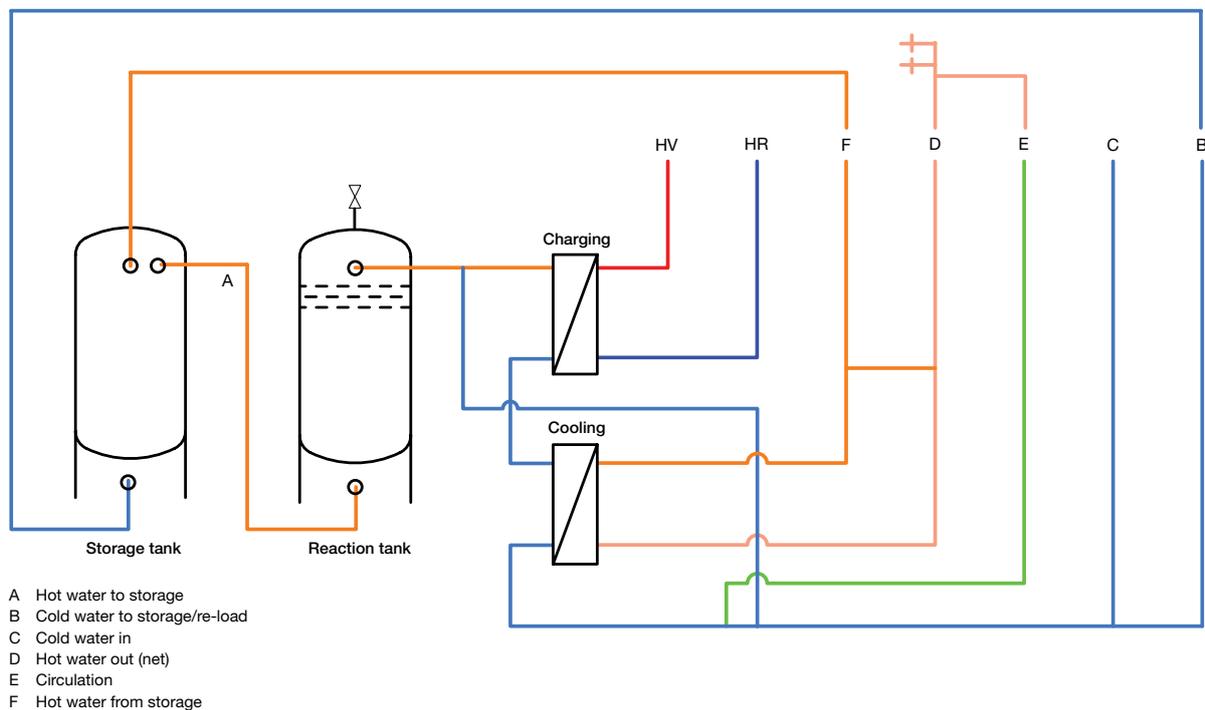
In the AquaProtect system, the hot water recirculation connection is made at the incoming cold water. This means that hot water which has been out in the system and may possibly have been 'infected' on contact with cold water, such as in a shower mixer, will partially be disinfected afresh. The legionella bacteria count is thus maintained at a very low level in the entire system.

When the AquaProtect system is commissioned, the entire hot water system is usually disinfected by the whole of the plumbing being flushed with water at 70°C or possibly even higher for a certain period of time. The AquaProtect system is rated so that such flushing can be carried out periodically, if necessary.

Boiler water at a temperature of at least 75°C is used as the primary medium for the AquaProtect system. If the AquaProtect is connected to the district heating system, it is important to check that the water temperature is sufficiently high throughout the year. If not, an electric boiler, for instance, may have to be added.

The AquaProtect system is available in a number of standard sizes, but it can also be rated and customized for specific applications.

The production is certificated to the ISO 9001 quality standard, and our laboratory is accredited by SWEDAC.



How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com