Affordable, easy and reliable solution to battle legionella available soon

The company Z Energi located in Stavanger, Norway, will together with Stavanger municipally and Innovation Norway test a new method to battle legionella by using IoT sensors to map faults in the water system. The solution will be tested and verified in the next 12 months and result in a concept which can be used by any who has large expenses with legionella caused by the usage of traditional methods such as shock flushing, silver, and adding chemicals and salt mixtures to the water pipes, which are ineffective, bad for the environment and expensive.

Tastahallen

The facility has 17 IoT sensors with 32 measuring points, which logs warm and cold-water temperatures, and energy consumption. Along with a legionella protection system developed in Denmark to finally rid Tastahallen of their legionella issue, which was first detected in 2007. This will result in less disease, and huge savings in both time and energy use.

Facts

- By measures such as reducing water temperature, Norway can reduce an energy loss equivalent to 3.8 TWh anually, which is as much as all wind turbines in Norway produce combined.

The new cost effective, environmentally friendly solution

Together with Innovation Norway, ReMoni, and Danish Clear Water (DCW), Z Energi has analysed Tastahallen in Stavanger, and will implement measures they believe will solve the legionella issue once and for all, and simultaneously reduce the energy usage for heating. Until now, the water has been heated to 80°C in an attempt to keep the system free of legionella. These temperatures are poorly suited for heat pumps, adding excess wear and tear to pumps, pipes while extra money is spent on heating the water to these temperatures.

For the first part of the project, on Wednesday the 20/03/2019 the temperature was reduced to move load from the water heaters to the heat pump. Until now, there has been three water heaters, doing most of the heating from 10 to 80°C. This measure will reduce energy consumption by over 50%, and simultaneously secure both warm and cold water by allowing the disinfection fluid to reach the whole system. The water will be measured every week together with NORCE, to ensure that the system works as expected.

ReMoni IoT sensors delivered by Z Energi

The measuring system

If one were to install similar systems by traditional energy measurers and sensors, the price would be in the hundreds of thousands Norwegian kroner, here it is done in a few hours, for a fraction of the cost. By using clamp-on IoT-sensors from ReMoni - which is mounted on the outside of the pipes in only a few minutes, Z Energi can observe the energy fluctuations as they happen, and thereby be able to troubleshoot and verify every temperature and unit in the system. With a combination of this technology and legionella protection from DCW, they are able to find the best solution to keep both the warm and cold water free of bacteria, and simultaneously reduce the energy consumption by a large amount.

Benefits of the new anti-legionella solution:

- Inexpensive compared to traditional solutions of today
- Easy to install and monitor
- Clamp-on IoT-sensors: No cutting in pipes, no risk of leakage after installation
- Screening process is quick; within the same day you can identify where the legionella problem is caused

Problem since 2007

After legionella was first detected in 2007, several forms of legionella protection were attempted in the shower facilities of Tastahallen, everything from acid wash to replacement of the piping system, without success. A lot of resources have been spent in order to conduct maintenance such as hot water flushing, and manually activating all of the 80 showers to circulate and replace stagnant water.

Experiences and measurements indicate that shock flushing gives a false sense of security as the legionella can survive deep within the biofilm, which commonly appears in facilities without proper legionella protection, and then re-emerge shortly after a flush is completed. Data from the IoT sensors also indicate that usage of such high warm water temperatures result in a rapid heating of the cold water to 20 to 45°C when the shower facility is not in use. This is very unfortunate as it creates a perfect environment for legionella to flourish in.

Goals

Z Energi will in cooperation with technology providers and Innovation Norway create an environmentally friendly low temperature legionella solution which can be used all over the world. If it is successful, facilities such as apartment buildings, district heating companies, and public buildings in Norway can reduce an energy loss equivalent to 3.8 TWh, which is as much as all wind turbines in Norway produce combined. It will also be important to lower the temperature to obtain a comfortable indoor air quality in the new super-isolated buildings which are becoming more common throughout the world.

ReMoni - IoT sensors

ReMoni is all about saving resources!
ReMoni is an award-winning Danish company that develop, design and produce innovative solutions for resource and energy optimization.
With patented clamp-on technology, combined with artificial intelligence and algorithms, ReMoni helps companies, building- and energy managers save money and resources; in an easy, secure and affordable way.

Danish Clean Water - Article 95 legionella system for warm and cold water

DCW has solutions for saving energy and protecting against legionella
Through a 2,5-year long project they have documented that the legionella bacteria were reduced to 0 in warm water, they call it Zero Legionella, and simultaneously achieve energy savings of 30 – 40% in warmwater heating. This system is article 95 approved, which all biocides in the EU/EØS marked must be according to the EU Biocides Regulation 528/2012.

Innovation Norway
F&U financially supports the development of legionella protection

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