

Safeguarding hot water supplies

PASSING THE HARDNESS TEST

Preventing limescale deposits

Saving energy and costs in domestic hot water supplies starts with the installation of efficient heating systems. But what is to be done when horrendous limescale deposits regularly restrict the operational heating process?

System installer MJS nowadays deals with the problem of limescale with a handy and effective water treatment system.

Author: Marc Flettner, ION Deutschland GmbH, Düsseldorf



Protected hot water system

WHO estimates that more than 20,000 people die in Europe each year from dangerous Legionella. Utility water temperatures of over 60°C are important to fight these bacteria. Yet the limescale precipitation is then particularly aggressive, which is why two further active anodes "AB H50" and "AB S20" protect the hot water system

Saving energy and costs in domestic hot water supplies starts with the installation of efficient heating systems. But what can be done when horrendous limescale deposits regularly cause the operational heating process to collapse?

System installer MJS nowadays combats the energy and profit killer limescale with Aquabion, a handy and effective water treatment system.

The field service team at MJS in Mühlheim/Main (www.airklima.de) was shocked when the alarm bells rang in a housing area in Langen: The "Supply System Construction" department had installed the large central hot water heating unit with over 400 kW and a tank loading system together with a correspondingly large utility water tank just six months previously. But angry residents in the 100 flats were already complaining that they were getting only lukewarm water from their taps. The central hot water heating unit was installed on behalf of Proenergy Contracting (www.proenergy.de), an energy contractor and a former subsidiary of Veba based in Bochum, which provides optimum energy supply concepts for more than 3,500 commercial customers in Germany, Austria and Hungary and is one of the largest private energy providers in Germany. MJS is responsible for the installation and the complete facility management in a radius of 300 km around Mülheim.

Limescale wastes energy:

After an on-site inspection, the service engineer found that the temperature in the utility water tank was around 60% lower than the setpoint 75°C. He diagnosed the fault as being massive limescale incrustations on the external heat exchanger. Oliver Weiss, head of the



Limescale deposits

"Aquabion" is available to fit every pipe diameter. "Type AB F65" for DN 65 was installed here in the cold water main. Thanks to the artificial precipitation of limescale immediately behind the water pipe, the altered lime crystals now flow off through the pipe network without danger.

Heating and Sanitary department: "At first we could only think that the dramatic limescale precipitation was due to the loading temperature being too high. After the new heat exchanger had been installed, we therefore reduced the loading temperature by 5°C."

Yet not even three months after the expensive service work, the same problem became drastically noticeable again within just a couple of days. However, this time the scenario was particularly unpleasant: It was a weekend and no replacement heat exchanger was available! Some of the angry residents even threatened to move into a hotel.



Housing area in Langen

MJS regards "Aquabion" as an important component in its central hot water heating systems in order to ward off claims to damages from angry residents, as here in a housing area in Langen in Hessen, due to wasted energy or taps and fittings clogged with massive limescale deposits

Prevention saves expensive service work

In this situation, Proenergy's help desk recommended its partner, ION Deutschland GmbH, Düsseldorf. This firm has a cooperation agreement with Proenergy and supplies its "Aquabion" water treatment system (www.aquabion.de). Where medium-hard to hard water is concerned, as in Langen, the active anode works as a lime converter.

The new, microscopically visible, neutral crystals no longer adhere to surfaces, but rather flow off with the stream of water. Once the "Aquabion" cartridges had been installed, no more complaints were received whatsoever up to the first maintenance date six months later.

Subsequent inspection of the heat exchanger confirmed that there were few limescale deposits and even

these were loose and could obviously be washed away easily. Wasted energy, angry residents and service work costing both time and money are now things of the past!



Interview:
Brief interview with Oliver Weiss,
head of system supply construction,
MJS Air Klima GmbH



Why were you so shocked by the limescale deposits on the utility water heat exchanger in the housing area in Langen?

Oliver Weiss: We emphasise professional, profitable and customer-friendly energy management, but the immense limescale damage in such a short time completely destroys any such efforts at management. Firstly, our maintenance work and costs rise exorbitantly because not only the heat exchangers, but also the complete pipe network including pumps are damaged much earlier, even becoming unusable. Secondly, our customers suffer. Their bills directly reflect the exploding heating requirement; a crust of 1 mm limescale namely raises the requirement by 10%! And their taps and fittings, which are often quite expensive, quickly become a source of annoyance. They are not just more difficult to clean, but simply become more prone to defects. Moreover, I've begun to worry about "consequential damages" which maybe no-one thinks of immediately. Dissatisfied customers could put us under pressure with claims to damages – and that not just because of today's high energy prices!



SHK P ROFI

What has been your experience with "Aquabion"?

Oliver Weiss: Since the "Aquabion" systems have been installed, no descaling action whatsoever has been required. The system can be installed quite simply within just a couple of hours, it is environmentally friendly needing no outside power or chemicals, and does not require any regular maintenance outside its life cycle. The complete system should solely be replaced by a new one every six years or so under a modern deposit return process. In addition, we can now operate the tank at water temperatures of around 70°C without problem. 60°C is thus guaranteed even in the far flung pipe network downstream from the tank – and we can thus reduce the threat of Legionella bacteria!



SHK P ROFI

Has the deployment of "Aquabion" brought changes to your operational work?

Oliver Weiss: Yes, and all for the good. We are now running the system in numerous facilities. It has considerably lowered the service expenditure for our

systems, also because we have been able to extend the regular maintenance intervals. In addition, the high demands which the residents rightly place on us as experts can now be more easily fulfilled. Nowadays our goal is to guarantee the cheapest and technically most reliable energy management systems for our customers. That is not least why we now automatically offer "Aquabion" as a preventative measure in all our quotes for central hot water heating systems. In order to ward off claims to damages, we make explicit reference to the damage that can arise without this lime converter. We now believe that we are excellently equipped to serve the market in future! As an aside, Proenergy also deploys "Aquabion" for customers in other regions of Germany under its cooperation agreement with ION.