TT23

Does low conductivity protect against corrosion?

To demineralize the fill or make-up water of a heating installation to obtain / maintain low conductivity has increased. More and more companies promote or sell RO (reverse osmosis) water, demineralised water or “VDI” water as a remedy for corrosion. An incorrect interpretation of the VDI 2035 further supports this misconception. Low conductivity does not protect against corrosion, it only slows down the process.

What is low conductivity water?

Almost all mineral and salt ions have been removed from low-conducting water Therefore the capacity to conduct electricity has become very low. The advantage is that any corrosion (caused by the presence of dissolved oxygen) will proceed much more slowly. After all, the corrosion process can only occur thanks to electron transport.

What is the cause of corrosion?

The cause of corrosion is of course the presence of dissolved oxygen in the water. However, just because there is no dissolved oxygen in the system water at a given time does not mean that corrosion has not taken place or will not take place in the future. After all, when oxygen enters the system, it reacts very quickly with the metal of the installation to form oxides. It therefore does not make sense to search for dissolved oxygen...

Why strive for low conductivity?

Low conductivity significantly slows the corrosion rate, reducing the speed with which the dissolved oxygen reacts with the metal. It facilitates the possible search for dissolved oxygen (in the classical way) and in that sense can help in diagnosing possible causes of the problem. For a Risycor it makes no difference. The final amount of corrosion sludge formed depends after all on the amount of oxygen entering the system. Short and intense, or long and slow, it doesn’t matter. The amount of sludge that is formed in the end is always the same.
Note: in the case of permanent oxygen entry as is the case with oxygen-permeable plastic pipes a low conductivity can make a catastrophically bad situation a little less bad, by slowing the rate of corrosion. Due to the slower reduction of dissolved oxygen, the difference in partial pressure is also less, and thus (in the long term) the amount of oxygen entering is also less.
Simply put: turning a catastrophic situation into a major problem.

Low hardness

Avoiding hardness deposits (scaling) is an advantage of demineralised water, because the hardness salts have been largely removed. Also exotic corrosion processes (which occur very rarely in chemically untreated installations) become less likely the lower the conductivity.

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