

# ELYSATOR<sup>E</sup>

engineering water

## Corrosion and Sludge Protection in Water Recirculation Systems

# Heating - Cooling



easy to use  
very efficient  
green technology



Oxygen, acids and salts in water based recirculation systems cause corrosion and sludge forming. The ELYSATOR filters aggressive substances out of the water, allowing a low maintenance and reliable operation.

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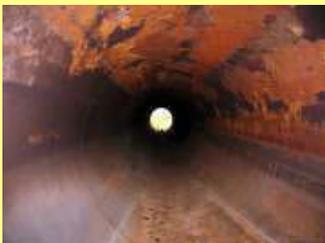
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# The problem

Early underfloor heating systems used plastic pipes that were permeable to oxygen. Technology has since advanced to the point where it is now possible to produce underfloor heating pipes that are practically diffusion proof. Valves, threaded joints, circulating pumps, regulators, automatic bleed devices and faulty expansion tanks, however, are still potentially important sources of oxygen uptake. Oxygen diffusing into the heating water, too low a pH value and raised electrical conductivity of the system water can all lead to corrosion and blockage of the heating system from corrosion products. In the past, the most common method of corrosion protection was to add chemical corrosion inhibitors. In many cases, however, it was found

impossible to provide active protection in cracks or under deposits of dirt or rust, so this approach could not deliver a satisfactory solution to the problem. Furthermore, it is costly and time-consuming to monitor that the correct amounts of inhibitors are added. Using heat exchangers to separate the system into a heating circuit and hot-water circuit ultimately merely splits the problem into two parts without achieving active corrosion protection. Modern heating systems are more sensitive to signs of corrosion, limescale and any other deposits.



- Underfloor heating pipes clogged with corrosion products
- Blockages in control valves and pumps
- Boiler corroded through
- Holes in radiators leading to water damage
- Noisy circulation from gases produced by corrosion
- Increased power consumption from irregular heat distribution

# The solution

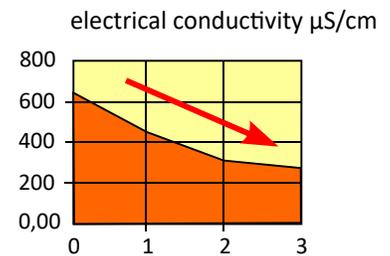
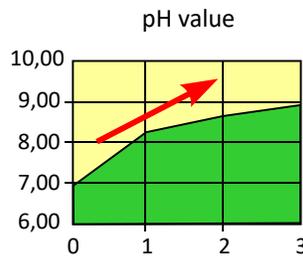
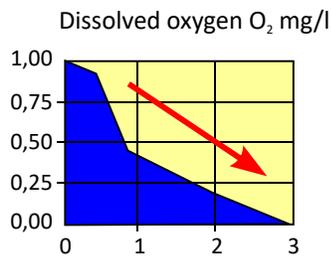
A reaction tank containing high-purity magnesium anodes – the ELYSATOR - is installed in a bypass circuit of the heating system. The reaction with the sacrificial metal (magnesium), which goes into solution, reduces the concentration of atmospheric oxygen diffusing into the water to a negligible level. The

magnesium hydroxide produced in this process helps to raise the pH value to an optimum range.

Depending on the composition of the water in the system, its electrical conductivity then drops thanks to partial precipitation which reduces the water hardness. The result is alkaline water that is low in salts

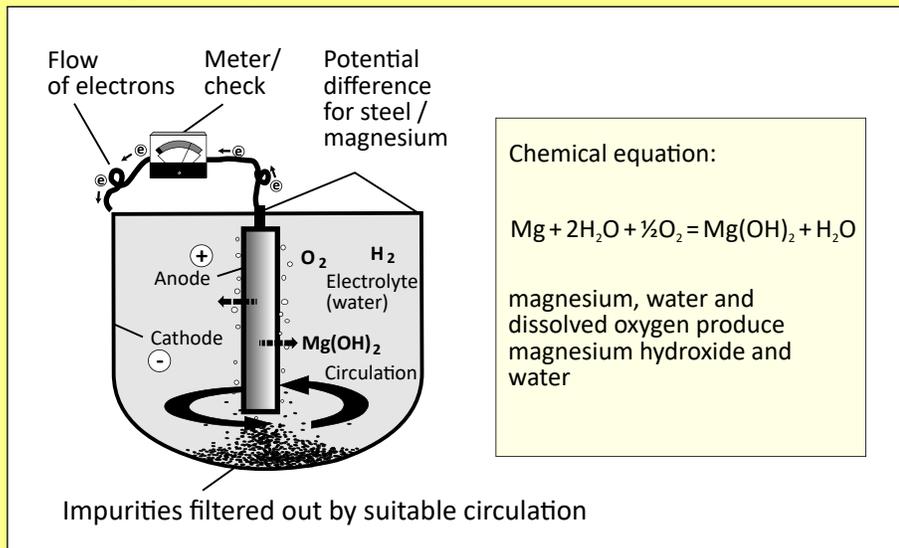
and has a minimum oxygen concentration.

Corrosion damage is unlikely in systems containing water with these properties.



lower oxygen + higher pH value + lower electrical conductivity = more reliable corrosion protection

## Block diagram, simplified



## Operation & Servicing

Corrosion residues that are carried along by the flow of water are deposited in the ELYSATOR for removal as sludge in the restoration phase, until the water is clear. Old systems, however, that are heavily contaminated or treated with chemicals must be flushed through thoroughly before fitting the ELYSATOR (e.g. using SANOL H-15). Subsequent maintenance simply involves changing the anodes

every 3 to 5 years; the ELYSATOR works without an external power supply and without chemical additives. The ELYSATOR is the market leader in this field of corrosion protection, and has been used successfully for over 30 years in heating and cooling systems. The process is equally suited to protecting new installations and restoring existing systems to health.





## Technical data

Material of vessel: Inox CrNiMo 1.4401  
 Insulation: Foam with coated metal sheet, CFC-free  
 Operating pressure: 10 bar  
 Max. temp.: 100 °C

Dimensions in mm	Typ 50	Typ 75	Typ 100	Typ 260	Typ 500	Typ 800
A Overall height	1045	1045	1045	1590	2230	2120
B Tank diameter	420	420	420	600	600	800
C Inspection hatch	140	140	140	270	230	300
D Inlet - outlet	390	390	390	625	1290	1060
E Inlet - bottom	290	290	290	385	385	530
<b>Connector size</b>	1"	1"	1"	1¼"	1½"	1½"
<b>System Volume m<sup>3</sup></b>	10.0	20.0	30.0	70	120	220
<b>Litres/minute</b>	5 - 10	8 - 15	10 - 20	25 - 50	50 - 100	80 - 160

The (water) capacity of a heat storage tank, e.g. in solar installations, can be subtracted from the total volume of water to work out the ELYSATOR type required.



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## 6 good reasons

- Complete confidence that your heating system will retain its value, whether old or new.
- Quality engineering built upon years of research and development.
- A long-lasting product made to Swiss quality standards from corrosion-proof materials.
- Environmentally friendly technology that works without external power and chemicals
- Self-regulating, low-maintenance operation
- Appliance operation can be metered and monitored.