

PUROTAP® i-control

Inline corrosion & conductivity monitoring
made **simple, reliable, affordable**



i-control

- ☑ innovation
- ☑ integration
- ☑ information



Unattended corrosion will destroy valuable components of your hydronic heating or cooling system.

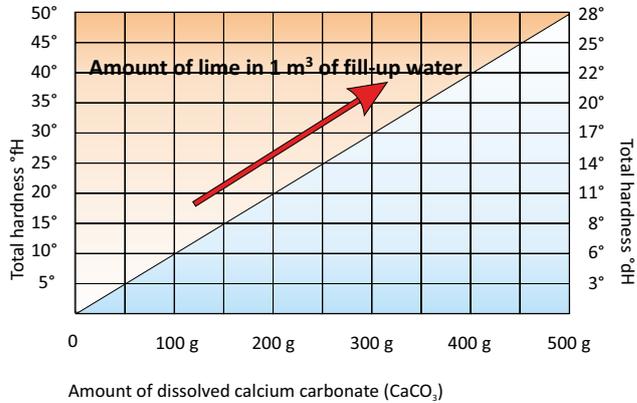
High electrical conductivity of the recirculating water is both cause and effect of corrosion.

The PUROTAP inline monitor keeps you informed about the electrical conductivity of your loop water and allows control over corrosion and precipitation.

Minerals under control in your hydronic circulating water

Completely desalinated water no longer contains any substances that can damage or settle in boilers and heat exchangers.

The following table shows the amount of lime that accumulates as a result of filling the heating system once with untreated water.



Lime precipitation in the boiler

According to many manufacturer specifications and technical guidelines, fill-up water must normally be desalinated (demineralised) for heating systems. Practice has shown that modern devices such as wall-mounted gas boilers, heat pumps and solar systems are damaged by lime precipitation even at lower water hardness levels.

Dissolved minerals are electrically conductive. Measuring the electrical conductivity of the loop water allows you good control over the concentration of minerals that could cause scale formation in your hydronic system.

Desalinated water is electrically non-conductive

Corrosion under control in your hydronic circulating water

Since corrosion processes in closed heating systems mainly involve electrochemical reactions, the electrical conductivity of the water plays a direct role in the rate of these reactions.

The salt content of the water determines the electrical conductivity. According to VDI guideline 2035, increasing amounts of oxygen are tolerated with reducing water salt content.

When ions are present, which transport electrical currents through the water, it is practically impossible to avoid the formation of galvanic elements (corrosion elements), which leads to local corrosion.

Desalination also removes all aggressive salts such as chlorides, sulfates and nitrates that are known for causing corrosion above a certain concentration and in a specific interaction.



Localised corrosion for high levels of salt

Electrical conductivity of loop water is both cause and effect of corrosion. Therefore inline monitoring is essential in preventing corrosion.

PUROTAP® i-control with mounting lock



Conductivity measurement, inline and permanent. Optical LED display with clear symbols .

No external power needed, battery lifetime > 2-3 years . Battery change at any time without interrupting operation.

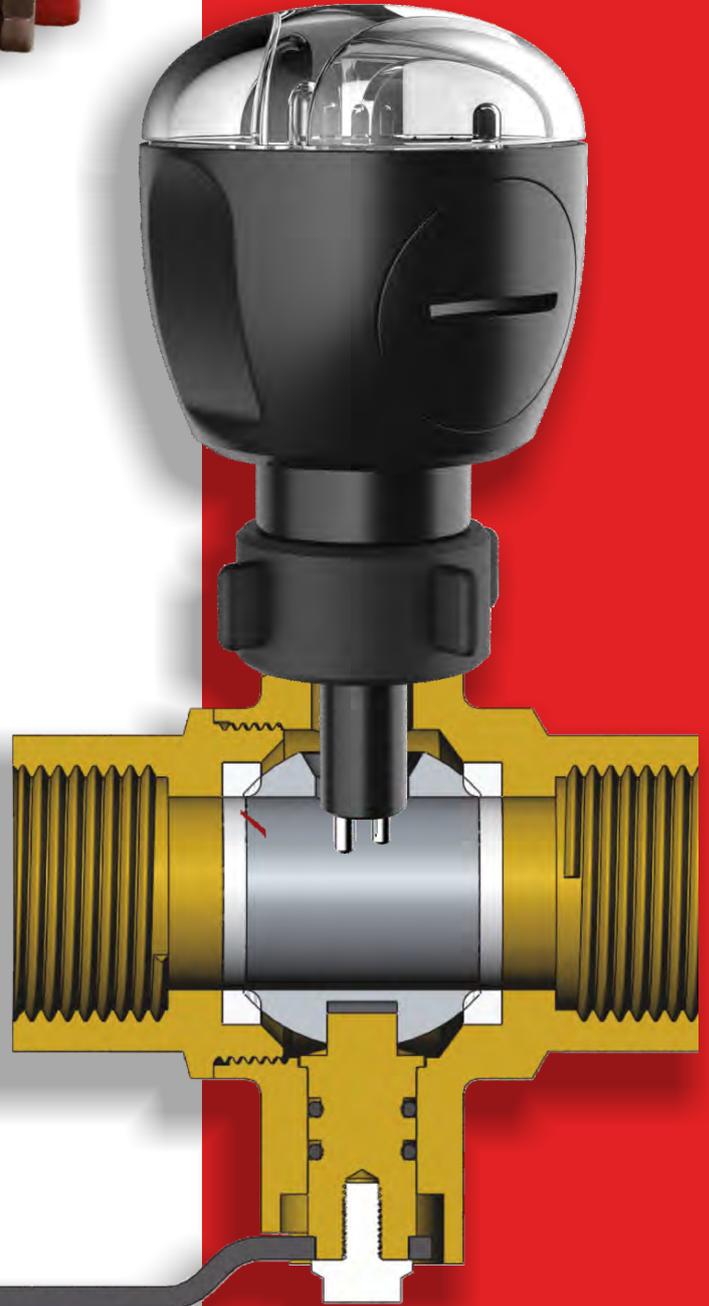
Solid housing made of fiberglass reinforced plastic.

Easy & safe to install without tools. 3/4" union nut.

Stainless & maintenance-free probe.

Unique mounting lock with integrated shut off allows the replacement of the probe without loss of water, under pressure and during operation.

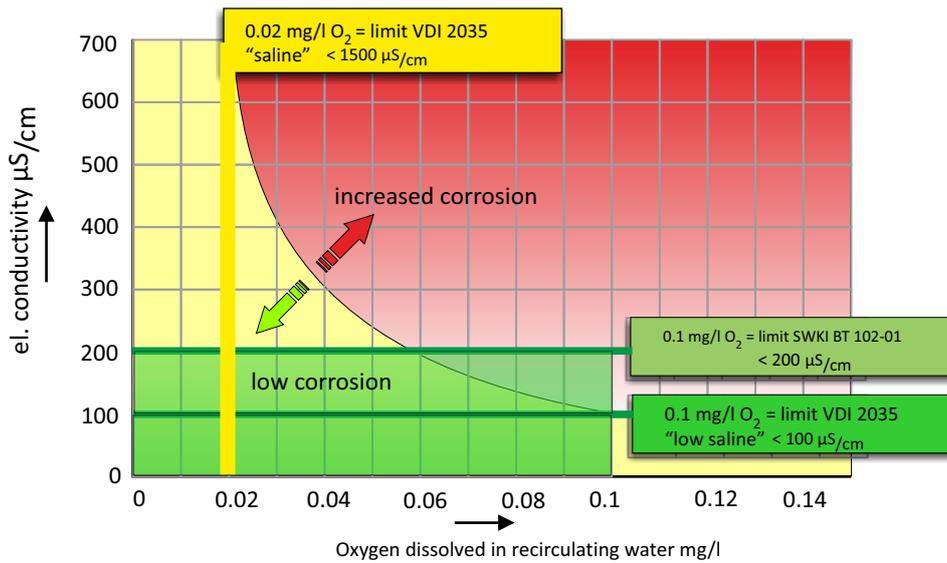
Standard 1 " internal thread, full bore passage.



LED		0 - 100 μS
LED		200 - 300 μS
LED		> 300 μS
Temp. max.		75°C
Pressure max.		4 bar



Corrosion as a function of salinity and oxygen in recirculating water



The corrosion probability declines with a decreasing electrical conductivity of the recirculating water. [ANORM H5195-1:2010, para. 4.9]

According to current standards

Authority:	Guideline/Standard:	Citation:
CEN	EN 14868, Protection of metallic materials against corrosion - Guidance on the assessment of corrosion likelihood in closed water circulation systems.	[Para. 10.3.1.] "With regard to the occurrence of all local types of corrosion it is preferable to use demineralised filling water, as corrosion cells cannot stabilize without the presence of salts."
VDI (German Associations of Engineers)	2035, Prevention of damage in water heating installations, corrosion in the water system.	[Sheet 2, Para. 6.4.] "As a rule the likelihood of corrosion decreases with a fall in the electrical conductivity of the heating water.."
DIN German Institute for Standardisation	DIN 50930 Corrosion of metallic materials under corrosion load by water inside of tubes, tanks and apparatus	[[Part 3, Para. 7.2] Chloride and sulfate ions stimulate the anodic partial reaction of metal corrosion. The corrosion probability for local corrosion can be reduced through selective anion exchange.
SWKI Swiss Society of Heating and Air Conditioning Engineers	BT102-01, Water quality for building services engineering systems	[Para. 4 ff] «Fill-up water and make-up water must be desalinated."



5 good reasons

- 1) constant inline measuring of the sum parameter $\mu\text{S}/\text{cm}$
- 2) insignificant cost for measuring
- 3) maintains value of the investments in building technology
- 4) meets current standards for maintaining product warranty
- 5) good water quality allows energy efficient operation

Updates may be made without notice. Web version supercedes print version.