



WATER TREATMENT FOR CLOSED CIRCUITS

SOLUTIONS AND TECHNOLOGIES

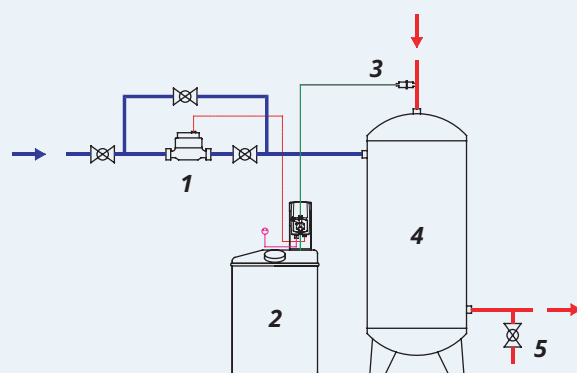


COLD OR GLYCOL WATER CLOSED CIRCUITS

In both the industrial and civil sectors, closed circuits using water or water and glycol mixtures **as the fluid used** for cooling are widespread. These often find application **at critical points in production processes** or can be essential for the proper functionality of a building.

Despite their importance, the control and chemical conditioning of the water they contain are frequently neglected, leading to serious problems such as **corrosion, fouling and/or the formation of organic and inorganic deposits** with a consequent drop in performance, increased maintenance costs, unplanned plant downtimes and, a shortened lifespan of the plant.

The **prevention** of closed circuits is achieved with technologies chosen according to the operating temperature, plant metallurgy and the type of antifreeze used, if any.



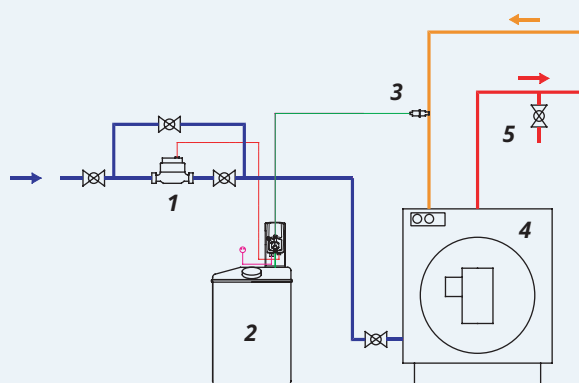
Example of closed glycol circuit conditioning

Plant legend:

1. Pulse water meter
2. Conditioning dosing station
3. Injection lance
4. Glycol circuit tank
5. Sampling point



Example of corrosion inside a pipeline



Example of conditioning a closed circuit with hot/overheated water

Plant legend:

- 1. Pulse water meter
- 2. Conditioning dosing station
- 3. Injection point
- 4. Boiler
- 5. Sampling point



Example of calcium carbonate scaling

HOT AND OVERHEATED WATER CLOSED CIRCUITS

The **initiation of corrosive phenomena is particularly rapid** in hot and overheated water systems because the oxygen/metal reaction rate is directly proportional to the operating temperature of the circuit.

The same temperature favours precipitation if calcium and magnesium carbonate (commonly known as 'limescale') are present in the feed water.

In overheated water circuits, oxygen must **be eliminated by adding deoxygenating agents** so that it reacts rapidly and completely with it.

Pragma Chimica offers a **complete range of additives** for preserving, cleaning and maintaining of all types of closed circuits, in compliance with the client needs and with the regulations concerning the safety of operators and the protection of the environment. We provide **support and technical advice** as well as on-site and laboratory assistance.

PRAGMA CHIMICA'S TECHNOLOGIES

Pragma Chimica's research and development department is at your complete disposal for developing new technologies and procedures to clean, wash and sanitise closed circuits, even when operating in particular conditions. We offer **tailor-made solutions**, respecting the client's needs and the operators' safety.

- Preliminary analyses
- Periodic maintenance checks
- Acid/alkaline washing and pickling
- Remediation of biological silt and/or organic residues
- Chemicals for reclamation and maintenance, depending on temperature, metallurgy and circuit operating conditions
- Design of reclamation in operation (on-line), without plant downtime
- Estimation of volumes to be treated using tracer technology



Testing of corrosion rates with appropriate test specimens (coupon test)

PRAGMA CHIMICA'S SOLUTIONS

Pragma Chimica, in closed heating/cooling circuits, designs and proposes to its clients appropriate chemical conditioning of recirculated water for the aforementioned problems:



- ✓ Anti-corrosive oxygen scavengers
- ✓ Antiscalant dispersants
- ✓ Alkalinises
- ✓ Multi-metallic corrosion inhibitors, also in the presence of aluminium and aluminium alloy elements, for circuits loaded with brine or working with water of low hardness/electrical conductivity
- ✓ Biocides and algaecides with bio dispersants, for monitoring bacterial load



PRAGMA CHIMICA SRL

Via dell'Industria, 48/b - 36071 Arzignano (VI)
Tel: +39 0444 451373 - 0444 450334 | Fax: +39 0444 452153

pragma@pragmachimica.it
www.pragmachimica.it/en

