



# WATER TREATMENT FOR GLYCOLATE CIRCUITS

SOLUTIONS AND TECHNOLOGIES



# WHY CLOSED CIRCUIT WITH GLYCOLATE WATER MUST BE TREATED?

The addition of ethylene or propylene glycol profoundly modifies the **behaviour of water** which becomes more aggressive towards metals, tends easily to form sludge and can be colonized by micro-organisms such as bacteria and moulds; these phenomena are favoured by the slow but inevitable **decomposition of glycols**, caused by their reaction with oxygen.

The consequences are a reduction in the system efficiency, the need for frequent maintenance interventions, the reduction of the life of the equipment installed, the development of bad smells.



## HOW CAN BE PROTECTED GLYCOLATE CIRCUITS? TECHNIQUE OF CHEMICAL CONDITIONING

The correct conditioning of the glycolate water circuits is obtained by:

- the **pH control**, maintained within narrow ranges of oscillation that depend on the metallurgy of the plant;
- the **inhibition of corrosion**, obtained with blends of different inhibitors, chosen on the basis of the main characteristics of the plant, the glycol used and the quality of the water used;
- the **sludge dispersion**, which avoids the formation of substantial deposits and allows, with the appropriate plant interventions, to control the suspended solids value of the recirculated solution;
- the **control of microbial contamination**.

Normally pH control, corrosion inhibition and sludge dispersion are carried out using a single conditioning additive, while for microbiological control specific additives with biocidal action are used.



# HOW TO SELECT THE CORRECT CHEMICAL CONDITIONERS

The selection of the most suitable product to condition a closed circuit with glycol water is made by the **Pragma Chimica** technician after a careful examination of the plant in question.

Some of our technologies are also suitable and certified in the food sector.

The most commonly applied biocidal products are:

- DBNPA based biocides in glycol solution, ideal for low glycol concentration plants (< 10%).
- Isothiazolinone-based biocides, ideal for medium concentration glycol plants..

**Pragma Chimica** product line allows the conditioning of all water circuits operating in the temperature range between - 35 °C and 95 °C.

## PRAGMA CHEMICAL TECHNOLOGIES FOR THE REMEDIATION OF GLYCOL WATER CIRCUITS

There are two different cleaning methods for glycol water circuits that allow the removal of sludge and the remediation of the glycol solution, for example from biofilm.

- The first method involves **emptying** the circuit and **washing** it with a solution of a specific sanitizing pH alkaline product to remove sludge and biofilm adhered to the heat exchange surfaces.
- The second method is applicable in large volume systems or that cannot be stopped (**on-line cleaning**) and allows to obtain the desired results without affecting the operation of the plants by calibrating dosages of dispersants, mixtures of alkalizing / dispersing agents and biocides.



# SOLUTIONS FROM PRAGMA CHIMICA

**Pragma Chimica** R&D department is at your complete disposal to the development of new technologies and procedures for safeguarding and managing circuits and machinery operating with glycol solutions, customizing the intervention according to the customer's needs, with a constant eye on the metallurgy used.

Glycols for special applications:

- food sector (substances and active ingredients included in the GRAS list).
- Inhibited with organic acids.
- Also suitable for the protection of circuits with aluminium and its alloys.

And also:

- inhibited or uninhibited ethylene/propylene glycols, depending on customer requirements and the type of activity or circuit.
- Highly effective corrosion inhibitors.
- Products and technologies for chemical cleaning of glycolate circuits.
- Chemical analysis.



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