



The importance of Water Treatment in the cooling and heating systems

“Développement durable et HQE, notre volonté ...”

Another widely used application of water is the cooling of a system by recycling the very same water in half-opened systems and through displacement of heat in cooling towers.

We observe the use of such devices in all kind of economic sectors among which let us quote : steel , metallurgy and moulding industries ; for the cooling of reactors, of compressors of cooling systems including air-conditioning and food-cooling; vapours condensation and cooling in thermoelectricity and nuclear plants, among many others. In such systems, a large part of the heat is evacuated by water evaporation, which also induces an increase of salts concentration and others non-desirable materials, phenomenon observed in boilers.

As could be expected, **corrosion** is also an ever present problem in this process. Finally, due to relatively low temperatures found in cooling water, a third very unpleasant inconvenience takes place :

The microbiologic growth of several classes of organisms such as algae, bacteria, fungus (Legionella). To minimise furring and incrustations problems , in addition to the use of water of good quality and a regular control of drains, the use of **RELVAMINE®** is highly recommended to disperse metallic ions and salts (mostly of calcium and magnesium). **RELVAMINE®** also fights the corrosion in the cooling systems being a corrosion inhibitor by stopping the chemical reactions responsible for the corrosion. This is achieved by forming a protecting, hydrophobic film on the metal surface .Against the microbiologic development **RELVAMINE®** as algaecide and biocide is able to eliminate the micro-organisms present in the water circuit through specific mechanisms. In systems highly prone to infestation , we recommend the treatment by **RELVAMINE®** which contains products able to penetrate and dissolve the mucilaginous layer (slime or biofouling) , which highly undesirable when it sticks to heat exchange surfaces .

We remind that some bacteria are directly responsible for corrosion:
Iron bacteria : Gallionella , Crenothrix, Leptothrix and so on ...create aqueous deposits, are of aerobic type and develop in pH between 5 and 8.

Sulfato-reducing bacteria Desulfovibrio, Clostridium, Thiobacillus ... create black sludge deposits. Their maximum activity develops in pH between 4 and 8. They are able to resist temperatures above 100°C by making spores.

With so many problems which occurs simultaneously in cooling and heating systems, it is usual to find excess of materials in suspension in the water. This presence favours even more corrosion by micro-organisms which use them as nutrition elements.

