PRAGMA
CHIMICA

WATER TREATMENT FOR COOLING CIRCUITS

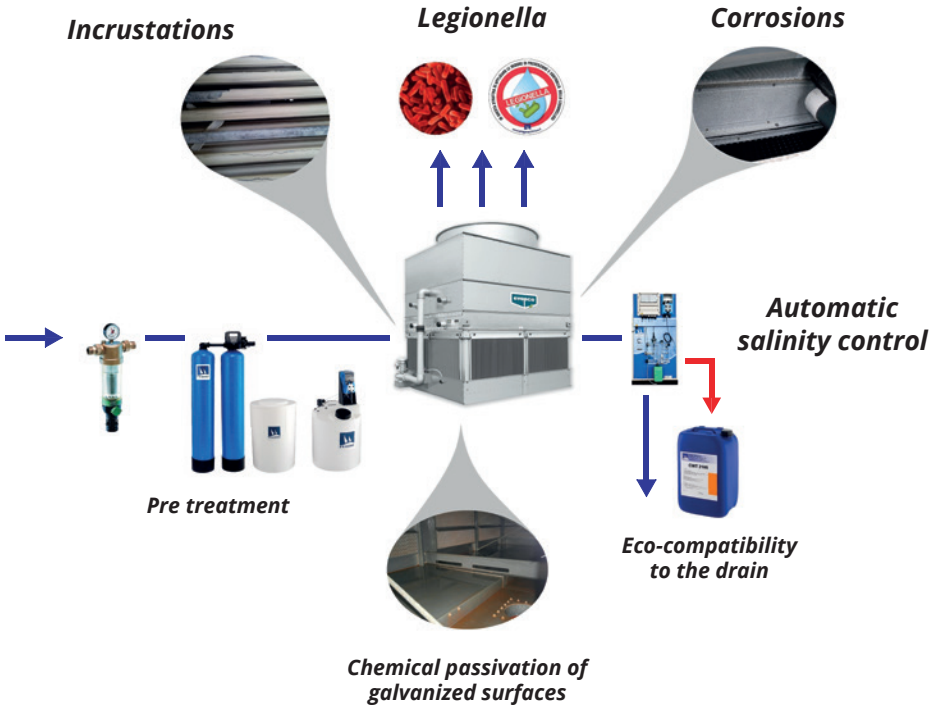
SOLUTIONS AND TECHNOLOGIES

OPEN / RECIRCULATED COOLING CIRCUITS

Water, after heat exchange, is cooled by partial ***evaporation*** (with the aid of evaporative towers, evaporative condensers, or coolers in general) and then comes recirculated. There is therefore an increase in these plants of salt concentration because the water is subject to note partially evaporated. Therefore, the features harmful originals of the same are enhanced by this salt increase.

It should also be borne in mind that the water in these plants is subjected to intimate contact with large volumes of air taken from the environment with the relative pollutants (oxygen, carbon dioxide, sulphur dioxide, industrial gases and fumes, atmospheric dust, plant spores, etc.).

Due to this facts, the typical drawbacks of that systems, to the point to seriously affect their efficiency, they can be summarized in: ***incrustations***, ***corrosions***, ***deposits*** and ***microbiological growths***. These drawbacks are often interdependent and should be considered separately, based on type of user.



Chemical conditioning

- Anti-scale treatment
- Anti-corrosion treatment
- Biocide/algaecide treatment
- Technologies that contributing to water saving

Legionellosis and evaporative cooling towers in industry

As reported in the Italian law n. 81/2008 the risk of exposure to Legionella in any work environment, requires the implementation of all appropriate security measures to exercise the most complete ***prevention*** activity. All morbid forms caused by such bacteria Legionella are contracted by inhalation of aerosols. In Italy the most serious epidemics have been caused mainly from cooling towers, untreated from the microbiological point of view. ***Pragma Chimica*** biocides are approved and certified effectiveness of the bactericidal activity against Legionella, tested according to the technical standard UNI EN 13623:2010.

The chemical conditioning

Treatments that allow protection from ***corrosion*** and prevent the formation of ***calcareous deposits***, inside the plant heat exchange surfaces.

Furthermore, if properly designed, these treatments allow ***passivation*** of galvanized surfaces in new cooling units.

Save water and energy

We design water treatments that allow considerable ***water and energy savings***, with innovative solutions and easy to manage, with operational data control and alarms even remotely (remote control).

Drainage compatibility

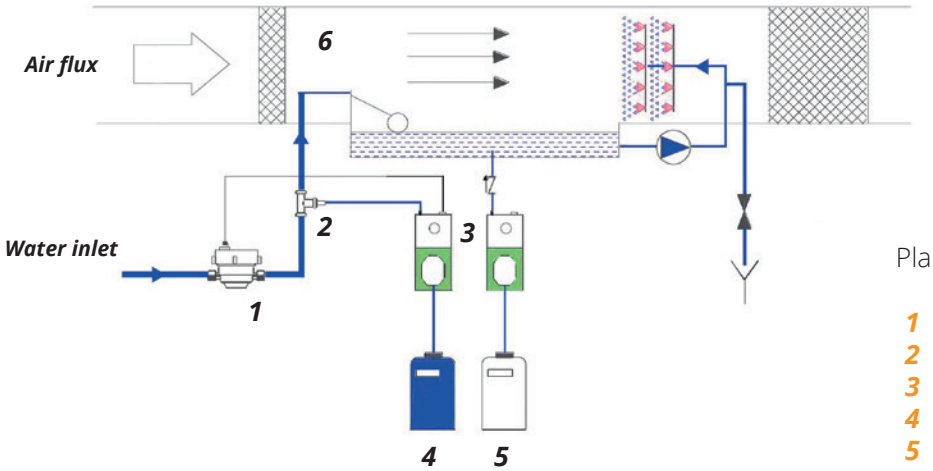
Our chemical treatments, at the dosages established by us, respect the ***emission limit values*** for the discharge established by European laws. For more information please contact our technical department.

OPEN/RECIRCULATED HUMIDIFICATION PLANTS

In humidification and air conditioning systems (adiabatic, diabatic or atomization, by evaporation, wet pack cooler) technical and economic problems previously seen for cooling systems are the same. In addition, however, the hygienic aspect health care takes on particular importance.

In fact, entering the air directly in contact with the environment, it is necessary that both fluids (water and air) they are free of toxic substances or in any case in compliance of all existing air quality standards.

Adiabatic humidification system



Plant legend:

1. Pulse water meter
2. Injection point
3. Chemical dosing station
4. Anti-scale
5. Biocide
6. Adiabatic room

SOLUTIONS FROM PRAGMA CHIMICA

The ***Pragma Chimica*** research and development department is at your complete disposal to the development of new technologies and procedures to remediation and/or maintenance of ***cooling circuits***, even when operating in particular conditions. We could proposing ***tailored solutions***, in compliance with the customer needs and operator safety.

- Preliminary analysis and periodic maintenance checks.
- Acid/alkaline washing, depending on the metallurgy used in the circuit.
- Sanitation from Legionella, biological silt and organic residues.
- Chemical water conditioning (anti-scale and non-corrosive products).
- Maintenance and charge control treatments bacterial (biocides/algaecides) based on the type of receptor water body (eco-compatibility at the drainage).
- Internal passivation of galvanized surfaces.
- Biological risk exposure protocol.
- Management of remote control systems.

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