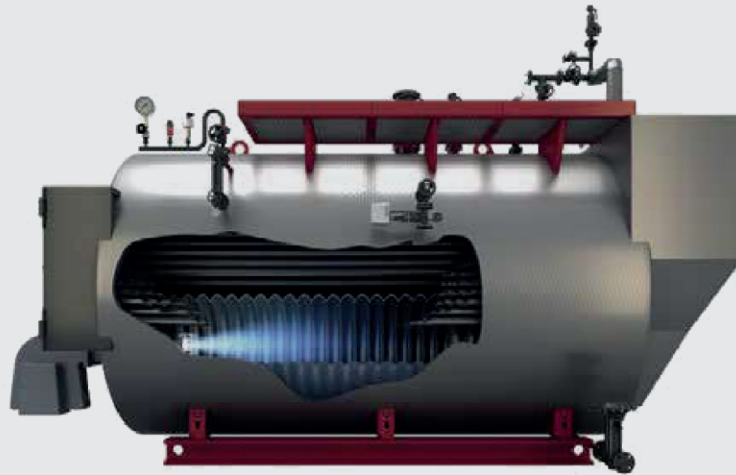




WATER TREATMENT STEAM GENERATORS

SOLUTIONS AND TECHNOLOGIES



WATER TREATMENT MANAGEMENT IN STEAM GENERATORS

Effective water treatment not only leads to **better efficiency** of the systems where water is destined but also allows considerable **energy savings**, less wear and tear, and enhances operational safety.

The adequacy of water treatment should therefore not be considered as a fact but should be seen in the context of the overall economic balance of running the thermal power plant, as well as ensuring the production of steam in the required quantity and quality, **without planned interruptions**, and at the lowest possible overall cost.

For this purpose, it is essential to:

- **Prevent fouling:** this reduces heat exchange, causing higher fuel consumption, and can lead to breakage due to overheating.
- **Prevent corrosion:** this causes pipes, heat exchangers, etc. to rupture, resulting in production stoppages and unwanted repair costs.
In addition, corrosion phenomena can cause dangerous deposits and induced corrosion.
- **Prevent entrainment:** this reduce the efficiency of steam production machinery and apparatus, causing deposits and corrosion

The above objectives can be achieved by consistently complying with the prescribed or recommended limits for water treatment in steam generators.



STEAM PRODUCTION SYSTEMS

A guide to correct treatment

Protection against corrosion

Treatments that allow passivation of metal surfaces and complete chemical de-oxygenation of feed water.

Water and energy savings

We design water treatments that enable significant water and energy savings through innovative solutions.

Compliance with current regulations

ANCC Circular 30/81
UNI-CTI 7550
UNI EN 12952-9
UNI EN 12953-10

Protection against scaling

Conditioning treatments that prevent the formation of deposits due to the presence of encrusting salts in boiler water.

Compatibility with drainage systems

Chemical treatments, at the dosages established by us, comply with the discharge emission limit values.

APPLICABLE PRODUCTS AND TECHNOLOGIES

Water feeding steam generators must be treated according to law to avoid phenomena such as corrosion and incrustation, which are extremely harmful to the generator itself but also to the equipment and lines that use the steam produced.

To fulfil these purposes, Pragma Chimica offers to its clients the following chemical products and plant solutions:

Chemical conditioners

Boiler sludge treatment - steam line protection - clean steam production (FDA certification).

Antiscalant

Products with dispersing and/or antiscaling action.

Design of water treatments

Filtration - softening - reverse osmosis - demineralisation - chemical dosing stations - conductivity, pH, hardness control instrumentation - remote control systems and remote management of measured data.

Anti-corrosives

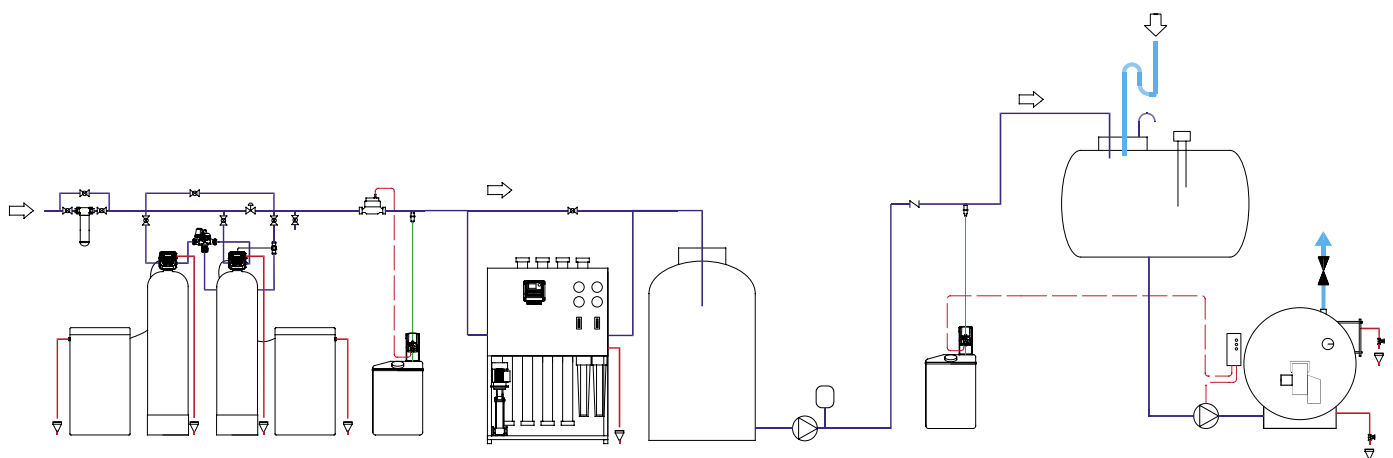
Non-volatile/volatile Oxygen scavengers - alkalises for steam lines.

Clean steam

Non-volatile Oxygen scavengers for food industry steam.



We also design all the treatments necessary for **alkaline boiling** and **pre-commissioning passivation** of steam generators, according to UNI 7582:1988



Classic diagram of water treatment in thermal power stations used for steam production.

From left to right: safety filtration - duplex softening - antiscalant dosing - reverse osmosis desalination plant - treated water storage and relaunching - chemical conditioning - to the feed tank of the steam generator(s)

PRAGMA CHIMICA'S SOLUTIONS

Pragma Chimica's research and development department is at your complete disposal for the development of new technologies and the safeguard and correct management of steam production circuits and machinery, customising intervention according to your needs, with a constant focus on operator safety.



Chemical products for:

- ✓ Complete chemical deoxygenation of boiler water
- ✓ Corrosion protection of the metal surfaces of steam/ condensate lines, feed line and steam generator
- ✓ Conditioning of any encrusting salts present in the boiler
- ✓ Side stream cleaning
- ✓ Management projections of steam generator purging costs
- ✓ Chemical washing (descaling, alkaline boiling, pickling and storage of steam generators during downtime)
- ✓ Chemical analysis
- ✓ Design of chemical and physical treatments



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