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STEAM-WATER SAMPLING, ANALYSIS AND DOSING SYSTEMS



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PROCESS

The steam-water sampling, analysis and dosing systems are complete systems for the steam sampling able to carry out automatic chemi-physical analysis on thermal process fluids. At the same time they allow to execute manual sampling for laboratory analysis.

The systems can be realized both on rack chassis to be housed inside existing technical rooms (panel room, chemical laboratory, etc.) and inside specific shelters for external applications.

APPLICATIONS

Water-steam thermal cycles:

- > Thermal power plants
- > Combined cycle power plants
- > Biomass power plants
- > Nuclear power plants
- > Incineration plants



1. Pipelines

SAMPLING AND ANALYSIS SYSTEM

The sampling systems are composed by two units:

- > Sample and conditioning unit
- > Chemical analysis and manual sampling unit

In the **sample and conditioning unit** all operations needed to make the fluid suitable for automatic chemical analysis and the manual sampling operations are carried out.

The standard operations are:

- > **Temperature lowering** (helical heat exchangers, water chiller, etc.)
- > **Pressure reduction and/or regulation** (capillary, manual or automatic pressure regulators, etc.)
- > **Stripping** (mechanical stripping with inert gas)
- > **Decarbonation** (thermal stripping)
- > **Filtration** (manual or self-cleaning filters with selective filtration stage)

In the sample conditioning unit all devices needed to safely operate are installed (check and stop on temperature alarm, check and stop on pressure alarm, check and stop on sample flow alarm).

In the **chemical analysis and manual sampling unit** all the sensors and/or continuous analysers to measure the chemi-physical properties of the sample are installed.

The monitored parameters are:

- > **pH** (acidity or basicity level)
- > **Oxidoreduction potential (RedOx)**
- > **Electrical conductivity** (total conductivity, cationic conductivity and stripped cationic conductivity)
- > **Dissolved oxygen**
- > **Turbidity**
- > **Silica**
- > **Hydrazine**
- > **Sodium**
- > **Phosphates**
- > **Chlorine** (free and total)
- > Others on demand

In the analytical unit all the analysis equipment accessories (flow cells, cationic columns, flow meters, etc.) and utilities (power supply and electric panel, status transmitters and displays, signals output, sink, etc.) are also installed.



2. Analysis devices

DOSING SYSTEM

Chemical Dosing Systems are used to **continuously inject the chemical product** inside pressure parts of a steam thermal plant in order to guarantee that the boiler works properly.

Suitable chemical feeding is performed based on the data from a Chemical Sampling system.

The control of dosing pumps is carried out from DCS or locally by operator.

Such chemical additives allow to prevent the pressure parts of the boiler, the plant piping and other apparatus from the chemical corrosion and scale.

FEATURES AND BENEFITS

- > **Monitoring chemi-physical features** in the water-steam thermal cycle
- > **Water and vapour quality** parameter optimization
- > **Corrosion** phenomena prevention
- > In pipes **deposits** avoidance
- > Longer **maintenance** interval
- > **Boiler** thermal efficiency optimization



4. Dosing system