



Case Study

Wastewater treatment from the Oil & Gas Industry. Case Study UPT Ibiza.

Year 2012 - 2013

Project location Thermal Power Plant UPT of Ibiza.

Objectives Removal of oils, hydrocarbons and suspended solids from the wastewater.

- Installed equipment**
- Coarse separation unit of oil and hydrocarbons with technology API – CPI
 - Solid separation via sieving and sand removal units
 - Fine hydrocarbons separation unit
 - Reactives dosing process: coagulation-flocculation reactors
 - Clarification with dissolved air flotation DAF: equipment SIGMA DAF FPAC-20-S

Capacity 20 m³/h.

Treatment performance		
Initial TSS (mg/L)	Final TSS (mg/L)	Removal efficiency
1100	55	95%

The Thermal Power Plant UPT of Ibiza is a conventional cycle thermoelectric installation. It has 13 thermal groups with a total power of 270 MW: six motors, four gas turbines and three double gas turbines. They use **natural gas** as their main **fuel** and diesel as an auxiliary fuel.

The wastewater from the UPT Ibiza contains a high amount of oils, hydrocarbons and suspended solids, the elimination of which is the main objective of the treatment plant designed and installed by SIGMA.

The treatment plant is made up of a series of technologies for separating oils, hydrocarbons and suspended solids, in addition to the organic matter associated with them.

Coarse separation unit of oil and hydrocarbons with technology API - CPI: The system designed by SIGMA uses CPI separator plate technology for the separation of hydrocarbons within the tank. It is made up of a rectangular tank with an inclined bottom ending in a screw extracting the settled solids, it includes a skimmer system for the separation of hydrocarbons and oils of API technology. It has a heating circuit using hot water. Constructed of very high quality steel.

Compact system of sieving, sand removal and fine hydrocarbons separation: Includes inclined sieves and shaftless screw for lifting the separated solids. The sand removal section

includes a horizontal sand transport screw. Next, a rectangular tank with a trapezoidal bottom is installed, equipped with a set of independent coalescing lamellae for optimum water distribution performance, containing a skimmer system for the separation of hydrocarbons and oils. It has a heating circuit using hot water. System built in very high quality steel.

Coagulation – flocculation system and clarification with flotation SIGMA DAF FPAC-20-S: The physical-chemical treatment consists of the addition of coagulant and flocculant for the formation of flocs that contain the suspended solids present in the water and that cannot be separated naturally by sedimentation given their low density, it also allows the partial elimination of organic matter associated with these solids and the elimination of oil and hydrocarbon residues that may have remained after the previous treatment. The addition of coagulant and flocculant is carried out in series tanks provided with stirring and built in very high quality steel. A dosage system specially adjusted to the necessary doses of these products is supplied. These doses are established by means of previous flocculation tests carried out in the laboratory, subsequently, the dosage is re-adjusted on an industrial scale. The flocs generated are separated from the water using DAF dissolved air flotation technology. For the treatment plant built in the UPT of Ibiza, a SIGMA DAF equipment model FPAC - 20 - S is designed and installed.

