The objective of the subject of Combined Cycles, is fundamentally the knowledge at the management and operation level of the different combined cycles that can be carried out in practice with the current thermal machines and their thermal performances, which implies a broad knowledge of the cycles Thermal of Rankine, Brayton, Diesel, etc. the operation and operation of steam and gas turbines with all their elements, such as steam generators, heat recovery boilers of exhaust gases, condensers, etc.
280724 - Combined Cycles and Cogeneration

**Content**

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<th>COMBINED CYCLES AND COGENERATION</th>
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**Description:**
- Introduction.
- Centralized generation systems.
- Thermodynamic foundations of the gas-steam cycles.
- The gas turbine cycle.
- The steam turbine cycle.
- Thermodynamic study of the combined gas-steam cycles.
- Combined gas-steam cycle of a pressure level.
- Combined gas-steam cycle of two pressure levels.
- Combined gas-steam cycle of three pressure levels.
- Cycles combined with reheating.
- Cycles combined with reheating and high pressure in one step.
- Technology of the main constituent elements and configurations of the combined cycles.
- Partial load performance.
- Cost maintenance costs.
- Reduction of polluting emissions.
- Technology of steam turbines used in gas-steam combined cycle plants.
- The heat recovery boiler with and without postburning.
- Comparison of a combined cycle power plant with other power generation plants.
- Cooling systems.
- Future trends.

**Related activities:**
In order to consolidate the acquired knowledge, students are required to carry out a project of a combined cycle of use of residual energy on a ship.

**Specific objectives:**
All the contents of the subject are explained in theoretical classes and in the cases that are feasible, practical exercises are carried out that consolidate the acquired knowledge.

**Qualification system**

60% of the final mark of the subject corresponds to a theoretical exam at the end of the semester.
30% of the final mark to the presentation of an innovative project of a combined cycle applied to a ship.
10% of the final mark for practical exercises.

**Regulations for carrying out activities**

The completion of the final exercise and practical exercises are proposed by the teacher of the subject. The innovative combined cycle project is agreed between the student and the teacher of the subject.
Bibliography

Basic:


Complementary: