Rational use of energy

ECTS
5 crédits

Hourly volume
22h

Introducing

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):
*How to establish energy and exergy balances on energy production or energy consumption scenarios. Critical analysis of the obtained results.
*Identify dysfunctions in a system and to propose optimal solutions. To propose new scenarios considering energy aspects.
*How to establish a life cycle analysis on energy production processes and different energy use scenarios; to use a software (Umberto) and the appropriate databases. Use of results for process eco-design.
* Pinch analysis for improving energy use in a process.
*Other optimization methods (numerical methods) depending on the case study for process ecodesign.

The student will be able to:

*Mobilise knowledges in chemical engineering in order to solve complex problems in the field of matter and energy processing.
*Conception, design, modelling, conducting and optimizing (for technical and economical criteria) installations in the field of chemical engineering
* Considering safety, energy efficiency and management of environmental impacts in the early step of process design and in functioning of unit processes and processes.
*Conception of new unit processes and processes in different industrial fields like Ecoindustry, Energy, Environment, in order to reduce the climate change threat and contribute to energy transition.

Necessary prerequisites

Energetic thermodynamics
Process simulation and assessment
Processes and energy

Practical info

Location(s)

Toulouse