
OPTIMIZATION OF THE STRUCTURE OF ENERGY SYSTEMS

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What do we mean for Optimization of the structure of energy systems?

- Evaluate and choose, among the possible structures, those which better satisfy desired objective/s (having energetic, economic, or environmental nature)
- We often talk of
"Optimizing the synthesis of energy systems", which should be understood as

"Optimizing the synthesis of energy system components", i.e. the process of putting components together in order to build the overall system structure according to desired objective/s

Common requirements

- **Energy system representation**

Different options:

- superstructure
- decomposition of the system into subsystems
- representation of the overall structure as superimposition of thermodynamic cycles

- **Use of the algorithm that is more suitable to the energy system representation chosen**

e.g. superstructure requires an algorithm which switch on or off flags in order to activate or not parts of the superstructure itself
--> MINLP algorithms or evolutionary algorithms are suitable