

ENERGETICS

DENERG - Technical and economic assessment of energy systems

Funded By	Dipartimento DENERG
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Context of the research activity	<p>The research program is aimed at studying innovative energetic systems, with both fossil and renewable sources, and at investigating the typical issues related to combined heat and power production plants, also coupled to thermally activated technologies for the cooling production, rather than heat pumps, taking into account the integration between the plant and the served building.</p> <p>These systems will be analyzed by setting up dedicated tools for their simulation, which will be validated by means of experimental data, which can be retrieved by the small scale cogeneration plants installed at the Politecnico di Torino, or which can be obtained from plants installed at industrial facilities or public and private research centers, partner of Politecnico di Torino within the research program. Moreover, the program foresees the deepened analysis of the optimal strategy of regulation of these plants, when they follow the user loads.</p>
Objectives	<p>The objective of the project is to develop prediction and optimization models useful for the optimized management of energy flows within industrial and territorial systems. More specifically, the project involves the study and implementation of an optimization system, the purpose of which will be to analyze energy flows and evaluate their optimal behavior of the various technologies present within of the sites being analyzed, thanks to optimization and prediction algorithms, both from an environmental and economic point of view. During the activity, the operating data of the systems will be integrated with the implementation of predictive and optimization models not only on the basis of the plant conditions, but also in accordance with the boundary conditions (such as electricity prices and natural gas) which can radically influence the optimal set-point.</p>
Skills and competencies for the development of the activity	Scenario analysis for energy transition at territorial level.

