RENEWABLE ENERGIES

Research topic:

Exploration methods for geothermal resources. Systems for production and storage of thermal energy; production of electricity from systems at medium and high enthalpy.

Components:

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Collaborations

CREGE (Univ. Neuchatell), Karlsruhe University, UFZ Helmholtz - Leipzig, CNR IGG Pisa, Turin Polytechnic, Institut de Physique du Globe (Paris France), University of Bergen (No), National Institute of Geophysics and Volcanology (INGV), Institute for Geothermal Sciences, Kyoto University (Japan).

Project description:

The two most common areas are: large geothermal power plants with a potential for tens of MW electrical and systems which provide air-conditioning (heating and cooling) in civil, industrial or agricultural through a heat pump systems.

The latest trends for electricity production from geothermal sources are moving towards exploiting natural conditions relatively more frequent on the territory (fluids to T. <150 ° C) and in a modern vision proposed by the "green economy" of micro-distributed generation. Recent experiences, moreover, are opening new frontiers to geothermal energy: the subsoil is used for seasonal storage of heat, captured in surplus of solar systems thermal panels and used to support traditional low temperature heating system.

The study and research activity is addressed in different sectors. Among these, the application of innovative techniques in the exploration of geothermal resources and, for several years, cutting-edge methodologies to solve problems correctly sizing the system (resource quantification and characterization) and therefore not induce an over-exploitation / depletion of the same or interference within the same plant (or between adjacent interventions) that will reduce its productivity and durability. The whole, of course, in accordance with environmental sustainability!

Laboratories used DST:

Geological-technical characterization in situ and in the laboratory. Prospecting and mapping Radon, including measurements of environmental parameters related to gaseous emissions. Geochemical-petrographic characterization of active and fossil hydrothermal areas.