

ENEL R&D Activity for the Exploitation of Low-Enthalpy Geothermal Energy

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Abstract

Low Enthalpy geothermal sources are widely distributed worldwide and represent a relevant potential capacity for electricity generation. Subcritical binary cycles are presently the most diffused technology for the exploitation of this source, they are however characterized by low efficiency and low plant profitability.

In order to achieve higher performances in its plants, ENEL has started a research project jointly with the Italian turbine manufacturer Turboden, in order to develop advanced machinery operating in supercritical conditions.

The studies performed up to now show that supercritical cycles may provide higher efficiency for all geo-fluid temperature range, from 100 to 200 °C, resulting in up to 23% of additional energy production. A pilot plant of 500 kWe is presently under construction at the ENEL experimental site, in order to support the design of a new turbine, operating at higher power and pressure, which is expected to equip the future ENEL plants.