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DeepU

DELIVERABLE 5.1

DeepU closed loop geothermal heating plant

Numerical Modelling of Geothermal Deep Heat Exchangers

Lead Beneficiary: CNR

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EXECUTIVE SUMMARY

In this report, we examine the design and performance of open- and closed-loop systems in two case studies in Italy: one in an “average” geothermal gradient in northern Italy close to Ferrara, with 145°C at about 6000 m depth, representative of the general European geothermal gradient. The other at Larderello, in an anomalous area with 300°C at about 3000 m depth. A third case study is described in the Appendix and refers to Ireland, with a site showing a geothermal gradient comparable to the Ferrara case but without presence of fluids.

In addition to the radiator type closed loop systems in Ferrara and Lardarello, also a closed loop single U –type heat exchanger and a coaxial heat exchanger in Ferrara were simulated.

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