

Deliverable D6.2

Evaluation of performance in demonstration site No 2: Bioclimatic office building of CRES

WP6

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Dissemination Level

PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	X
CI	Classified, as referred to in Commission Decision 2001/844/EC	

Publishable summary

The Deliverable D6.2 “Evaluation of performance in demonstration site No 2: Bioclimatic office building of CRES”, is a confidential document delivered in the context of WP6, Task 6.2: “Demonstration site No 2: Bioclimatic office building of CRES” with regard to the application of new and innovative borehole heat exchangers (BHE) developed by the Cheap-GSHPs project and their evaluation compared to standard BHE types under real time heating and cooling conditions of a nearly zero energy emissions building.

This document reports the test results of the demonstration site of CRES in Pikermi, Greece. There, existing open loop ground source heat pump (GSHP) system was retrofitted by a GSHP supplied by four BHEs, one helicoidal developed during the in WP2, Task 2.2 “Study, simulation and development of geometries of ‘heat basket type’ GSHEs to fit with borehole diameters of 325 mm”, one coaxial developed in WP3, Task 3.3 “GSHE material developments”, as well as one single-U and one double-U BHE for comparison. In addition the new drilling equipment developed during WP3, Task 3.1 “Development of a rotating and vibrating machine head for penetrometers” was tested under various drilling conditions. An online monitoring system was installed which allows real time data recording. The monitoring system includes temperature sensors, flow meters, thermal energy meters, pressure transmitters and electrical energy analysers for data acquisition, as well as interfaces and PC based data management.

Both helicoidal and coaxial BHEs showed excellent energy yield with improved borehole thermal resistance and specific energy outputs compared to single and double U BHEs, in both heating and cooling operation.