

Deliverable D2.3

Design and costs of GSHEs and drilling machines for up to 500 mm

WP2

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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 'Design and costs of GSHEs and drilling machines for up to 500 mm' is a confidential document delivered in the context of Work Package 2, Task 2.3, with regards to perforation for installing heat basket type ground source heat exchangers.

The deliverable presents the easy-drill technology as the starting point for the installation of heat baskets and the development of a new drilling methodology optimized from the easy-drill concept, together with the developments of heat baskets with smaller than state of art diameters. The large diameter of the heat basket implied a redesign of the drilling equipment. Therefore, new equipment has been developed, manufactured and tested in the field. This new technology has been named the '*enlarged easy drill*' due to the fact that the standard easy drill has been stretched to fit together with the heat basket manufactured by Rehau.

The new technology therefore has been studied, developed, designed by the technical office of Hydra and then manufactured at the Hydra workshop. The final test took place at the Hydra test site where the enlarged easy drill technology has been tested in real drilling conditions. The tests included two heat baskets provided by Rehau that have been installed in Molinella (Italy) by Hydra to a depth of 15 m. Both heat baskets have been coupled with fibre optic cable to allow data collection on soil temperatures during future Ground Thermal Response tests

Even though the tests have been successfully accomplished, the experience from the field tests provided a lot of learnings about the correct method of installation and potential improvements in terms of GSHE design. These will be covered within this deliverable.

Finally, the drilling methodology for installing heat baskets with a diameter of 400-500 mm has been examined in term of ease of perforation. Two solutions are proposed and studied to understand the feasibility of these solutions.