

Deliverable D2.5

Definition of best grouting mix and process for developed geothermal heat exchangers

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 *D2.5 - Definition of best grouting mix and process for developed geothermal heat exchangers* is a confidential document delivered in the context of WP2, *Task 2.5: Powerful vibration-rotation drilling head mounted on compact drilling machine to install the improved co-axial heat exchangers* with regard to the development of drilling machine and main components, designed and built.

This document describes all the activities performed in order to characterize some of the most recent and commercially available grouting. This includes also results from studies and research-conducted in past/running projects (i.e. ITER, ThermoMap and in particular Cheap-GSHP and GE-OCOD) with high conductivity and eventual integration of Phase Change Material (PCM) mixtures.

The specific objective in this task is to fully characterize and compare the thermal behaviour of several conventional and thermal enhanced grout to be used during the installation of the co-axial heat exchangers using different drilling methodologies being developed in GEO4CIVHIC such as the Hydra-Red drilling methodology, the Thyssen-Krupp-Infrastructures drilling concept and the use of well points.

According to the different drilling options, the kind of cement mixtures to be selected requires very specific conditions in terms of injection pressure, pumpability and solidification times. Several grouting solutions and related application procedures have been developed and tested in laboratory in order to be applied directly in demonstration cases. Before applying these solutions in the demonstration cases, test were performed in the lab and in the test field in Molinella (Italy)

Moreover, to select the better option to be used in situ, the thermal properties of the mixtures have been taken into consideration.

Finally, practical suggestions on how to use the selected grouts in situ are provided, together with the preliminary information obtained by the realization of the in-situ demo case foreseen in GEO4CIVHIC Project.

However, due to COVID-19 Pandemic emergency, some of the in-situ applications are currently postponed and are not yet included in this deliverable.