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Project Title:

# **GEOthermal Technology for economic Cooling and Heating**



## **GEOTeCH**

**Grant Agreement No: 656889**

**Collaborative Project**

### **Report on the field trials of the augers and drill rig**

#### **Executive Summary**

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#### **Dissemination level**

PU	Public, fully open, e.g. web	
CO	Confidential, restricted under conditions set out in Model Grant Agreement	<b>X</b>
CI	Classified, information as referred to in Commission Decision 2001/844/EC.	

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# 1. PUBLISHABLE EXECUTIVE SUMMARY

In WP2 of the GEOTeCH consortium a dry drilling methodology based on hollow stem augers for soft to medium consolidated formations is developed and built.

Both the augers and the drill rig have been produced at a prototype level, with the final products envisaged to be completed in the coming year (2018).

Field trials have been held at several stages in the project:

- Summer 2015; initial testing with available equipment.
- Summer 2016; testing of drill components and first series of augers
- Summer 2017; testing of prototype drill rig and pre-production series of augers
- Autumn and winter 2017/2018; Installation of borehole wellfields at demo-sites

Part of the work carried out in WP 2 of the GEOTeCH project involve field trials. These trials have the aim to select, design, test and evaluate components of the drill rig and the augers under development.

The results of the development and the testing were presented in deliverable 2.3 - Drill rig and tooling operational and tested.

In the current deliverable relevant information from these field trials described above has been selected and is presented. Further field trials that are part of this report are the field trials carried out in preparation of the demo site installation and the installation of the Tribano (IT) demo site in 2017.

To compile the current report information from the following field experiments has been used:

## Field trials aimed at development of drill rig and components:

- 2015 Amsterdam (NL): Initial field test with existing augers.
- 2016 Emmeloord (NL): Field testing of augers and drill rig components.
- 2016 Emmeloord (NL): Field testing of augers.
- 2017 Emmeloord (NL): Field testing of heat exchanger installation.

## Field trials aimed at testing completed equipment and installation procedure:

- 2017 Tribano (IT): Hiref demo site installation.
- 2018 Leicester (UK): DMU demo site installation.
- 2018 Amsterdam (NL): Groenholland demo site installation.

Currently, the field trials at one of the demo sites (Tribano) is completed and the preparatory work for the demo sites in Leicester (UK) and Amsterdam (NL) has been completed and the sites await installation in the coming months.

Both to Leicester and Amsterdam the pre demo site installation visits have been made and relevant information for the execution of the demo site installation is available.



*Figure 1: GEOTeCH drill rig transport on low loader*

The field trials are relevant as they allow the work package to be able to arrive at a practical and competent design and build of the specialized drill rig and the augers. Furthermore the field testing has been able to provide actual user information on the components of the drill rig and this has led to improvements in selection of these components as well on the development of the methodology of the heat exchanger installation.

Results from the field testing and the experience gained are to be used in the design of the final production augers as well as detailed design and completion of the mechanical and hydraulic requirements of the final drill rig and auxiliary equipment.

Experience from the field trials will also be used to optimize the controls of the drill, the overall installation procedure and the training procedure of the operatives involved.