

# Deliverable D2.5

## Evaluation of the installation and GSHE combinations

### WP2

**Grant Agreement number** 657982

**Project acronym** Cheap-GSHPs

**Project full title** Cheap and Efficient Application of reliable Ground Source Heat Exchangers and Pumps

**Due date of deliverable** 31/01/2017 (M20)

**Lead beneficiary** 5 - RED

**Other authors** Giulia Mezzasalma (RED)  
 Mario Psyk (REHAU)  
 Michele Bernini (HYDRA)  
 Antonio Galgaro and Matteo Cultrera (UNIPD-DG)  
 Michele De Carli (UNIPD-IE)  
 Giuseppe Emmi and Angelo Zarrella (UNIPD-IE)

**Dissemination Level**

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

## Publishable summary

The deliverable “Evaluation of the installation and GSHE combinations” is a confidential document delivered in the context of Work Package 2, task T2.5 “Comparison of the different combinations and selection of the combinations for the demonstration cases” with regard to the heat basket type of Ground Source Heat exchangers developed previously developed within this work package.

In Work Package 2 work has been done on one hand by Rehau on the materials and the production process of the heat baskets in order to reduce the external diameter to facilitate drilling for installations at larger depths than the current state of art. Current heat baskets are installed at depths between 3 to 5 meter.

On the other hand work has been done by Hydra on the different drilling methodologies to achieve larger diameters at shallow depths but still substantially deeper than 3 – 5 meters.

In this task T2.5 the two developments have been combined in field tests on the premises of the drilling machine supplier Hydra.

Two newly developed heat baskets with reduced external diameter were installed at depths of 15 meter using a new drilling methodology, inspired by a combination of auger and rotary drilling whilst capitalizing on the ‘ easy drill ‘ concept from Hydra.

Thermal Response Test have been made on the new heat baskets. Also a preliminary cost analysis was made.

The field tests have provided important learnings on this new approach to install heat baskets at larger depths. These learnings will be useful in the demonstration cases and future business modelling.