Deliverable D3.4

Optimized GSHE design combinations with expected performances and costs

WP3

Grant Agreement number	657982
Project acronym	Cheap-GSHPs
Project full title	**Ch**eap and **E**fficient **Ap**plication of reliable **G**round **S**ource **H**eat Exchangers and **P**ump**s**
Due date of deliverable	31/08/2016(M15)
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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 D3.4 “Optimized GSHE design combinations with expected performances and costs” is a confidential document delivered in the context of WP3, Task 3.4: GSHE design and cost/benefit optimization. Within this task different co-axial ground heat exchanger solutions are studied in order to define the best choice from an energy efficiency and installation cost point of view. Starting basis is the state of art of coaxial ground source heat exchangers of which the external tube of 50 mm diameter is made out of steel or stainless steel. These heat exchangers are installed via piling and via drilling in function of the composition of the underground.

This document summarises the results of the simulations on several modifications of the design of the coaxial ground heat exchanger. The design changes have been generated during the proposal preparation based on field experiences and research from the consortium partners. These modifications include changes in the geometry and composition of the external and internal tubes. They complement the developments on the drilling machine components and methodology from previous tasks in this work package. These design changes are expected to enhance the heat flux rate and reduce the internal efficiency losses .

In addition the capital and operating costs of the actual state of art solutions have been researched in order to establish a reference basis.

In a subsequent analysis, the benefits and costs of these improvements are measured against the above mentioned reference basis. Finally, the designs to be tested in the field are selected.

Hence, the results of this task are together with the machine developments the basis for the field tests as the next task of this work package. During these field tests the improvements are expected to be validated.