Deliverable D4.2

GEO4CIVHIC DSS for geothermal retrofit specification and requirements

WP4

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Project acronym	GEO4CIVHIC
Project full title	Most Easy, Efficient and Low Cost **Geo**thermal Systems **for** Retrofitting **Civ**il and **Hi**stori**c**al Buildings
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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 aim of the GEO4CIVHIC project is to foster the retrofitting of civil and historical buildings by facilitating installation, reducing costs and increasing efficiency of the different components through shallow geothermal systems. This will be achieved, on one hand by improving drilling machines and methodology, optimizing GSHE design and materials, and using more compact and hybrid HPs for high and low temperature terminals. On the other hand, a set of software tools will be developed to provide a holistic engineering solution to optimise installation and operation of GSHPs. One of these tools is a Decision Support System (DSS) to provide sets of engineering solutions based on heating and cooling application relevant for the different ground and climate conditions across Europe.

The D4.2 “GEO4CIVHIC DSS for geothermal retrofit specification and requirements” deliverable is a confidential document delivered in the context of WP4 and linked to Task 4.3: DSS implementation for civil and historical buildings geothermal retrofit with regard to the specification of the GEO4CIVHIC DSS, whose aim is to facilitate the decision making around installing GSHP systems.

The objective of the DSS is to analysis the feasibility and impact, both technical and economic, of shallow geothermal retrofit and assist in the selection of appropriate technologies. The pre-engineering analysis will be based on building type, space/access availability, climate, soil and owner’s priorities (e.g. investment level, return of investment, overall efficiency, maximization of renewables…) and will consider all the components of the geothermal system installation and operation (drilling methodology, GSHE, grouting...).

The GEO4CIVHIC DSS will build on the DSS from the CHEAP-GSHPs project, currently only focused on GSHP technology without considering neither the retrofit of the building and related costs nor the urban setting, and use information provided by the other WPs of the project. The rule-based DSS will present a user-friendly interface for decision makers, non-experts in geothermal systems, to integrate GSHP in their retrofitting projects and serve as an accelerator to introduce the novel technologies developed in the GEO4CIVHIC into the market.

This document presents the work carried out in the frame of T4.3, covering the requirements for the DSS to be developed. It defines the philosophy of the DSS, specifying its scope as well as functional and non-functional requirements. This document is the basis for the subsequent work in T4.3, i.e. the GEO4CIVHIC DSS for geothermal retrofit reference architecture (D4.3) and GEO4CIVHIC DSS for geothermal retrofit engine (D4.7). It will be used as internal reference for the consortium in the developments of the DSS.