CHEAP-GSHPs project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 657982.
The basic idea of Cheap-GSHPs project is to substantially reduce the total cost of ownership, composed out of investment and operating costs, increase the safety of shallow geothermal systems during installation and operation and increase the awareness of this technology throughout Europe.

To reduce the total cost of shallow geothermal systems by 20-30%, the project will improve actual drilling/installation technologies and designs of Ground Source Heat Exchangers (GSHEs) in combination with a holistic engineering approach to optimize the entire systems for building and district heating and cooling applications across the different underground and climate conditions existing within the EU.

The safety and regulatory aspects will also be addressed across all the components of the system going from the geological aspects over the installation to the integration within historical, existing and new buildings.

The developments will be demonstrated in six sites whilst the tools will be applied to several virtual demo cases.

The project includes comprehensive training manuals and courses, even specially devoted to the application to historical and cultural buildings, in order to reach the different target groups and to lower the market entry threshold.

An existing, innovative vertical borehole installation technology of coaxial steel GSHE will be improved and a helix type GSHE will be developed next to a new, innovative installation methodology.

These GSHE’s will be installed to a depth of 40 – 50 meters, ensuring improved safety and faster permitting. Also the use of novel the heat pumps for higher temperatures developed within the project will reduce the costs in the market for retrofitting buildings.

The project will also develop a decision support system (DSS) and other design tools covering: the hydro-geological data bases and analysis; the feasibility and economic evaluation of different plant set-ups; the selection and design of low enthalpy geothermal systems; the plant configurations with other renewable energy sources. These tools will be made publicly available on the web to users.

Map of real (in red) and virtual (in blue) demo sites

Real demo sites
1. Belfield House at University College Dublin, Ireland
2. Residential ecohouse Putte bij Mechelen, Belgium
3. Universidad Politécnica de Valencia Spain
4. Test Site Erlangen Erlangen-Eltersdorf, Germany
5. Bioclimatic office building of CRES Piferni, Greece
6. Technical Museum of Zagreb Croatia

Virtual demo sites
1. Ballyroan Library Dublin, Ireland
2. Residential Retrofit Glencree Wicklow, Ireland
3. Complex of Santa Croce Florence, Italy
4. Ca’ Rezzonico and Ca’ Lupelli Venice, Italy
5. Manens-Tifs S.p.A. Headquarter Padua, Italy
6. Grupo Ortiz Office Buildings Vallecas – Madrid, Spain
7. Historical building Bucharest, Romania
8. Historical Museum of Bosnia and Herzegovina Sarajevo, Bosnia and Herzegovina
9. The Serbian Orthodox Bođani Monastery Bodjani, Serbia
10. Office building of Brogeda-Chiasso Switzerland