



Project Summary

GROUND COUPLED HEAT PUMPS OF HIGH TECHNOLOGY

GROUNDHIT

Action Line: Cost-effective supply of renewable energies
Contract Type: Specific targeted research projects
Activity area: Geothermal Energy

Coordinator:

Organisation: Centre for Renewable Energy Sources
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Project details

Reference:	GeoEn/503063/2003	Start Date:	1/06/2004
Status:	Execution	End Date:	31/05/2008
Project Cost (€):	3.586.070	Duration (months):	48
Project Funding (€):	1.677.183		

Summary

The project GROUNDHIT aims at improving cost-effectiveness, competitiveness and market penetration of ground coupled heat pumps. The project involves 10 partners from 7 countries, two of which are new accession states; the budget is of 3.644.134 (22,7% R&D, 59,5% Demo and 14,4% Innovation) with a EU Funding of 1.760.832 (48,32%), focusing on the following:

1. Borehole Heat Exchanger (BHE) Research: Optimisation in terms of heat transfer with the earth, standardization and development of a prefabricated prototype, resulting in advanced vertical BHE.
2. Ground coupled heat pumps research focusing on the theoretical design and laboratory experimentation:
 - Optimisation of ground source heat pumps (electrical water source heat pumps intended to be used together with a borehole heat exchanger) in terms of COP. We anticipate to increase the energy efficiency of such heat pumps from the present maximum COP-4,5 to COP>5,5 and the corresponding SPF from 3,9 to over 4,5.
 - Development of electrical ground source heat pumps able to deliver 80°C hot water (existing units cannot deliver more than 65°C).
 - Optimisation of electrical water source heat pumps intended to utilize hot groundwater up to 40°C as a heat source in terms of COP. We anticipate raising the energy efficiency of such heat pumps to COP well over 7, depending on the temperature of the input hot water.
3. Prototypes development and demonstration of the above technologies:
 - Ground source heat pump of COP>5,5, coupled with prefabricated borehole heat exchangers in Portugal.
 - Ground source heat pump delivering 80°C hot water, coupled with prefabricated borehole heat exchangers in Austria.
 - 40°C water source heat pump of COP>7, coupled with a hot water geothermal well in Greece.Demonstration of ground source heat pump of COP>5,5 with the aid of the Mobile Geothermal Demo Kit.
4. Innovation related activities: dissemination of results, intellectual property protection...



Partners

1	Centre for Renewable Energy Sources	GR
2	Compagnie Industrielle d'Applications Thermiques	FR
3	EWS Erdwärme-Systemtechnik GmbH & Co. KG	DE
4	Geothermische Vereinigung e.V.	DE
5	GEOTEAM Gmbh. Consultants for Hydrogeology, Geothermics and Environment	AT
6	Escola Superior de Tecnologia de Setubal	PT
7	Mentor Investment Consultants S.A.	GR
8	Centre for Research and Technology Hellas/Chemical Process Engineering Research Institute	GR
9	University of Oradea	RO
10	NUOVA CESEN S.p.A.	IT
11	University of Silesia	PL
12	Bureau de Recherches Géologiques et Minières	FR