



NEWSLETTER

- February 2008 – Issue n° 6

“Reaching the Kyoto targets by means of a wide introduction of ground coupled heat pumps (GCHP) in the built environment”

Project Progress

The GROUND-REACH project “*Reaching the Kyoto targets by means of a wide introduction of ground coupled heat pumps (GCHP) in the built environment*”, is now working on the contribution of geothermal HP to Kyoto targets, on the technical-environmental-economical feasibility of Ground Source Heat Pumps, and on proposals for improving GSHP standards.

The Brochure on GSHP will be available soon in 14 languages !

We wish you an interesting reading, and invite you to regularly have a look at the Ground Reach website for the latest news and publications of our deliverables.

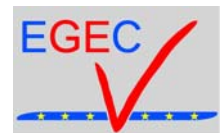
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Upcoming EVENTS



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NEWS from Ground Reach



Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources

In March 2007, European Council signed up to a binding EU-wide target on 20% of RES for 2020 and put European Commission in front of the challenge of defining new legislation. EU Renewable Directive will, for the first time, cover renewable heating and cooling (RES-H), i.e. solar thermal, biomass heat and geothermal heat. On this, there is a clear consensus in the European Commission, the European Council and the European Parliament.

The European Commission has the 23/01/2008 agreed on a far-reaching package of proposals that will deliver the European Council's commitments to fight climate change and promote renewable energy. All major CO₂ emitters will be given an incentive to develop clean production technologies through a thorough reform of the Emissions Trading System (ETS) that will impose an EU-wide cap on emissions. The package seeks to deliver the European Union to reduce greenhouse gases by at least 20% and increases to 20% the share of renewable energies in the energy consumption by 2020. The emissions reduction will be increased to 30% by 2020 when a new global climate change agreement is reached.

In addition to a properly functioning market for pollutants, all Member States have to urgently start changing the structure of their energy consumption. Today, the share of renewable energy in the EU's final energy consumption is at 8.5% which means that an average increase of 11.5% is needed to meet the target of 20% in 2020.

In order to achieve this, the Commission is proposing individual, legally enforceable targets for each of the Member States. The options for developing renewable energy vary from one Member State to another and lead times for bringing renewable energy on stream are long. Thus it is important for Member States to have a clear vision of where they intend to act. The national action plans to be prepared by Member States will set out how they intend to meet their targets and how progress can be monitored effectively.

As long as the EU's overall target is met, Member States will be allowed to make their contribution by supporting Europe's overall renewables effort, and not necessarily inside their own borders.

The Commission has also adopted new State aid guidelines on environmental protection which will help Member States to develop a sustainable European climate and energy policy.

Eco-label for heat pumps introduced

On November 20th the Commission Decision of 9 November 2007 establishing the ecological criteria for the award of the Community eco-label to electrically driven, gas driven or gas absorption heat pumps was published. The eco-label can be awarded to products that "contribute significantly to improvements in relation to key environmental aspects."

Strategic Energy technology Plan for the EU

The 23/11/2007, the EC published its SET-Plan. The European federation of geothermal industries-EGEC - welcomes the European Commission's proposal on a Strategic Energy Technology plan. While not enough references are made for the heating & cooling sector. Indeed, the sector of heating and cooling represents approximately half of the EU's final energy consumption and it is not enough addressed.

The geothermal heating and cooling is increasingly based on the use of ground source heat pumps (GSHP). It is a source of energy of growing popularity, with an excellent feed back from the leading countries. This energy answers to different energy needs: heating, cooling and hot water production.

The shallow geothermal energy with ground source heat pumps, can be present virtually everywhere in Europe (and the world) and is permanently available for heating and cooling. It saves from 40 to 80% of the energy bill, and is largely independent of the conventional energy price.

Some of the main instrument to achieve a sustainable growth of Renewable Energy Source Heat (RES-H) are technical guidelines, standards, and training (creating the necessary skilled workforce).

EGEC shares the recommendations of the SET-Plan to develop geothermal energy:

- Establish a Coherent financial support mechanisms
- Initiate Additional incentives
- Adopt Appropriate regulations, standards, permit procedures
- Develop RD&D support
- Promote International collaboration and centralisation of existing knowledge
- Launch Vocational and training programmes

Promote Agriculture and Commercial Applications for Geothermal Heating & Cooling - Friday, April 25, 2008. Budapest-



At this geothermal energy conference markets, potentials, latest technologies, application and practical case studies are shown, highlighting especially the use of geothermal energy in the agriculture industry and the broader commercial industry. The conference is supported by the European Commission within project RESTMAC in the 6th Framework Program.

EGEC and the Energy Centre of Bratislava are pleased to invite you to attend this Conference which will take place at the Hungexpo Budapest Fair Center in Budapest (Hungary) on 25 April 2008.

Experts will present the experience gained in that field, and will be available for discussion. This is your chance to learn about the current development, and how it might be used in your sector and area of responsibility.

RENEXPO® Central & South-East Europe unites international key players from the industry in the context of a trade fair and a congress – making it the leading event for communication, knowledge transfer, and networking in the region. The entire spectrum of renewable energies and energy efficient construction and renovation will be presented.

For the 3-day conference, leaders from the political and economic sectors convene with members of the media, trade organisations, producers, and service providers.

400 participants will discuss the latest technologies and their application, future market development, implementation of strategies as well as legal and financing questions at the high-quality conference and its accompanying workshops.

For any queries, please contact EGEC at com@egec.org.

More information: <http://www.renexpo-budapest.com/>

Within the Restmac project, EGEC will organize two other conferences before June 2008:

- Geothermal Heating & Cooling in Italy : a growing market, in Milano
- Geothermal Electricity and CHP : a technology for our future, in Strasbourg (France)

More information at com@egec.org and on www.egec.org

24. January 2008: GroundReach Workshop in Athens a tremendous success

About 150 participants, almost twice as many as originally expected, listened to the presentations of the GroundReach Workshop “ Heating and Cooling with Geothermal Heat Pumps” at Hotel Stratos Vasilikos in Athens on January 24, 2008. Experts from Austria, France, Germany, Sweden and Switzerland provided an input from international experiences, while Greek speakers explained the situation on the emerging Hellenic market for GSHP. Lively discussion followed the speeches; in

particular the dispute on legal and regulatory issues tested the abilities of the Greek-English interpreters to the limits. In general it can be stated that what exists in current experience with GSHP in Greece is quite promising, and that with the necessary building up of professional infrastructure, training, quality certification, etc. a splendid future for this technology can be expected also under Greek climatic conditions. The presentation material will soon be available for download from the GroundReach website (<http://www.groundreach.eu>)

The day after the workshop, 25.1.08, allowed the project management committee of GroundReach to evaluate the current project status, and to discuss the success of GSHP promotion in the light of rapidly growing sales numbers in the emerging as well as in the already developed markets. The main task, however, was the preparation of the Groundreach Workshop to be held on 23 May 2008 in connection with the IEA Heat Pump Conference in Zurich, Switzerland. The program will soon be available on the conference website: <http://www.hpc2008.org>



Fig. 1: During the opening speech by Dimitrios Mendrinos (CRES), the conference room in Hotel Stratos Vasilikos well filled, 24.1.08



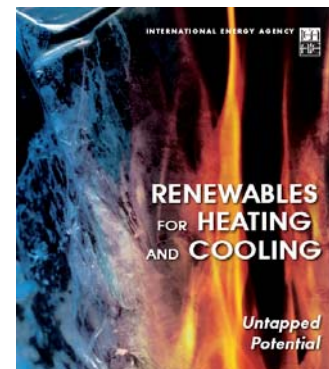
Fig. 2: The organisers of the workshop on the podium in Hotel Stratos Vasilikos, from left: Anastasia Benou, Konstantin Karytsas and Dimitrios Mendrinos, all from CRES, 24.1.08



Fig. 3: The GroundReach project management committee and the CRES geothermal energy team after the GroundReach project meeting at the CRES premises, Pikermi, 25.1.08

IEA publication on Renewable Heat and Cooling

This timely report, published end of 2007, examines the technologies, current markets and relative costs for heat and cold production using biomass, geothermal and solar-assisted systems. It evaluates a range of national case studies and relevant policies. Should the successful and more cost-effective policies be implemented by other countries, then the relatively untapped economic potential of renewable energy heating and cooling systems could be better realised, resulting in potential doubling of the present market within the next few years.



Free download of the pdf version on:

<https://www.iea.org/Textbase/publications/index.asp>

Table 10 • Summary of estimated installed global capacities, energy outputs and 2005 and projected costs out to 2030 of solar thermal, bioenergy (excluding traditional biomass combustion) and geothermal technologies

	Installed capacity GW _{th}	Energy output PJ/yr	Costs 2005		Projected average cost reduction by 2030 % 2005 costs
			Range €/GJ	Average €/GJ	
Solar thermal	100-110	200-220			
- water and space heating			8 to 226	52	-42
- solar assisted cooling	<0.05		11 to 307	66	-44
Bioenergy	1000-1200	3000-4000			
- pellet heating			8 to 99	26	-5
- CHP			7 to 67	26	-8
- anaerobic digestion			6 to 32	15	-3
- MSW waste-to-energy			2 to 12	5	-9
Geothermal	25-30	270-280			
- deep conventional			0.5 to 11	2	+11*
- deep advanced			1 to 24	3	-13
- shallow geothermal					
- heat only			3 to 89	19	-9
- h+c: heating			2 to 75	17	-8
- h+c: cooling			2 to 97	16	-8

*Increase costs due to scarcity of sites and many of the good sites already developed.

Recommendations for future work

- *Governments are encouraged to improve the accuracy of their national data collection relating to heating and cooling supply and demand in order to better inform development of policies. Due to the distributed nature of heat supply and the local demand, this may be difficult to achieve without extensive user surveys or national sales figures.*
- *More analytical studies could be undertaken by researchers to develop better effectiveness indicators so that successful outcomes (or otherwise) and the cost effectiveness of individual policies can be better assessed.*
- *Countries currently without any REHC policies in place should assess their local renewable energy resources and, where appropriate, policy-makers should review existing policies elsewhere (as outlined in this report) in order to identify the most suitable policy mix necessary to stimulate the local market.*
- *A review of best practices and lessons learned in developing and implementing technology standards and labelling in association with other policies would be a useful guide for countries wishing to emulate the leaders.*
- *Evaluation of REHC technologies deployed in the residential sector compared with the industry, commercial and institutional sectors is needed to determine which policy approaches could be most relevant for each sector.*
- *Replication of successful and cost-effective policies by countries with similar levels of specific renewable energy resources should be encouraged, but would first require detailed analysis of the rationale behind policy designs. (This will be undertaken within the Global Renewable Energy Markets and Policies – past trends and future prospects study currently in preparation by the IEA Renewable Energy Unit).*

Best practice : "Lesnik" Health-Resort Sanatorium in Sopot

The project consists in a comprehensive modernization of the heating system of the "Lesnik" Health - Resort Sanatorium in Sopot, thanks to which the emissions of air pollutants caused by coal combustion in worn out coal-fired boilers of inadequate efficiency will be reduced. In result of the project, the heating demand of the building will be reduced. Based on an energy management audit, the following measures have been selected as the most energy-effective and cost-effective ones: Building up a heating system with heat pumps using vertical ground collectors as heat source, working in parallel with a gas boiler and a solar collector system, modernization of the heat distribution system, thermal insulation of the roof slabs and external walls, and replacement of the windows.



The Sanatorium building is a detached structure consisting of two segments. One of them, two-storied, includes inhalation and recreational facilities. Patients' rooms, office rooms, physiotherapy rooms, gym hall, kitchen, canteen, and boiler plant are situated in the other building segment, which is four-storied. The total cubage and floor area of the building are 12.576 m³ and 4.223 m², respectively. The building, erected in 1970s, does not meet the current heat insulation and energy consumption requirements. Before modernisation, the sanatorium was supplied with heat and hot water from a coal-fired boiler plant provided with two ECA IV/14 and two ECA IV/12 boilers of 65% efficiency and 1,33 MW total power capacity. To cover the annual heat demand of 6.826 GJ/a, which represents the needs of the central heating and hot water supply systems taken in aggregate, the boilers consume 382 Mg of coal a year. Low efficiency of the heating installations and poor technical condition of the heat insulation system of the buildings resulted in high heating costs.



Within the project described herein, a heat pump system of 200 kW heating capacity was built. The heat pump was manufactured by Hibernatus. The function of the lower heat source is to be fulfilled by an underground heat exchanger in vertical configuration, consisting of two sections of 40 boreholes each (80 in total), about 50 meters deep and refilled with soil. Each of the main sections was divided into 8 circuits including 5 boreholes connected together. Two heat exchangers in the form of U-shaped tubes was installed in each borehole. The total length of the heat exchanger is 16.000 meters and the sum of the boreholes depth is about 4.000 meters. Moreover, a

system is to be provided where the surplus heat generated by the solar collectors may be transferred to the underground heat exchangers. In addition to that, a gas-fired boiler of 100 kW capacity is to be installed to assist the heat pump system and to finally heat the hot water to the desired temperature during winter. To reduce the hot water preparation cost, a system of solar collectors of 245 m² total area and about 202 kW heating capacity is to be applied, which will cover 100 percent of the hot water preparation needs in summer.

The project is also to include the modernization of internal central heating installations with the replacement of 270 radiators, application of additional heat insulation to 1.306 m² of roof slabs and to 2.431 m² of external walls, and the replacement of windows of 937 m² total area. In result of the project, the annual heat demand dropped from 6.826 GJ/a to 4.305 GJ/a and the design heating capacity changed from 401 kW to 261 kW.



More information about this best practice could be found on the website of [GROUND REACH](#).

Upcoming EVENTS



The Athens Summit 2008
Global Climate
& Energy Security

5-7 May 2008 - Athens Hilton, Greece

The Challenge of Change
www.athens-summit.com

Under the Auspices of H.E. the President of the Hellenic Republic,
Dr. Karolos Papoulias

The Athens Summit - Global Climate and Energy Security "The Challenge of Change", Athens Hilton, Greece, 5-7 May 2008

The Athens Summit

Amidst increasing concerns over climate change, environmental safety and the security of energy supply/demand, the Mediterranean region is in a privileged position to act as a host to a wide variety of viewpoints regarding the resolution of our global sustainable development issue.

The **Athens Summit 2008** aims at bringing together senior government officials, international civil servants, corporate leaders, financiers, academic and market analysts from all swaths of the energy and environmental communities, in order to forge a common understanding of the challenges facing the area's sustainable development, as well as to provide a unique networking opportunity for all interested parties.

Session Titles:

- Implications of Climate Change for Energy Policy
- Strategic Developments in Energy and Climate Security
- Towards a Sustainable World Society
- Hydrocarbon Dependence and Evolution
- The Environment and Energy Communities Meet: Finding Common Ground for Energy and Climate Security
- Conventional Power for the Future
- Renewables to the Rescue
- The Financiers Forum: The New Era of Energy/Environmental Investment
- The Role of Cities in Combating Climate Change



9th International Energy Agency - Heat Pump CONFERENCE

Zürich, Switzerland, 20 - 22 May 2008

Conference Secretariat hpc2008

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Next GROUND REACH Workshops:

- M11: 16 April 2008: GROUND REACH Workshop, Oradea – Romania
- M12 March 2008: GROUND REACH Workshop, Madrid – Spain
- M13 May 2008: GROUND REACH Workshop, Risskov – Denmark
- M14 June 2008: GROUND REACH Workshop, Varsovia – Poland

Please send your request to be unsubscribed to: info@egec.org

This Ground Reach Newsletter was elaborated by EGEN – European Geothermal Energy Council.