

NEWSLETTER

- December 2006 – Issue n° 2

“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 a report analyzing the market details of ground coupled heat pumps in Europe. In parallel, an inventory of EU legislation on GCHPs will be published soon.

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.

NEWS from Ground Reach

- GSHP Best Practice Database now online
- European Survey on GCHPs – New call !!
- Policy : FP7 call for proposals
- Heat Pump Solutions for Commercial Buildings
- The French insurance scheme for ground water heat pumps
- GSHP subject of the project iCON-RES
- Church warms to green message
- Saxony started new geothermal incentive programme
- Good experiences with GSHP in UK
- Focus on a best practice case study : *Main office of Sparkasse Donaueschingen*

Upcoming EVENTS



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NEWS from Ground Reach



GSHP Best Practice Database now online

On 17 November 2006 the Ground Source Heat Pump (GSHP) Best Practice Database was implemented into the project website of the EIE project GROUND-REACH (<http://www.groundreach.eu>).

Main purpose of this database is

- to provide reliable information on the high energy efficiency and low CO₂ emissions achieved with GSHP in practice
- to show the broad range of possible application areas for this sustainable heating/cooling technology all over Europe
- to form the basis for setting up recommendations for a successful design, installation and operation of GSHP systems

In the course of the project at least 50 best practice cases from 28 EU countries shall be compiled. So far four cases are included (two office buildings, a one-family house and a sheltered workshop). An evaluation of the best practice case studies shall help to identify criteria ("benchmarks") for the application of GSHP in Europe.

All stakeholders interested in presenting their successful ground source heat pump installation(s) to the public are invited to submit information to [FIZ Karlsruhe, Germany](http://www.fiz-karlsruhe.de) or to make direct online input on the website. Measurement of seasonal performance factor (SPF) over at least one heating period is required.

E-survey : What is your opinion about geothermal heat pumps ? – New call

In the framework of GROUND-REACH project, our mission is to aid Europe (and our country) to reach the Kyoto targets by using ground source heat pumps for heating and cooling of buildings.

For this reason, and in order to provide a complete European dimension to the e-survey, the project decided to conduct an e-survey from the GROUND-REACH web site: www.groundreach.eu

We are carrying out this survey in order to identify how key persons like you, feel about ground source heat pumps, which are also known as geothermal heat pumps. So please, spend 30 seconds of your precious time to reply to the questions, by answers that complies best with your opinion

Calls for Proposals : GCHPs in the FP7

The Council adopted the FP7 the 18/12/2006, and just after, the 22/12/2006 the EC published the first call for proposals. The Deadline: 3 May 2007 at 17.00, Brussels local time. This call covers geothermal energy : AREA ENERGY.4.3: GEOTHERMAL ENERGY

“ Expected impact: the focus of the geothermal energy area will be on the following topics: i) to improve the performance of specific ground source heat pumps (increased efficiency and competitiveness); ii) to improve the reliability and ease of maintenance of the underground heat exchanger.

Topic ENERGY.2007.4.3.1: Improved ground source heat pumps

Content/scope: Optimise the component level design including heat transfer fluids of commercial ground source heat pumps. The aim is to increase the coefficient of performance of the heat pump and of the overall system in order to reduce the electricity consumption and extend its usage in Europe and particularly to the Mediterranean regions where this

technology has not gained ground in a significant manner. The increase of efficiency will reduce operating costs and reduce pay-back time.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: Reduce total cost (investment, operation and maintenance costs) of geothermal heat supply.

Open in call: FP7-ENERGY-2007-2-TREN

Topic ENERGY.2007.4.3.2: Improved underground systems

Content/scope: Development of components which are easy to connect and disconnect from the surface. It is important to further progress with this technology as the geothermal heat pump has important components below the surface. The installation and repair costs which are a sizable part of the installation will be greatly reduced allowing sector to increase market share as well as progress in reliability.

Funding scheme: Collaborative project with a predominant demonstration component.

Expected impact: Robust, reliable and low-maintenance geothermal heat pump systems.

Open in call: FP7-ENERGY-2007-2-TREN “

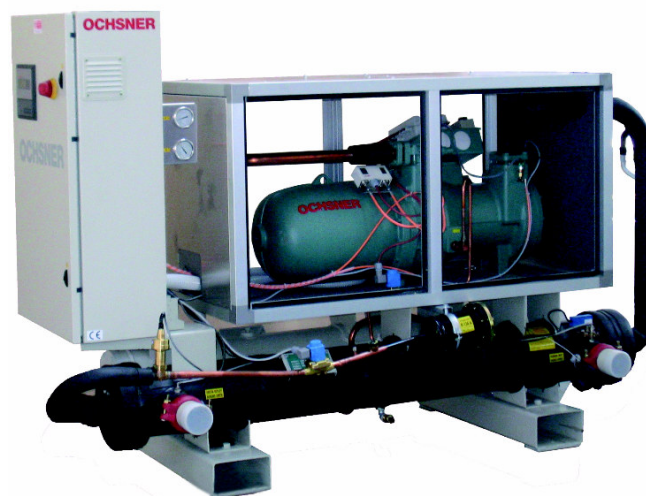
More information on : www.cordis.europa.eu

Heat Pump Solutions for Commercial Buildings : OCHSNER offers special heat pumps with high capacities

Not only house owners, but also industry, business and communities face a big problem in increasing energy costs. To heat and cool buildings as efficient and advantageous as possible, cost effective and environmental solutions are very welcome.

Public utilities, storage depots, sports halls, large office buildings, swimming pools, museums and hotels are only a few examples of large buildings, which have to be heated and air-conditioned. This service can not be provided by domestic heat pumps, but by large industrial ones. With these systems all kinds of large buildings, even whole housing estates can be heated and air- conditioned in an economic and ecologic way.

The demands on large heat pumps are quite complex. It is not enough to provide higher heating capacity, aspects like heat recovery or parallel heating and cooling have to be considered as well. Large capacities under permanently changing conditions are no problem for large heat pumps.



Despite these and other tough requirements large heat pumps represent an ideal solution for heating and cooling purposes. Because of the high reduction of costs concerning energy and operating costs in relation to conventional heating systems, the use of large heat pumps is

extremely economic and environment- friendly. Heat pumps with a certain size are suited to use low temperature district heating, all kinds of waste heat and exhaust air, but above all geothermal energy. Furthermore they can increase the return temperature of heat distribution systems.

The heat pump expert OCHSNER offers large heat pumps for either brine or water as heat source. These heat pumps, which normally use screw-type compressors, are available from 100 kW up to 1 Megawatt heating or cooling. The screw-type compressors used by OCHSNER, are specially built for refrigerant cycles and have special screw profiles, which provide high efficiency. These systems are designed in a very space-saving, compact and economic way to enable the best benefit for the user.

The French insurance scheme for ground water heat pumps:

AQUAPAC is a guarantee created by ADEME, BRGM and EDF. It is dedicated to heat pumps (30 kW) using ground water (well depth lower than 100 m)

Its principle is to propose to the client a double guarantee covering two risks:

- A "seeking guarantee" covering the risk of an unsuccessful drilling, in terms of absence of water or of insufficient flow in the aquifer.
- A "durability guarantee" covering the risk, over 10 years, of a drying up of the well or of accidents on hardware, linked to an evolution of the well.

The aim is to enable the client to take an insurance at a small cost and thus to help him to overcome his reluctance to choose this type of solution.

AQUAPAC is based on a guarantee fund allocated by ADEME and EDF. The client has to pay a guarantee fee proportional to the cost of the system but this fee is small with regard to a traditional insurance.

GSHP subject of the project iCON-RES

The Interreg III project "Information Connection Renewable Energy Sources" (iCON-RES) is a bilateral activity aimed at transfer of know-how and information on renewable energy sources across national boundaries. Contracting body is the city of Vienna, coordinator Arsenal research, Vienna.

In cooperation between project partners from Austria and Hungary information materials about the renewable energy technologies thermal solar, photovoltaics, (geothermal) heat pumps and biomass are prepared (e.g. Best Practice Guide). Furthermore this project includes the adaptation of the Austrian education programme for energy consultants to Hungarian needs, preparation of a heat pump market study for Hungary and a feasibility study on geothermal resources, as well as monitoring of a heat pump installation in Hungary.

Church warms to green message

A historic church has started putting its green plans into practice, leading the renewable energy revolution in Hertfordshire. St Mary's Church in Welwyn village has become the first church more than 100 years old to install a Ground Source Heat Pump (GSHP), slashing its carbon dioxide emissions by nearly 100 % from 44 tonnes a year to less than two tonnes a year.

The GSHP system will replace the current standard boiler that heats the building and will use electricity from green suppliers. Members of the congregation put forward the idea of having a sustainable energy source while raising money for a £770 000 extension.

Saxony started new geothermal incentive programme

In March 2006 the German Bundesland Saxony had started a new incentive programme for shallow geothermal projects. Twelve projects of over 100 proposals have been selected for funding. The total programme budget is 500.000 Euro. Four shallow geothermal projects have already been supported by a total budget of nearly 800.000 Euro.

Good experiences with GSHP in UK

EU Energy Commissioner Piebalgs met with the occupants of social houses in Cornwall UK, accompanied by Graham Watson, Member of the European Parliament, and William Gillett, Head of Unit for renewable energies at the IEEA. The houses are heated by newly installed geothermal heat pumps.

The occupants stated that they were delighted by their lower energy bills and by the fact that they no longer had to carry coal and dirty ashes in and out of their houses.



Focus on a best practice case study : *Main office of Sparkasse Donaueschingen*

Air-conditioning of the main office of Sparkasse Donaueschingen is provided primarily by means of 56 vertical ground heat exchangers (double U system) having a depth between 90 and 99 meters. The heat transfer medium is purely water. In the summertime the water circulates directly through the ground heat exchangers and "thermoactive" ceilings having a surface of 3.500 m². During winter a ground-source heat pump with a heating capacity of 110 kW is used to support the heating of the building.

Ground heat exchanger system of Sparkasse Donaueschingen (sytherma)

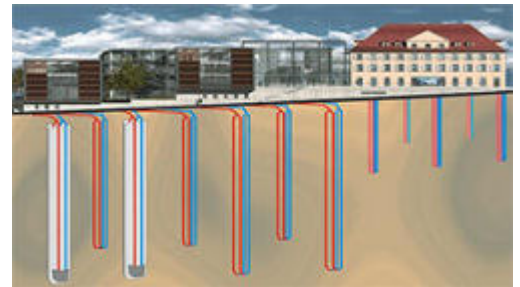
To achieve high planning reliability as required for such a big installation calculations using a building simulation program had been carried out. In addition the behaviour of the ground was simulated over a period of 40 years. Due to optimisation of these both simulation calculations the originally planned number of borehole heat exchangers could be reduced from 75 to 56.

In the summertime the water circulating through the ground heat exchangers provides direct cooling for the ceiling heat exchangers in the offices. It is warmed up from 15°C to 18°C. The fresh air provided by five air-conditioners (22°C inlet temperature at an ambient temperature of 32°C) is cooled by the water from the ground heat exchangers too.

The total cooling capacity is 275 kW, the annual cooling energy 150 MWh/a. In the wintertime the borehole heat exchangers are used as heat source for a ground-source (water-to water) heat pump with a heating capacity of 110 kW to support the heating system. The borehole heat exchangers are double U plastic pipes (HDPE) with a diameter of 32 mm.

To optimise the behaviour of the borehole heat exchanger field during the summer respectively winter season, 30 heat exchangers in the middle have a depth of 99 meters and the surrounding heat exchangers a depth of 90 meters.

The pure water circulating through the borehole heat exchangers has an inlet temperature of 6°C and an outlet temperature of 10-12°C. The supply temperature of the ceiling heating system is 45°C. The design values of COP and annual heat delivery are 4,5 and 300 MWh/a



respectively. Aimed at achieving the highest possible heating capacity the supply and return temperatures of the complete heat pump system are controlled steadily.



Drilling the boreholes (systherma)



Upcoming EVENTS



- **24 January 2007** : 2nd GROUND-REACH promotion meeting in Wien, Austria (focus on the EU Directive on the Energy Performance of Buildings (EPBD) and the influence on heat pump system installation)

- **29 January 2007 – 2 February 2007** : EU Sustainable Energy Week

In Brussels :

- EU Renewable Policy Conference
- Sixth Annual ManagEnergy conference for local energy actors
- Local and Regional Sustainable Energy Solutions
- Seminars and workshops proposed by European regional authorities, networks and trade associations

Those who cannot come to Brussels to take part will have the opportunity to participate in a number of related national, regional or local events, including

- The Energy Days of the Brussels Region (Belgium) on the following weekend.
- Les Assises de l'Energie in Grenoble (France)
- The meeting of the European Buildings Directive Platform in Dublin (Ireland)
- The Spanish Sustainable Energy Week in Murcia (Spain).

You can obtain more details and register for the EU Sustainable Energy Week on : www.eusew.eu

- **29.-31.01.2007** : EUROPEAN RENEWABLE ENERGY POLICY CONFERENCE :: Brussels

Contact: EREC www.erec-renewables.org

Email: conference@erec-renewables.org

- **8 February 2007** : 3rd GROUND-REACH promotion meeting in Orleans , France “LES POMPES A CHALEUR GEOTHERMALES, Structure une filiere dans une demarche qualite..., conference-Debat a Orleans ”

Contact: BRGM : f.jaudin@brgm.fr

- **19-21.04.2007** : RENEXPO® CENTRAL & SOUTH EAST EUROPE :: Budapest Fairgrounds, Budapest – Hungary

Contact: REECO GmbH : mailto:hegner@energie-server.de

www.energie-server.com

- **30.05.-01.06.2007** : EUROPEAN GEOTHERMAL CONGRESS :: Unterhaching, Germany

Contact : Geothermische Vereinigung e.V. - Bundesverband Geothermie / GtV-BV

info@egc2007.de

web: www.egc2007.de

- **26-28.06.2007** : POWER-GEN EUROPE : IFEMA FERIA DE MADRID :: Madrid – Spain

Contact: Renewable Energy Europe : samantham@pennwell.com

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

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