

**A geotermia szakma-politikai kérdései**

**Geothermal Energy, Scientific and Political Questions**

**Szentes, Hungary, October 28, 2008**

**Geothermal Energy –  
a huge, reliable resource to be  
used sustainable and ecological**

***Geothermische Energie –  
eine riesige, verlässliche Ressource,  
nachhaltig und ökologisch zu nutzen***

**Dr. Burkhard Sanner**

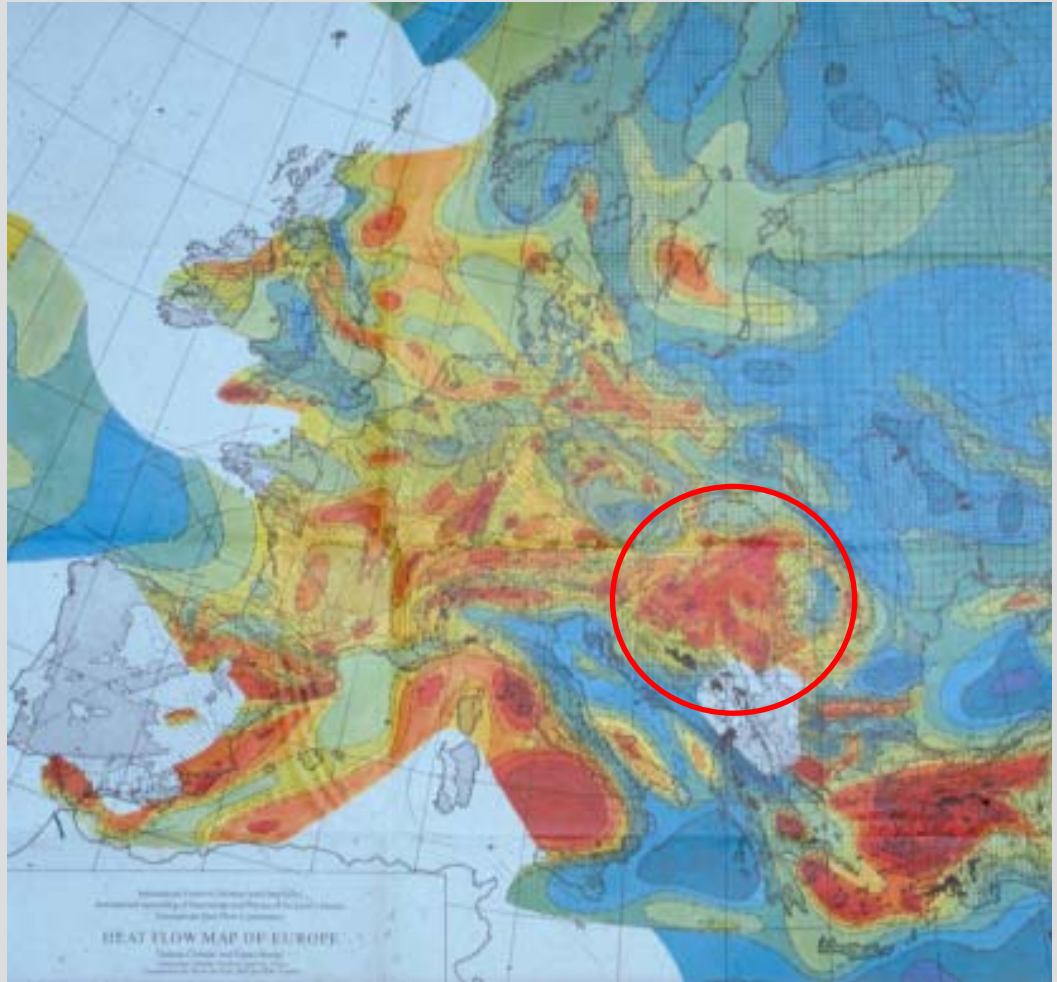
**European Geothermal Energy Council, Brussels**



# Hungary in the “Geothermal World” *Ungarn in der “Geothermischen Welt”*

The Pannonian Basin,  
a premier geothermal  
spot in Europe

*Das pannonische  
Becken, eine erst-  
klassige geothermische  
Region in Europa*



Map of geothermal heat flux in Europe (Cermak & Rybach, 1979)

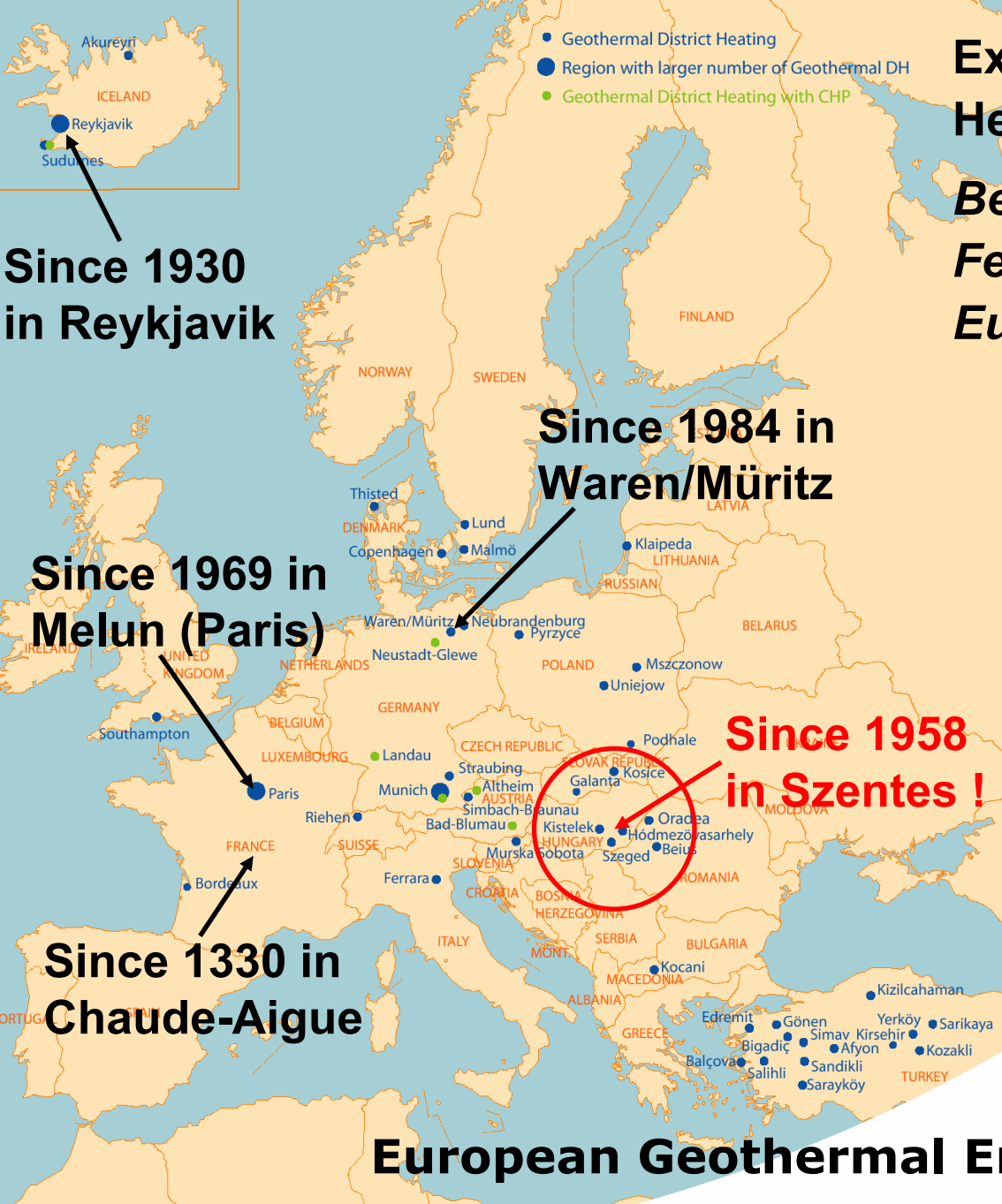
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# **Sustainable geothermal energy**

## ***Nachhaltige geothermische Energie***

- **Wherever necessary, re-injection with adapted technique**
- **Close monitoring of pressure, and detailed studies on natural recharge where no re-injection is desired**
- **Prevent pollution by waste water or leakage**
- **Exclude harm due to drilling of shallow plants**
  - **good design of plants, training of drillers**
  
- ***Wo es notwendig ist, Reinjektion mit passender Technik***
- ***Genaue Beachtung des Druckspiegels bzw. detaillierte Studien zu natürlicher Grundwasserneubildung, falls Reinjektion nicht gewünscht***
- ***Verschmutzung durch Abwasser oder Leckagen muss vermieden werden***
- ***Beeinträchtigung durch Bohren oberflächennaher Anlagen ausschließen – gute Planung und Schulung***



**Existing Geothermal District Heating systems in Europe**  
*Bestehende geothermische Fernwärmesysteme in Europa*



**GEOTHERMAL DISTRICT HEATING**

Brochure of EGEC, for download at [www.egeg.org](http://www.egeg.org)

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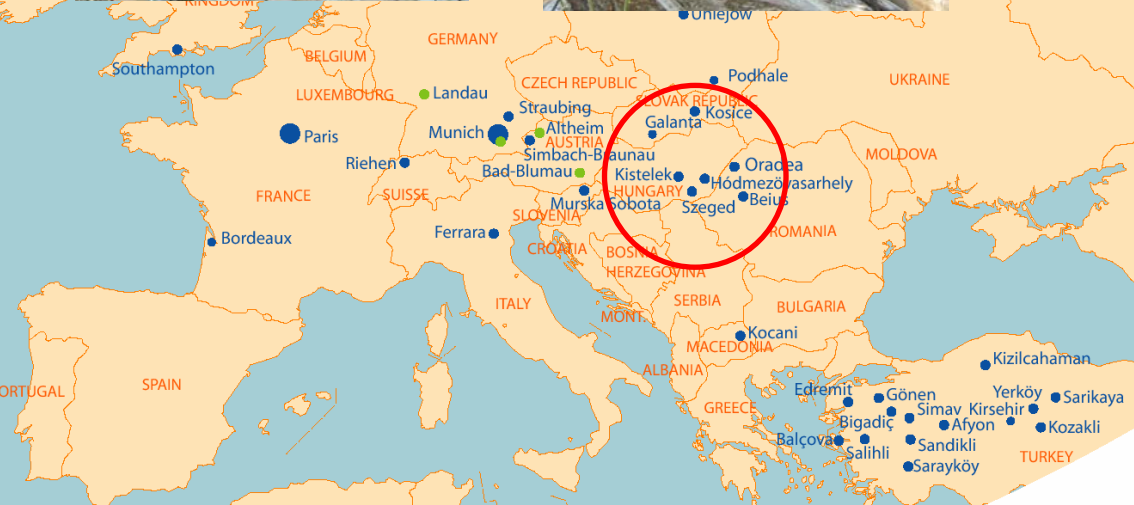




- Geothermal District Heating
- Region with larger number of Geothermal DH
- Geothermal District Heating with CHP

**Geothermal Energy in Agriculture - Hungary is in a leading position !**

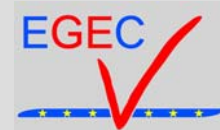
***Geothermische Wärme für die Landwirtschaft – Ungarn vorne !***



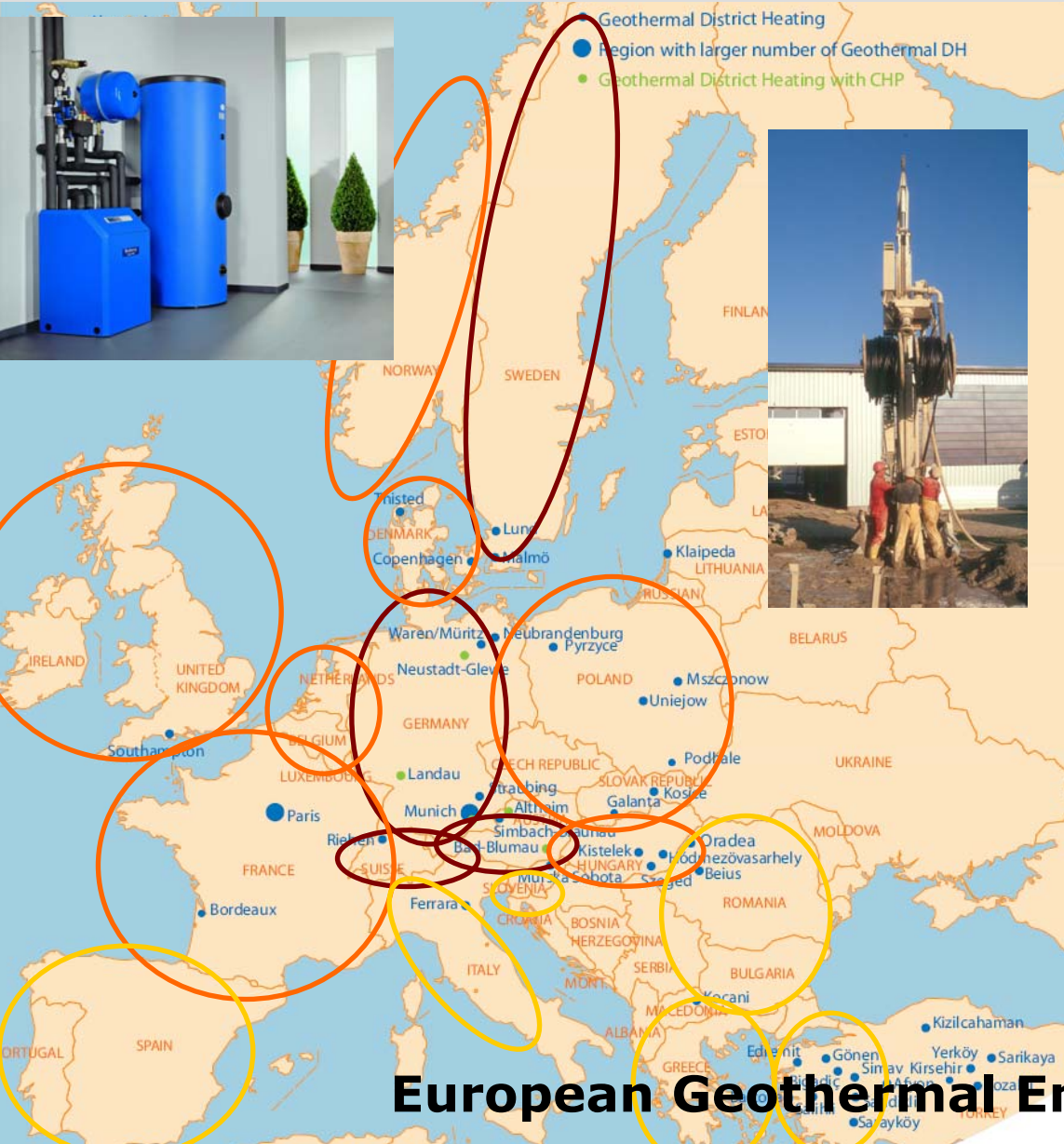
**GEOTHERMAL ENERGY USE IN AGRICULTURE**

**Brochure of EGEC, for download at [www.egec.org](http://www.egec.org)**

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# Shallow Geothermal Energy



Ground Source Heat Pump market and deployment in Europe

*Markt und Verbreitung erdgekoppelter Wärmepumpen in Europa*

(base map showing geothermal DH)

-  old and strong  
*alt und stark*
-  recent and strong  
*jung und stark*
-  emerging  
*im Aufbruch*

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# Shallow Geothermal Energy – largest projects

Country	City, Project	Number BHE	Depth BHE	BHE total
NO	Lørenskog, Nye Ahus Hospital	350	200 m	70'000 m
NO	Oslo, Offices/Flats Nydalen	180	200 m	36'000 m
SE	Lund, IKDC / Chemical Institute	153	230 m	35'190 m
SP	Mollet de Valles, Hospital	138	145 m	20'000 m
TR	Istanbul, Ümraniye Mall	208	41-150 m	18'327 m
HU	Törökbálint, Office Pannon GSM	180	100 m	18'000 m
DE	Golm near Potsdam, Max-Planck-Inst.	160	100 m	16'000 m
SK	Bratislava, Office Strabag	178	80 m	14'240 m
SE	Stockholm, Blackeberg Quaters	90	150 m	13'500 m
NO	Oslo, Office park Alnafossen	64	200 m	12'800 m
SE	Örebro, Music Highschool	60	200 m	12'000 m
HU	Páty, Verdung Logistics Centre	120	100 m	12'000 m
BE	Melle, Office EANDIS	90	125 m	11'250 m
DE	Langen, Head Office DFS	154	70 m	10'780 m
CH	Zürich, Grand Hotel Dolder	70	150 m	10'500 m
PL	Rudy, former Cistercian Monastery	100	100 m	10'000 m

BHE: Borehole  
Heat Exchanger

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# Shallow Geothermal Energy – largest projects

Country	City, Project	Number of BHEs	Well Depth (m)	Well Spacing (m)
NO	Lørenskog, Nye Ahus Hospital			12'000
NO	Oslo, Offices/Flats Nydalen			12'000
SE	Lund, IKDC / Chemical Institute			12'000
SP	Mollet de Valles, Hospital			12'000
TR	Istanbul, Ümraniye Mall			12'000
<b>HU</b>	<b>Törökbálint, Office Pannon GSM</b>	180	100 m	12'000 m
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SK	Bratislava, Office Strabag	178	100 m	12'000 m
SE	Stockholm, Blackeberg Quaters	90	75 m	11'250 m
NO	Oslo, Office park Alnafossen	64	70 m	10'780 m
SE	Örebro, Music Highschool		50 m	10'500 m
<b>HU</b>	<b>Páty, Verdung Logistics Centre</b>		100 m	10'000 m
BE	Melle, Office EANDIS		25 m	11'250 m
DE	Langen, Head Office DFS		70 m	10'780 m
CH	Zürich, Grand Hotel Dolder		50 m	10'500 m
PL	Rudy, former Cistercian Monastery		100 m	10'000 m

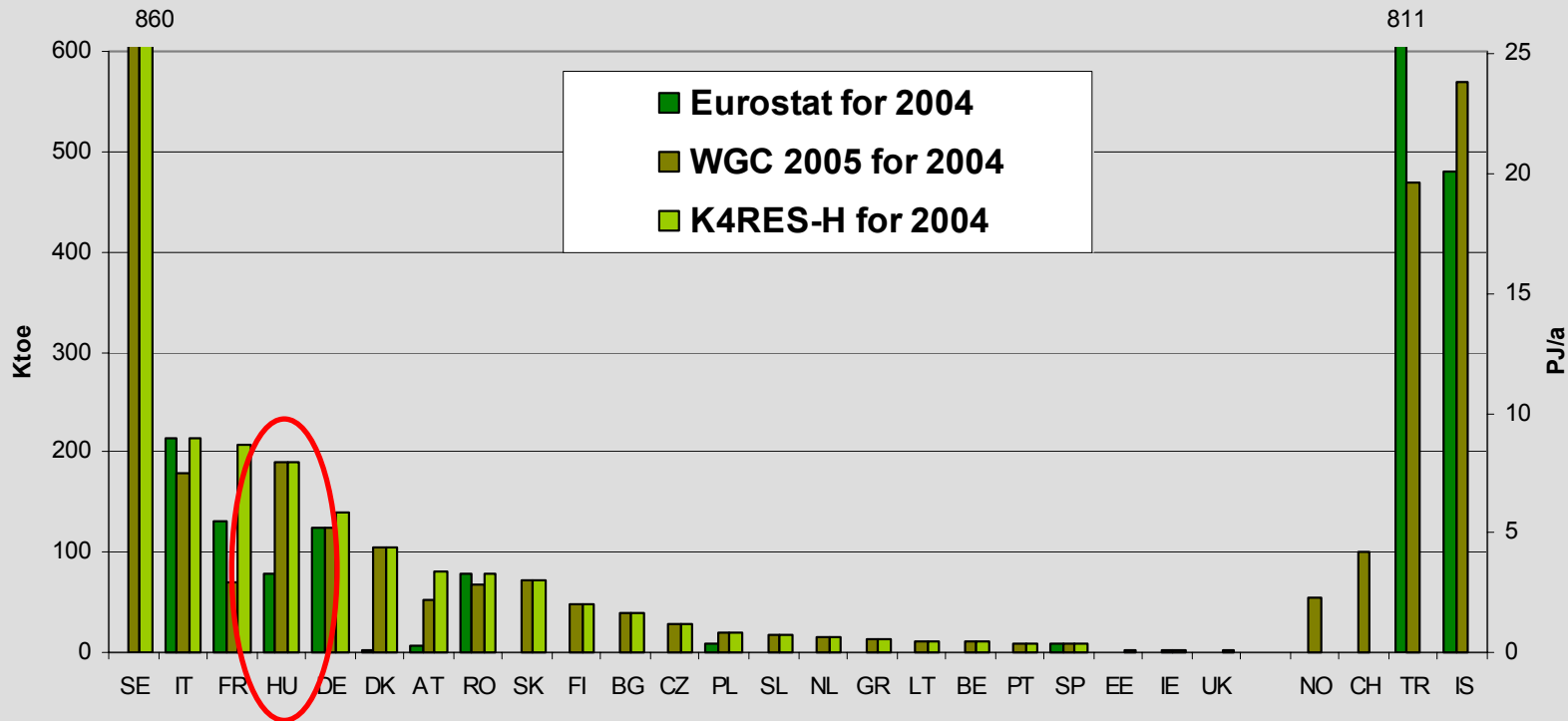


BHE: Borehole  
Heat Exchanger



# Geothermal Heating and Cooling

## *Geothermisches Heizen und Kühlen*



**Heat produced from geothermal sources (deep and shallow), according to several statistics**

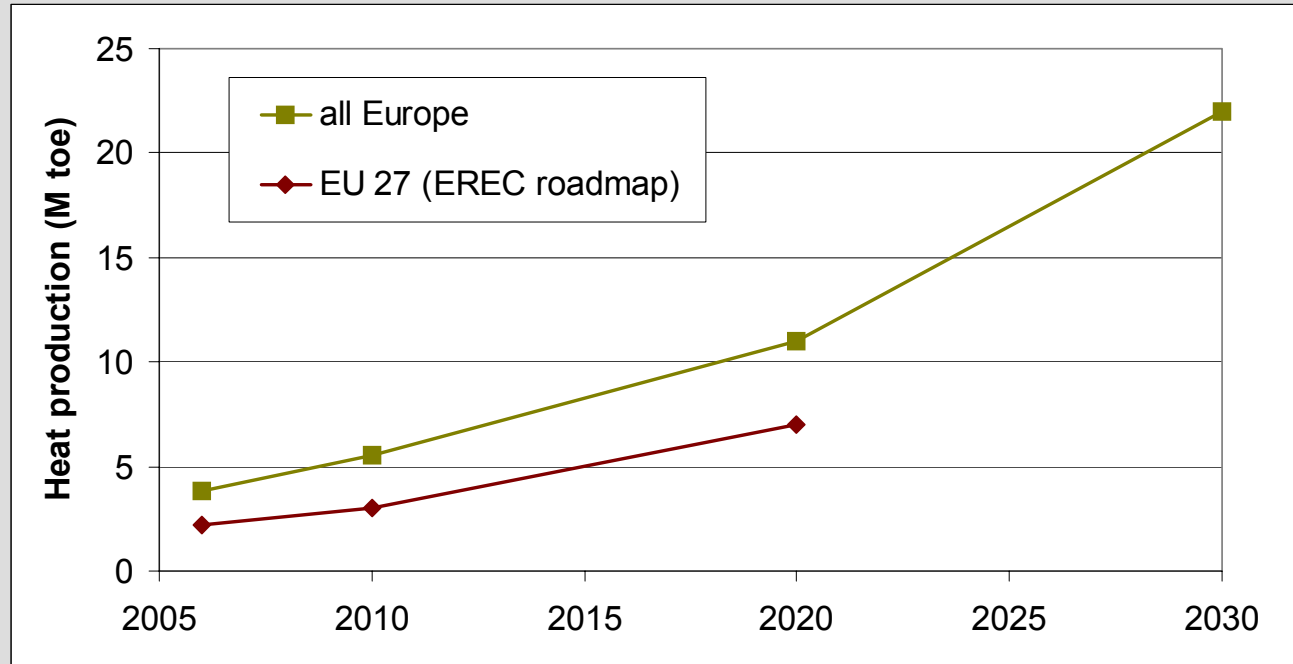
*Aus geothermischen Quellen (flach und tief) gewonnene Wärme, nach diversen Statistiken*

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# Geothermal Heating and Cooling

## *Geothermisches Heizen und Kühlen*



**Heat produced from geothermal sources (deep and shallow),  
according to EGEC targets 2008**

***Aus geothermischen Quellen (flach und tief) gewonnene  
Wärme, entsprechend EGEC-Zielen 2008***

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# Existing Geothermal Low-T- Power plants in Europe

## Bestehende geothermische NT-Kraftwerke in Europa



Since 2003 in  
Neustadt/Glewe

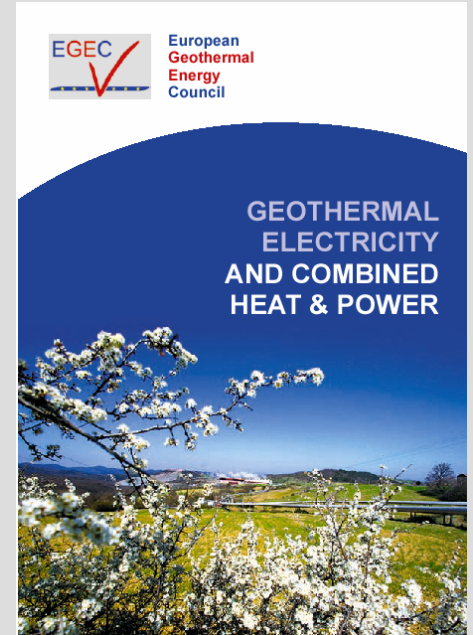
Since 2000 in  
Altheim and  
Bad Blumau

Since 2007 in  
Landau

Not yet in  
Hungary

Since 2008 in  
Soultz (EGS)

Since 2008 in  
Unterhaching

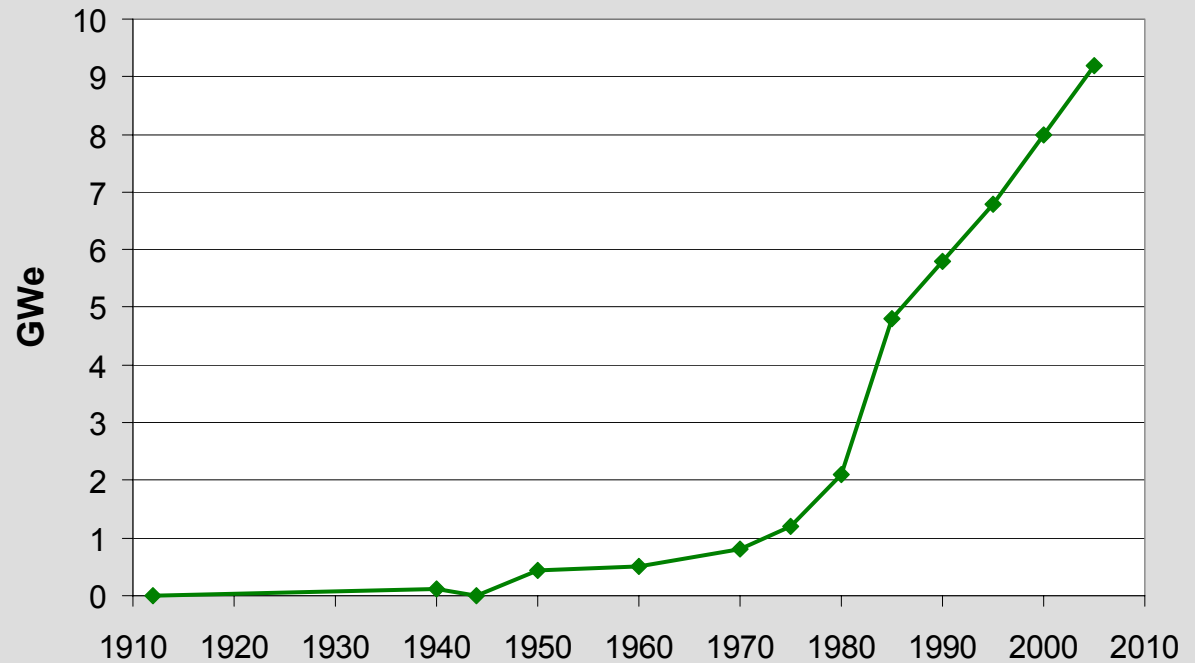


Brochure of EGEN, for  
download at  
[www.egen.org](http://www.egen.org)

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# Geothermal Electric Power *Geothermischer Strom*



**Installed capacity in geothermal power since 1912, world-wide**

***Installierte Leistung an geothermischer Stromerzeugung seit 1912, weltweit***

**(after data from IGA and WGC 2005)**

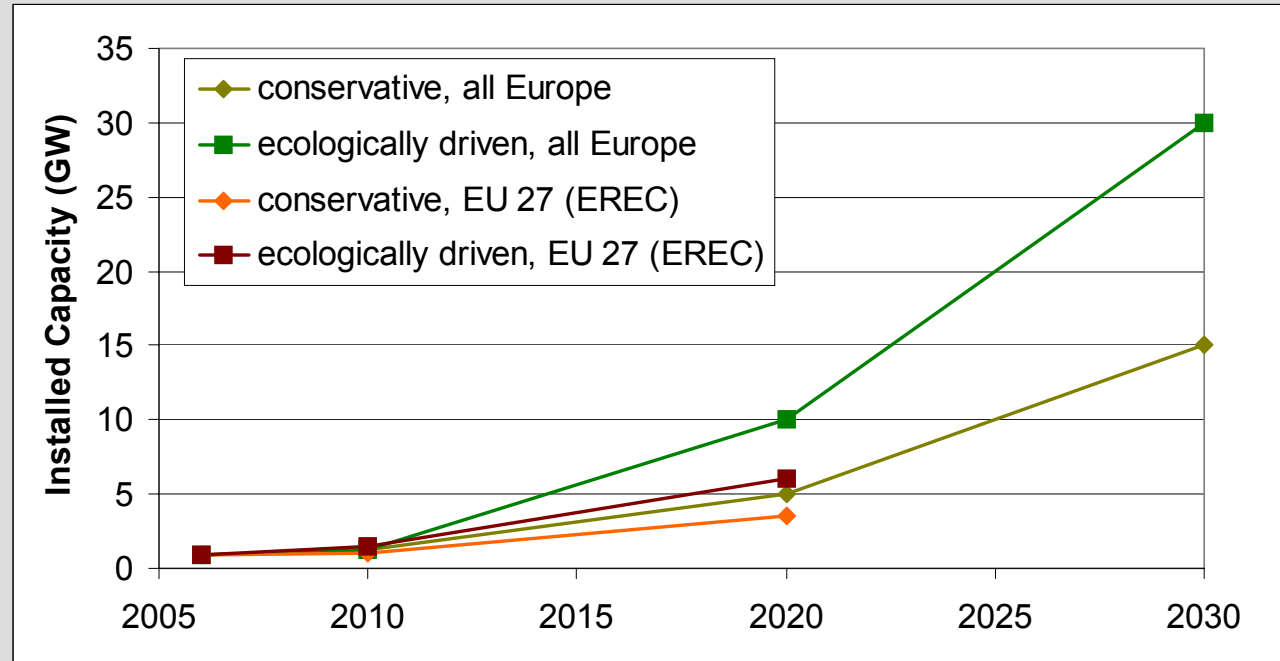
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# Geothermal Electric Power

## *Geothermischer Strom*



**Installed capacity according to EGEC targets (2008)**

**In 2006, ca. 7 TWh of power production !**

***Installierte elektrische Leistung nach EGEC-Zielen (2008)***

***2006 wurden rund 7 TWh Strom geothermisch erzeugt !***

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# Political Developments in Europe

## *Politische Entwicklungen in Europa*

- **EU Directive on Promotion of Renewable Energy Sources (EP amendments as in ITRE vote of 11.9.2008)**

### Art. 2:

- (a) “energy from renewable sources” means renewable non-fossil energy sources: wind, solar, **geothermal**, aerothermal, hydrothermal, wave, tidal, osmotic, hydropower, biomass, snow, landfill gas, sewage treatment plant gas and biogases;
- (ab) “**geothermal energy**” means energy stored in form of heat beneath the surface of solid earth;

### Art. 12.5:

- (c) take-up of biomass based district heating and cooling networks, solar or **geothermal** in the northern and eastern regions of the European Union in combination with a major retrofitting programme of the existing building stock;

### Art. 13.3:

Member States shall ensure that certification schemes or equivalent qualification schemes are available for installers of small-scale biomass boilers and stoves, solar photovoltaic and solarthermal systems as well as **shallow geothermal** systems and heat pumps.

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# Political Developments in Europe

## *Politische Entwicklungen in Europa*

- **Project on Geothermal Regulations –GTR-H**

**This project aims at defining suitable regulations and legislation for geothermal energy use in the EU member states**

**Hungarian Partner: Office for Mining and Geology**

***Diese Vorhaben soll geeignete Regeln und Gesetze für geothermische Energienutzung in den Mitgliedsstaaten definieren***

***Ungarischer Partner: Amt für Bergbau und Geologie***

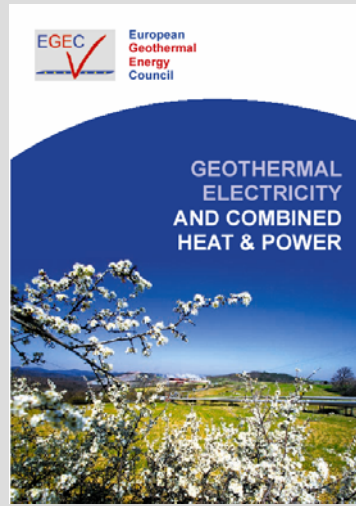


[www.gtrh.eu](http://www.gtrh.eu)

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**Thank you  
for your  
attention!**



**For more information:  
[www.egec.org](http://www.egec.org)**

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