



# GRETA NEWSLETTER

News from GRETA Near-Surface Geothermal Energy Project

## Our work in GRETA

Work Package 1 - Management: the Technical University of Munich (TUM) is the project leader.

WorkPackage 2 - Regulations: the Slovenian Geological Service (GEOZS) will edit guidelines aimed to foster the harmonization of regulations concerning thermogeology

WorkPackage 3 - Operational criteria: the Austrian Geological Survey (GBA) deals with the most technical aspects used in geothermal installations and their suitability in different geographic situations.

WorkPackage 4 - Mapping: the Turin Polytechnic (DIATI) will edit general and local maps of the geothermal potential, available in WebGIS

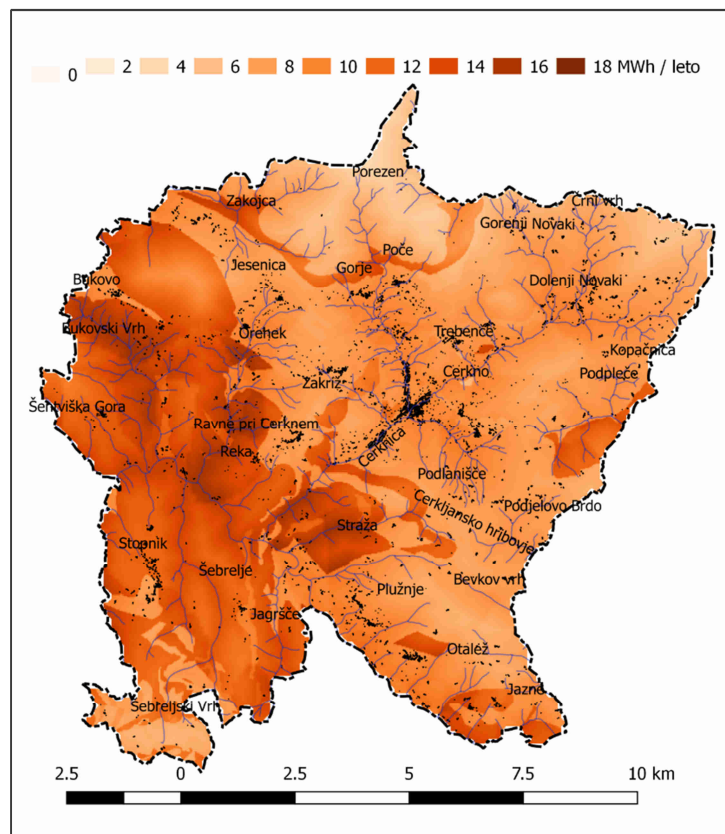
WorkPackage 5 - Energy planning: the research institute EURAC of Bolzano will develop a methodology for the integration of thermogeology in local energy plans.

WorkPackage 6 - User Interaction: the Regional Protection Agency of the Aosta Valley (ARPA VdA) deals with the involvement of private and public Stakeholders in the project, and the coordination of the GRETA HyperText

WorkPackage 7 - Communication: the French Geological Service (BRGM) advertises the project to the broad public.

## The potential of shallow geothermal Energy in the Cerklno pilot area (Slovenia)

The Municipality of Cerklno participates in the GRETA project as an observer through the Geological Survey of Slovenia (GEOZS), a project partner. The common challenges in the Alpine Space that gave rise to this project are connected to tourism in the remote hill areas and increasing energy needs, especially for heating, by cutting emissions, in particular of CO<sub>2</sub> and switching to renewable energy sources, in this case to the geothermal ones.



Map of potential shallow geothermal energy (according to the G.POT method) showing how much heating energy can be obtained annually from one borehole at a depth of 100 m



The Municipality of Cerkno already has a rich tradition of harnessing deep geothermal energy. Within the project, the scientific possibilities for harnessing the shallow geothermal energy from the surface down to a depth of 300m were also explored for the municipality. The geothermal energy constitutes a good combination by harnessing wood biomass and enabling the cooling of buildings and the storage of heat surplus. It represents a good potential for energy independence in future decades.

With the aim of presenting the potential of geothermal energy for heating and cooling via heat pumps in the municipality, GEOZS undertook a systematic review of the geological and geothermal characteristics of the municipality. [Read the whole article at http://www.alpine-space.eu/projects/greta/press-releases/articles/2017\\_12\\_cerkljanske-novice\\_cerkno\\_greta\\_en.pdf](http://www.alpine-space.eu/projects/greta/press-releases/articles/2017_12_cerkljanske-novice_cerkno_greta_en.pdf)

**Interview of Dr. Puppini: a view of a freelance geologist dealing with thermogeology since the very first Italian projects in the 80s.**

**Profile:**

Name: Umberto Puppini

Age: 62 years old

Education: degree in Geology, University of Milan

Activity: Freelance Geologist

Lives in Milan, Italy

Experience in this sector: near 35 years Geographical working area: Italy.

Dr. Puppini is a freelance geologist dealing with thermogeology since the very first Italian projects in the 80s. He has also been a coordinator of the Geothermal Committee of the Italian Geologists Council.

**When have the first thermogeology projects been undertaken in Milan?**

As far as I remember, it was in 1988. The very first project was set up at the Palazzo Reale, dedicated to art exhibition. Unfortunately, it was stopped by the local health administration because they were concerned about the risk of diffusion of refrigerant gas in groundwater and consequent health hazard, ignoring there was no direct contact between gas and groundwater.



## Forthcoming events in the geothermal energy field

### January

15-19 January 2018 -  
Neuchâtel (Switzerland) -  
CAS Deep Geothermal  
Systems: Certificate of  
Advanced Studies,  
Module 3 (Drilling and  
Logging)

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29-30 January 2018 - Geneva,  
(Switzerland) -  
Journées romandes de la  
géothermie (Géothermie-  
Suisse)

### February

12-14 February 2018 -  
Stanford, California (USA) -  
Stanford Geothermal  
Workshop

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21-24 February 2018 -  
Afyonkarahisar City (Turkey) -  
IV Geothermal and Natural  
Mineral Waters Symposium  
and Exhibition

As a result of such ‘misunderstanding’ by the former local administration, no other similar project has been undertaken for 20 years!

### What happened after 2005?

Since then the boom never stopped, despite a very slight decrease during the crisis. The boom concerns mainly Milan, a top town in thermogeology both in the EU and in the world and Lombardy. In Milan we have almost 300 big installations working at the moment. In the Lombardy region and in the Po plains, thermogeology is very wide-spread and known by professionals with some thousands installations overall.

### Has something improved in the meantime?

In my opinion, the administration technical culture has really improved. Furthermore, the performance of heat pumps has grown over the years and this fact matched with the increasing need to improve the energetic performance of new and even historical buildings. For instance, in 2005, the La Scala theatre has been an important starting point: the first case where the project team led by architect Botta said “why not choosing thermogeology?” Today, nearly all public buildings in Milan have their own geothermal plant.



*La Scala theatre, like many other buildings in Milan, is heated with a geothermal open loop system*

### Has this boom contributed to make administrative procedures simpler?

In the Lombardy region, to install closed loops, it is sufficient to fill out an online form 30 days prior the beginning of the drilling. No other procedure is required except communicating the end of the work within 1 year. This is maybe even too simple... This regulation has been



criticized since the maximum depth of boreholes is fixed at 150 metres, which is geologically rather meaningless, but a limit in the regulation is needed. We must also consider that a geothermal borehole is in practice very similar to other geological works which do not request any authorisation at all. In the Lombardy region, another procedure is required beyond 150 metres, similar to the one needed for open loop systems, which nowadays takes four months to end up. This has been possible because the administration of Milan uploads online every procedure and request, in coordination with the other public bodies. As a result, the delay to get an authorisation has been halved. There has been a clear administrative improvement for authorisation timing, and a further improvement is expected soon since a new regulation is going to join two different requests (one for abstracting groundwater and another one for discharging it).

### **Which are the aspects still to be improved in Italy?**

Our marketing is still underdeveloped. Statistics are very backward too, some data are completely missing. For instance, we do not know how many heating pumps are sold in Italy while in Germany or in Switzerland they know it perfectly well. Another key point is the risk deriving from thermal interference with other existing plants, particularly for open loops. About these risks the public administration does not give any official opinion, so the interferences hopefully must be taken into account by the designer. The alternative could be a public management that considers groundwater as a thermal resource too, which happens sometimes, since some administrations cover district heating systems. In order to foresee the possible thermal impacts of a not yet existing plant it is crucial to use the more sophisticated and evolved expertise and tools.

### **What is the role of the geologist in a geothermal project?**

Since there are two main features in a project (the heat source underground, and machines exchanging the heat from the source), the role of the geology concerns the dimensioning of the infrastructures made for the thermal exchange. If this is correctly done in the project, afterward you can totally forget about it. For maintenance, you just have to care about the pumps' management. But if something does not work properly, responsibilities can be sought in the hidden part of the whole system, that is in the underground. For this reason, the professionalism of the geologist needs to be extremely strong.

### **Are there examples from abroad that Italy should try to imitate?**

Certainly Swiss and Swedish have been outstanding for developing the thermogeology, especially for small installations. In Sweden, an incredibly high percentage of private houses (85% or 90%) have geothermal systems. In Switzerland a lot of houses use thermogeology too, most with a closed loop system. Swiss system is tight but also very simple, maybe even too simple for some aspects since it leads to minimal standard of design and no further requests are foreseen. Being a country with less political conflicts (and less people), it is easier than in Italy to organise and make regulations; they are used to analyse every possible problem in advance, nothing is forgotten in planning. Paradoxically, anyway, my job as an Italian professional is rather more accurate in the first phase of investigation, since I assume my personal standards are more reliable than the ones required by the Swiss law.



### Are economic incentives sufficient in Italy?

In Italy there are some incentives for the energy efficiency which include thermogeology, but in my opinion a thermogeology installation is actually self paid in some years (from 2 and a half to 8, in my experience). Financially speaking, a geothermal plant must be considered as an investment, like putting money in a bank. Once people understand this, they really fall in love with thermogeology, since they see it as a good deal. I believe that thermogeology can be economically self sustained.

[Please note that opinions expressed in this interview are those of the interviewees and do not necessarily represent the views of GRETA's stakeholders or project members].

### Get in touch!

Do you have salient issues or events that you might like to tell us to bring up in the next Newsletter? Let us know!

Link to the winner video of Alpine Space projects: <https://www.youtube.com/watch?v=JO0agacgW4I>

<http://www.alpine-space.eu/projects/greta/en/home>

<https://www.facebook.com/greta.alpinespace/?ref=search>

<https://www.linkedin.com/company/greta-project/>

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GRETA is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme. Send us an email at [contact@greta-alpinespace.eu](mailto:contact@greta-alpinespace.eu) and see more about GRETA at [www.alpine-space.eu/projects/greta](http://www.alpine-space.eu/projects/greta)

