

Issue 2 - Dr. Umberto Puppini, Italy

Profile

Name: Umberto Puppini
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Umberto Puppini, geologist (Milan, 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. 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 widespread 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.

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 authorization 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 authorization has been halved. There has been a clear administrative improvement for authorization 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 the thermogeology, since they see it as a good deal. I believe that thermogeology can be economically self sustained.