Geothermal energy, a pillar for coal regions in transition

A RELATED INDUSTRY

Geothermal energy is in many ways similar to conventional extractive industries such as mining for minerals.

- It requires extensive understanding of geological formations to identify possible production sites.
- The equipment and know-how for developing a geothermal production closely resembles – in some cases, it is the same – those for conventional drilling.
- Geothermal power and cogeneration is produced using steam turbines, which are usually manufactured by companies also involved in turbines for conventional power.

COMPATIBLE TECHNOLOGIES

Beyond similarities, there are many synergies between the geothermal and the fossil mining industry at the geographical, business, and skill level.

- Fossil mining sites tend to correlate with geothermal resource availabilities (see the case of MijnWater, overleaf, and the GeoHeatPol project for switch to geothermal in coal regions). This allows the development of renewable resources with skilled workers in their own region.
- Geothermal project development requires many of the same skill set that mining workers possess: Expertise in geosciences; Management of drill cutting; Management of flow extraction, with corrosive and high temperature fluids; Electricity and heat production skills; Reservoir engineering; District heating design and management ... And many more.
- Geothermal projects, although of different scale than conventional fossil ones, tend to also share business model similarities, particularly regarding the uncertainty inherent to underground production. However, the differences in cash flows and profitability make a sound expertise in preparatory studies all the more precious.

POSITIVE SOCIAL IMPACT

HOW CAN THE GEOTHERMAL SECTOR CONTRIBUTE TO ASSIST “COAL REGIONS IN TRANSITION”?

- By offering reconversion opportunities for workers (drill operators, geologists, qualified mining workers, equipments manufacturers,...)
- By maintaining industrial activity in a region and contributing to local economical development. Geothermal projects are not comparable to mining jobs, which are steady on the same site for decades, but a thorough industrial strategy to promote geothermal heat and power production can contribute to the solution with the development of many smaller projects over long periods in a same region, and ad-hoc industries like tourism, agro-industry, and balneology.
- By contributing to reducing energy poverty and improving quality of life: coal regions tend to be characterized by a high prevalence of energy poverty due to low building quality and low income for a large swath of the population. By replacing coal for home heating, and with no air-emissions, geothermal is a solution for improving air quality in cities.

KEY PROPOSAL

- Invest in the re-training of workers
- Enhance synergies between geothermal and coal workers
- Promote local, regional and national strategies to develop an industrial strategy around geothermal energy in coal regions
- Establish a support framework relevant to the development of geothermal energy with:
  - Financing: repayable grants in immature markets, risk insurance facilities for the geological and production risk
  - Regulations: a facilitating framework to support geothermal development
- Identification of geothermal resources
The case of MijnWater (The Netherlands)

MINE WATER, BASIS FOR RENEWABLE ENERGY

THE PROJECT

After the closure of the coal mines in Heerlen (The Netherlands) and the surrounding area, the mine passages filled with groundwater, which is heated by the earth naturally. The geothermal source below ground remained untouched for decades until the municipality of Heerlen conducted a study in 2005 into the possibility of using water from the mines for heating and cooling buildings, homes, and offices. That had far-reaching positive consequences.

The project began life in earnest as a project supported by the European Interreg IIIB programme and the 6th Framework Programme. Now, Mijnwater B.V. is a rapidly expanding private company owned by the municipality, continuing to diversify and develop and innovative concept, the success of which has been proved over more than ten years.

THE FIRST THERMAL SMART GRID IN EUROPE

The Minewater concept can be applied to a limited extent in other former mining areas. In recent years the technology has been further developed into a hybrid network with which the residual (unused) heating and cooling capacity from one customer is not ‘wasted’ but rather used for other customers: the first thermal ‘smart grid’ for the supply of heating and cooling water in Europe.

The reputation of the project is growing as it develops into a responsive system, altering supply biased on a number of demand-side factors, including the weather and customer demand, and working in synergy with other renewable energy sources.

EUROPEAN GEOTHERMAL INNOVATION AWARD 2015

In 2015, Mijnwater B.V. received the ‘European Geothermal Innovation Award 2015’, an award that showcases excellence in development of the most intelligent applications of geothermal energy.

More information about the project can be found at www.mijnwater.com