Corporate sourcing geothermal energy

GEOTHERMAL IN INDUSTRY: A SOLUTION FOR ENERGY, CLIMATE AND SECURITY OF SUPPLY

The industrial sector is a heavy energy consumer and greenhouse gas emitter which needs to be more sustainable, competitive, and to ensure its security of energy supply. This gives it a specific and urgent energy challenge: it needs to find stable, low cost, and local renewable energy, and it needs to reduce its contribution to climate change. Much of the energy used by the industry is for low and medium level heat (less than 200°C), which is required at many stages of production.

Geothermal is increasingly being used in the agri-food industry as it meets many of the sectors’ requirements. Low or medium temperature geothermal heat is available everywhere in the world, and the systems enabling its use are simple and easy to maintain. Geothermal projects are installed locally and provide heating and cooling at competitive prices.

BUSINESS MODELS TO SUPPLY HEAT AND POWER TO COMPANIES

Financing geothermal energy projects usually requires tailored approaches in terms of financial instruments as the geothermal sector is far from being uniform in terms of maturity and technology readiness across geographical, technology lines and uses. Geothermal energy projects tend to be defined by their capital intensity and its risk associated as an underground energy source.

Three business models to supply geothermal heat and power to companies have already been implemented in Europe:

1. Corporate Power Purchase Agreement: Corporate PPA can be with physical or virtual supply via a heat or electricity network. In the geothermal sector, it can be used for company or for a pool of entities buying the geothermal energy.

2. Public Private Partnership and Joint Ventures: Some innovative projects have received public funds, and the geothermal heat projects have been developed through a PPP. Joint ventures between the geothermal project developer and power and heat industrial consumer have also been established all over Europe.

3. Project development with self-consumption: Some companies in Europe have decided to develop their own geothermal project, and have internalize the competences.

KEY PROPOSAL

The recast Renewable Energy Directive provides that the uptake of long term PPAs should be facilitated, which should be implemented in a way that eases the corporate sourcing or renewable heat and electricity, in particular from geothermal, through different models tailored to the specific needs of companies.
**Geothermal heat for greenhouses in the Netherlands - Project development with self-consumption**

The Dutch horticulture sector is one of the top global leaders in terms of innovation and trade with international partners. Being a stable pillar of the Dutch economy, horticulture represents around 400,000 jobs and accounts for a yearly production value of €8 bn. Relying extensively on natural gas, the sector’s energy costs represent about 20% to 30% of its total production costs. Geothermal systems operating projects in the Dutch horticultural sector representing an installed capacity of over 100 MWth and contribute to significantly lower energy costs and protect companies from volatile natural gas prices.

**GEOTHERMAL HEAT SOURCING FOR INDUSTRIAL PROCESSES**

**Geothermal heat for process heat in France – Public Private Partnership & Joint Venture**

ECOGI is a joint venture between “Electricité de Strasbourg” Group, “Roquette Frères” industrial partner, and the “Caisse des Dépôts et Consignation” institute. The project was supported by public funds: “ADEME” with the “Fond Chaleur”, “Conseil Régional d’Alsace” and “SAF Environnement”, as guarantor.

ECOGI- Geothermal heat plant for a bio-refinery in Rittershoffen France delivers heat for a 24 MWth capacity to the “Roquette Frères” bio-refinery in Alsace, covering around 25% of the process heat needed on this industrial site.

**CORPORATE SOURCING OF GEOTHERMAL ELECTRICITY IN ICELAND**

Geothermal energy, as a flexible baseload source of energy is particularly suitable for the needs of a PPA, as it can respond to variations in demand and is available when needed. For this reason, there are several examples of geothermal PPA across the world and in Europe.

In 2014, Landsvirkjun, Iceland’s national power company signs power purchasing agreements with the industrial actor PCC BakkiSilicon for 35 MW of hydroelectricity capacity and 58MW of geothermal electricity. The purpose of this agreement is to provide electricity for a plant to produce silicon metals. The value of geothermal power for this type of customer is the guarantee to have a stable electricity source (geothermal plants have capacity factors up to 100%) with stable prices in the long term.