LEGISLATION AND REGULATION ANALYSIS COUNTRY BROCHURES

BELGIUM

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An analysis of the legislative and regulatory framework for GSHP systems at the real case study site for a residential house in Putte, in the Flanders region of Belgium is presented below.

GEOTHERMAL LEGISLATION

Geothermal Energy is defined in the Flemish Environmental Legislation, with shallow geothermal defined as the energy used for GSHEs up to depth of 500m.

LOCAL LEGISLATION

Local regional legislation is applicable in Belgium for GSHP systems and in the case of the site at Putte the Flanders region, where the VLAREM legislation applies. The utilisation of shallow geothermal energy in Flanders is regulated by the Order of the Flemish Government concerning Environmental Licences (VLAREM I). This legislation is divided into sections that determine when an environmental permit must be requested.

LICENSING & PERMITTING PROCEDURES

LICENSING AND PLANNING APPLICATION

Licensing for GSHP systems is completed through the Provincial Authorities that act as the main licensing and authorisation bodies when a Class 1 permit is required. Class 2 & 3 are completed through the local municipality. A classification based on impact is applied and comprises three classes:

- Class 3: no permit, only a registration by the Municipality — processing time: 1 day
- Class 2: a municipal permit; — processing time: 3 - 6 months
- Class 1: a provincial permit — processing time: >4 months

The VLAREM I and II law is applicable for all heat pumps and specifies the kind of permit to be obtained based on the size of the heat pump to be installed. No permit is needed for the installation of a small heat pump (< 5 kW elec). Heat pumps of installed capacity between 5 and 200 kW, require a Class 3 registration to the local municipality. This is applicable for the Putte case study site. When installing a heat pump with an electric input greater than 200 kW a municipal permit is needed (Class 2). Open loop systems using groundwater wells for thermal energy storage in aquifers, including re-injection, with a pumped flow of <30.000 m^3/year require a Class 2 (municipal permit). Flows of ≥30.000 m^3/year require Class 1 (provincial permit).

Planning application procedures in this case of the GSHP installation are covered by the registration and permitting process for Class 3. The planning process is independent of the GSHP system licensing for Classes 1 and 2, with the installation works not permitted until a license is secured.

DRILLING PERMITS

No specific permit is required for the drilling operations or the ground works aside from the conditions or guidelines covered as part of the above permissions.

EIA REQUIREMENTS

Closed loop GHE are exempt from EIA requirements. These are only applicable to large scale open loop systems. However an environmental permit section for closed loop ground source heat exchangers (VLAREM section 55.1, chapters 53, 54 and 55.3 on the 'Vertical drillings for the benefit of the construction of level wells and other purposes than mentioned in chapters 53, 54 and 55.3') specifies the type of permit needed as a function of the depth, the geological conditions and the local aquifer vulnerability classification.

The depth for which a licence is required is defined scientifically. A geological map indicates the depth for which the authorization is required as well as the prohibited zones (areas of aquifer protection).

MONITORING REQUIREMENTS

Monitoring requirements are only applicable in the case of open loop systems requiring parameters such as flow and injection rates, temperatures and hydrochemistry to be monitored. The results are submitted to the Flemish Environmental Agency (VMM). The extent and cost of the monitoring requirements is a function of the size of the project, the receiving environment and the license conditions.

REGULATIONS

GSHP SYSTEM REGULATIONS

The main regulations are set out in the VLAREM II that differentiates between horizontal, open and closed systems. In the case of the closed loop systems, differences are identified based on the use of either geothermal brine or refrigerant in the heat exchanger within a depth range of between 100m and 150m. Open loop systems are differentiated based on discharge method used and include re-injection into the same or a different aquifers to production, or the use of discharge to surface waters.

ENVIRONMENTAL

Environmental regulations are focussed on the protection of groundwater extractions destined for public water supply. The regulations focus on the prevention of cross contamination of aquifers through drilling and the completion of boreholes using grouting. The regulations include restrictions and prohibitions on drilling within the protection perimeter of type I or II of groundwater extractions intended for public water supply.

There are no specific restrictions at the case study site aside from grouting requirements.

BUILDINGS

The EPBD implementation in Flanders sets out targets for levels of insulation and the net energy consumption for heating are required for different building types (K-level and E-level). A requirement for new build residential buildings as of 2014 requires integration of one out of six renewable energy sources respecting quantitative conditions for each of these technologies (solar thermal, PV, biomass, heat pump, district heating) or a combination of these technologies providing a minimum of 10 kWhr/m^2 from renewable energy sources. These requirements are applicable to non-domestic, public sector as well as retrofit buildings where a planning permission is required.

A specific target for heat pumps with a seasonal performance factor above 4, contributing to 85% of the heating requirements of building is applicable to the same categories of building as mentioned above.

HEATING & COOLING PLANTS

The Belgian Building Research Institute publishes technical for the completion of works for the building sector and specifically the integration of heating and cooling plant equipment with respect to the building fabric and building design temperatures to be achieved. Specific recommendations for heat pumps and temperatures of 40°C and 30°C (or 20°C) are specified.

POLICY CONTEXT

The Policy Paper on Energy 2014-2019, published by the Flemish Parliament sets out the targets and progression of these set out in the NREAP for Belgium. A target contribution of renewable heat from heat pumps (no specific figures for geothermal) of 350 ktoe by 2020 has been set in the NREAP for Belgium. In the recently published progress report in 2015 the progress for the expected target for 2014 of 135.7 ktoe was not was not met, with a total estimated contribution of 28.08 ktoe reached. No specific targets relating to GSHPs are set out for 2020 or for 2030.

STANDARDS & GUIDELINES

Standards on the GSHE equipment are outlined in the VLAREM II (article 5.52.2.3) and specify that materials used in GSHE installations must have a useful lifespan of 50 years and rated for underground temperature ranges of between -20°C to 40°C and have an overpressure resistance of 16 bar. All materials used must not react with underground soil and water.

The Belgian Building Research Institute publishes applicable EN standards for heating and cooling systems that include GSHPs.

Vlaamse Confederatie Bouw (VCB) ' Vereniging Geothermie ' and the Smartgeotherm project provide guidelines and best practice standards on the drilling and completion of vertical GSHE's in single and double U.

TRAINING & CERTIFICATION

VCB organise training workshop and disseminate the Geotrainet material involved in the installation of GSHE systems. A certification programme for drillers and installer is in place since January 2015. No certification covering design aspects is in place.

OTHER INFORMATION

A regional database of GSHP systems is available through a webGIS interface where details of installed systems can be viewed. Information on this database on resources is available through the www.dov.vlaanderen.be website.

Financial incentives in the Flemish region are provided through the local energy distribution company, where a maximum subsidy amount of €1700 for heat pumps if not used for cooling is offered. Incentives including the 'Ecology Premium' are available for non-domestic installations where HFCs replace natural refrigerants.