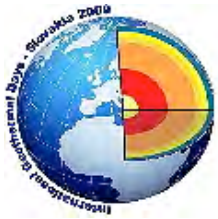

INTERNATIONAL GEOTHERMAL DAYS
SLOVAKIA 2009
CONFERENCE & SUMMER SCHOOL

III.3

ACCELERATION OF GEOTHERMAL UTILIZATION IN HUNGARY

Gábor Szita

President of Hungarian Geothermal Association

ABSTRACT

Natural gas has a crucial importance in Hungary's energy balance. Therefore, the security of natural gas supply and the fluctuation of natural gas prices make a decisive influence on heating energy supply. The European Union encourages supporting the development of renewable energy sources. Such a support, called Environment and Energy Operative Programme, has existed in Hungary for five years now. Due to the current rules, for instance, local authorities may even get 60-70% of their investment costs back. The geothermal sector has utilised the support with a good efficiency so far. Three new small town district heating systems were already commissioned in Veresegyház, Kistelek and Bóly. Currently, the execution of a geothermal district heating project is under way in two sites, and two others are in a planning phase, i.e. the grants have already been awarded. Altogether more than ten new project proposals are in the field of vision or to elaborate, or to submit for support, or to evaluate. The investment boom in geothermal utilisation has provided valuable experience. Probably, the most important of those is to keep the investment costs low. This is in line with the aim set by EGEC in the European development strategy of geothermal energy for the period up to 2020. Unfortunately, acceleration of the geothermal investments has not been followed by modernisation of the legal framework. A joint communiqué issued by geothermal actors last year has yet remained unresponded by the ministries and senior authorities. The Hungarian Geothermal Association, which was successful in having certain statutory provisions amended three years ago, continues its successful activity when organising workshops and have been publishing for the fifth year now the quarterly newsletter.

1. THE DRIVING FORCES BEHIND THE UPTURN

It is well-known that natural gas plays a crucial role in Hungary's energy supply, with about 80% of the needs being met by Russian imports. In space heating energy consumption, natural gas also plays a main role, and therefore the security of natural gas supply and the fluctuation of natural gas prices make a decisive influence on heating energy supply. Erupting for the second time, the Ukrainian-Russian gas dispute has particularly drawn attention to the vulnerability of central Europe in general, and Hungary in particular. And, the dramatic increase in the price of natural gas at a rate higher than that of inflation encouraged the users of this energy to reassess the situation and take action. Reducing dependence – which, as seen, goes hand in hand with defencelessness – has become an important objective for gas users. The European Union also recognised the

risk entailed by gas dependence. Therefore, and as a result of the compulsion to act in response to the climate change, the member states are encouraged to support the development of renewable alternative energy sources which cater for sustainable energy management. Utilised by the geothermal sector with a good efficiency so far, such a support has existed in Hungary for five years now.

2. THE ENVIRONMENT AND ENERGY OPERATIVE PROGRAMME (KEOP)

Backed by the European Union, the so-called Environment and Energy Operative Programme is used by the Hungarian government to support the enhanced utilisation of renewable energy sources. We are in the third phase of calling project proposals at the time of writing this paper. The conditions of submitting proposals are modified from time to time. The most recent call issued in March 2009 has introduced many favourable changes. Depending on the proposing entity and the cost efficiency of development, geothermal investments may be given non-repayable investment grants. (No grant may be obtained for running the facilities). Local authorities and the actors of the public sphere may even get 60% of their investment costs back – instead of the earlier 50% – and in the case of less favoured local councils, this ratio may even reach 70%. In the case of businesses, depending on the region, the refund could reach 30 to 50%. A project proposal document, with its most significant component being a so-called feasibility study, must be drawn up to receive a grant. This is a classical technical/cost efficiency study of the type characteristically worked out by engineering consultant companies. A water rights and environmental permit is to be attached as a compulsory enclosure to project proposals aimed at harnessing geothermal energy. The investment preparatory phase takes about 1 to 1.5 years including the drawing up of the study, the obtaining of permits, the assessment of project proposal and the concluding of the grant agreement. After this period, implementation should be started and finished within 2 years.

Figure 1: Geothermal district heating networks in Hungary

3. GEOTHERMAL DISTRICT HEATING SYSTEMS FOR COMMUNAL PURPOSES

The figure shows those places in the map of Hungary, where geothermal energy is used in a district heating system for the heating of homes and public buildings. Of these places, the following have used such heating already prior to 2004: Kapuvár, Mosonmagyaróvár, Vasvár, Nagyatád, Veresegyház, Jászkisér, Szolnok, Szarvas, Csongrád, Szentes, Hódmez□vásárhely, Szeged and Makó. Thanks to the grant mentioned in the previous section, three similar new systems were commissioned in Veresegyház, Kistelek and Bóly. Currently, the execution of a geothermal district heating project is under way in two small towns, Gárdony and Mórahalom. Three others are in a planning phase, i.e. a grant has already been awarded. The number of project proposals already submitted, but not yet evaluated, and that of proposals being drawn up and not yet submitted, as well as the number of local councils showing a genuine interest are altogether more than ten.

4. EXPERIENCE

The already constructed and commissioned geothermal district heating systems have not only substituted natural gas, but also improved energetic efficiency. This was possible, because with a few exceptions the heat supply systems used before the utilising of geothermal water were obsolete and energy gazzling. By setting up well-regulated geothermal water based heating systems adjusted to the current requirements, energy saving of not less than 10 to 15% could be achieved in comparison with natural gas heating. This finding has become an important point of departure for designing new systems, where we take into consideration among other things the absolute rate of decrease in energy demands. It is a precondition of making geothermal investments successful that investment costs must be kept low. In view

of the fact that according to the legal regulations applying to Hungary, geothermal waters used for energetic purpose only must be reinjected into the hot water reservoir, it is a requirement generally to make two boreholes and to install a pipeline of significant length. Since the volume and temperature of geothermal water available from wells are given factors, the energy content of geothermal waters is limited. As a result, the volume of natural gas that can be substituted by geothermal utilisation systems is also limited, which puts a natural ceiling on investment costs, because cost efficiency is determined jointly by the financial achievement resulting from the replacement of a fossil energy source and the investment cost. Indeed, the technologies which have been applied in Hungary for the last ten or twenty years proved to be appropriate not only technically, but also cost-wise for granting the expected level of cost efficiency. An additional positive impact of the upturn is that some areas where it is profitable or necessary to launch technical developments have been identified. Such fields are borehole drilling, the determination of optimal well diameter, and in surface technology the providing of a solution for supplying geothermal water to low heat demand consumers like for example single family homes. One objective of the developments is in line with the aim set by EGEC in the European development strategy of geothermal energy for the period up to 2020, namely that the investment costs and the specific investment costs must be reduced.

4. THE GENERAL SITUATION OF UTILISING GEOTHERMAL ENERGY IN HUNGARY

At the end of last year, trade organisations and companies having an interest in the geothermal field had worded a joint communiqué and submitted it to the head of the Ministry of Environment and Water, the organisation which oversees this special area. The communiqué appropriately summarises the most pressing tasks that the Hungarian geothermal trade has to address. There was a suggestion that with the contribution of the involved parties, the Ministry would discuss in a working committee the measures to be taken, but this has not happened until this day. It can be said in general that the ministries and senior authorities do not send representatives to the events of the geothermal profession and do not respond to questions raised by the trade.

5. THE ACTIVITIES OF HGA

Founded in 1995, Magyar Geotermális Egyesület (Hungarian Geothermal Association) boasts a continuously broadening membership base and is the largest trade advocacy organisation in Hungary. As a result of its advocacy efforts, the Association was successful in having certain statutory provisions that had already entered into force amended, because they had an extremely adverse effect on geothermal energy users. Most recently, in 2008, we managed to prevent the promulgation of statutory provisions that had been anti-constitutional in our view. We regularly organise trade days and have been publishing for the fifth year now our quarterly newsletter Földh□ Hírlevél. In addition to trade-related work in the strict sense, as a kind of accessory, we have discovered the origins of the word ‘thermal’ used in association with the geothermic field practically in all the European languages.