Geothermal

Resource Management

Effective resource management is an essential part of successful geothermal utilization. It requires a proper understanding of the geothermal system involved, and relies on careful monitoring of the field.

www.isor.is

ÍSOR
ICELAND GEOSURVEY

Long-term resource management is an important part of successful geothermal utilization. With proper management, operational problems can be held to a minimum, and production from the field may be sustained for a long time. Such management relies on an understanding of the geothermal field that can only be gained by a sustained effort of data-gathering.

The most important data on the nature and properties of a geothermal system are obtained by monitoring its response to long-term production. This monitoring data also provides the basis for geothermal reservoir modeling.

Iceland GeoSurvey offers services related to the following aspects of geothermal resource management:

- **Physical monitoring**

  The reservoir pressure and temperature are monitored, and the mass and heat transport through wells are measured. This monitoring may be partly or fully automated, or carried out remotely.

- **Chemical monitoring**

  The chemical composition of reservoir fluids is monitored by regular sampling and analysis. Changes in the fluid chemistry may provide an early indication of cold water intrusion.

- **Indirect monitoring**

  Changes in the reservoir state may be detected by surface observations such as surface elevation measurements, micro-gravity observations, and micro-seismic monitoring.

- **Geothermal system modeling**

  A numerical model of a geothermal reservoir is developed. It is used to estimate the production potential of the system and to optimize utilization strategies for the field.

- **Reinjection planning**

  Numerical models of the reservoir are used to site reinjection wells, and tracer tests are performed to map flow paths in the system. Reinjection of geothermal effluent is generally the preferred method of disposal, but it also serves to extend the useful life of a reservoir.

- **Environmental monitoring**

  Ground surface subsidence, gravity changes, the chemical composition and temperature of local ground-water, and gas emissions to the atmosphere are among the environmental parameters monitored. In this way, any adverse effects of geothermal utilization on the environment may be addressed in a timely manner.

- **Sustainability assessment**

  The sustainable production potential of a geothermal system is estimated, and its sustainable utilization is planned in accord with various scenarios. Such assessments are based on the premise that the geothermal resource should last for at least 100-300 years with proper management.

Contact: **Bjarni Richter**
Marketing- and Project Manager, Senoir Geologist
br@isor.is

ÍSOR
ICELAND GEOSURVEY

Iceland GeoSurvey - Grensasvegur 9 - 108 Reykjavik - Iceland - Tel.: +354 528 1500 - Fax: +354 528 1699 - isor@isor.is - www.isor.is