Volcanology and Geothermal Resources: Participation of Landsvirkjun in the EUROVOLC project

Asgrimur Gudmundsson¹, Sigurdur Markusson¹, Freysteinn Sigmundsson², Gylfi Pall Hersir³, and Kristjan Agustsson³

¹University of Iceland, Nordic Volcanological Center, Institute of Earth Sciences, Reykjavik, Iceland (fs@hi.is)
²University of Iceland, Nordic Volcanological Center, Institute of Earth Sciences, Reykjavik, Iceland (fs@hi.is)
³ISOR – Iceland GeoSurvey, Reykjavik, Iceland

The Krafla power station was built by the Icelandic government 1975 and came under ownership of Landsvirkjun - The National Power Company of Iceland in 1985, and Bjarnarflag power station in Námafjall year later. These were the first steps for Landsvirkjun to generate electricity from geothermal resources in Iceland. Initially the company outsourced all geothermal research and monitoring, but systematically it trained people and hired geothermal experts and developed its own geothermal division. Theistareykir power plant, commissioned in 2017, was the first geothermal construction of Landsvirkjun from start to finish. Development and operation of geothermal fields at an active volcanic environment, such as in Krafla and Theistareykir, creates strong synergy with scientific research interest in volcanology and related branches of earth sciences and engineering. The strong infrastructure and wealth of data created by the energy company has catalysed important research interest and cooperation with scientist and has been a big part of Landsvirkjun’s operation from the beginning. Landsvirkjun makes data available from its databases from geothermal areas in Northeast Iceland within the EUROVOLC project. This is regarded a foundation of a successful industry and science community cooperation. The plan is to keep open source policy for researcher to access Landsvirkjun databases and metadata. Initially the emphasizes is on seismic and ground deformation data (GPS geodetic measurements). Landsvirkjun is running a seismic network consisting of 17 stations in NE-Iceland (http://lv.isor.is/, in English and Icelandic), operated by Iceland GeoSurvey. Landsvirkjun has installed four continuously operating GPS stations in or near the geothermal areas in North Iceland: one in Theistareykir, two stations in Krafla and one in Bjarnarflag (operated by University of Iceland). In addition, GPS-measurement campaigns have been performed every year in the last decade covering the Krafla area (http://www.icelandsupersite.hi.is/gps/ts/NVZ.html). Borehole logs will be accessible, such as formation temperature and pressure. Also lithological logs (x,y,z) such as resistivity, neutron-neutron and gamma-ray. Interpretation reports of televiewer logs from selected wells will be available. Drill cuttings have been collected during drilling at over 70 deep wells at every two meters interval and lithology figures and cross sections will be available. All chemical data from high-temperature wells, groundwater wells, hot-springs and fumaroles will be available, either by request or through an on-line viewer access directly to Landsvirkjun chemical management system.