

Research and development projects to meet injection demands at Hellisheidi and Nesjavellir

The results of research, development and implementation of projects 2015-2020 is that all separated geothermal water from the geothermal power plants can be reinjected back into the geothermal reservoir. The projects will continue in 2021 with an emphasis on implementing improved techniques. A special effort has been made in the injection at Nesjavellir.

Hellisheiðarvirkjun

- Geothermal water has been reinjected into production wells that are not used for steam production in Sleggjubeinsdalur Valley. In this manner reinjection is dispersed throughout the production fields of Hellisheidi Power Plant. In late 2016, three such wells were used for reinjection on mt. Skarðsmýrarfjall. That injection was ceased in the autumn of 2017 due to negative effects on the production fields. Instead two other wells at mt. Skarðsmýrarfjall were used further away from the production fields. This injection has been a success and is considered to support the production area.
- In late 2016, injection started into wells in the Carbfix site, located outside of the plant's production fields. Injection at the Carbfix area has been stopped and it is intended to use the area for carbon dioxide injection.
- A new injection well, HN-18, was drilled and commissioned in 2020. The well is drilled from the same drilling site as HE-55 in a south-easterly direction. Injection is going according to plan and no increased seismic activity has been observed in connection with it.
- The impact of re-injection on the geothermal system will continue to be closely monitored, and the arrangements will be changed if deemed necessary due to negative effects.
- ON Power has been operating a seismic network in the Hengill area since 2016. In 2018, the number of meters tripled in connection with an international research project and the Hengill area is thoroughly monitored. The research project aims to understand the relationship between seismic activity and re-injection, so it will be possible in the future to arrange re-injection, so it minimizes seismic activity.

Nesjavallavirkjun

- The results of tracer tests that began in 2015 and 2018 show that geothermal water discharged in some of the 300 to 600 m deep injection wells connected to the power plant's injection system is found in groundwater and springs by Thingvallavatn Lake. Efforts are being made to keep the mixing between groundwater and geothermal water to a minimum.
- Injection in well NJ-18 started in November 2019. The injection is progressing well and around 10-15% of the geothermal water from the power plant is reinjected into the well. It is considered unlikely that geothermal water will mix with groundwater.
- Seismic activity due to re-injection in NJ-18 at Nesjavellir was monitored, especially in connection with an international research project. Almost no seismic activity was detected, and this bodes well for deep injection at Nesjavellir.
- Research has been completed to prepare for the drilling of a new injection well at Nesjavellir. It is planned to drill under the Stangarháls north of the power plant's production area.
- The effects of re-injection on the geothermal system will continue to be closely monitored and will be re-arrangement if deemed necessary due to negative effects on the geothermal system.