

## A Powerful Place to Explore

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### ABSTRACT

ON Power is a leading energy company that operates the *Geothermal Exhibition* located at the Hellisheiði power plant. The company utilizes geothermal energy to produce electricity and geothermal water for heating. Visitors are offered guided tours of the facility to learn how the earth's heat can be sustainably harnessed. The exhibition provides an interactive educational experience for school groups, scientists, and the general public. The Hellisheiði Geothermal Exhibition has recently been ranked among the most visited destinations in Iceland – not only because of its convenient location, but also as a center to explore the latest innovations in renewable geothermal energy. The exhibition has been growing steadily since its opening in 2007, receiving over 100,000 visitors per year. Following the successes of groundbreaking research projects conducted on-site, such as *CarbFix*, the exhibition and public outreach in general is becoming an integral part of the power plant operation.

### 1. BACKGROUND AND IDEOLOGY

ON power runs two geothermal power stations, one on either side of Hengill (ON Power website, 2019). The Nesjavellir power plant on the northern side of Hengill has been operating since 1990. The Hellisheiði power plant on the southern side of Hengill (shown in Figure 1) has been operating since 2006. The Hellisheiði power plant houses the Geothermal Exhibition where guests can learn about geothermal energy and the novel district heating system in Reykjavík (Geothermal Exhibition, 2019). On a clear day one can see Snæfellsjökull glacier from the top floor in the exhibition area at the Hellisheiði power plant as it faces directly to the glacier and its central volcano. Snæfellsjökull is also where Jules Verne had his protagonists enter into the Earth in his epic: *Journey to the center of the Earth*.

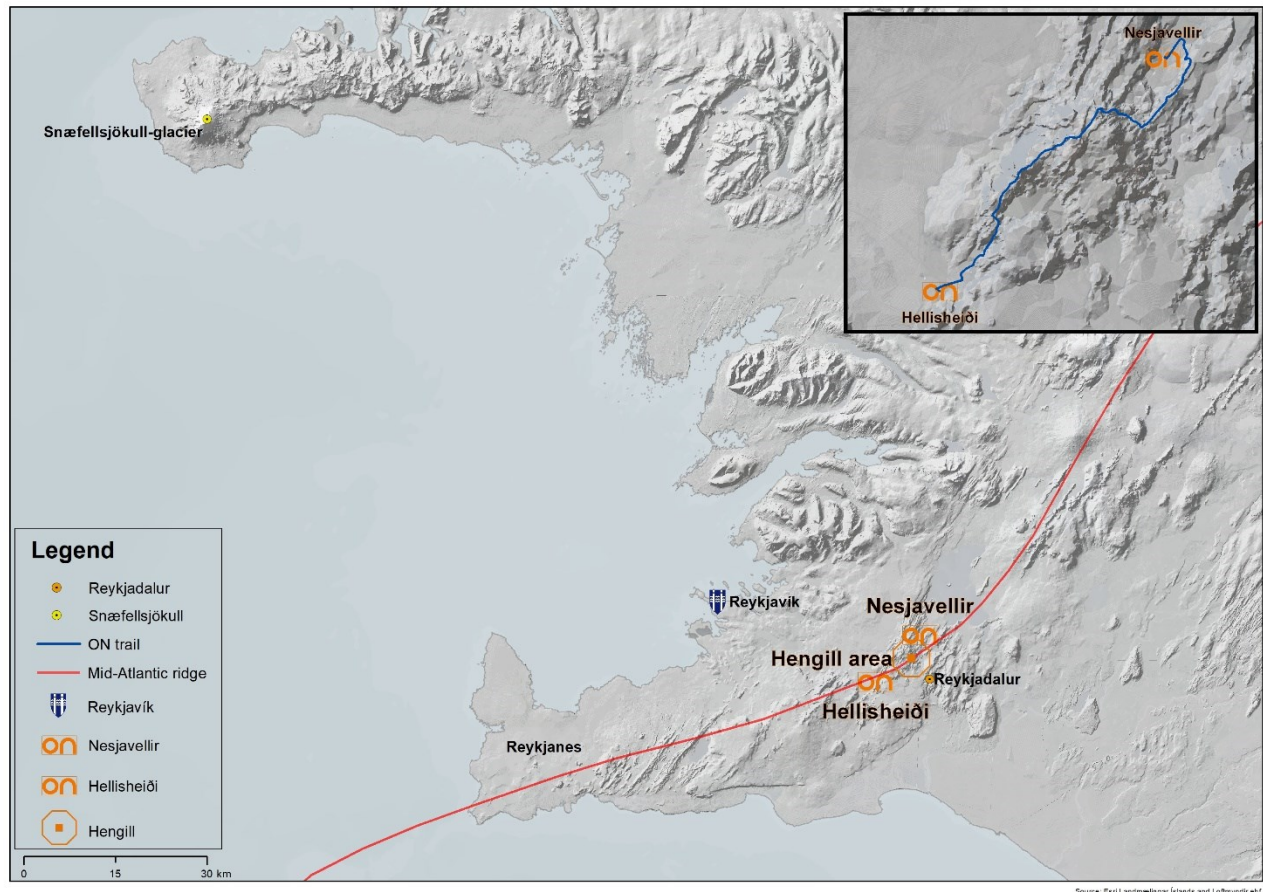


**Figure 1: The Hellisheiði Geothermal Power Plant**

The Hellisheiði and Nesjavellir power plants, both operated by ON Power, a subsidiary of Reykjavík Energy, are located in the Hengill area which is popular for outdoor activities among locals. Figure 2 shows a map of the southwestern corner of Iceland including the Hengill area. It is a year-round recreational area, offering diverse landscapes, hot springs, craters, diverse vegetation, rivers and lakes. An extensive network of hiking trails with a combined length of over 100 km can be explored, including cabins, maps and information signs throughout the area. The Reykjadalur hot springs is a favorite among locals and tourists alike where one can relax in the warm river and enjoy the view. The geothermal exhibition serves as a convenient entry point for the area where the two power plants and showcase the utilization of natural resources in harmony with the environment.

### ON Power trail run – Running between power stations

An invitational trail run, The ON Power Trail Run™, was held at the end of June this year where 120 trail runners raced between the two power plants. The race received good reviews and provided valuable experience for next year when registration will be open for the public. The goal of the race is to further connect ON Power to the environment and present Hengill as an outdoor recreational area. The trail is about 16 km and starts at the Hellisheiði power plant and finishes at the Nesjavellir power plant (see route in the inset on Figure 2).



**Figure 2: Map of south-west Iceland showing including the Hengill area. Also marked are the location of i) the Hellisheiði power plant, ii) the Nesjavellir power plant, iii) the Snæfellsjökull glacier, and iv) the hot springs in Reykjadalur. The upper-right inset shows the route of the ON power trail run between the two power plants.**

The main building of the Hellisheiði powerplant was designed with a visitor center and exhibition in mind. The original architectural goal was to have all plant components in one central building with each production unit located around the main structure. Reykjavík Energy hired an experienced team of consultants after an international tender in September 2001. The design work began in 2002 and the preliminary design of the first phase was completed towards the end of 2003, followed by the construction of roads and creation of infrastructure in April 2005. The power plant was finally completed in 2011.

The form of the building is inspired by the geology of Iceland. Just as the strata is tilted into the boundaries between the tectonic plates separating the island, the visitor's center and the turbine halls incline against one another reflecting the tectonic forces that power the plant. The "spear" above the main entrance, shown in Figure 3, points directly to the Snæfellsjökull glacier. The power plant surroundings have been restored and landscaped to emphasize sustainable solutions in a respectful dialogue between man and nature. The overall design was kept flexible enough such that production units can be added to the plant according to need.

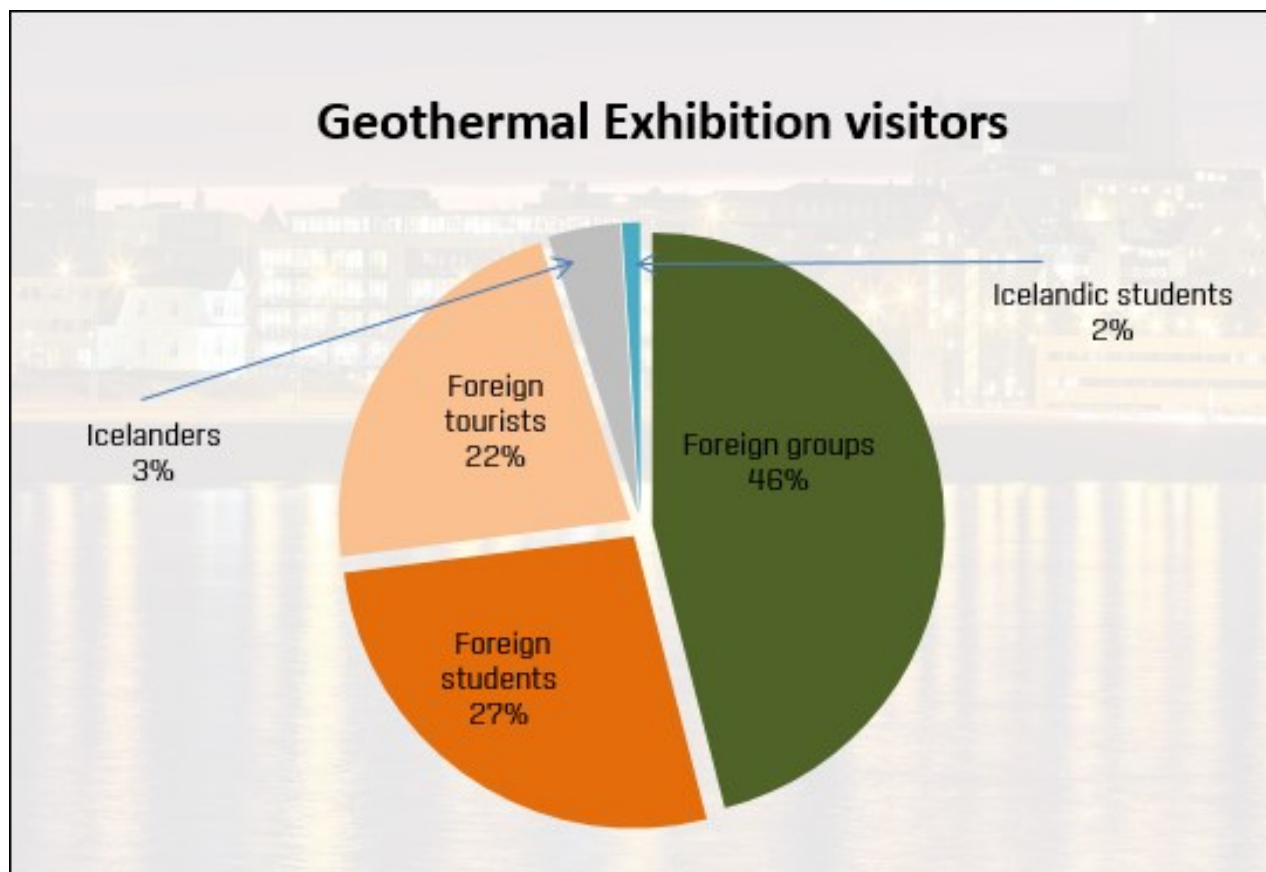


**Figure 3: The main building and surroundings of the Hellisheiði geothermal power plant**

## **2. VISITORS AT THE GEOTHERMAL EXHIBITION**

ON Power has been running the Geothermal Exhibition since 2015. Since that time, the number of visitors has grown by 40 percent. Visitors from 36 countries visited the Geothermal Exhibition in the year 2018 and similar statistics are expected for the year 2019. Most of the visitors, around 50 percent, come from the United States and the United Kingdom. Visitors consist of individuals, groups of scientists, students and tourists.

Around 30,000 students from all over the world, visit the exhibition annually to learn about geothermal energy. ON Power has also been working with local schools to educate students about geothermal energy. In a world heading towards a low-carbon future, the utilization of geothermal energy is an important subject. Educating students and young people in this way is part of the social responsibility of ON Power.



**Figure 4: Visitor statistic at the geothermal exhibition**



Most of the exhibition visitors have pre-booked their visits prior to arriving. The exhibition is presented via interactive multimedia installations, wall displays and presentations. It allows visitors to examine Iceland's geothermal energy utilization in a clear and illustrative fashion. We offer different types and length of tours, depending on demands and group size. ON Power has an energetic workforce, dedicated to providing excellent service, answering questions from our guests and conveying knowledge about geothermal energy in Iceland. An audio guide web app was recently launched with more detailed information about the projects that ON is working on. All tours within the Geothermal Exhibition are offered in Icelandic, English and German. The geothermal exhibition also has a souvenir shop and a cafeteria.



**Figure 5: The geothermal exhibition**

### **3. SUMMARY**

The Geothermal Exhibition has become one of the most visited destinations in Iceland, not only because of its convenient location, but also as a place to learn about the source of Iceland's renewable energy. The exhibition has been growing steadily since its opening in 2007, receiving over 100,000 visitors a year.

The innovative aspects of the ON Power operation is what impresses our visitors the most. Projects such as *CarbFix*, in which CO<sub>2</sub> emission is captured through water dissolution and injected into the subsurface for permanent mineral storage, demonstrate the effectiveness of research and innovation. The pioneering work of ON Power in the renewable energy sector and the potential of CarbFix as a climate change solution has left visitors satisfied and with a sense of optimism.

### **REFERENCES**

Geothermal Exhibition website, 2019: <http://www.geothermalexhibition.is>

ON Power website, 2019: <http://www.onpower.is>