Geothermal Emission Control (GECO)

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GECO (Geothermal Emission Control) is an international research project that started in 2018, funded by the EU through the H2020. The project consortium is led by Orkuveita Reykjavíkur (OR) and consists of 18 partners from 9 countries across Europe.

The GECO project builds upon the success of the recently developed CarbFix gas re-injection method. Applying the CarbFix method advanced considerably our ability to clean the exhaust gases emitted by geothermal power plants based on a novel water dissolution method in a dedicated scrubbing tower. The injection of the resulting gas charged waters into the subsurface disposes the captured gases within precipitated minerals that remain stable over geologic time. This method has been demonstrated to be successful and has been running at the Hellisheidi power plant in Iceland for the past five years. Through this industrial scale demonstration, this new method has been demonstrated 1) to offer considerable cost savings compared to other approaches to capture and dispose acidic carbon and sulphur bearing gases; 2) to be far more environmentally friendly compared to other available technologies; and 3) to aid in the long-term viability of geothermal systems by enhancing the permeability of fluid injection wells.

The goal of the GECO project is to adopt the CarbFix re-injection technology, together with emission gas reuse schemes, to become a standard to the geothermal power industry worldwide through the application of gas injection to four new sites across Europe. By consistently monitoring the reactions that occur in the GECO field sites, each having a distinct geology, we will be able to generalise these findings to create a tool for predicting the chemical behaviour of a large number of other systems before they are developed for geothermal energy or carbon dioxide storage. Such tools have the potential to decrease both the risk and the cost of future geothermal energy projects. The GECO project aims to provide a new general, efficient, cost-effective, and environmentally benign technology to clean and permanently store or reuse geothermal exhaust gases throughout Europe and the rest of the world