

TRONDHEIM



EnerGizerS

CO₂-Enhanced Geothermal Systems for Climate Neutral Energy Supply

GLIWICE KRAKÓW

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P R O J E C T P A R T N E R S



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EnerGizerS

BACKGROUND AND GOAL:

Five institutions from Poland and Norway join forces in the EnerGizerS project to analyze Enhanced Geothermal Systems (EGS) efficiency using supercritical carbon dioxide as a working fluid. Enhanced Geothermal Systems with CO₂ instead of water as the working fluid (CO₂-EGS) has attracted much interest worldwide due to the additional benefit of CO₂ geological storage while obtaining geothermal energy. The CO₂-EGS technology can become a new sustainable source of energy, which might be essential for fulfilling the international ambitions for the mitigation of anthropogenic climate change. The proposed solution aims to protect the climate by producing clean geothermal energy and simultaneously eliminating carbon dioxide emissions from fossil fuel combustion.

THE MAIN ACTIVITIES:

Within the EnerGizerS project, the international consortium of scientists has conducted research aimed at detailed identification of potential geological structures for the location of CO₂-EGS systems in Poland and Norway, combining the requirements for both EGS and CCS (Carbon Capture and Storage) technologies. Petrophysical, thermal and mechanical laboratory tests will be performed on drill-core samples taken from appropriate geological structures. The results of laboratory tests will be used for advanced mathematical modelling, including structural modelling of the geological reservoir, modelling of the fracturing process of solid rocks and 3D modelling for multi-variant simulations of CO₂ injection and exploitation with forecasts of reservoir behavior over time. The project assumes experimental determination of properties and behavior of supercritical carbon dioxide as well as mathematical modelling of CO₂-based topside systems for heat and power production. All performed tests and analyzes will form the basis for conducting techno-economic and environmental assessments of the proposed technology. The project results will help to determine the validity of combining two technologies: EGS and CCS, to utilize captured carbon dioxide and to produce energy.

THE MAIN GOALS:

- Development of Enhanced Geothermal Systems (EGS) technology using supercritical carbon dioxide as the working fluid;
- Strengthening the cooperation between Polish and Norwegian partners and exchanging experience in the use of geothermal energy;
- Reduction of carbon dioxide emissions into the atmosphere and mitigation of anthropogenic climate change while meeting energy demand.

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