

InSituStreTech

Accurate in-situ stress measurement to enable safer and more efficient geo-energy projects.

In a nutshell

With increased pressure on business to combat its climate change emissions, companies around the world are looking for solutions to replace fossil fuel and prevent carbon emissions. The most promising is carbon capture and storage (CCS) technology. This is where carbon is captured at source, liquefied, and then stored deep inside porous rock underground.

However, to ensure safety and efficacy of the project, engineers need to understand the formation and in-situ stresses in rock deep underground before they start the project. InSituStreTech has developed a new stress measurement method which provides accurate and reliable data to CCS operators. This allows operators to conduct safer and more efficient CCS projects, resulting in increased quantities of CO₂ stored underground to better mitigate climate change.

This technology may also be used for other geo-energy applications exploiting the underground resources, such as nuclear waste storage, geothermal power plants, and geological hydrogen storage.

Why is our technology important?

Currently, in-situ stresses are measured with a method called hydraulic fracturing. However, this method has several limitations which have significant implications for the safety and efficacy of the project:

- ☐ the measurement of maximum horizontal stress can only be estimated with +/- 20% accuracy;
- ☐ the method does not account for pre-existing weaknesses in the rock found in deep formation; and
- ☐ hydraulic fracturing may cause damage to the rock, leading to potential CO₂ leakage.

InSituStreTech has developed a new stress measurement method which addresses the limitations of existing methods. This new method measures both the maximum and minimum in-situ stresses with a +/-5% accuracy and great reliability and therefore provides a more realistic understanding of the underground.

The benefits of our solution

The improved precision is crucial when assessing the viability of any carbon capture and storage project. On average, InSituStreTech's stress measurement method could make geo-energy projects 20% more productive. This means a given CCS project could annually store an additional 20% of CO₂ underground, thus making the project more impactful on reducing carbon emissions.

Keywords

Geo-energy – Carbon capture – Stress analysis – Renewable energy – Climate change – In-situ stress management – CCS

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