GeoTHERM
expo & congress

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Ortenauhalle Kongress 1
Tiefe Geothermie

Friday, 21 February 2025, 12.30 pm
Ortenauhalle Congress 1
Deep geothermal energy

Geothermal Scaling in Low Temperature Geothermal Wells

Geothermische "Scales" in Niedertemperatur-Geothermiebohrungen

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The occurrence of geothermal scale in low temperature geothermal wells in Europe presents an operational challenge that impacts the efficiency and longevity of geothermal energy systems. Geothermal scale forms due to the precipitation of dissolved minerals when geothermal fluids undergo changes in temperature, pressure, and chemical composition. The most common scales found in low temperature geothermal wells are carbonates, sulfates, and silicates. Factors contributing to scale formation include the mineralogy of the reservoir, the chemical composition of the geothermal fluid, and operational parameters, such as flow rates and pressure management.

In Europe, geothermal scale formation has been documented across various geothermal fields, including those in Iceland, Germany, and France. The presence of scaling in the geothermal systems can lead to reduced heat transfer efficiency, clogging of pipes, and increased maintenance costs. As a result, the development of effective scale reduction strategies is critical for operators. Various methods for scale removal, including both conventional techniques, such as chemical and mechanical methods, and the more recent innovative technique of electro-hydraulic pulsing, have been assessed to understand their advantages and challenges in achieving successful outcomes.

Research and collaboration among European geothermal operators, academia, and policymakers are essential to address the challenges posed by scaling and ensure the efficient exploitation of low temperature geothermal resources across the continent.