

RECORDED BENEFITS

- Avoided abandoning well and drilling new one, saving \$10 million
- Increased power generation by 50,000 MWh over nine months
- Offset carbon dioxide emissions by around 57,000 tCO₂e
- Provided a safer, less aggressive and more cost-effective cleaning solution

New Scale Cleaning Method Significantly Improves Performance of Production Well

GeoSol™ Well Cleaning Program

Customer Challenge

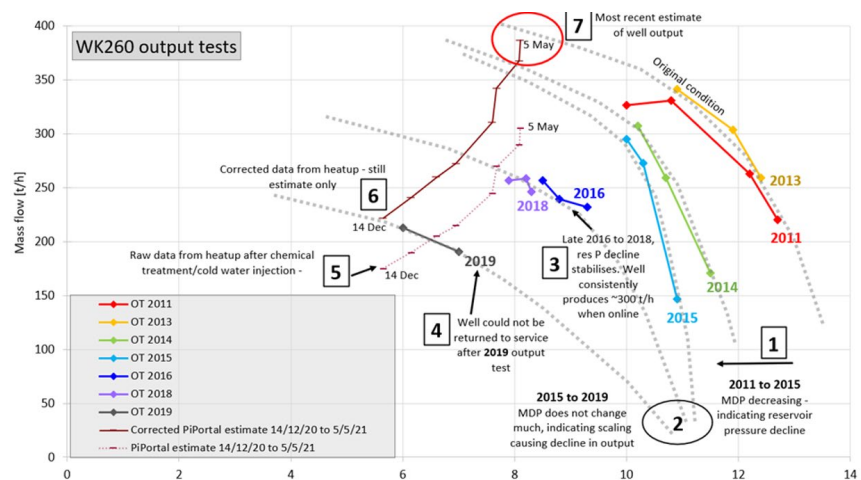
An eight-megawatt production well at a geothermal power plant in New Zealand was taken off-line due to buildup of scale in the formation, which reduced the flow of steam and brine so severely that it could no longer contribute to power generation. Abandoning the well and drilling a new one would cost up to \$10 million. Cleaning the well with harsh chemicals, such as hydrofluoric acid, was unattractive because of its cost, aggressive nature and risks to operators.

Recommended Solution

Solenis recommended a new method of cleaning the rock formation that combines advanced concepts from reservoir engineering, geology and pumping dynamics. This well cleaning program employs low concentrations of chemicals, high pressure, high flow rates and carefully controlled flow to allow cleaning chemicals to penetrate the fissures in a rock formation and dissolve scale buildup.

Results Achieved

With the well bore cleaned of scale, output peaked at 130% of the well's expected recoverable capacity, which translated to increased power generation of around 50,000 megawatt-hours (MWh) over a nine-month period. With the well back in production, it eliminated the need to utilize fossil fuel for the equivalent generation, offsetting carbon dioxide emissions by around 57,000 tons of CO₂ equivalent (tCO₂e), based on coal fuel substitution.



Output curves from 2011 to 2021 showing reservoir pressure decline, decline due to scaling (recoverable), and recovery after GeoSol well cleaning program.

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