SENSIA

Powering Sustainable Operations with Geothermal Intelligence

INTELLIGENT ACTION

Unlock the full potential of geothermal energy

Geothermal energy has a key role to play in the world's transition to net-zero. But to make the transformation from a niche solution to a cornerstone of the global energy system, geothermal operators must overcome critical challenges currently holding the industry back.

These challenges include:

+ ESP failure:
High temperatures (>300°C) and corrosive fluids accelerate wear and failure, causing costly downtime and equipment failure.

+ Incompatible systems:
Legacy infrastructure is often incompatible with modern IOT and control technologies, limiting automation.

+ Sensor limitations:
Conventional sensors degrade in harsh geothermal environments, reducing measurement accuracy.

+ Limited data:
Siloed datasets from sensors, plants, and legacy systems hinder unified analytics, delaying real-time insights and eroding trust in decision-making.

+ Reservoir uncertainty:
Dynamic subsurface behavior and incomplete real-time data create gaps between predictive models and actual output, limiting proactive production adjustments.

At Sensia, we transform these challenges into opportunities, with intelligent, connected solutions that enable you to run smarter geothermal operations.

Ensure safe, reliable operations

Sensia's geothermal process safety and control solutions provide intelligent automation across the entire production cycle. Supporting all geothermal configurations, including automating steam extraction, regulating reservoir pressure, and maximizing turbine performance. While maintaining safe, efficient operations across any geothermal configuration, including binary, flashed steam, and EGS systems.

Our integrated platform combines:

+ Advanced monitoring of pressure, temperature, flow rate, and fluid chemistry.

+ Real-time automation of valves, pumps, and turbines for consistent energy conversion.

+ Intelligent reinjection control to preserve reservoir integrity and reduce environmental impact.

**+ Fault-tolerant safety systems** aligned to SIL standards for high-hazard environments.

From managed pressure operation to turbine protection, Sensia ensures your geothermal assets are secure, efficient, and future-ready.

Achieve efficient operations

## Optimize, extend asset life, reduce energy costs, and minimize downtime.

Sensia artificial lift solutions keep production efficient and uninterrupted.
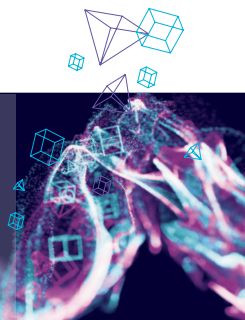
Variable Speed Drives (VSDs)

Sensia's VSDs are built on industry-leading Allen-Bradley and PowerFlex platforms, leveraging over 100 years of field-proven experience. Designed for robust performance in harsh geothermal environments, they dynamically fine-tune pump speeds in real time to match production demands.

By optimizing energy use and reducing mechanical stress, Sensia VSDs enhance equipment longevity, lower operational costs, and support sustainable output without overloading critical infrastructure.
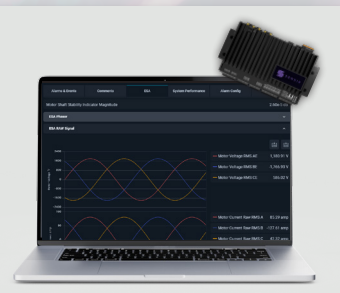
Power Analyzer 2.0

Monitor ESP performance without relying on downhole sensors. By analyzing surface electrical data, Power Analyzer 2.0 detects inefficiencies, tracks health trends, and provides actionable insights to extend ESP run life and reduce unplanned downtime.

AiRP with Avalon Lift Surveillance

AiRP analyzes real-time data from VSD connected sensors to detect early signs of potential failure. It uses intelligent prioritization to flag critical issues before they escalate enabling proactive intervention, extending ESP run life, and maintaining lift performance without interruption.

AVALON

Streamline operations with integrated data management

Centralize geothermal data for faster decisions and scalable operations.

Break down silos and bring all your geothermal data into a unified, smart ecosystem that gives you full visibility and control across the value chain. Harness the full potential of your geothermal resources with our powerful data management solution.

Avocet provides the secure, centralized repository your operation needs, storing critical power plant and well data in one accessible location. Meanwhile, OFM delivers the specialized analytical tools geothermal professionals demand, including sophisticated Horner Analysis for reservoir behavior insights, precise enthalpy forecasting, and comprehensive plant performance evaluation.

Together, they form an unbeatable combination that transforms raw data into actionable intelligence, optimizing your geothermal assets and maximizing renewable energy production. Upgrade your geothermal data management today and experience the difference industry-leading tools can make.
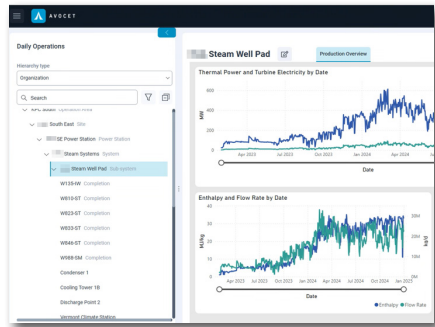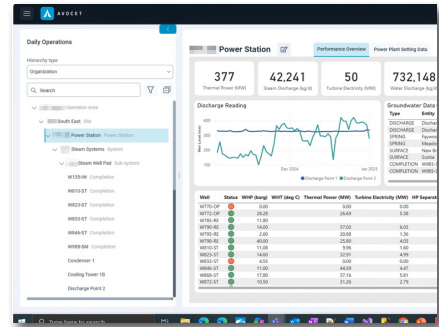
Monitor and optimize performance

Forecast, analyze, and enhance production.

Make better production decisions with the right insights at the right time.

OFM delivers the specialized analytical tools geothermal professionals demand – from sophisticated Horner Analysis for reservoir behavior insights to precise enthalpy forecasting and comprehensive plant performance evaluation.

These tools transform raw data into strategic insight, helping you to optimize assets and maximize output.

Avocet SaaS

Avocet is a scalable and configurable production data management solution that enables you to manage your geothermal operations more efficiently, from anywhere. It delivers enterprise-grade capabilities through a flexible, subscription-based model that eliminates hardware procurement and complex IT setup.

Scale your solution as your operations grow, paying only for what you need when you need it. Experience the full power of Avocet's geothermal data management platform with minimal risk and maximum return.
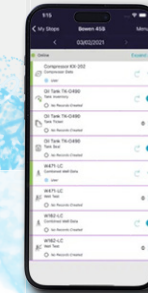
Remote control and monitoring

Operate smarter, from anywhere.

Connect, monitor and respond in real-time – no matter how remote your operation.

Avalon Edge Gateway (AEG)

AEG bridges legacy and modern infrastructure through RS-485/RS-232 and ethernet connectivity, ensuring smooth interoperability with existing Avalon ecosystems. Its local storage guarantees zero data loss during outages, while advanced cybersecurity protocols shield critical operations. LTE-enabled communication maintains uptime in remote sites, transforming aging systems into secure, adaptive, and future-ready networks.

IXMS RTU

This ultra-efficient, solar-ready Remote Terminal Unit is engineered for harsh geothermal sites. With efficient power consumption IXMS enables reliable control, even in off-grid locations.
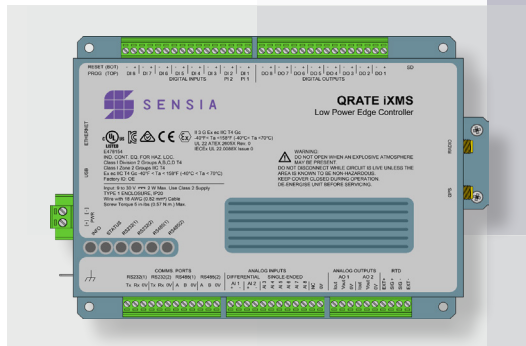
QRATE HCC2

Combining Remote Terminal Unit (RTU) capabilities with edge computing, QRATE HCC2 is a rugged, all-in-one platform built for high-temperature, remote geothermal environments.

Equipped with a Software Development Kit supporting Python and C# for custom app development and predictive maintenance logic to real-time control for turbines, generators, and flash tanks. Embedded AI/ML capabilities process data at the edge, reducing latency and enabling proactive fault detection without relying on constant connectivity.

Accurate Measurement

Precision-driven solutions

Flow Meters and Scanners

Achieve superior accuracy and reliability in monitoring critical process measurement variables at the edge with our advanced QRATE Scanner 3100 series flow computers and primary flow meters. Suited for superheated and saturated steam common to geothermal applications, these systems deliver critical data related to steam quality and process variables, such as pressure and temperature. Our durable NUFLO turbine meters are well-suited for measurement of the injection water, especially when coupled with our MC Synergy digital totalizer, which features condition-based monitoring.

Capex-saving Measurement System

Sensia's QRATE Scanner 3100 flow computer and the NUFLO DP Cone Meter are renown for extended reliable operation with minimal maintenance costs. An excellent choice for the primary meter in a geothermal application where deposits from the reservoir can foul other types of meters, the NUFLO DP Cone Meter dramatically accelerates the steam velocity at the cone to ensure the measurement section is clear of debris. These systems deliver robust performance in the harshest environments while driving cost efficiencies and compliance.

Sensia – your digitalization partner

We make the advantages of industrial-scale digitalization and seamless automation available to every energy company. From the digitalization of a single asset to the automation of your entire production operation, we solve your challenges one by one.

Our digitalization and automation solutions drive Intelligent Action by connecting, automating and optimizing every aspect of the energy production process.

Get in touch to discover how we can make your geothermal production smarter, safer, and more sustainable.

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