Your partner for sustainable growth in the geothermal power industry
Your Total Solution Partner for Geothermal Power

Visible results with actionable insights lead to system reliability.

Local service supported with global geothermal experience ensures system performance.

Delivering value through advanced modeling and predictive capabilities.

Custom-fit chemistry selected and fed to meet your system's needs.

Nalco Water Approach

We create and deliver value that aligns with your key business drivers.

Ensure Your Plant's Consistent, Sustainable Performance

Digital Innovation
- Geomizer™ Modeling
- 3D TRASAR™ Geothermal
- OMNI™ Performance Monitoring

Comprehensive Solutions
- Scale Control
- Corrosion Control
- Deposit Removal
- Cooling Water Treatment
- H₂S Abatement
Nalco Water Global Geothermal Impact

Serving over 40 Global Geothermal Plants

ASIA/PACIFIC
Scale Control

Problem:
A Philippines geothermal plant experienced near complete pipeline blockage due to scale formation at the mixing point of two wells. Scale accumulated at 0.7 inches per month and required manual removal. With no alternate diversion pipeline, productivity was down 15 MW causing lost revenue of US$21,600 per day. The plant sought a scale control solution for amorphous silica and corrosion products.

Solution:
- Geomizer™ Scenario Modeling
- Nalco Water Silica Inhibitor
- Nalco Water Iron Sulfide Dispersant

NORTH AMERICA
Online Well Cleaning

Problem:
A US geothermal plant experienced reduced electrical generation capacity due to a 75% reduction in injectivity to their injection well, which was constricted by deposit buildup. The facility endured ~$1,200/day in lost revenue opportunity. After an unsuccessful offline acid clean, the plant sought ways to restore well capacity and remove restrictive deposits.

Solution:
- Geomizer™ Scenario Modeling
- Nalco Water online chemical cleaning chemistry

MIDDLE EAST
Corrosion Control

Problem:
A binary geothermal plant in Turkey experienced a total shutdown one year into operation due to severe corrosion. Investigations confirmed corrosive failure across the plant with equipment damage that took nearly two years of shutdown time to replace. After losing two years of revenue-generating productivity and equipment repair costs, the customer sought improved corrosion management.

Solution:
- Geomizer™ Scenario Modeling
- Nalco Water corrosion inhibitor
- 3D TRASAR™ Technology for geothermal corrosion monitoring

NORTH AMERICA
Cooling Water – H₂S Abatement

Problem:
Release of H₂S gases from US geothermal plants presents both worker exposure and environmental emissions concerns. The Hudson Ranch power plant must meet an H₂S limit of 3.8 lb/hr—equal to an H₂S removal rate of at least 90-95%. Since typical H₂S treatment systems are capital intensive, maintenance intensive and unreliable, Hudson Ranch sought a different solution to meeting their H₂S limit.

Solution:
- Nalco Water Patented H₂S Abatement Program

AIR
262 tons / year reduction in H₂S emissions

COSTS
$100,000 / year in net total cost of operation for H₂S compliance

PRODUCTIVITY
Improved air quality for employees and local environment

ASSETS
Protected binary plant equipment from corrosive failure and replacement

COSTS
US$500,000 savings in avoided equipment cost replacement of heat exchanger tubes + 600m pipeline

SAFETY
US$50,000 savings in avoided labor and maintenance savings in corrosion repair

PRODUCTIVITY
US$50M productivity in MW generation through avoiding 6 months additional corrosion-related shutdown

COSTS
US$1M / year savings in revenue generating capacity of 15 MW header

ASSETS
US$7M / year savings in revenue generating capacity through restoring 1 MW productivity in injection well

SAFETY
US$400,000 / year increase in revenue generating capacity through avoiding 14 days mechanical cleaning downtime

COSTS
US$20,000 / year savings through avoiding mechanical cleanings

ASSETS
Protected 15 MW header from scale deposit buildup and corrosion risk

SAFETY
Improved safety and handling compared to acid cleaning and hazards of mechanical cleaning

PRODUCTIVITY
US$100,000 / year savings in reduced maintenance cost compared to acid cleaning of the injection wells

ASSETS
US$7,200 savings in revenue generation through avoiding offline shutdown time for typical cleaning methods

COSTS
US$200,000 / year savings in revenue generation through avoiding 54 days mechanical cleaning downtime
**Total Solution Partner to Meet Your Geothermal Needs**

**WELL TREATMENT**
Flow restriction in production or injection well systems decreases production and increases operating costs. Nalco Water optimizes well flow by removing deposits using safe, proprietary on-line/off-line strategies and by maintaining system cleanliness with advanced scale-inhibition technologies.

**Nalco Water Offerings:**
- Scale inhibition - CaCO$_3$, BaSO$_4$, FeSiO$_2$
- On-line deposit removal
- Corrosion inhibition
- Geomizer™ predictive modeling
- 3D TRASAR™ Geothermal corrosion monitoring

**TURBINE/CONDENSER SYSTEMS**
Nalco Water can help optimize the power output of your geothermal turbines while keeping you in environmental compliance.

**Nalco Water Offerings:**
- OMNI™ condenser performance monitoring
- On-line cleaning - silicate compounds, calcite
- H$_2$S abatement
- Steam system corrosion protection
- Turbine cleaning

**BRINE TREATMENT - FLASH & BINARY**
Nalco Water’s proprietary Geomizer modeling tool predicts brine solubility throughout the plant—informing advanced chemistry treatment strategies to inhibit scale deposits and corrosion.

**Nalco Water Offerings:**
- Scale inhibition - CaCO$_3$, CaSO$_4$, BaSO$_4$, FeSiO$_2$, SiO$_2$, Sb$_2$S$_3$
- Corrosion inhibition
- Geomizer™ predictive modeling
- 3D TRASAR™ Geothermal corrosion monitoring
- On-line deposit removal
- Steam system protection

**COOLING WATER SYSTEMS**
Nalco Water’s expertise in controlling scale, corrosion, and microbial growth in cooling water systems optimizes system performance at the lowest total cost. Our solutions save water and energy by proactively managing your cooling water processes with real-time data that prepares water for optimal condenser performance with increased cycles of concentration in both flash and binary operations.

**Nalco Water Offerings:**
- 3D TRASAR™ Cooling Water Technology
- Scale control
- Corrosion control
- Microbial control
- H$_2$S abatement - patented
- Treatment of condensate make up water sources (high ammonia / dissolved gases)

*Green indicates digital offerings*