Spotfire® for Energy - Production Optimization

Watch every well, catch every variance, and pick the right intervention.

Executive Summary

Production optimization changes as a well ages: early-time performance, mid-life decline, and late-life operating constraints each call for different decisions. But rate and pressure telemetry, well tests, lift and choke settings, well condition, and economic thresholds sit in surveillance systems, models, and spreadsheets, so deviations surface late and interventions are delayed. Spotfire Industry Pro connects them in one visual environment, alongside the surveillance systems and engineering models your teams already use. Engineers watch live and historical signals against expected behavior, isolate exactly where performance shifted, and see why wells, zones, and assets behave differently. Spotfire AI works inside that same analysis, so engineers can ask in their own words and build faster while every step stays visible, editable, and open to challenge. Rank interventions by value, and act before small variances become lost production.

Value

Catch variance early
See rate, pressure, and lift deviations against expected behavior as they emerge.
Understand why wells differ
Performance, well condition, and economics in one view.
Pick the right intervention
Rank interventions by value before committing crews and capital.
Ask, then verify
Describe the analysis in your own words. Keep every step visible, editable, and open to challenge.

What's new in Spotfire this Quarter

SPOTFIRE AI
Ask Spotfire, Skills, and MCP connections
Describe the analysis in plain language, capture methods as Skills, and connect to maintenance planning and ticketing systems.

TIME SERIES
AVEVA PI connector and time-series cleansing
Query PI tags and Asset Framework hierarchies directly, with enhanced PI connectivity and AI-augmented time-series cleansing.

DECLINE
Arps decline curves and range-based marking
Model depletion stages, recalculate reserves as you filter, and drag across a decline window to isolate where performance shifted.

ACCELERATORS
Production Equipment Surveillance Accelerator
A persona-driven, Community-supported application that captures well pump telemetry and flags anomalies.

Use Case Specific Functionality

Connectors
AVEVA PI, OPC UA, Spotfire Data Streams, SAP HANA, Esri ArcGIS, S&P Global and Enverus via Data Virtualization, Snowflake and Databricks push compute

Visualizations
Arps Decline Curve Analysis, Reference Elements and Statistics Layers, Quality Control Charts, Graphical Table with Sparklines, Map Chart, 3D Surface and Line Chart, Task and Resource Timeline, Parallel Coordinate Plot

Data Functions
Time Series Smoothing, Resampling and Dynamic Time Warping, Geospatial Suite, Outlier Detection (Isolation Forest, Local Outlier Factor, Autoencoder), Holt-Winters Forecasting, Statistica Algorithms, Python and R Packages

Actions
Analyze Well Trajectory, Visualize Quality Control Charts, Analyze Time Series Correlations, Smooth Time Series, Normalize Time Series, Handle Missing Values in Time Series

Accelerators
Persona-driven applications for production engineers, artificial lift engineers, and field operations supervisors: Production Equipment Surveillance Accelerator

Spotfire AI
Ask Spotfire, Insight Agents, Skills, MCP connections, time-series data cleansing, Agent Registry

Spotfire AI for Production Optimization: Ask. Augment. Act.

Ask: investigate in your own words

- Describe what you need, from preparing data to building views with drill-down, and Ask Spotfire builds it inside your analysis.
- Ask about your data, have a visualization or page explained, or update many visuals at once.
- Everything Ask Spotfire creates is standard Spotfire content, so you can inspect, edit, and challenge it.

Augment: build faster, and trust the result

- Insight Agents surface trends, patterns, and anomalies in the data you mark, with recommended next steps.
- Skills capture a method once as a plain-language workflow anyone on the team can run, and include time-series data cleansing.
- Add new Insight Agents from the Agent Registry between releases, or build your own around company rules and experience.

Act: close the loop from insight to action

- MCP connections link Ask Spotfire, agents, and skills to systems that expose an MCP server, such as maintenance planning and ticketing.
- Retrieve context or trigger actions without leaving the analysis, with the expert deciding what happens.
- You choose the AI model and which groups can use it, and usage is logged and attributable.

Selected Workflows



Surveillance and Anomaly Detection

- Query AVEVA PI tags and Asset Framework hierarchies directly
- Compare rates, pressures, and temperatures against expected behavior, with limits as reference elements
- Detect outliers with Isolation Forest, local outlier factor, and autoencoder functions
- Smooth noisy signals and fill gaps with time-series cleansing
- Watch control limits and violations on quality control charts
- Scan every well with sparklines in a graphical table
- Start from the Production Equipment Surveillance Accelerator



Production Life Cycle Analysis

- Follow every well from startup through decline on one time axis
- Drag across a decline window with range-based marking to isolate where performance shifted
- Fit exponential, hyperbolic, and harmonic Arps declines, with terminal limits to avoid overestimating reserves
- Recalculate reserves as you filter and mark, and export results to data tables
- Overlay well tests, operating conditions, and economic thresholds on the decline curve
- Compare many wells side by side in a trellis
- Find analog decline behavior with dynamic time warping



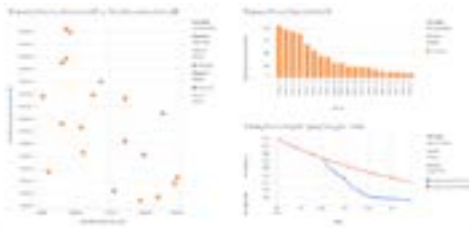
Artificial Lift and Choke Optimization

- Analyze pressures, temperatures, and current draws on lift systems to anticipate failures before they disrupt output
- Track decline, lift performance, and choke settings together to surface non-productive time risk early
- Monitor downtime reasons and resolve issues faster
- Correlate lift and choke changes to rate response with cross-correlation
- Train predictive maintenance models with time series and machine learning data functions
- Benchmark performance against peers to spot efficiency gaps



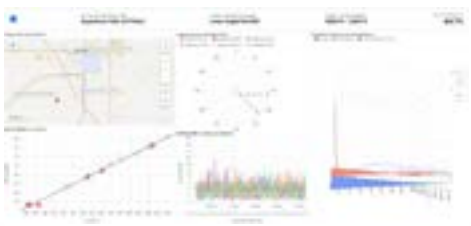
Underperformer Diagnosis

- Rank wells by variance from expected performance, using historical baselines and models
- Understand why wells, zones, and assets behave differently, not just that they do
- Overlay operational events, spatial context, and well history to explain a deviation
- Map production hotspots and underperformers on multi-layer maps
- Aggregate wells by polygon to compare areas and benchmark
- Isolate drivers with multivariate analysis, clustering, and feature selection



Intervention and Workover Prioritization

- Rank intervention candidates by expected value against cost and economic thresholds
- Combine production and pump reliability data to select workovers within budget
- Show which wells clear an economic cutoff with reference elements
- Plan interventions on a shared timeline with rig and crew resources
- Send the decision to maintenance planning or ticketing systems through MCP
- Track results against the forecast as new production posts



Trajectory Optimization

- Analyze inclination, azimuth, and measured depth in coordinated 2D and 3D views
- Compare trajectory choices against production performance, reservoir response, and spatial context
- Model trajectory and lift strategy adjustments against plan with the Statistica algorithm library
- Reduce variability in outcomes by comparing wells and pads on the same basis
- Feed production response back into future well placement decisions
- Compare actual data with forecast trends in 3D surface and line charts

Enterprise deployment

Discover Insights. Surface Risks Early. Drive Operations Forward.

Spotfire unites geoscience, engineering, and operational data across the energy value chain, turning specialist-tool silos into one governed platform, with native analytical depth, AI-augmented investigation, and the agility to solve energy's most complex challenges faster. Spotfire AI is built in, with your choice of AI model, group-level control over who can use it, and usage that is logged and attributable.

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