Spotfire® for Energy - Operational Excellence

Make risks visible across systems early to maintain performance and stability

Executive Summary

Operational excellence in upstream energy is not about reacting to failures; it is about anticipating them. But equipment degradation, capacity limits, and operational risk emerge gradually, with signals scattered across historians, maintenance systems, and spreadsheets, so by the time an issue shows up in a report, disruption has already occurred. Spotfire Industry Pro connects condition, performance, and capacity insight in one visual environment, alongside the control systems and maintenance platforms your teams already use. Engineers see forecast and capacity limits in one continuous picture, catch deviations early, and weigh equipment health, production impact, and economics together before deciding what to fix first. 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. Detect deviations, bottlenecks, and emerging issues early, and keep production flowing.

Value

See risk forming
Condition, performance, and capacity in one visual environment.

Balance forecast to capacity
See bottlenecks before they become constraints.

Prioritize what matters
Weigh degradation, risk, and economics together.

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.

CONNECTIVITY
AVEVA PI connector, enhanced in 15.1
Native PI access with Asset Framework hierarchies, plus enhanced PI and SAP HANA connectivity and time-series cleansing.

TRENDS
Statistics layer and reference elements
Calculate degradation and risk metrics on the trend, and set capacity limits, thresholds, and maintenance windows on time series.

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

Use Case Specific Functionality

Connectors
AVEVA PI, OPC UA, Spotfire Data Streams, SAP HANA, Cognite Data Fusion, Esri ArcGIS, Snowflake and Databricks push compute

Visualizations
Reference Elements and Statistics Layers, KPI Chart and Bullet Graph, Quality Control Charts, Graphical Table with Sparklines, Map Chart, Combination Chart (Pareto), Task and Resource Timeline, Arps Decline Curve Analysis

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 Time Series Correlations, Visualize Quality Control Charts, Smooth Time Series, Normalize Time Series, Handle Missing Values in Time Series, Visualize Missing Data

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 Operational Excellence: 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

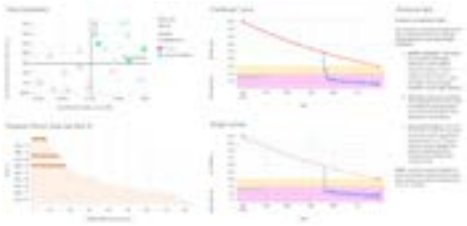
- MCP connections link Ask Spotfire, agents, and skills to systems that expose an MCP server, such as maintenance planning and ticketing.
- Retrieve context or trigger actions without leaving the analysis, with the expert deciding what happens.
- You choose the AI model and which groups can use it, and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

Selected Workflows



Forecast-to-Capacity Balancing

- Pull historian data straight into the forecast-versus-capacity view with the native AVEVA PI connector
- See the production forecast and the facility or network constraint in one continuous picture
- Set capacity limits as reference elements on the forecast, so a breach is visible at a glance
- Place equipment condition and spatial context beside the constraint on multi-layer maps
- Forecast wells with Arps decline curves, and recalculate as you filter and mark
- Spot where bottlenecks will form before they become constraints
- Adjust operating or development plans before production is impacted



Workover Prioritization

- Compare workover candidates in context: equipment health, production impact, and economics
- Calculate degradation and risk metrics directly on the well trend with the statistics layer
- Combine production and pump reliability data to select workovers within the maintenance budget
- Weigh production contribution and economic value, not just the latest failure
- Show which wells clear an economic cutoff with reference elements
- Plan interventions on a shared timeline with rig and crew resources



Equipment Condition and Maintenance

- Bring historian records, thresholds, and contributing factors into one view
- Detect early signs of degradation with Isolation Forest, local outlier factor, and autoencoder functions
- Train predictive maintenance models with time series and machine learning data functions
- Smooth noisy signals and fill gaps with time-series cleansing
- Watch control limits and violations on quality control charts
- Start from the Production Equipment Surveillance Accelerator for well pump telemetry



Facility and Network Surveillance

- Monitor wells, facilities, and gathering networks in one view, combining real-time and static data
- Stream real-time data with Spotfire Data Streams alongside PI and OPC UA sources
- Map equipment and network assets with multi-layer maps and Esri layers
- Compare throughput against design capacity with KPI charts and bullet graphs
- Scan every asset with sparklines in a graphical table
- Align response with a shared view across operations, maintenance, and engineering



Downtime and Deferral Analysis

- Track downtime reasons and resolve issues faster
- Rank the causes of lost production with Pareto charts
- Mark a time range to isolate exactly when an event began
- Overlay maintenance periods and shifts on the trend as reference boxes
- Quantify deferred production against the forecast
- Find recurring patterns with cross-correlation across equipment and wells



Risk and Integrity Management

- Show integrity management data and thresholds beside historian records
- Flag threshold breaches early and rank assets by risk
- Coordinate responses across disciplines from a single view
- Send follow-up actions to maintenance planning or ticketing systems through MCP
- Capture repeatable, data-driven decision workflows as Skills
- Keep every step visible, editable, and auditable under your governance

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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