Spotfire® for Manufacturing - Process Integrity

Built for high-stakes process stability, control, and continuous improvement

Executive Summary

Manufacturing processes are influenced by hundreds of variables across tools, chambers, recipes, and production steps, and keeping performance stable and repeatable means understanding how variation emerges, propagates, and affects output. But process signals sit across control systems, metrology tools, inspection platforms, and production data that are analyzed separately, so subtle drift, interactions, and loss of control are easy to miss. Spotfire Industry Pro brings them into one unified industrial analytics environment, building on the systems your teams already rely on. Engineers see control and spec limits on the live process trend, compare tools and chambers side by side, and trace scrap and yield loss to where variation was introduced. 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 drift early and keep processes within control.

Value

Catch process drift early
Control and spec limits on the live process signal.

Process and Tool correlations
Find where variation is introduced.

Understand interactions
Test many variables together, not one at a time.

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 your data catalogs and other systems.

SKILLS AND AGENTS
Equipment commonality and time-series cleansing
Skills and agents for equipment commonality analysis and time-series data cleansing, built for process and equipment history.

REFERENCE ELEMENTS
Control limits, spec limits, and nested roll-ups
Put control and spec limits on the process trend, and roll a yield line up correctly across lot, tool, and chamber.

ACCELERATORS
Sputter Deposition APC Accelerator
A persona-driven, Community-supported application for run-to-run control that tackles deposition rate drift.

Use Case Specific Functionality

Connectors
AVEVA PI, OPC UA, Spotfire Data Streams, Oracle, Microsoft SQL Server, Vertica, Snowflake and Databricks push compute, Spotfire Data Virtualization

Visualizations
Reference Elements and Statistics Layers, Quality Control Charts, Violin and Histogram enhanced Box Plots, Trellis with Paging, Parallel Coordinate Plot, Heat Map, Wafer Map

Data Functions
Statistical Testing (ANOVA, Levene, Brown-Forsythe, Mann-Whitney U), Process Capability Analysis, Process Invariant Variables, Principal Components Analysis, Partial Least Squares, Outlier Detection, Time Series Smoothing and Dynamic Time Warping, Statistica Algorithms, Python and R Packages

Actions
Visualize Quality Control Charts, Analyze Time Series Correlations, Visualize Correlations, Smooth Time Series, Normalize Time Series, Visualize Missing Data

Accelerators
Sputter Deposition Advanced Process Control Accelerator for thin films process, metals process, and controls engineers

Spotfire AI
Ask Spotfire, Insight Agents, Stats-Guided AI, Skills, MCP connections, Agent Registry

Spotfire AI for Process Integrity: 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, and new agents arrive through the Agent Registry between releases.
- Skills capture a method once as a plain-language workflow that anyone on the team can run.
- Stats-guided AI recommends the distribution analysis method based on the shape of your data.

Act: close the loop from insight to action

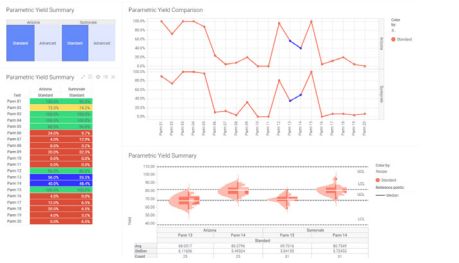
- MCP connections link Ask Spotfire, agents, and skills to systems that expose an MCP server, such as data catalogs and ERP.
- Retrieve context or trigger actions without leaving the analysis, with the expert deciding what happens.
- You choose the AI model and which groups can use it, and usage is logged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

Selected Workflows



Advanced Process Control

- Put control and spec limits directly on the process trend with reference layers
- See an out-of-control point the instant it occurs
- Combine historical and current data to refine control strategies
- Compare a historical strategy against a simulated run-to-run strategy in what-if analysis
- Model EWMA feedforward and feedback adjustments to compensate for drift
- Estimate the process capability gain before you automate



Process Yields

- Analyze yield in the context of process conditions
- Correlate yields across tools, lots and wafers
- Roll a yield reference line up correctly across lot, tool, and chamber with nested aggregations
- Show yield rates and defect percentages in the box plot statistics table
- Review one lot at a time with trellis paging
- Pinpoint where variation is introduced and target the fix



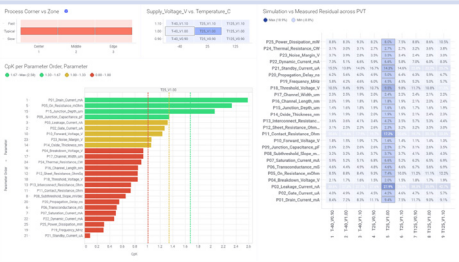
Root Cause Analysis of Scraps

- Bring process data, equipment signals, and production outcomes into a shared context
- Click a tool or chamber panel header to mark every scrap event for that group at once
- Ctrl+click to mark several panels together
- Correlate contributing factors across equipment logs and production events
- Find what tools have in common with equipment commonality analysis*
- Accelerate root-cause analysis and cut scrap



Process Characterization

- Explore process data across many variables to see how parameters change outcomes
- See the full output distribution with violin plots and kernel density estimation
- Catch multimodal or skewed behavior before qualification
- Compare experiments and historical data in one view
- Check distribution shape with Anderson-Darling, Shapiro-Wilk, and Kolmogorov-Smirnov tests
- Define optimal operating conditions with Design of Experiments in Statistica



Process Design Interactions

- Evaluate many variables together, not one relationship at a time
- Identify which interactions matter with built-in ANOVA and variance-comparison tests
- Compute tests directly in the visualization beside the process data
- Reduce dimensions with principal components analysis and partial least squares
- Rank critical parameters with feature selection functions
- Drop constant variables with the process invariant variables function



Drift Detection and Tool Matching

- Monitor SPC control limits, capability indices, and drift patterns together
- Compare tool and chamber behavior side by side
- Detect multivariate drift across tools and chambers with outlier detection functions
- Watch X and R/S charts with violation highlighting
- Align run signatures with dynamic time warping
- Stream process signals from PI, OPC UA, and Spotfire Data Streams

Enterprise deployment

Discover Insights. Surface Risks Early. Drive Operations Forward.

Spotfire unites process, equipment, metrology, and test data across the entire manufacturing flow, turning specialist-system data silos into one governed platform, with native analytical depth, AI-augmented investigation, and the agility to solve high-tech manufacturing's most complex challenges faster. Deploy high-impact workflows across global manufacturing networks, in the cloud, on-premises, or hybrid, with lineage and governance behind every analysis. Spotfire AI is built in, with your choice of AI model, group-level control over who can use it, and logged, attributable usage.

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