Spotfire® for Manufacturing - Product Optimization

Built for high-stakes product quality, test efficiency, and performance decisions

Executive Summary

Product performance in high-tech manufacturing is shaped by interactions between materials, process conditions, and test environments, and variation can emerge anywhere from wafer fabrication to final test. But the signals needed to understand it are spread across test systems, process data, inspection results, and engineering analyses that are reviewed separately, so it is hard to see how variation affects performance and where to improve. Spotfire Industry Pro brings them into one unified industrial analytics environment, building on the systems your teams already rely on. Engineers review test results as full distributions rather than summary numbers, cut redundant test steps without losing defect coverage, and trace failures back to their origin. 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. Identify performance drivers, evaluate trade-offs, and improve outcomes with confidence.

Value

Find the yield drivers
Full distributions, not just a mean and a spread.

Test smarter
See which test steps add defect coverage, and which do not.

Trace failures to the source
Failure rates that hold up across lot, wafer, and die.

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.

STATS-GUIDED AI
Distribution methods recommended from your data
AI recommends the distribution analysis method based on the shape of your data, with Mann-Whitney U test functions.

DISTRIBUTIONS
Violin plots and show-all-points box plots
See the full shape of test result distributions, with raw test points beside the statistical summary.

REFERENCE ELEMENTS
Nested aggregations and column matching
Roll a failure line up across lot, wafer, and die, and apply spec limits from a separate table to every test parameter.

Use Case Specific Functionality

Connectors
Oracle, Microsoft SQL Server, Vertica, Teradata, Snowflake and Databricks push compute, Spotfire Data Virtualization, ODBC and JDBC, CSV and Excel files

Visualizations
Box Plot with All Data Points, Violin Plot, Reference Elements and Statistics Layers, Wafer Map, Pareto Chart, Parallel Coordinate Plot, Heat Map, Probit Plot

Data Functions
Statistical Testing (Mann-Whitney U), Distribution Characterization, Process Capability Analysis, Feature Selection, Partial Least Squares, Machine Learning and Clustering, Design of Experiments with Statistica, Python and R Packages

Actions
Visualize Correlations, Visualize Quality Control Charts, Visualize Missing Data, Create Wafer Map

Accelerators
Parametric Correlation templates for product and yield engineers

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

Spotfire AI for Product 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.

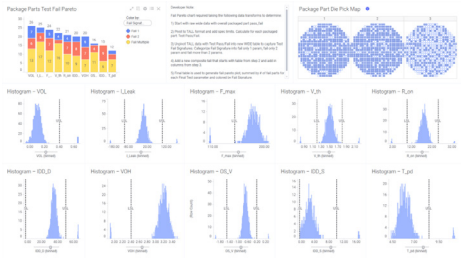
Augment: build faster, and trust the result

- Insight Agents surface trends, patterns, and anomalies in the data you mark, with recommended next steps, 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



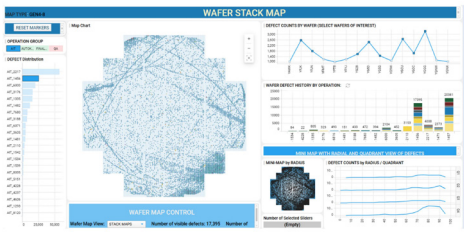
Package Test Yield Optimization

- Bring test, binning, and process data into a single view
- Review full distributions with violin plots and kernel density estimation
- Spot skewed or multimodal behavior tied to a process variable
- Correlate performance with upstream process variables to find yield drivers
- Rank yield loss by bin and lot with Pareto charts
- Review lots one at a time with trellis paging



Product Test Time Reduction

- Analyze test results to find redundant or low-value test steps
- Show every raw test point beside the statistical summary with box plots
- See which test steps add defect coverage and which do not
- Weigh test coverage against test time before removing a step
- Test whether differences are real with t-test, ANOVA, Kruskal-Wallis, and Mann-Whitney U functions
- Keep confidence in quality with control limits on quality control charts



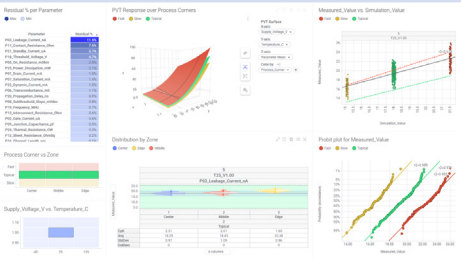
Product Failure Analysis

- Explore failure modes alongside process conditions and test results in one context
- Roll a failure reference line up across lot, wafer, and die with nested aggregations
- Correlate failure drivers with process data, inspection results, and history
- See where failures cluster spatially with wafer maps
- Rank drivers with feature selection, partial least squares, and random forest functions
- Accelerate root-cause analysis and time to resolution



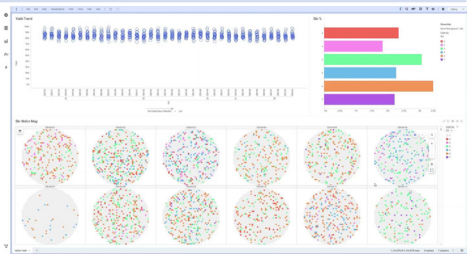
Specification and Process Windows

- Connect DOE outputs and process windows to spec limits and reliability outcomes
- Apply spec limits from a separate table to every test parameter by matching on column names
- Show targets, limits, and acceptance ranges as reference lines, bands, and boxes
- Assess process capability against spec limits
- Evaluate design trade-offs before refining production parameters
- Analyze designed experiments with Statistica



Product Characterization and Reliability

- Characterize devices across temperature, voltage, and thermal conditions with shmoo analysis
- Correlate product behavior with process variables and explore distributions interactively
- Check distribution shape with Anderson-Darling, Shapiro-Wilk, and Kolmogorov-Smirnov tests
- Predict burn-in and reliability outcomes with machine learning data functions
- Surface reliability and performance risks early
- Connect design, test, and manufacturing data in one analysis



Performance Driver Analysis

- Compare good and bad lots, wafers, or runs across high-dimensional data
- Identify the process signatures behind yield and reliability issues with machine learning
- Reduce dimensions with principal components analysis and partial least squares
- Visualize correlation matrices across parametric tests
- Compare many parameters at once in parallel coordinate plots
- Turn advanced models into explainable insights

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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