Spotfire® for Manufacturing - Yield Improvement

Built for high-stakes yield optimization, defect analysis, and quality decisions

Executive Summary

Yield and quality depend on how variation propagates across wafers, lots, tools, and process steps. But the signals that explain it, from inspection systems, metrology tools, wafer sort and parametric test data, equipment and MES context, and reliability analysis, are analyzed separately: wafer maps in one tool, test data in another, equipment and MES logs elsewhere. Spotfire Industry Pro brings them into one shared analytical environment, building on the systems your teams already rely on. Engineers explore spatial, parametric, and hierarchical relationships together, rank defect types by measured yield impact, and trace yield loss back to its source. 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. Find defect patterns faster, and resolve quality issues sooner.

Value

See the wafer and the data together
Wafer maps, test results, and process context in one view.

Rank what costs yield
Kill ratios and defect impact, calculated in the visualization.

Trace loss to the source
From spatial pattern to tool, step, and 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.

WAFER AI
Wafer data preparation and pattern detection
Add zones and check coordinate alignment on die-level data today, with wafer pattern detection* and a pattern advisor in Spotfire 15.1.

WAFER MAPS
Wafer map visualization
Overlay die, defect, and metrology layers in one wafer-aware view, with statistics layers, exposure fields, and assisted setup in Spotfire 15.1.

ACCELERATORS
Wafer Zone Analysis and Pattern Classification
Persona-driven, Community-supported applications that bridge raw die-level wafer data and root-cause troubleshooting.

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

Data Functions
Statistical Testing (Mann-Whitney U), Classification Modeling, Random Forest and Boosted Trees, Hierarchical and K-Means Clustering, Feature Selection, Principal Components Analysis, Outlier Detection, Statistica Algorithms, Python and R Packages

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

Accelerators
Wafer Zone Analysis and Wafer Pattern Classification Accelerators for yield, process integration, and failure analysis engineers

Spotfire AI
Ask Spotfire, Insight Agents (Data Preparation for Wafer Data), Wafer pattern advisor, Skills, MCP connections, Agent Registry

Spotfire AI for Yield Improvement: 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.

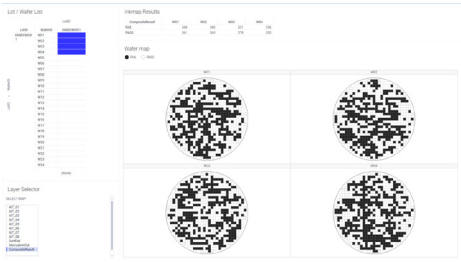
Augment: build faster, and trust the result

- 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

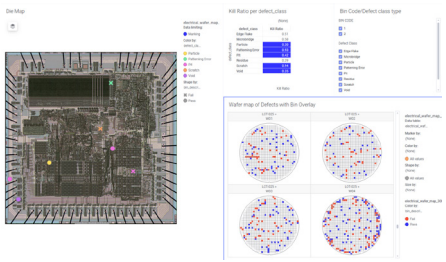
- MCP connections link Ask Spotfire, agents, and skills to systems that expose an MCP server, such as data catalogs and ERP.
- Retrieve context or trigger actions without leaving the analysis, with the expert deciding what happens.
- You choose the AI model and which groups can use it, and usage is logged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

Selected Workflows



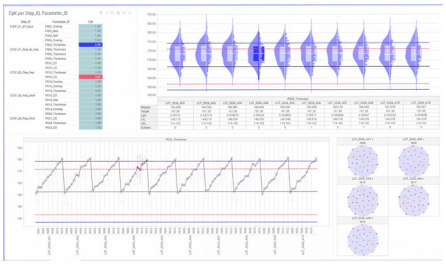
Assembly Pick Map

- Visualize wafer maps, pick maps, and test outcomes together in a single analytical view
- Correlate spatial defect patterns with assembly performance and downstream yield
- Select every die in a pick-map region with one click on a trellis header
- Compare trellised wafers side by side on the wafer map
- Review one lot at a time with trellis paging
- Optimize picking strategies to improve yield



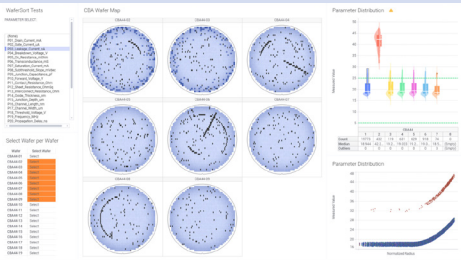
Kill Ratio and Yield Prediction

- Analyze kill ratios and correlate defect types with yield outcomes
- Calculate kill ratios and yield impact inside the visualization with the statistics layer
- Rank defect types and test conditions by measured yield impact
- Compare best and worst populations to isolate what drives the difference
- Test the difference with t-test, ANOVA, Kruskal-Wallis, and Mann-Whitney U functions
- Predict the yield effect of process or test changes with machine learning



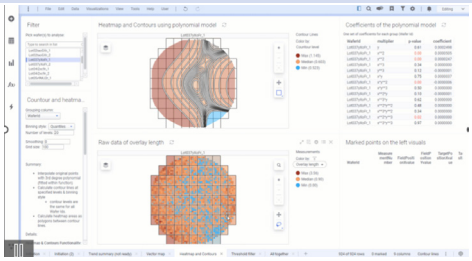
Reliability Testing

- Correlate reliability test results with process conditions, defect data, and electrical test outcomes
- Hover over a threshold to see the linked test values with reference element tooltips
- Spot early failure indicators before they show up in long-term behavior
- Show limits and acceptance ranges as reference lines and bands
- Check distribution shape with normality tests and Kolmogorov-Smirnov comparison
- Connect an early signature to a later outcome without cross-referencing systems



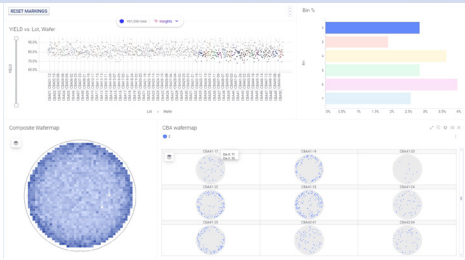
Failure and Root Cause Analysis

- Overlay die, defect, and metrology layers in one wafer-aware view with the wafer map
- Replace lining up three exports by wafer ID
- Explore defect data, wafer maps, test results, and process conditions together
- Find categorical and spatial patterns alike
- Rank root causes with commonality analysis and Pareto charts
- Accelerate root-cause analysis and corrective action



Wafer Zone and Spatial Signatures

- Split wafers into radial and angular zones with no code
- Add zones and flag coordinate mismatches with the Data Preparation for Wafer Data agent
- Compare zone profiles across wafers and lots
- Spot angular and zone-profile anomalies that can point to chuck tilt or consumable degradation
- Detect wafer patterns with wafer pattern detection
- Classify signatures with the Wafer Pattern Classification Accelerator



Defect and Bin Analysis

- Analyze bin distributions and sort bin results with electrical test data
- Correlate inline inspection and metrology with final yield
- Rank bin and defect categories with Pareto charts
- Compare wafer sort and parametric test data in one view
- Add equipment and MES context to trace loss to a tool, step, or time
- Cluster wafers by behavior with clustering functions

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.

Spotfire® is a visual industrial analytics platform that combines advanced analytics, industry-specific visualizations, and AI to help experts turn complex industrial data into trusted, actionable intelligence. Cloud Software Group, Inc. All rights reserved. Spotfire®, the Spotfire logo, Spotfire® Analytics, Spotfire® Industry Pro, Spotfire® Enterprise, Spotfire Enterprise Advanced Data Services, and Spotfire® Enterprise Data Streams are trademarks or registered trademarks of Cloud Software Group, Inc. and/or its subsidiaries in the United States and /or other countries. All other product and company names and marks mentioned in this document are the property of their respective owners and are mentioned for identification.