

“PFM shows us where production really slows down, where rework tends to happen and which improvements actually deliver results.”
Operations Director, Semiconductor Manufacturer

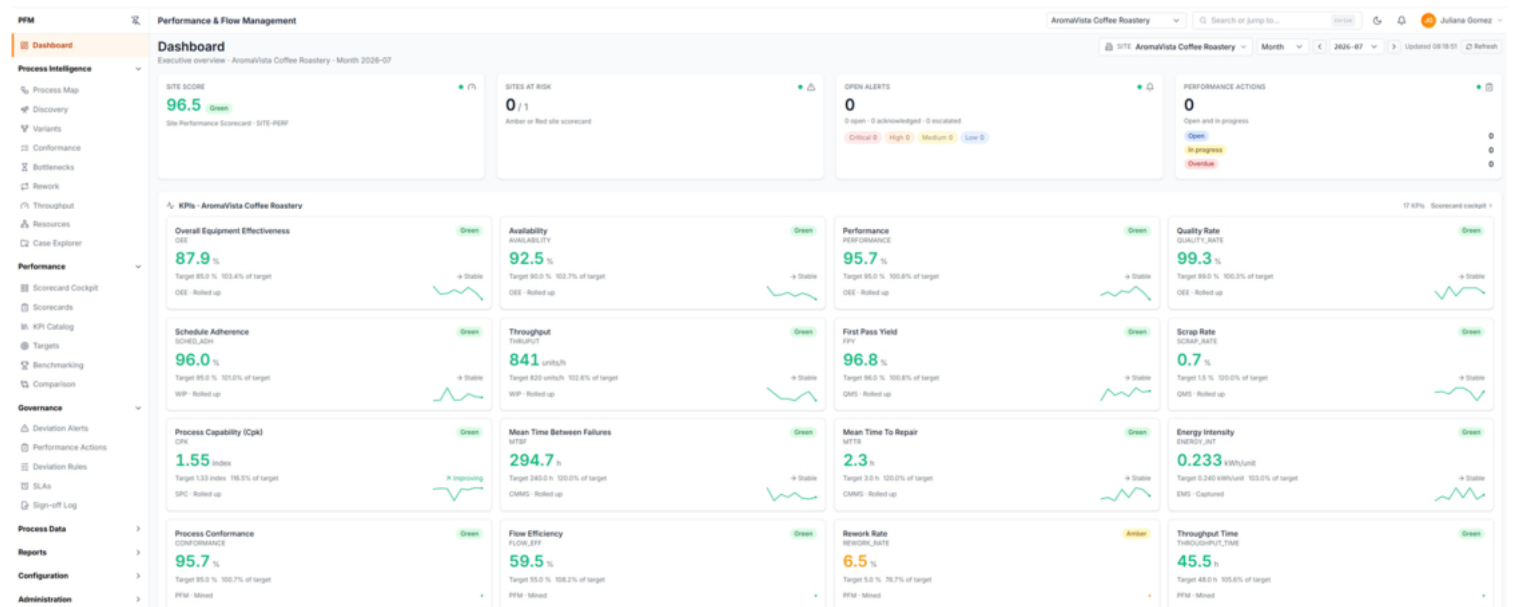


DATASHEET

Performance & Flow Management

See the Flow. Measure the Gap. Prove the Gain.

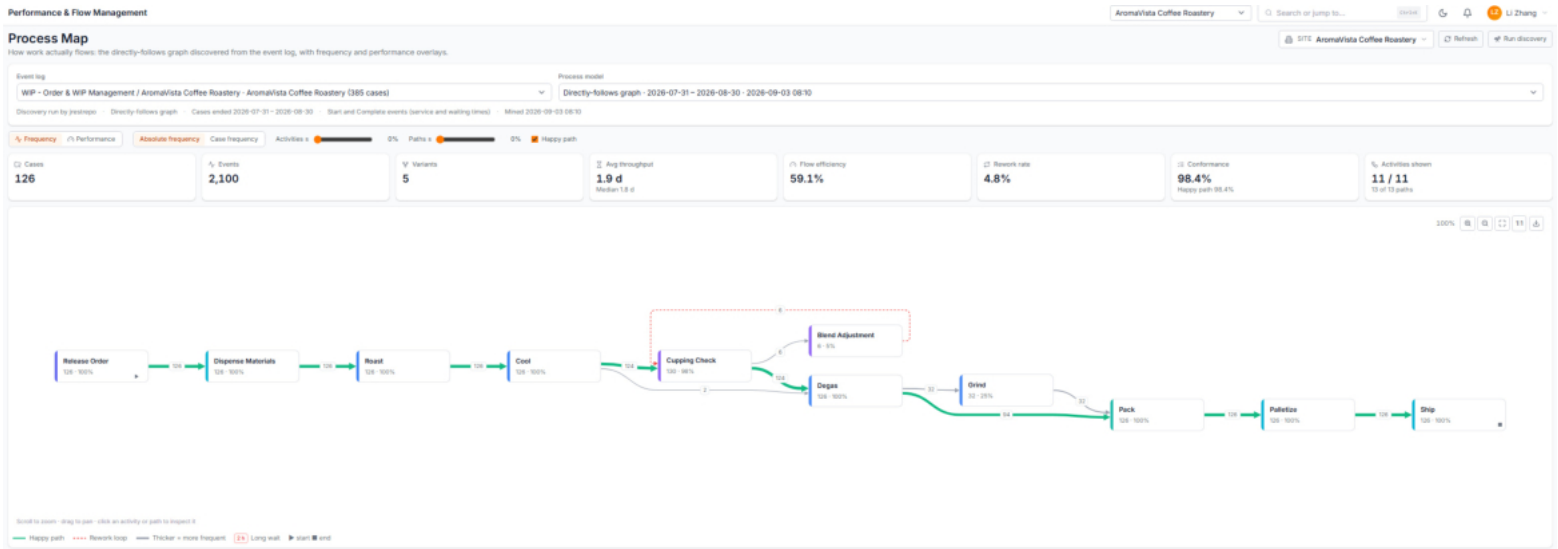
Manufacturers generate more production data than ever, yet the critical questions stay unanswered: How does work actually flow through the plant? Where do orders wait, loop back, or deviate from the approved routing? Which site, line, or machine is underperforming - and is anyone acting on it? Dashboards show outcomes but hide causes, while manual process audits are slow, subjective, and outdated the moment they are finished. The LOGICAL SYSTEMS Performance & Flow Management (PFM) application closes this gap by uniting process mining with enterprise performance management on the Inductive Automation® Ignition platform. PFM reconstructs every production case from event data, discovers the process map as it really runs, and pinpoints bottlenecks, rework loops, and deviations automatically. ISO 22400-aligned KPIs, weighted scorecards, and internal benchmarking turn raw signals into a single performance language across every site, while governance rules watch the process continuously, raising SLA-tracked alerts and driving corrective actions whose effectiveness is measured. The result is a closed loop from insight to verified improvement.



PFM provides the performance backbone for data-driven operations across discrete, process, and batch manufacturing. It ingests events from execution, quality, maintenance, and energy systems, validates and normalizes them, and replays every case against published reference models. Role-based views serve operators, supervisors, engineers, and executives, while electronic signatures and a complete audit trail support regulated environments. The outcome is transparency that scales: every plant measured the same way, every deviation visible, and every improvement verified.

Smarter Operations Visibility

Complete Process Intelligence & Performance Solution



Process Discovery

- Automatic process discovery from event logs
- Directly-follows graph and heuristic miner algorithms
- Process map with frequency and performance overlays
- Variant ranking and happy-path identification
- Case Explorer with event timeline replay per case

Flow Analytics

- Bottleneck ranking by handoff waits and service times
- Rework and loop detection tied to cases and variants
- Throughput-time distribution and flow efficiency
- Resource handoff matrix across teams and work centers

Conformance & Reference Models

- Versioned reference routings published with e-signatures
- Conformance checking with fitness and precision scores
- Skipped, inserted, out-of-order and unauthorized steps
- Immutable baselined runs for audit-proof change control

KPIs, Targets & Scorecards

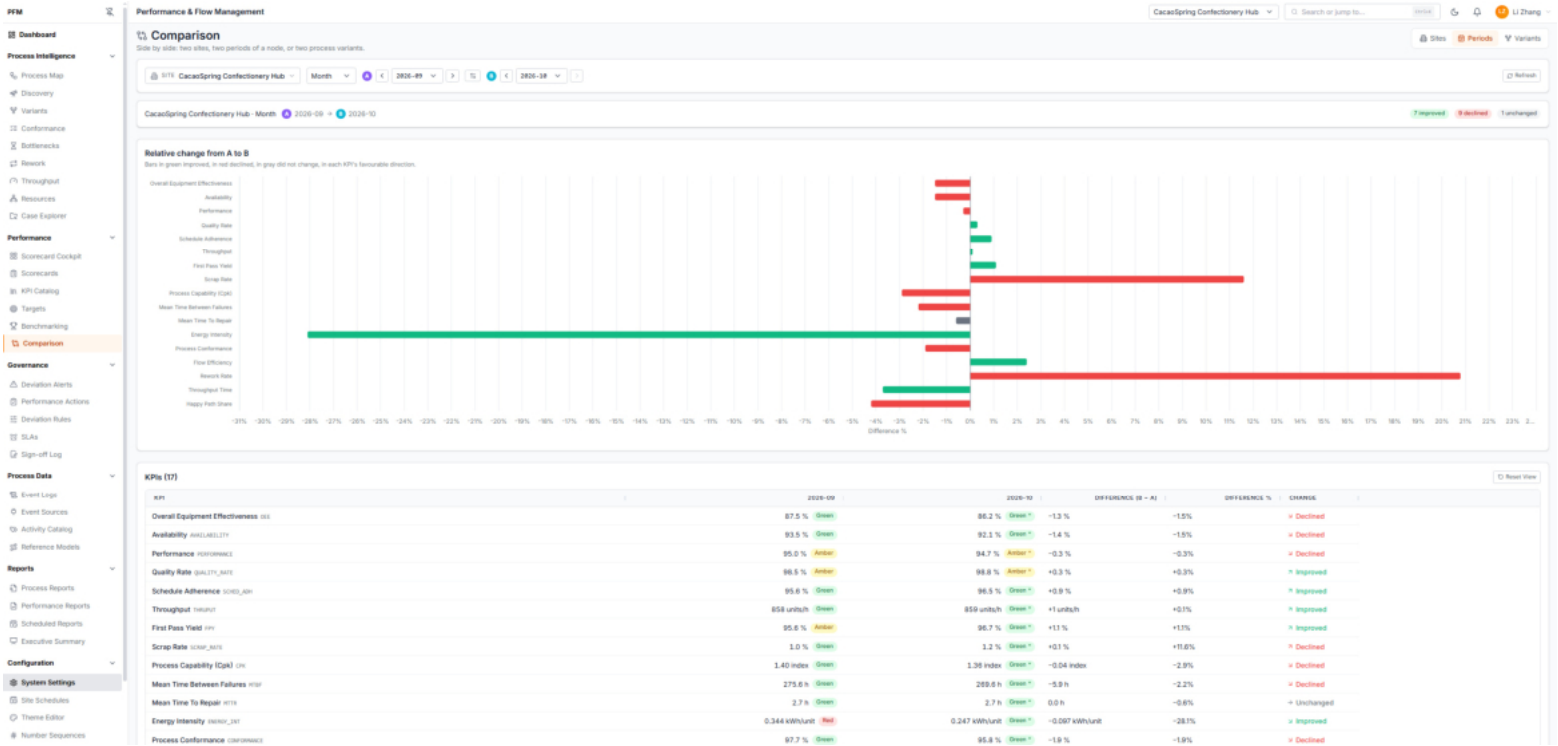
- Numerous built-in KPIs referenced to ISO 22400
- Collected and process-mined KPIs in one catalog
- Targets, stretch goals and RAG thresholds per node
- Weighted scorecards from machine to enterprise level
- Scorecard Cockpit with trends, gaps and peer ranking

Benchmarking & Comparison

- League tables ranking sites, lines and machines per KPI
- Percentiles, gap-to-target, gap-to-best and bands
- External industry reference values per KPI
- Side-by-side comparison of sites, periods or variants

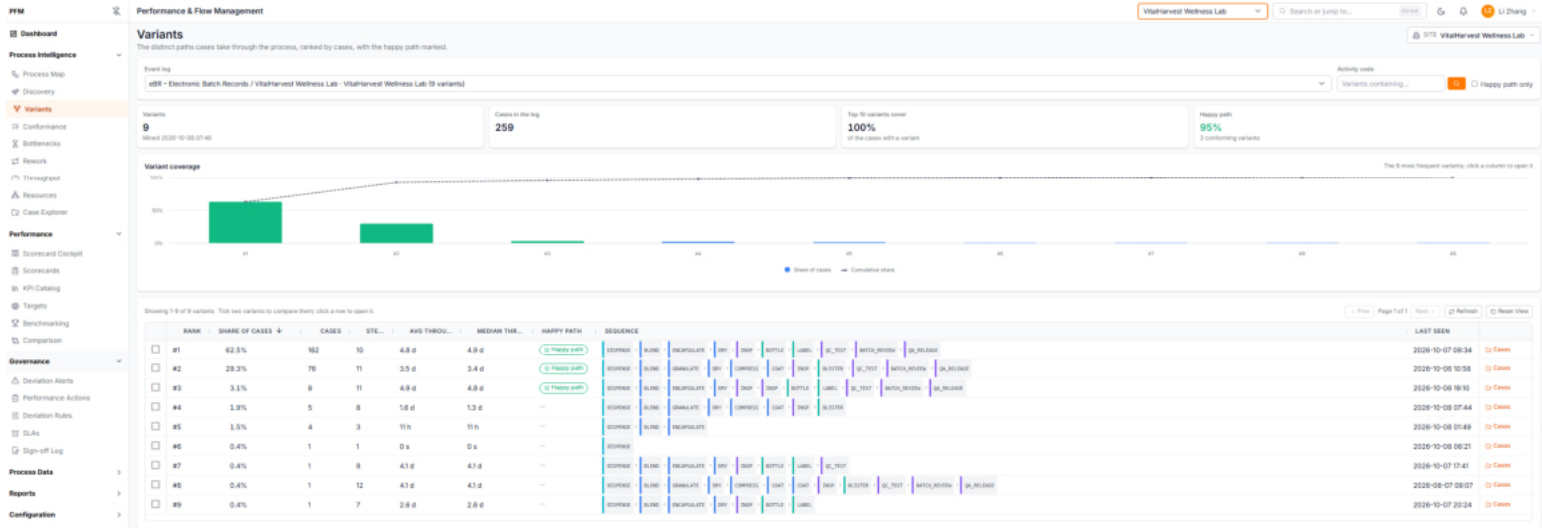
Governance & Action Management

- Deviation rules for KPI, conformance, waits and rework
- SLA-tracked alerts with escalation and acknowledgement
- Performance actions with measured effectiveness
- E-signatures, sign-off log and full audit trail



Closed-Loop Performance
From Event Data to Verified Improvement

The LOGICAL SYSTEMS PFM application turns raw production events into a trusted analytical record. Event sources connect the companion LS applications - OEE, QMS, WIP/Order Management, SPC, EMS, Electronic Batch Records, and CMMS data through LS EAI, alongside read-only queries over Ignition data sources, CSV and XES files, and UNS streams. Incoming events are normalized through the Activity Catalog, where pattern-based mappings translate source labels into a governed activity dictionary, and every event log is scored by built-in quality checks for completeness, timestamp order, and unmapped events. Discovery then runs on demand or automatically on schedule, so process maps, variants, bottlenecks, and mined KPIs stay current without manual effort.



Governance turns visibility into accountability. Deviation rules continuously evaluate KPIs, conformance results, handoff waits, and rework, raising alerts with severity, SLA response and resolution clocks, and escalation. Alerts notify the right people through MNS, create tasks in TMS, and can require an electronic signature to override or close. Performance actions are tracked from finding to resolution, then measured for effectiveness against the KPI they were meant to improve. Every signature is recorded in the sign-off log with signer, meaning, and the SHA-256 hash of the signed record supporting 21 CFR Part 11 and EU GMP Annex 11 practices. Across the enterprise, each site instance synchronizes with a global instance over the Ignition Gateway Network: scorecards roll up, league tables rank every site, and scheduled reports - conformance, variants, bottlenecks, rework, scorecard packs, benchmark reports, and a one-page executive summary are generated and e-mailed automatically.

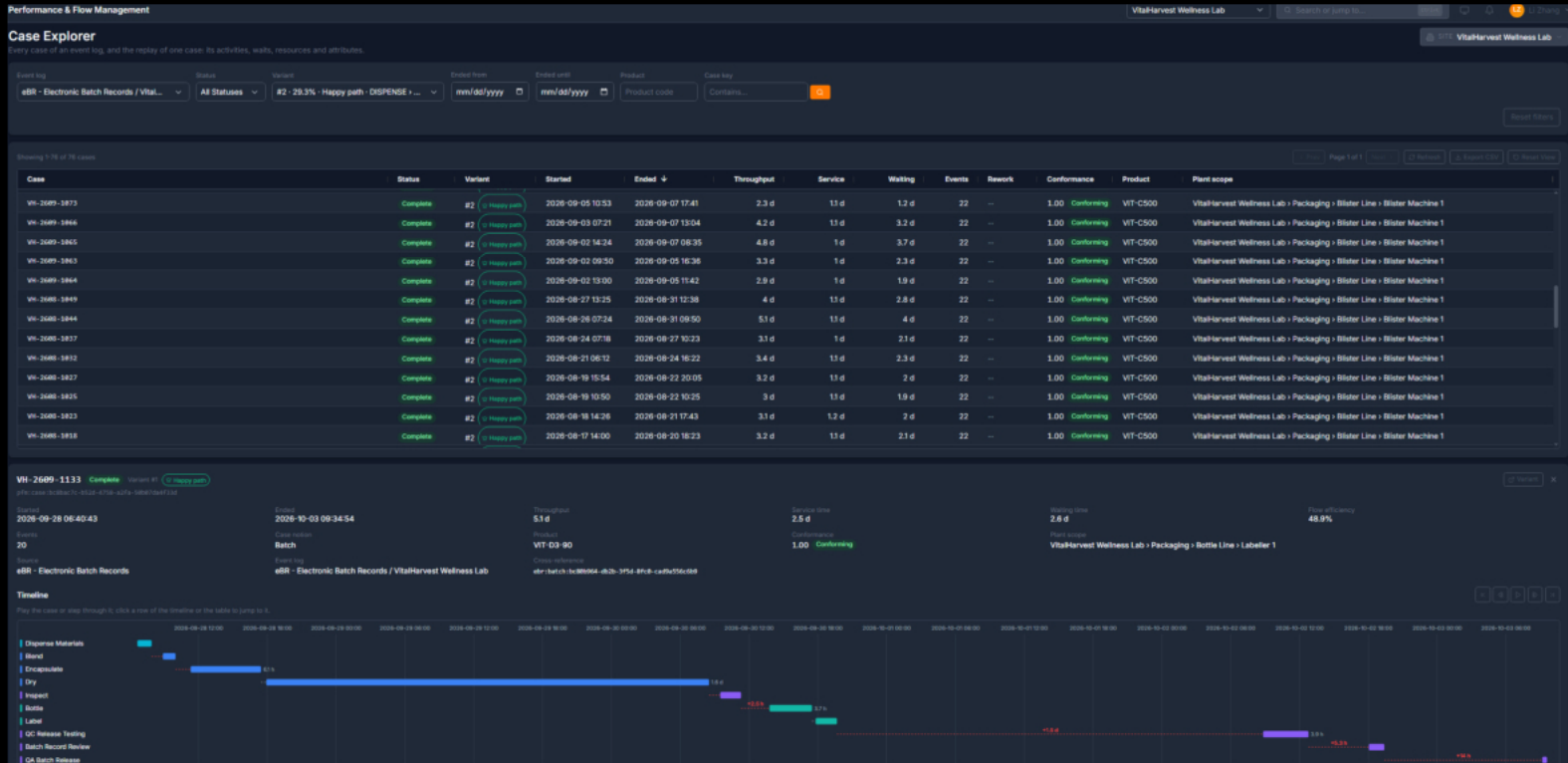
Deployment Flexibility

PFM is a native Ignition Perspective module that installs directly on your existing gateways, no separate server or external process-mining platform required. It deploys standalone at a single site or as a multi-site topology with a global instance for enterprise roll-ups and benchmarking, synchronizing over the Gateway Network. Seven permission tiers from Viewer to Administrator, multi-language support, and a theme editor adapt the application to each role and site.

Industry Use Cases

- Food & Beverage: reveal waiting and rework across roasting, blending, filling, and packing processes.
- Life Sciences: conformance against approved routings, electronic signatures, and audit-ready sign-off logs.
- Consumer Packaged Goods: master high-mix flows and expose variant proliferation and changeover losses.
- Chemicals: monitor batch and campaign execution against reference models across multi-stage processes.
- Discrete Manufacturing: uncover bottlenecks, handoff waits, and rework loops across lines and work centers.

Deviation Alerts											
Conformance, KPI, throughput, rework and bottleneck alerts raised by the deviation rules, most severe first											
Open 0 Acknowledged 9 Escalated 6 Critical open 1 SLA breached 13											
Search alert number or title... Open Acknowledged Escalated Resolved Critical High Medium Low All scopes All rules All KPIs mm/dd/yyyy mm/dd/yyyy SLA breached only											
15 alerts											
ALERT	SEVERITY	STATUS	TITLE	RULE	NODE	KPI	VALUE VS THRESH...	OCCURRENCES	FIRST DETEC...	LAST DETEC...	SLA DUE
ALT-2026-00002	Critical	Escalated	Unauthorized batch release - NutriBloom Infant Nutrition: NUTRI-INFANT	Unauthorized batch release	Site: NutriBloom Infant Nutrition		5 vs 0	>45	2026-08-27 03:40	2026-10-08 14:46	Resolve 2026-09-03 03:40
ALT-2026-00001	High	Escalated	Release steps skipped - NutriBloom Infant Nutrition: NUTRI-INFANT	Release steps skipped	Site: NutriBloom Infant Nutrition		8 vs 2	>58	2026-08-14 03:40	2026-10-08 14:46	Resolve 2026-08-23 03:40
ALT-2026-00002	High	Escalated	Rework loop at Inspect - Hydrapure Bottling Works: INSP	Rework loop at Inspect	Site: Hydrapure Bottling Works		2 vs 1	>87	2026-07-15 03:40	2026-10-08 14:46	Resolve 2026-07-22 03:40
ALT-2026-00014	High	Acknowledged	Daily OEE below 60% - Fill Line 2 (Sparkling 750 ml)	Daily OEE below 60%	Hydrapure Bottling Works > Line: Fill Line 2	Overall Equipment Effectiveness	53.3 % vs 60.0 %	>1	2026-10-04 00:05	2026-10-04 00:05	Resolve 2026-10-06 00:05
ALT-2026-00001	High	Escalated	Process capability below 1.0 - Softgel Line 2	Process capability below 1.0	VitalHarvest Wellness Lab > Line: Softgel Li	Process Capability (Cpk)	0.91 index vs 1.00 index	>2	2026-09-01 09:10	2026-10-01 09:11	Resolve 2026-09-06 09:10
ALT-2026-00003	High	Escalated	Monthly rework rate above 25% - Fill Line 2 (Sparkling 750 ml)	Monthly rework rate above 25%	Hydrapure Bottling Works > Line: Fill Line 2	Rework Rate	38.6 % vs 25.0 %	>3	2026-08-01 00:12	2026-10-01 00:14	Resolve 2026-08-06 00:12
ALT-2026-00004	High	Acknowledged	Process capability below 1.0 - Can Line 1 (900 g)	Process capability below 1.0	NutriBloom Infant Nutrition > Line: Can Line	Process Capability (Cpk)	0.87 index vs 1.00 index	>1	2026-09-30 18:04	2026-09-30 18:04	Resolve 2026-10-05 18:04
ALT-2026-00013	Medium	Acknowledged	Queue in front of Fill - Hydrapure Bottling Works: CARBONATE > FILL	Queue in front of Fill	Site: Hydrapure Bottling Works		2h 54m vs 2h 30m	>7	2026-10-03 03:40	2026-10-08 14:46	Resolve 2026-10-10 03:40
ALT-2026-00001	Medium	Acknowledged	Conforming share below 80% - Hydrapure Bottling Works: HYDRA-BOTTLING	Conforming share below 80%	Site: Hydrapure Bottling Works		73.6% vs 80.0%	>93	2026-07-11 03:40	2026-10-08 14:46	Resolve 2026-07-18 03:40
ALT-2026-00005	Medium	Acknowledged	Conforming share below 80% - NutriBloom Infant Nutrition: NUTRI-STOI-RM	Conforming share below 80%	Site: NutriBloom Infant Nutrition		79.5% vs 80.0%	>3	2026-10-02 03:40	2026-10-05 03:40	Resolve 2026-10-09 03:40
ALT-2026-00009	Medium	Acknowledged	Weekly first pass yield below 89% - Fill Line 2 (Sparkling 750 ml)	Weekly first pass yield below 89%	Hydrapure Bottling Works > Line: Fill Line 2	First Pass Yield	87.7 % vs 89.0 %	>5	2026-09-07 00:14	2026-10-05 00:08	Resolve 2026-09-12 00:14
ALT-2026-00004	Medium	Acknowledged	Daily scrap rate above 3% - Paine Boring Line	Daily scrap rate above 3%	Cascading Confectionery Hub > Line: Paine	Scrap Rate	3.3 % vs 3.0 %	>1	2026-10-03 00:11	2026-10-03 00:11	Resolve 2026-10-08 00:11
ALT-2026-00006	Medium	Escalated	Monthly MTTR above 5 h - Copper 2	Monthly MTTR above 5 h	Hydrapure Bottling Works > Machine: Copp	Mean Time To Repair	7.1 h vs 5.0 h	>3	2026-09-01 00:13	2026-10-01 00:14	Resolve 2026-09-06 00:13
ALT-2026-00004	Low	Acknowledged	Monthly energy intensity above threshold - Hydrapure Bottling Works	Monthly energy intensity above threshold	Site: Hydrapure Bottling Works	Energy Intensity	0.335 kWh/unit vs 0.320 kWh	>3	2026-08-01 00:12	2026-10-01 00:14	Resolve 2026-08-06 00:12



Key Features and Benefits

Features

- Automatic process discovery with directly-follows graph and heuristic miner, scheduled re-mining, and up to 200,000 cases per run
- Interactive process map, variant, bottleneck, rework, throughput, and resource-handoff analytics
- Conformance checking against versioned, signed reference models with classified deviations
- 17 ISO 22400-referenced KPIs out of the box - collected and mined - with targets, stretch goals, and RAG thresholds
- Weighted scorecards with composite scoring across the plant hierarchy
- Internal benchmarking league tables plus external industry reference values
- Rule-based deviation alerts with SLAs, escalation, and signature-controlled overrides
- Performance actions with task integration and measured effectiveness
- Electronic signatures, sign-off log, and full audit trail supporting 21 CFR Part 11 / EU GMP Annex 11 practices

Benefits

- Objective, data-driven view of the process as it actually runs - no interviews or manual mapping
- Bottlenecks and rework located by case evidence, so improvement effort goes where it pays back
- One performance language across all sites: same KPIs, same targets, same scorecards
- Deviations caught and actioned under SLA instead of discovered in month-end reviews
- Improvement verified: every action measured for effect on the KPI it targets
- Audit-ready records for regulated environments

Technical Requirements

System Requirements

Ignition® (8.1.+) Core Modules, Quad-core processor, 16 GB RAM, 10 GB free disk space

Supported Operating Systems

Windows Server 2019/2022/2025, Windows 10/11, macOS (X, 10.16+), Linux (Ubuntu, CentOS, RHEL)

Supported Protocols

MQTT, OPC UA / OPC DA, REST API (JSON Payloads) Kafka (via connector), Snowflake (via pipeline, data bridge)

Supported Databases

Microsoft SQL Server, Oracle, MySQL, MariaDB, PostgreSQL, any database with JDBC driver

Supported Browsers

Chrome, Firefox, Safari, Microsoft Edge

