

Rayterton ERP for Manufacturing

Rayterton ERP for Manufacturing is a strategic, enterprise grade digital infrastructure designed for multi plant manufacturers and large industrial groups. The platform goes far beyond transactional ERP by embedding governance, operational intelligence, quality compliance, traceability, and profitability control into a single unified manufacturing ecosystem.

End to end plant lifecycle platform

Rayterton ERP for Manufacturing is an end to end plant lifecycle platform designed for manufacturers to plan and execute production with finite capacity discipline, control procurement and inventory with audit ready evidence, manage engineering change safely, and close finance with cost traceability from material to margin.

Implementation Philosophy and Experience

With **Rayterton** that specializes in customizing solutions to fit your needs 100%, you do not need to worry about disruption or change the system can follow your existing business processes and operations.

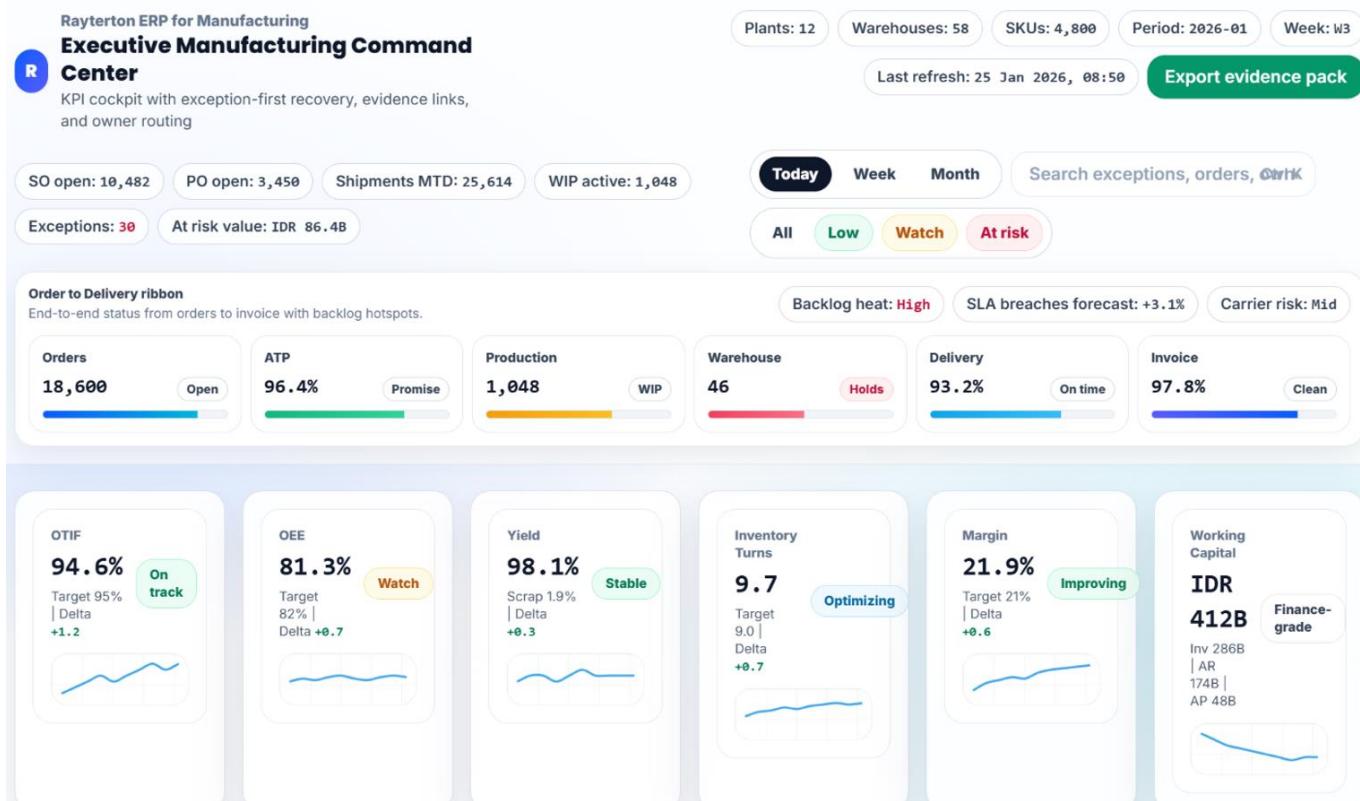
- *Phased rollouts, go live on specific modules with your own pace*
- *Existing processes respected and emphasized*
- *Change requests included in maintenance; no fear of missing out important business needs during initial implementation phase*

This is a short generalized sequence of implementation to get started with Rayterton ERP :

1. Setup Foundation and Master Data
2. Define BOM and Routings
3. Configure Planning Policies
4. Enable Procurement Controls
5. Establish Warehouse Execution
6. Release Production Orders
7. Run Finite Scheduling
8. Execute Quality and CAPA
9. Activate Traceability
10. Close Costing & Close Finance
11. Profitability Cockpit

Executive Manufacturing Command Center

Monitor everything in your manufacturing business from a centralized command center, complete with dashboards equipped with everything you need to monitor and make decisions. Give leadership a real time control view of service, capacity, quality, inventory, and margin exposure. Includes **Executive KPI Cockpit** (OTIF, OEE, yield, scrap, inventory turns, working capital, margin), **exception tiles** (late orders, material shortage, capacity overload, quality holds), and **drilldown to planning, execution, quality, and finance**. This module feeds prioritized exceptions into Order to Cash, MRP and Scheduling, Procurement, Production Execution, Quality, and Costing, and consolidates outcomes back into executive evidence packs.



At-risk value breakdown

Revenue at risk, penalties, expediting cost, and margin exposure.

Category	Value	Detail
Revenue at risk	IDR 58.2B	Late + shortages
Penalty exposure	IDR 9.6B	SLA clauses
Expedite cost	IDR 4.1B	Air freight, OT
Margin exposure	IDR 14.5B	Variance drivers

AI insight and recommended play

Predictive signal, root cause hints, and next-best action.

Prediction
OTIF likely drops to 92.8% if no recovery is executed in next 8h. High risk

Top drivers: supplier commit drift, constrained Line 04, and quality hold backlog.

Confidence	Lead time risk	Blocked shipments
0.86	+2.3d	12

Recommended: Reschedule | Then: Substitute RM | Then: Expedite PO

Generate recovery plan | **Route tasks to owners**

Multi-plant performance

Predictable risk score with owner routing and recovery readiness.

Plant	Owner	OTIF	OEE	Yield	Risk
Plant 01	Planner A	96.1%	84.2%	98.6%	Risk 18
Plant 02	Planner B	93.8%	79.1%	97.9%	Risk 31
Plant 03	Planner C	94.5%	82.7%	98.2%	Risk 22
Plant 04	Planner D	92.4%	76.8%	97.4%	Risk 44
Plant 05	Planner E	95.2%	83.5%	98.8%	Risk 16
Plant 06	Planner F	93.1%	80.8%	98.0%	Risk 33
Plant 07	Planner G	94.0%	81.9%	98.1%	Risk 27

Network health

Service, stability, and constraint hotspots.

Category	Value	Detail	
On-time shipments	23,882	Late 1,732	
Blocked lots	46	Holds 12 Quarantine 34	
Constraint heat	Top 6 resources		
Line 04	Changeover 12	Batch wait 86	Pack 06 Labor gap 78
Oven 01	Maint 74	QC Gate Hold spikes 69	Dock 03 Carrier 63

Exception-first alert board

Shortages, late orders, quality holds, and constraints with evidence-ready drill.

Exception Type	Plant	Reference	Owner	SLA
Rework risk	P08	APS-20260007	Costing G	Over 6h
Pick short	P03	MRP-20260014	Logistics F	Over 6h
Expedite required	P10	NCR-20260021	Supervisor E	Over 6h
Supplier delay	P05	SHIP-20260028	Scheduler D	Over 6h
Pick short	P07	MRP-20260006	Logistics F	Due 1h
Supplier delay	P01	SHIP-20260012	Scheduler D	Due 6h
Quality hold	P07	PO-20260018	Buyer C	Due 1h
Shortage	P01	SO-20260024	Planner A	Due 6h

End to End Order to Cash Control Tower

Visualize backlog risk by plant and week, protect customer service with exception based orchestration, and keep finance aligned with fulfillment reality. Includes **Order timeline control tower**, **backlog heatmap by plant and week**, **ATP signals connected to MRP and finite schedule**, **shipment and invoicing readiness**, and **service recovery workflow for late or partial deliveries**. This module pulls supply, capacity, and constraint signals from MRP and Finite Scheduling, triggers fulfillment through Warehouse Execution, and activates invoicing and margin trace into Costing and Profitability.

End to End Flow Map
Control tower storyboard with risk routing, owners, SLA, and evidence-ready drilldown

Jan 25, 2026 | 08:53 | Open Control Tower

Operational Scope
Enterprise scale, governance, and exception-first narrative for executive readers.

Plants: 12 | Warehouses: 58 | Open SO: 18,600 | Open PO: 3,450

Window | Rolling 30 days | Live
Signals from demand to finance

Governance | Approvals and audit trail on
Owner, SLA, and evidence links per exception

At-risk value: IDR 86.4B (High)
Flow health index: 78 out of 100
Top exposure: Plan, Make

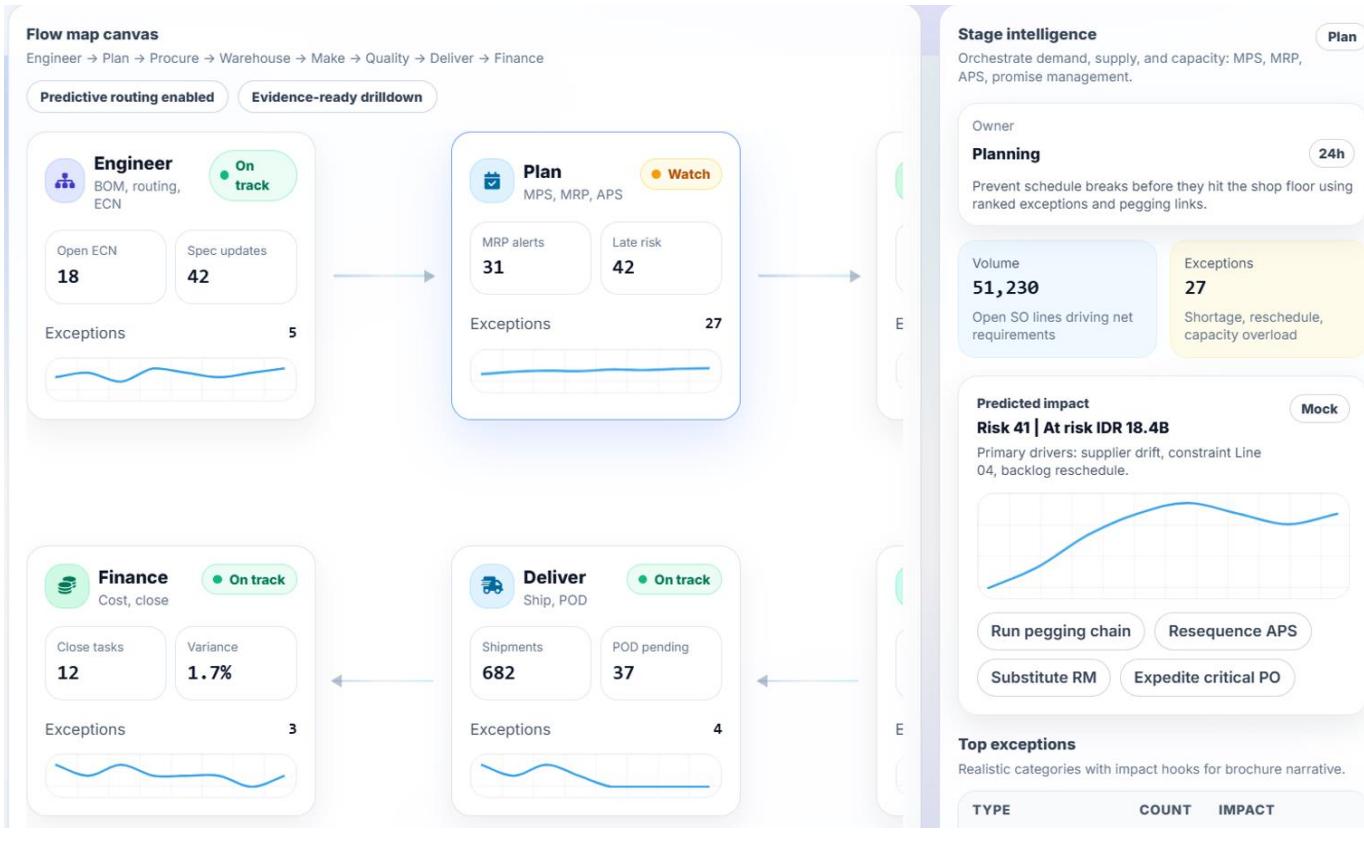
Control ribbon: Engineer (R 18, On track 5, EX 5), Plan (R 41, Watch 1, EX 27), Procure (R 22, On track 9, EX 27), Warehouse (R 6, On track 6, EX 9), Make (R 66, At risk 21, EX 21), Quality (R 38, Watch 1, EX 12), Deliver (R 16, On track 4, EX 4), Finance (R 14, On track 3, EX 3)

Command actions: Route owners (Role: Exec), Evidence pack

AI signal: OTIF forecast dips to 92.8% in next 8h (High)
Drivers: supplier drift, constrained Line 04, and quality hold backlog.

Recommended: Reschedule
Then: Substitute | Then: Expedite

Placement note: Put this flow map right after the hero dashboard



Exception heat view						Updated: 08:53
Compact, governance-friendly table for executive control narrative.						
Stage	Status	Exceptions	Primary Driver	Owner	SLA	
Engineer	On track	5	ECN approvals pending	Engineering	48h	
Plan	Watch	27	Shortage and capacity constraints	Planning	24h	
Procure	On track	9	Supplier confirmation gaps	Procurement	48h	
Warehouse	On track	6	Bin discrepancy and cycle count variance	Warehouse	24h	
Make	At risk	21	Work center bottleneck and downtime	Operations	8h	
Quality	Watch	12	Incoming inspection holds	Quality	24h	
Deliver	On track	4	Carrier scheduling	Logistics	48h	
Finance	On track	3	3 way match exceptions	Finance	72h	

MRP Exception Monitor and Pegging

Turn planning from a batch report into an executive decision engine. Detect shortages, safety stock breaches, and late supplies, then resolve them with pegging visibility that shows exactly which sales orders, production orders, and customers are impacted. Includes **MRP exception inbox**, **pegging chain visibility**, **shortage resolution actions** (expedite, substitute, reschedule, split), and **governance controls** for actions that impact cost or schedule. This module feeds prioritized shortages into Procurement and Production Dispatch, updates promise dates for Order to Cash, and outputs audit payloads and board packs for governance review.

MRP Exception Monitor and Pegging

Exception-driven planning with constraint signals, governance, and audit-ready evidence

Run: MRP-RUN-2026-01-20-1520 | Snapshot: 7F3A-11C9-2B7E | Latency: 3m | Confidence: High | Period: 2026-01

Month: Jan | Week: W3 | Shift: Day | Plants: 8 | Updated: 2026-01-20 15:20 | Command | Ctrl K

Export board pack | **Evidence pack**

Open exceptions **124**
Severity mix: High 18 | Medium 46 | Low 60
Daily standup view | **Exception-driven**

Revenue at risk **IDR 38.4B**
OTIF impact: -2.1 pts
Customers impacted: 27 | **Impact**

SO impacted **312**
Critical tier: A 64
Promise dates monitored | **Demand**

PO at risk **156**
Supplier flags: 12
Lead time variance tracked | **Supply**

Capacity alerts **31**
Bottlenecks: WC-CNC-02
Linked to APS Gantt | **Constraint**

Quick filters
Saved view: Daily Standup

Saved views | **Search item, SO, PO, supplier, work cente** | **Plant: PLT-01** | **Week: All** | **Severity: All** | **Type: All**

Scenario compare

Exception List (Actionable)
Click a row to load pegging chain, recommended playbook, and governance actions. All lists are 20+ rows for enterprise-scale screenshots.

On track actions | **Watch** | **At risk**

Severity	Type	Plant	Item	SO	Need date	Short qty	Supplier	Work cent
High	Supplier Delay	PLT-01	RM-RESIN-A Root cause: Supplier Delay	SO-2026-018311 Pegging enabled	2026-01-22	1800 Units	ChemPrime OTD monitored	WC MIX-01
Low	→ Reschedule Out	PLT-01	FG-VAL-980 Root cause: Demand Spike	SO-2026-017152 Pegging enabled	2026-01-26	336 Units	Sumatra Steel OTD monitored	WC CNC-01
Medium	Expedite	PLT-01	RM-RUBBER-F Root cause: Demand Spike	SO-2026-017304 Pegging enabled	2026-01-22	632 Units	Nusantara Plastics OTD monitored	WC CNC-01

Selected exception EXC-0001
Pegging chain with recovery playbook, governance actions, and scenario options.

Shortage in PLT-03 **High**
Item RM-ALU-6061-08 impacts SO-2026-018442 with IDR 1.9B revenue at risk.
2026-01-23

OTIF impact **3 days late risk** | Constraint signal **WC-CNC-02**

Owner and SLA Planner - MRP 2026-01-21 12:00 | Governance Approval: Yes Status: Open

Root cause and evidence signals
✓ PO ETA slipped by 4 days (lead time variance)
✓ Inventory accuracy is high (98.4%), shortage is real
✓ Work center WC-CNC-02 is at 112% load (capacity risk)
✓ Customer tier A with penalty clauses

Decision log (audit-ready)
All actions captured with who, when, why, and before/after for governance and evidence packs.

Time	Exception	Action	Owner	Reason code	Approval
2026-01-20 15:20	EXC-0001	Scenario A commit	Planner - MRP	SUPP_DELAY	Yes
2026-01-20 15:20	EXC-0001	Scenario A commit	Planner - MRP	SUPP_DELAY	Yes
2026-01-20 15:05	EXC-0004	Quality release request	Quality Manager	QUALITY_HOLD	Yes

Clear log

Pegging view

SO to supply

Sales Order
SO-2026-018442
Customer: Aurora Energy | Tier A | Due: 2026-01-24
Fill indicates readiness confidence.

Planned Order
PLN-PRD-003812
Plant: PLT-03 | Qty: 800 | Start: 2026-01-22
Fill indicates readiness confidence.

PO Suggestion
POS-000992
Supplier: MetalWorks Asia | Qty: 1200 | Need: 2026-01-21
Fill indicates readiness confidence.

Finite Scheduling Control Board

Schedule production with finite capacity, minimize changeovers, and protect critical windows with approval fences. Includes **Finite capacity scheduling board**, **changeover aware sequencing**, **dispatch windows** and **frozen fences**, **simulation with deltas**, and **controlled approvals for schedule moves with service impact**.

Finite Scheduling (APS) Gantt Board
Work center timeline with constraints, changeovers, governance, and publish gates

Run: APS-RUN-2026-01-20-1540 | Snapshot: C9A2-04F1-71B0 | Latency: 2m | Confidence: High

Horizon: 20 days | Work centers: 12 | Command | | **Publish schedule**

Executive outcome
OTIF protection and WIP control
Finite capacity, governed changes, evidence-ready publish pack for leadership review.

OTIF risk: -2.3 pts | Late jobs: 11 | Changeovers: 8

Capacity posture
89%
Weighted utilization across critical work centers.

Revenue at risk
IDR 8.3B
Based on pegged customer orders in late lanes.

Freeze fence
48h
Moves inside fence require approvals and justification.
Policy: maker-checker

Scenario
Baseline
Use simulate to compare OTIF, cost, and WIP impact.
Scenario compare

Evidence
Publish pack ready
Before/after, approvals, constraints, and audit snapshot.

Evidence pack

Scheduling Control
Drag jobs to reschedule. Click a job to open governed detail view with pegging and playbook.

Late risk: 11 | Setup changeovers: 8 | Capacity flags: 5

Search: WO, product, tier | Zoom: Standard | Policy: Finite capacity, minimize changeovers | Actions: Undo, Simulate

Grid width per day | Sequence by family, then due date | Fence: 48h approvals | Simulate shows deltas and constrained moves.

Legend
Brochure-friendly, light, executive readable.

- Job family A (A)
- Job family B (B)
- Setup / changeover
- Late risk
- Shortcuts: Ctrl K, Esc, Click job

APS Gantt Board
Lanes with job blocks, setups, constraint signals, dependency lines, and publish governance.

Drag to reschedule | Grid: 1 day | Fence: 48h approvals | Ref: APS-GANTT-01

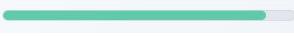
Lane health
Capacity and stability view

19/01 20/01 **21/01** 22/01 23/01 24/01 25/01 26/01 27/01 28/01 29/01 30/01 31/01 01/02 02/02

WC-010 Press Line
16h/day | 92% | Queue 6.2h | Setups 4 | Utilization: 

WC-020 CNC Cell
24h/day | 88% | Queue 8.0h | Setups 3 | Utilization: 

WC-030 Paint Booth
12h/day | 96% | Queue 10.1h | Setups 3 | Utilization: 

WC-040 Final Assembly
20h/day | 90% | Queue 7.3h | Setups 2 | Utilization: 

APS Gantt Board (Detailed View)

21/01 Lane

- WC-010 Press Line:** PRD-A12 | ... (Tier A, C1, On track)
- WC-020 CNC Cell:** PRD-CNC-04 | Qty 54... (Tier B, Risk C1, Late risk)
- WC-030 Paint Booth:** PRD-PAINT-... (Tier B, C1, Late risk)
- WC-040 Final Assembly:** PRD-ASSY-02 | Qty 2,400 ... (Tier B, Risk C1, Late risk)
- WC-010 Press Line:** PRD-B07 | Qty... (Tier A, Risk C1, Late risk)
- WC-020 CNC Cell:** PRD-CNC-09 | ... (Tier C, Late risk)
- WC-030 Paint Booth:** PRD-PAINT-XL | ... (Tier A, Risk C1, Late risk)
- WC-040 Final Assembly:** PRD-ASSY-07... (Tier A, Risk C1, Late risk)

Legend: Setups (orange), To (yellow), Bx (orange), Risk (red), Late risk (pink), Cap (blue), Li (green).

Engineering BOM and Change Control

Control BOM versions, routings, and effectivity dates with workflow discipline so production, procurement, and costing always use the correct revision. Prevent uncontrolled substitutions and reduce scrap caused by unmanaged change. Includes **Engineering BOM, routing versions, alternates and substitutions, effectivity windows, ECO workflow, impact analysis, and release control to production**. This module feeds released BOM and routing versions into MRP, Procurement, and Production Orders, and updates standard cost structures that flow into Costing, Variance, and Profitability.

Engineering Control Room

BOM, routing, effectivity, and change governance in one view

Plant: 02 Rev: R12 Baseline: R11

Compare Create ECO

Release to MRP

Product Master

Decision grade metadata for engineering, planning, and costing.

Controlled Maker checker Digital thread Effectivity

Finished Good FG-AXP-1200 Apex Pump 1.2kW

Total cost rollup Rp 1,347.200 Delta vs baseline: +2.3%

Lead time risk 7 Long lead items flagged

Alt coverage 82% Single source reduced

Routing std time 2.75h Feeds APS and costing

Governance fence Changes inside 14 days require ECO approval

Auto checks: effectivity overlap, alt priority, sourcing, compliance

Impact preview Cost, lead time, and capacity impact before release

Simulate MRP demand and routing load (mock behavior)

Command controls

Role: Eng

High density, fast filtering, compare mode.

Standard Dense Risk

Alt chips Sub chips

Cost Availability

Effectivity date 2026-01-21

Slide to preview BOM visibility by effective date (mock filter).

Simulate Evidence

Search Part ID, description, or risk tag

Matches expand automatically and keep context.

Multi level BOM

Select a node to see digital thread, sourcing, and change impact.

Levels: 4 Comps: 67 Flags: 7

Eff: 2026-01-21 View: standard Expand Collapse Compare: off

FG-AXP-1200 Apex Pump 1.2kW (Finished Good)

Qty: 1 EA Eff: 2026-01-15 To: Open Cost: Rp 1,347.200 Lead: 0d Stock: 0 Children: 3

ASM-AXP-1200-HSG Housing Assembly

Qty: 1 EA Eff: 2026-01-15 To: Open Cost: Rp 294.400 1 alt Setup

Routing operations

Step sequencing with setup vs run, and a quick load preview.

Std time: 2.75h

Seq	Operation	Work center	Time	Load
10	Press housing Forming and trimming	WC-010 Press Line	0.57h	Run 0.45h Setup 0.12h Die family controlled
20	CNC machining Bore and shaft fit	WC-020 CNC Cell	0.70h	Run 0.62h Setup 0.08h Tooling recipe by variant
30	Winding Stator coil winding	WC-025 Winding Cell	0.44h	Run 0.38h Setup Gauge check

Decision panel

Ref: ENG-DTL-01

Selected FG-AXP-1200 Apex Pump 1.2kW (Finished Good)

Effectivity 2026-01-15 to Open Approved

No critical risk flags detected at this effectivity date.

Impact preview Cost Rp 0d Lead Stock 0 Used for pre-release checks before MRP and APS commit.

Sourcing N/A AVL: 0 No alt group

Compliance RoHS REACH CoC linked

Traceability ECO-ECO 2026-0142 Approved by Head Engineer Audit hash b7c1-9a2e-44f0

Maker checker log for audit and ISO evidence.

Digital thread links

Procure to Pay Spend Control Tower

Convert MRP signals into purchase requests, compare RFQs with supplier performance context, enforce approvals with matrix governance, and complete 3 way match with evidence packs ready. Includes **MRP driven PR creation, RFQ comparison, approval fence and matrix, PO release, 3 way match policy, supplier performance signals, and exception handling for shortages and expedite**. This module pulls demand from MRP and dispatch needs from Production, issues PO commitments that protect service, and feeds goods receipt and invoice matching into Inventory, Costing, and Finance controls.

The screenshot displays the Procure to Pay Cockpit interface with the following key sections:

- Header:** Shows 'Procure to Pay Cockpit' with subtext 'MRP PR, RFQ comparison, approved PO queue, supplier intelligence', 'Live' status, 'Last sync: 09:12', a search bar 'Search PR, supplier, contract, PO, material...', and keyboard shortcuts 'Ctrl' and 'K'.
- Top Navigation:** Includes 'Quick' (button), '+ Create PO' (button), a bell icon, 'RA' (Plant group 01), and buttons for 'Plants: 8', 'Open PR: 1,942', 'Open PO: 2,673', 'Approval: Matrix', 'MRP run: MRP- 2026-01-19-0900', and 'Policy: 3-way match'.
- Performance Metrics:**
 - MRP driven PR:** 1,248 (Auto created from shortages and safety stock violations). Metrics: Service risk: High, Pegging, Avg cycle: 2.1 days, SLA.
 - RFQ pending review:** 114 (Quotes received: 386 across 62 suppliers). Metrics: SLA.
 - Approved PO queue:** 268 (Ready to send with contract pricing and terms validated). Metrics: Controls: SOX, Evidence.
 - Spend under control:** Rp 753.3M (12 month rolling, Top category: metals and electronics). Metrics: Contracts: 412, Governed.
- PR Worklist:** Prioritized by need date, pegged impact, and policy fences. It includes buttons for 'Shortage', 'Expedite', 'Smart filter', and 'Actions'.
- RFQ Comparison:** Compares quotes with performance and governance evidence. Shows a table for 'PR-2026-019482' with columns: Supplier, Price, Lead, Score. Top entry: **NorthSteel Co** (Rp 28,210/kg, 4 days, Best).
- Supplier Intelligence:** Last 90 days. Includes metrics: OTD 96.4%, Defect rate 0.42%, and Avg lead time 4.1 days.
- Table Worklist:** Shows purchase requests (PR) with columns: PR No, Material, Plant, Qty, Need date, Source, Impact, Risk. Examples include:
 - PR-2026-019482:** RM-110239 (Alloy Coil 2.0mm), Plant 02, 12,500 kg, 2026-01-20. Status: MRP shortage, Impact: Pegged SO: SO-2026-014701, Risk: OTIF risk.
 - PR-2026-019401:** RM-090551 (Resin Grade A), Plant 05, 8,200 kg, 2026-01-22. Status: Expedite, Impact: Service level risk: High, Risk: Watch.
 - PR-2026-019233:** RM-071884 (Packaging Carton XL), Plant 01, 15,000 pcs, 2026-01-21. Status: MRP shortage, Impact: Late shipment risk: Medium, Risk: Policy fence.
 - PR-2026-040233:** RM-040233 (Banding Cat), Plant 07, 210 sets, 2026-01-24. Status: Replenishment, Impact: Safety stock breach, Risk: Quality.

Warehouse Bin and Wave Execution

Execute warehouse operations with bin level control and wave discipline. Improve picking speed, reduce mispicks, and protect production kits and customer shipments with barcode workflows and real time task visibility. Includes **Bin master and slotting, wave planning, pick pack ship, kitting for production, cycle count and variance control, and exception handling for shortages and damages**. This module pulls demand from Order to Cash and Production Dispatch, confirms material readiness back to Production Execution, and posts inventory movements into Costing, Traceability, and Finance.

WMS Bin View
Bin stock, putaway tasks, cycle count with accuracy and risk

Search bin, item, lot, tasks: Ctrl K

Warehouse: WH-02 Bins: 4,812 Tasks open: 186 Commands Create task

Inventory accuracy: 99.2% Variance below threshold in last 30 days Last cycle count: 2026-01-18 OK

Putaway SLA: 96.8% Completed within 4h target Avg putaway time: 1h 12m SLA

Lot and serial coverage: 100% High value and regulated items fully tracked Lots: 18,442 Traceable

Cycle count due today: 142 A class bins prioritized by risk and velocity Open variances: 7 Review

Bin Map (Zone A, Aisle 03)
Select a bin to open lot and serial detail plus task queue.

Scanning enabled Bin level Heatmap Search bin

Zone: A Temperature: Ambient Pick faces: Yes Utilization: 78% Replen tasks: 34

Zoom 6 cols Less More Legend: Low | Med | High | Full

Bin	Utilization	Zone	Face	Task Queue
A03-01-01	22%	Zone A	LOW	Picks
A03-01-02	88%	Zone A	FULL	Picks
A03-01-03	54%	Zone A	MED	Picks
A03-01-04	67%	Zone A	HIGH	Picks
A03-01-05	31%	Zone A	LOW	Picks
A03-01-06	45%	Zone A	MED	Picks
A03-02-01	72%	Zone A	HIGH	Picks
A03-02-02	39%	Zone A	LOW	Picks
A03-02-03	58%	Zone A	MED	Picks
A03-02-04	76%	Zone A	HIGH	Picks
A03-02-05	18%	Zone A	LOW	Picks
A03-02-06	90%	Zone A	FULL	Picks

Bin Detail
A03-02-04
Lot and serial view with operational tasks and governance.

Fast action Device: Online
Scan bin, lot, serial Scan

Create count Create putaway

Lock

Stock (Lot / Serial)
Live

Item Lot/Serial Qty
RM-110239 LOT-AL-202601-0441 5,200 kg

Cycle Count Schedule
Today

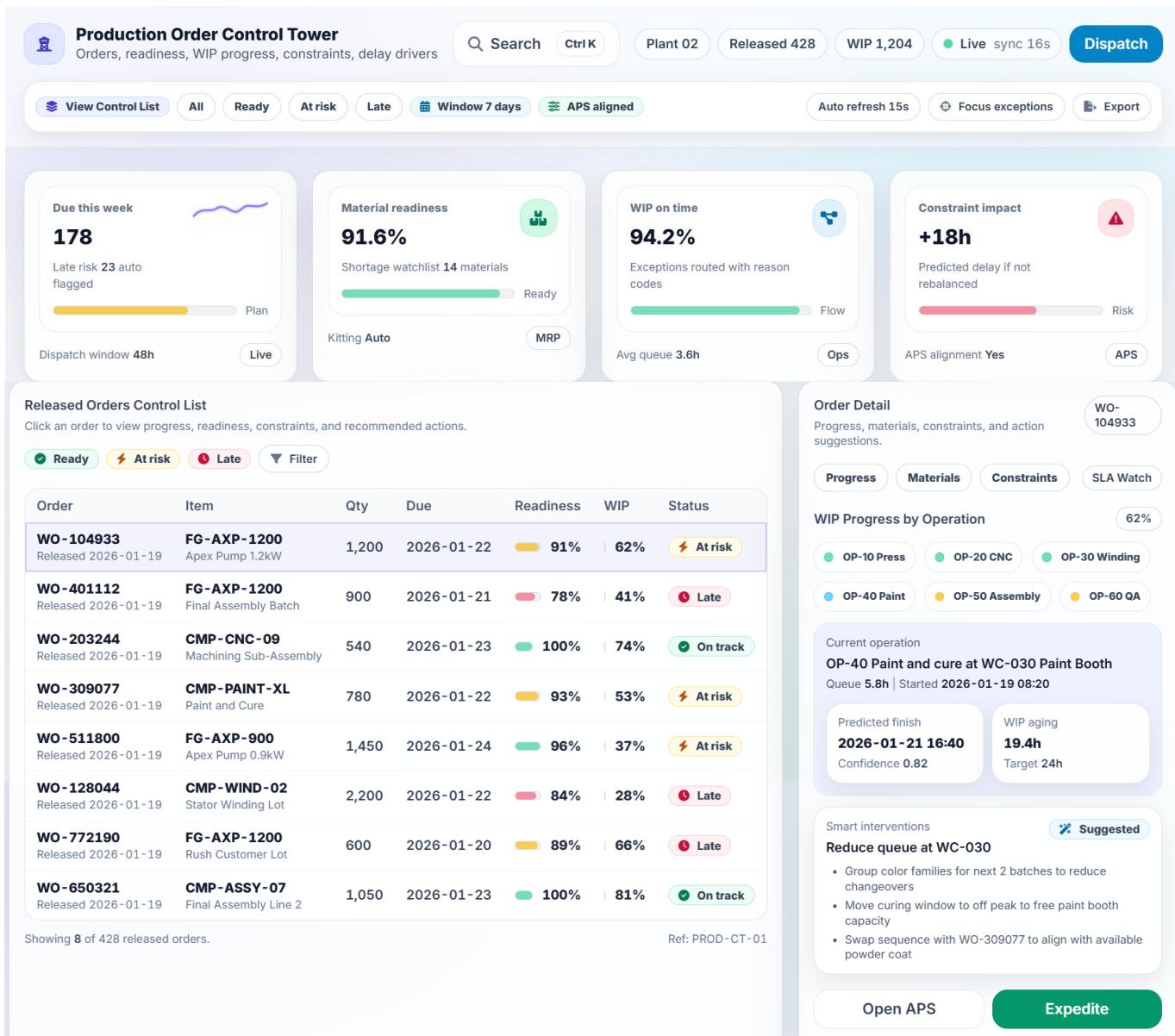
Bin	Class	Risk
A03-01-02	A	High
A03-02-04	A	Medium
A03-03-06	B	Watch
A03-04-05	B	Watch

Accuracy indicator
Variances auto routed for investigation with recount approvals and audit trail.

Select a bin on the left to refresh lot, serial and tasks.
Ref: WMS-OPS-01

Production Order Control Tower

Run the shopfloor with one operational cockpit. Track dispatch readiness, material kitting, progress against plan, and constraint risks in one view. Resolve issues early with controlled actions that protect service and cost. Includes **Production order control tower, dispatch window control, material readiness and shortage watchlist, progress against plan, labor and machine checkpoint signals, and exception driven actions**. This module consumes the finite schedule and releases work to execution, sends consumption and completion signals into Costing, and triggers quality checks and traceability capture at each step.



The dashboard is titled "Production Order Control Tower" and includes the following sections:

- Header:** Search, Ctrl K, Plant 02, Released 428, WIP 1,204, Live sync 16s, Dispatch.
- Filter Bar:** View Control List, All, Ready, At risk, Late, Window 7 days, APS aligned, Auto refresh 15s, Focus exceptions, Export.
- Key Metrics:**
 - Due this week: 178 (Late risk 23 auto flagged)
 - Material readiness: 91.6% (Shortage watchlist 14 materials)
 - WIP on time: 94.2% (Exceptions routed with reason codes)
 - Constraint impact: +18h (Predicted delay if not rebalanced)
- Released Orders Control List:** Shows 8 of 428 released orders with columns: Order, Item, Qty, Due, Readiness, WIP, Status. Examples include WO-104933 (FG-AXP-1200, 1,200, 2026-01-22, 91%, 62%, At risk), WO-401112 (FG-AXP-1200, 900, 2026-01-21, 78%, 41%, Late), and WO-650321 (CMP-ASSY-07, 1,050, 2026-01-23, 100%, 81%, On track).
- Order Detail:** WO-104933. Progress, materials, constraints, and action suggestions. Includes WIP Progress by Operation (62%) for OP-10 Press, OP-20 CNC, OP-30 Winding, OP-40 Paint, OP-50 Assembly, OP-60 QA.
- Current operation:** OP-40 Paint and cure at WC-030 Paint Booth, Queue 5.8h, Started 2026-01-19 08:20. Predicted finish 2026-01-21 16:40, Confidence 0.82. WIP aging 19.4h, Target 24h.
- Smart interventions:** Suggested to Reduce queue at WC-030. List: Group color families for next 2 batches to reduce changeovers, Move curing window to off peak to free paint booth capacity, Swap sequence with WO-309077 to align with available powder coat.
- Buttons:** Open APS, Expedite.

Quality CAPA and Nonconformance Hub

Control quality with closed loop discipline. Capture NCRs, enforce containment, drive root cause and corrective actions, and verify effectiveness before closure. Keep quality decisions traceable and ready for audits. Includes **NCR inbox**, **containment actions**, **CAPA workflow with approvals**, **defect analytics**, **supplier and process linkage**, and **effectiveness checks**.

This module blocks or releases inventory for Warehouse and Production, updates supplier performance for Procurement, and writes auditable quality evidence that links to Lot Genealogy and compliance reporting.

CAPA Workflow
NCR to root cause, action plan, approvals, due dates, and effectiveness checks

Plant: 02 Open NCR: 64 Open CAPA: 19 + New CAPA Cmd Ctrl K

CAPA cycle time
8.4 days
Median from NCR creation to close

Target: 10 days SLA Escalations: 2 Attention

Overdue actions
3
Auto escalated to Quality Manager

Repeat defect trend
-22%
Improvement after controls deployed

Window: 90 days Trend

Effectiveness checks due
7
Verification after implementation

Pass rate: 94% QA

NCR Worklist
Select an NCR to open the CAPA workflow and approvals timeline.

Critical Major Monitor Views Filter

NCR	Item / Lot	Defect	Severity	Due	Status
NCR-2026-000118 Raised 2026-01-18	FG-AXP-1200 LOT-FG-202601-0144	Seal leakage at final test	Critical	2026-01-24	In CAPA
NCR-2026-000104 Raised 2026-01-17	RM-110239 LOT-AL-202601-0419	Thickness out of spec	Major	2026-01-23	Approval
NCR-2026-000087 Raised 2026-01-15	CMP-PAINT-XL LOT-PT-202601-0008	Paint adhesion below threshold	Monitor	2026-01-26	Closed

Showing 3 of 64 NCR items. Select an NCR to open CAPA workflow detail.

Ref: QA-NCR-01

CAPA Case
End to end workflow with approvals and effectiveness checks.

NCR: NCR-2026-000118
Owner: QA-MGR Priority: P1 Evidence

NCR Logged
Owner: QA Inspector When: 2026-01-18 14:22

Root Cause
Owner: Process Eng When: In progress

Action Plan
Owner: QA Manager When: Pending

Approval
Owner: Plant Head When: Pending

Effectiveness
Owner: QA Lead When: Scheduled

QA Manager
Assignee: L. Chen Pending
Awaiting root cause submission

Process Engineering
Assignee: R. Alvarez In progress
5-Why analysis and fishbone draft

Plant Head
Assignee: S. Nugroho Queued
Auto queued after QA approval

+ Add action Submit for approval

Lot Genealogy and Traceability Tree

Trace every lot from supplier to finished goods to customer shipment. Execute recalls with confidence by identifying scope in minutes, not days. Build compliance grade genealogy for regulated industries and export readiness. Includes **Lot and batch genealogy tree, upstream and downstream trace, recall scope builder, quality holds and dispositions, and evidence export for auditors and customers**. This module pulls lot events from Procurement, Warehouse, Production, and Quality, and feeds cost and margin attribution into Actual Costing and Profitability.

Quality > Traceability > Lot Genealogy

Lot Geneal... 0.8s trace Genealogy OK

Ctrl K Plant: 02 Lots: 18,442 Docs: 28 Evidence pack

Run trace

Trace mode: Backward + Forward Root lot: LOT-AL-202601-0419 Depth: 5 QA released Lot and serial Audit trail Command Filters

Chain integrity: 100% (OK) No broken edges in depth 5

Affected shipments: 3 (1 in transit, 2 delivered) Watch

Trace time: 0.8s (Fast) Optimized index and cache

Recall exposure: IDR 20.24M (Risk) If root lot is blocked today

Genealogy Map: Click any node to drill down. Use zoom controls for brochure screenshots.

Supplier to Shipment Nodes: 14 Edges: 16 Path highlight: On Ref: QA-TRACE-01

Supplier Lot: NorthSteel Co, LOT-AL-202601-0419, GR: GR-2026-00812 | Qty: 8,200 kg, QA: Released, Bin A03-01-02

WIP Lots: Pressing WIP, LOT-WIP-PRS-202601-0177, WO: WO-203244 | Op: OP-10, Status: Complete, Output 540 pcs; CNC WIP, LOT-WIP-CNC-202601-0203, WO: WO-203244 | Op: OP-20, Inspection: Passed, Cpk 1.44; Assembly WIP, LOT-WIP-ASM-202601-0119, WO: WO-104933 | Op: OP-50, Progress: 62%, Queue 3.2h

Finished Goods Lots: Apex Pump 1.2kW, LOT-FG-202601-0144, Item: FG-AXP-1200 | Qty: 1,200, QA: Released, Seri

Selected node: Supplier Lot, LOT-AL-202601-0419 (QA released, Lot tracked, Chain root)

Drilldown: Node transactions and link evidence. LOT-AL-202601-0419

Transactions:

Type	Doc	When
Goods Receipt	GR-2026-00812	2026-01-17 10:12
Incoming Inspection	INSP-2026-00077	2026-01-17 13:05
Bin Putaway	PUT-2026-00411	2026-01-17 15:22

Actual Costing and Variance Analysis

Close the loop between operations and finance with real actual costing. Reconcile material, labor, overhead, and variances by order and by product. Turn variance from a monthly surprise into a controlled operational action list. Includes **Actual cost rollup by work order**, **variance drivers** (usage, rate, yield, overhead), **reconciliation views**, and **governance ready postings aligned to finance close**. This module consumes transactions from Production and Warehouse, validates standards from Engineering, and outputs financial postings and variance evidence into Finance and Profitability.

Actual Costing + Variance Analysis
Material, labor, overhead variance per production order with period summary and drivers

Period: 2026-01 | Month: Jan | Week: W3 | Shift: Day | Plants: 8 | Updated: 2026-01-19 14:32 | Currency: IDR | Region: ID | Tolerance band: ±3.0%

Sales Orders: 2,847 (Live) | Purchase Orders: 1,523 (8 plants) | Shipments: 3,192 (OTIF ready) | WIP Orders: 1,284 (Monitor)

+12.3% vs last month | +8.7% vs last month | +15.2% vs last month | -3.1% vs last month

Overview | **Orders** | **Drivers** | **Journal** | **Baseline: Standard** | **Allocation: Absorption**

Period variance total: +2.84% vs standard cost baseline | **Material variance: +1.62%** Top driver: price + scrap | **Labor variance: +0.74%** Top driver: overtime mix | **Overhead variance: +0.48%** Top driver: energy + downtime

Std baseline: IDR 273.0B | Impact: IDR 4.44B | MAT | Impact: IDR 2.03B | LAB | Impact: IDR 1.32B | OH

Production Orders Variance
Click an order for breakdown, waterfall, and ranked root drivers.

Within band | **Investigate** | **Critical** | **View: Table** | **Filters**

Order	Item	Qty	Std cost	Actual	Var %	Flag
WO-104933 Closed 2026-01-19	FG-AXP-1200 Apex Pump 1.2kW	1,200	IDR 19.26B	IDR 19.95B	+3.56%	Investigate
WO-203244 Closed 2026-01-18	CMP-CNC-09 Machining Sub-Assembly	540	IDR 3.19B	IDR 3.10B	-2.56%	OK
WO-309077 Closed 2026-01-19	CMP-PAINT-XL Paint and Cure	780	IDR 1.42B	IDR 1.53B	+8.00%	Critical
WO-401112 Closed 2026-01-19	FG-AXP-1200 Final Assembly Batch	900	IDR 14.45B	IDR 14.73B	+1.99%	OK
WO-502233 Closed 2026-01-17	FG-MOT-500 Motor Assembly	650	IDR 8.75B	IDR 8.92B	+1.94%	OK

Variance Intelligence
Waterfall, mix, and ranked drivers with audit ready actions. WO-104933

Order variance waterfall | **Std to actual**

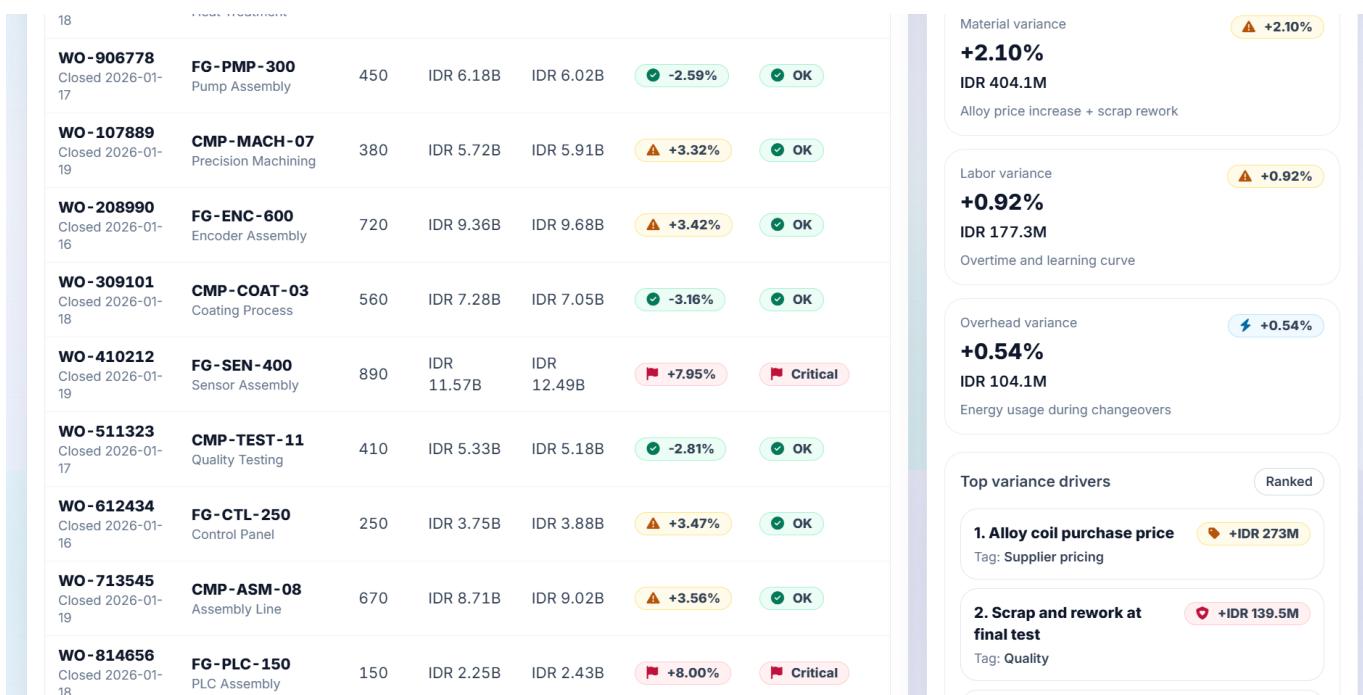
Std cost	Material	Labor	Overhead
IDR 19.26B	+IDR 404.1M	+IDR 177.3M	+IDR 104.1M

Insight
Variance is driven by supplier pricing plus scrap rework. Energy overhead is secondary.

Cost element mix | **Share**

Element	Share
Material	58%
Labor	26%
Overhead	16%
Confidence	10%

Net: +3.56% IDR 685.5M



The screenshot displays a dashboard for the Rayterton Apps ERP system. On the left, a table lists nine work orders (WO) with their details, including quantity, cost, and variance percentages. Most work orders are marked as 'OK', except for WO-410212 and WO-814656, which are marked as 'Critical'. On the right, a summary of material, labor, and overhead variances is shown, along with the top variance drivers.

WO	Item	Quantity	Cost	Variance	Status
WO-906778	FG-PMP-300 Pump Assembly	450	IDR 6.18B	IDR 6.02B (-2.59%)	OK
WO-107889	CMP-MACH-07 Precision Machining	380	IDR 5.72B	IDR 5.91B (+3.32%)	OK
WO-208990	FG-ENC-600 Encoder Assembly	720	IDR 9.36B	IDR 9.68B (+3.42%)	OK
WO-309101	CMP-COAT-03 Coating Process	560	IDR 7.28B	IDR 7.05B (-3.16%)	OK
WO-410212	FG-SEN-400 Sensor Assembly	890	IDR 11.57B	IDR 12.49B (+7.95%)	Critical
WO-511323	CMP-TEST-11 Quality Testing	410	IDR 5.33B	IDR 5.18B (-2.81%)	OK
WO-612434	FG-CTL-250 Control Panel	250	IDR 3.75B	IDR 3.88B (+3.47%)	OK
WO-713545	CMP-ASM-08 Assembly Line	670	IDR 8.71B	IDR 9.02B (+3.56%)	OK
WO-814656	FG-PLC-150 PLC Assembly	150	IDR 2.25B	IDR 2.43B (+8.00%)	Critical

Material variance +2.10% IDR 404.1M Alloy price increase + scrap rework

Labor variance +0.92% IDR 177.3M Overtime and learning curve

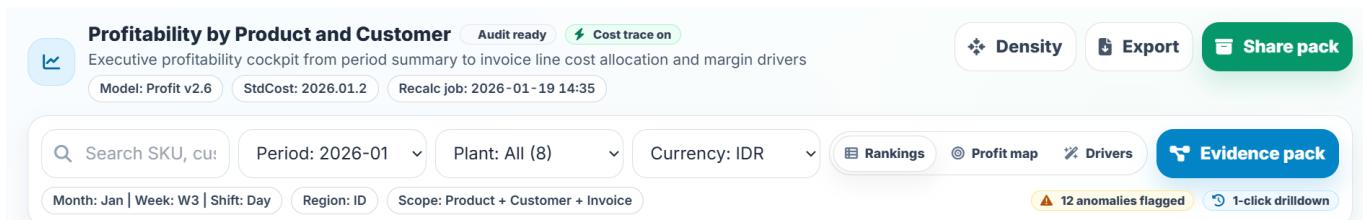
Overhead variance +0.54% IDR 104.1M Energy usage during changeovers

Top variance drivers (Ranked)

1. Alloy coil purchase price +IDR 273M Tag: Supplier pricing
2. Scrap and rework at final test +IDR 139.5M Tag: Quality

Profitability by Product and Customer

Move from cost reporting to profit decisions. Analyze profitability from period summary down to invoice line cost allocation and margin drivers. Keep “cost trace on” so leaders can defend margin actions with evidence, not assumptions. Includes **Profitability cockpit, product and customer margin ranking, cost allocation trace to material and operations, mix and price waterfall, and action list for margin leakage**. This module pulls actual cost evidence from Costing, revenue and terms from Order to Cash, and supplier and quality signals from Procurement and Quality to explain margin with operational drivers.



The screenshot shows the Profitability by Product and Customer cockpit. It includes a navigation bar with 'Audit ready' and 'Cost trace on' buttons, and a status message: 'Executive profitability cockpit from period summary to invoice line cost allocation and margin drivers'. Below this are buttons for 'Density', 'Export', and 'Share pack'. The main area features a search bar for 'Search SKU, cut' and filters for 'Period: 2026-01', 'Plant: All (8)', 'Currency: IDR', 'Rankings', 'Profit map', 'Drivers', and 'Evidence pack'. At the bottom, there are buttons for '12 anomalies flagged' and '1-click drilldown'.

Sales Orders
10,482
Open 1,204 | Past due 118

Invoices
7,916
Posted 7,842 | Disputed 38

Shipments
8,734
On-time 94.2% | Claims 0.8%

WIP Orders
4,186
Active 2,907 | On hold 141

Gross margin
31.8%
Contribution: IDR 126.6B

Net margin after freight and claims
25.1%
Net contribution: IDR 100.1B

Top SKU at scale
42.1%
FG-AXP-1200 drives margin mix

Bottom SKU risk
-4.6%
Loss driver: expedite + scrap concentration

Target: 30% GM

Freight: IDR 14.9B NET

Revenue: IDR 98.8B SKU

SKU: CMP-PAINT-XL RISK

Margin Flow and Profitability Lens
Period lens from revenue to net margin, then ranked product and customer drill paths to invoice evidence.

Product plus customer Currency: IDR

Hover points for period checkpoints. Values shown in billions.

MTD YTD QTD

Revenue	COGS	Gross	Freight	Claims	Discount	Net GM
FO-VAL-700	FO-VAL-700	FO-VAL-700	FO-VAL-700	FO-VAL-700	FO-VAL-700	FO-VAL-700
Invoice ref: INV-2026-001905						
FG-AXP-900	FG-AXP-900	FG-AXP-900	FG-AXP-900	FG-AXP-900	FG-AXP-900	FG-AXP-900
Invoice ref: INV-2026-001877						
CMP-CNC-09	CMP-CNC-09	CMP-CNC-09	CMP-CNC-09	CMP-CNC-09	CMP-CNC-09	CMP-CNC-09
Invoice ref: INV-2026-001822						
FG-AXP-800	FG-AXP-800	FG-AXP-800	FG-AXP-800	FG-AXP-800	FG-AXP-800	FG-AXP-800
Invoice ref: INV-2026-001795						
FO-VAL-750	FO-VAL-750	FO-VAL-750	FO-VAL-750	FO-VAL-750	FO-VAL-750	FO-VAL-750
Invoice ref: INV-2026-001783						
CMP-CNC-07	CMP-CNC-07	CMP-CNC-07	CMP-CNC-07	CMP-CNC-07	CMP-CNC-07	CMP-CNC-07
Invoice ref: INV-2026-001771						
FG-AXP-700	FG-AXP-700	FG-AXP-700	FG-AXP-700	FG-AXP-700	FG-AXP-700	FG-AXP-700
Invoice ref: INV-2026-001759						
FO-VAL-650	FO-VAL-650	FO-VAL-650	FO-VAL-650	FO-VAL-650	FO-VAL-650	FO-VAL-650
Invoice ref: INV-2026-001747						
CMP-CNC-05	CMP-CNC-05	CMP-CNC-05	CMP-CNC-05	CMP-CNC-05	CMP-CNC-05	CMP-CNC-05
Invoice ref: INV-2026-001735						

Invoice Evidence
Margin proof down to invoice line, allocation, and trace status.

INV-2026-001944

Customer
Aurora Energy
Date: 2026-01-19 | Terms: Net 30 | Status: Posted

Invoice AR risk: Low Dispute: None

Revenue IDR 13.6B Cost IDR 8.0B GM% 41.5%

Summary note
Margin driven by pricing discipline and stable freight lanes.

Invoice Lines Cost trace: Enabled

SKU	Qty	Revenue	Cost	GM%
FG-AXP-1200	400	IDR 9.10B	IDR 5.20B	42.9%
CMP-PACK-STD	400	IDR 0.68B	IDR 0.49B	28.1%

Allocation shown per selected line. In production, each component links to cost trace evidence.

Material 62% Labor 18% Overhead 20%

Evidence notes
Material includes lot trace, labor includes routing time, overhead includes machine center rates. Line SKU: FG-AXP-1200.

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Glossary

ATP (Available to Promise)

A method to calculate product cost based on real, recorded expenses (materials, labor, and overhead), so the cost reflects what actually happened in production.

BOM (Bill of Materials)

A complete list of all parts, components, and materials needed to build a product. Similar to a recipe for making a product.

CAPA (Corrective and Preventive Action)

A quality process to fix problems (corrective) and prevent them from happening again (preventive).

ECO (Engineering Change Order)

A planning system that calculates what materials are needed and when, based on demand, BOM, and production schedules.

MRP (Material Requirements Planning)

A planning system that calculates what materials are needed and when, based on demand, BOM, and production schedules.

NCR (Nonconformance Report)

A report created when a product or process does not meet required specifications.

OEE (Overall Equipment Effectiveness)

A performance metric that combines machine availability, speed, and quality into one score.

O2C (Order to Cash)

The full business process from receiving a customer order to collecting payment.

OTIF (On Time In Full)

A customer service measure showing whether orders are delivered on time and in the correct quantity.

Ready to Transform Your Manufacturing Operations at the Enterprise Level

Share your plant footprint, product complexity, planning constraints, procurement governance, quality standards, traceability requirements, and finance close pain points. Rayterton will configure a governance first ERP blueprint tailored to your operating model, then deliver a control tower demo with realistic volumes, audit ready evidence packs, and end to end traceability from demand to margin so leadership can validate outcomes before rollout.

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About Rayterton

Established in 2003, Rayterton delivers comprehensive Best Fit Software Solutions, server and hardware products, and technology services to a wide range of industries and organizations. Our core expertise lies in Business Process Improvement (BPI), IT Infrastructure, and IT Management.

At Rayterton, we are committed to empowering our clients by enhancing their business operations through tailored IT and management solutions. We combine innovation, experience, and client collaboration to ensure long-term success and digital transformation.

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client
requirements**

**Easy to
customize**

**Software
ownership**

**No Change
Request (CR)
fees during
maintenance**

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