

Know what stopped, what drifted, and who was told.

For maintenance, engineering, quality and operations teams choosing how machines, environmental readings and alerts are recorded, measured and acted on.



Agree the metric first

Write down what counts as planned time, a stop and a good unit.

Test the bad days

Stale readings, failed messages and nobody answering.

People decide impact

An alert starts a review; it doesn't decide the outcome.

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How to use this guide. Each section ends with tests you can run in a demo or trial, with or without V5. Rows are tagged **V5 FEATURE** where the capability is in V5 today, and **YOUR PROCEDURE** where it is something your team defines and carries out.

Sources explain buyer questions; they are not V5 compliance claims. Reviewed 2 October 2026.

1 • SCOPE

What's native, what's your procedure

Software records and routes. People set the rules, judge the impact and close the loop. Be clear which is which before you buy.

AREA	IN V5 TODAY	PLAN	YOUR PROCEDURE
Preventive maintenance	V5 FEATURE Calendar or runtime PMs, kiosk completion, spare-part requisitions, condemn and decommission with history	Pro, Ent	PM content, frequencies, return-to-use decision
Calibration	V5 FEATURE Instrument schedules, tolerance checks, certificates, kiosk gating on out-of-calibration devices	All	Tolerances, impact assessment on past use
Downtime and OEE	V5 FEATURE Downtime reasons at the moment of the stop; OEE from recorded events	Pro, Ent	Reason list, metric definitions, what to fix first
Sensors	V5 FEATURE Temperature, humidity, pressure and flow streams with alerting and logging	Pro, Ent	Limits, sample rate, disposition of affected stock
Notifications	V5 FEATURE SMS and email triggers, escalation, delivery audit	SMS all; rest Pro, Ent	Who is told, how fast, and what they must do
Anomaly detection	AI anomaly detection on process data: coming soon	Ent	Not available to rely on today

Not claimed. Automatic quarantine, automatic deviations, vibration sensing, specific radio protocols or sensor brands, fixed data retention periods, and guaranteed message delivery or timing. Ask for these in writing if you need them.

2 • ASSETS

Assets, PM and calibration: who does what

One asset record should hold the schedule, the history and the instruments on it. Map each step to a role before configuring anything.

STEP	MAINTENANCE PLANNER	TECHNICIAN	QUALITY	PRODUCTION
Create asset and PM plan	Owns	Advises	Reviews critical assets	Informed
PM falls due	Schedules	Receives	—	Agrees downtime window
Complete checklist, draw parts	—	Records, signs	—	—
Return to use	—	Requests	Decides where your procedure says	Accepts
Calibration due or failed	Schedules	Performs or arranges	Assesses impact on past use	Device blocked at kiosk until resolved
Retire or condemn asset	Proposes	—	Approves where required	Informed

Calendar PM

Every 3 months. Good for time-based wear and statutory checks.

Runtime PM

Every 250 run hours. Needs a configured run-hour source for that machine.

Out-of-calibration

The kiosk blocks the device. Your team decides what happens to work done since the last good check.

Spare parts

Drawn from inventory like any other lot, so usage is traceable.

Tests

CHECK	WHAT GOOD LOOKS LIKE	OK
Runtime trigger	A PM falls due after the configured run hours, from the agreed source	☐
Overdue PM	Visible to planner and supervisor; your rule decides if the machine may run	☐
Expired calibration	Device refused at the kiosk; impact review recorded	☐
Decommissioned asset	History still readable; asset cannot be selected for new work	☐

3 • DOWNTIME

Downtime reasons that people will use

OEE is only as honest as the stops recorded. A short list, picked at the moment of the stop, beats a perfect list filled in at shift end.

CATEGORY	EXAMPLE REASONS (YOURS WILL DIFFER)	PLANNED?
Changeover	Product change, allergen clean-down, size change	Planned if scheduled
Breakdown	Capper infeed jam, sealing jaw fault, conveyor motor	Unplanned
Material	Waiting for components, wrong label reel	Unplanned
Quality	Line hold for checks, rework	Unplanned
People	Short-staffed, training on line	Unplanned
Planned	Breaks, planned maintenance, no orders	Excluded from planned production time

Rules of thumb. 8–15 reasons per line. One "Other" reason that forces a comment, reviewed weekly. Decide the minimum stop length you record (for example, 2 minutes) and write it down; shorter stops then show up as performance loss.

Tests

CHECK	WHAT GOOD LOOKS LIKE	OK
Pick a reason in two taps	Operator records reason at the kiosk without leaving the job	☐
Stop with no reason yet	Shows as unassigned, not silently dropped	☐
Reason changed later	Original and change both visible in history	☐
Raise follow-up work	Maintenance job raised from the stop and linked to the asset	☐

4 • MEASUREMENT

The OEE metric contract

Before comparing lines, sites or systems, agree one written definition. ISO 22400-2 offers standard KPI definitions you can align with; your contract decides the details.

TERM	YOUR DEFINITION	EXAMPLE CHOICE
Planned production time	Shift time minus planned stops	480 min shift, breaks excluded
Run time	Planned production time minus unplanned stops	Includes stops ≥ 2 min only
Ideal rate	Per product and line, not nameplate if never achievable	50 units/min on FL-02
Total count	Units out of the machine, including rejects	From counter or kiosk
Good count	Passed first time, no rework	Rework counted as not good
Availability	$\text{Run time} \div \text{planned production time}$	
Performance	$(\text{Total count} \div \text{ideal rate}) \div \text{run time}$	Capped at 100%? decide
Quality	$\text{Good count} \div \text{total count}$	
OEE	$\text{Availability} \times \text{performance} \times \text{quality}$	

Common traps. Moving breaks in and out of planned time changes availability without anything getting better. Using nameplate speed makes performance look poor forever. Counting rework as good flatters quality.

5 • WORKED EXAMPLE

Worked OEE example, checked

Filler FL-02, Tuesday, 06:00–14:00. A fictional example; your figures will differ. No improvement is implied.

Running 06:00–10:42		Jam 45 min	Running 11:27–14:00
STEP	CALCULATION	RESULT	
Planned production time	480 min (breaks excluded by contract)	480 min	
Unplanned stop	10:42–11:27, reason: capper infeed jam	45 min	
Run time	480 – 45	435 min	
Availability	435 ÷ 480	90.6%	
Performance	20,010 units ÷ 50 per min = 400.2 min; 400.2 ÷ 435	92.0%	
Quality	19,610 good ÷ 20,010 total	98.0%	
OEE	0.906 × 0.920 × 0.980	81.7%	

Check it yourself. Ask the vendor to show each component from the recorded stops and counts, then change one input (for example, reclassify the jam as planned) and show what moves. If a number can't be traced to records, don't use it in a target.

What V5 shows. **V5 FEATURE** Availability, performance and quality from recorded stops, counts and rejects, with losses listed by reason. People decide what to fix first.

Readings: stale, missing, time and units



A flat line can mean a steady room or a dead sensor. Decide in advance how you tell the difference.

BUYER TEST	HOW TO RUN IT	WHAT GOOD LOOKS LIKE	DECIDE
Stale reading	Stop the sensor or gateway for longer than two sample periods	Visible as missing or stale, not repeated last value	Pass / fail
Gap in history	Disconnect for 30 min, reconnect	Gap is visible in the trend and export	Pass / fail
Clock and time zone	Compare reading time with a reference clock; cross a DST change in a test	Times agree; no duplicated or missing hour	Pass / fail
Units	Sensor sends °F, room set in °C	One unit stored and shown; conversion documented	Pass / fail
Resolution	Limit 5.0 °C, sensor resolves 0.5 °C	Limit is meaningful at that resolution	Agree

Sensor models, gateways and connection types are confirmed against your list before setup. Don't assume a device connects until it has been paired and tested on site.

Thresholds vs anomaly detection

Configured threshold
V5 FEATURE You set the limit band (for example, 0–5 °C). A reading outside it raises an alert. Predictable and easy to validate.

Anomaly detection
Flags unusual patterns that may still be inside limits. In V5 this is **coming soon** (Enterprise). Do not plan to rely on it today.

Your decision
YOUR PROCEDURE Which readings matter, what limit, how long outside before alerting, and who reviews.

SETTING	QUESTION TO AGREE	EXAMPLE
Limit band	Product or room requirement, with any alert margin	Alert at 5.0 °C; product limit 8 °C
Delay	How long outside before alerting, to avoid door-open noise	2 consecutive readings
Sample rate	Often enough to see a real excursion	Every 1 min
Recipients	Who acts at night and at weekends	Shift supervisor, then quality on call
Recovery	Is a return-to-band logged?	Yes, with time

8 • RESPONSE

From excursion to human disposition

An alert starts a review. It does not quarantine stock or open a deviation by itself. Write down who decides, using what evidence.

1	Excursion Chiller 2 reads 7.2 °C at 02:14	RECORDED Reading logged with time	WHO DECIDES Automatic record
2	Alert Shift supervisor alerted	RECORDED Send and delivery status logged	WHO DECIDES Automatic record
3	Acknowledge Supervisor acknowledges and checks the door	RECORDED Acknowledgement with name and time	WHO DECIDES Supervisor
4	Assess Which lots were in the room, for how long	RECORDED Readings and stock list reviewed together	WHO DECIDES Quality
5	Disposition Release, hold or investigate per your procedure	RECORDED Decision recorded with the readings	WHO DECIDES Quality

EVIDENCE TO KEEP TOGETHER	WHY
Readings before, during and after	Shows duration and peak
Lots and locations affected	Scope of the decision
Who acknowledged and when	Response time is real, not assumed
Decision and reason	Defensible later

Event routing and escalation



EVENT	FIRST RECIPIENT	CHANNEL	ESCALATE AFTER	THEN
Lot placed on hold	Quality on call	SMS + email	15 min no acknowledgement	Shift supervisor
Out-of-spec result	Lab lead	Email	30 min	Quality manager
Sensor excursion	Shift supervisor	SMS	15 min	Quality on call
Late work order	Planner	Email	None	—

Delivered is not seen. **V5 FEATURE** V5 logs each send and the delivery status reported by the messaging provider. Only a person's acknowledgement shows someone is acting. Make escalation depend on acknowledgement, not delivery.

Undelivered-message and outage tests

Run these with test recipients only. Never send test alerts to customers or real on-call staff without warning them.

#	TEST	EXPECTED	PASS
1	Recipient phone number invalid	Send shows not delivered; other channel or next person still notified	
2	Nobody acknowledges	Escalation moves on at the agreed time	
3	Recipient left the company	Removed from rules; no messages to old numbers	
4	Messaging provider unavailable	Failure visible in the log; your fallback (phone tree) is used	
5	Burst of 20 identical alerts	Behaviour agreed and acceptable to recipients	
6	Opt-out by a recipient	Respected; rule owner sees the gap	
7	Gateway or network down for sensors	Gap is visible; your manual check procedure starts	

No vendor can guarantee delivery or timing of SMS or email. Keep a manual fallback for critical events.

Commissioning RFP and acceptance matrix

QUESTION FOR THE VENDOR	EVIDENCE TO ASK FOR		
Which sensors and gateways have you connected for sites like ours?	Device list confirmed against yours		
How is a stale or missing reading shown?	Demo of a disconnected sensor		
How long are readings and message logs kept, and can we export them?	Written answer for your contract		
What happens to alerts during an outage?	Written behaviour and your fallback		
Can OEE components be traced to recorded stops and counts?	Live worked example		
Is anomaly detection available today?	Status in writing (V5: coming soon)		
AREA	WHAT TO SEE DEMONSTRATED	SYSTEM A	SYSTEM B
Maintenance	PM due, completed, parts drawn	_____	_____
OEE	Components traced to records	_____	_____
Sensors	Stale reading and excursion shown	_____	_____
Alerts	Failed send and escalation shown	_____	_____
Response	Disposition recorded with evidence	_____	_____
Total (0–3 each)		_____	_____

12 • NEXT STEPS

First month and sources

WEEK	DO	EVIDENCE
1	Asset list, PM plans, downtime reasons, OEE contract (pages 5–6)	Signed definitions
2	Pair one line's counters and one room's sensors; run tests on page 8	Test records
3	Routing table and escalation; run tests on page 12	Test log
4	Review first OEE week with the team; adjust reasons	Review notes

Sources explain buyer questions; they are not V5 compliance claims. Reviewed 2 October 2026.

Standards

- **ISO 22400-2:2014, KPIs for manufacturing operations management (under revision)** — www.iso.org/standard/54497.html

V5

- **Maintenance & OEE** — v5ultimate.com/features/maintenance-oeo
- **Sensors & IoT** — v5ultimate.com/features/sensors-iot
- **Notifications** — v5ultimate.com/features/notifications
- **Calibration** — v5ultimate.com/features/calibration-management
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