

MAINTENANCE KPI TRACKER: MONTHLY INPUT

Free template from OEE Lab: oee-lab.com/maintenance-kpi-tracker-template. Excel version with formulas and charts on the same page. Scope _____ Year _____

A Month	B Planned production hours	C Downtime from failures (h)	D Number of failures	E Hands-on repair hours	F PM tasks due	G PM tasks done on time	H Planned maintenance hours	I Total maintenance hours	J Backlog of ready work (h)	K Crew hours per week	L Maintenance cost	M Replacement asset value (RAV)

WHAT TO COUNT IN EACH COLUMN

- A. Month:** The first day of the month.
- B. Planned production hours:** Hours the machine, line or area was scheduled to run in the month. Leave out time with no orders and planned shutdowns.
- C. Downtime from failures (h):** Clock hours from each failure stop until the machine ran again, added up. Not changeovers, not waiting for material.
- D. Number of failures:** Stops caused by a failure that needed a repair.
- E. Hands-on repair hours:** Clock hours someone was working on the stopped machine for those failures. Count the clock once, even when two people worked together.
- F. PM tasks due:** Preventive tasks whose due date fell in the month.
- G. PM tasks done on time:** Of those, the tasks done by their due date (or inside the window you wrote down).

- H. Planned maintenance hours:** Labor hours on work that was planned before it started: PM and scheduled repairs.
- I. Total maintenance hours:** All maintenance labor hours on this scope in the month.
- J. Backlog of ready work (h):** Estimated labor hours of open work that is ready to do, parts and permits in place, at the end of the month.
- K. Crew hours per week:** Hours the crew can spend on that work in a normal week, after meetings, travel and breakdowns.
- L. Maintenance cost:** Labor, parts, contractors and materials for the month, in one currency.
- M. Replacement asset value (RAV):** What it would cost to replace the assets in this scope new today, in the same currency.

MAINTENANCE KPIS BY MONTH

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Scope _____ Year _____

Month	MTBF (h) (B - C) ÷ D	MTTR, time to restore (h) C ÷ D	Hands-on repair per failure (h) E ÷ D	Waiting share of each stop 1 - E ÷ C	Availability from failures (B - C) ÷ B	PM compliance G ÷ F	Planned maintenance H ÷ I	Backlog (crew weeks) J ÷ K	Cost as % of RAV, a year L × 12 ÷ M
All months									

Letters are the columns of page 1. All months: add up each page 1 column for every month and divide once; never average the monthly percentages. Backlog: the latest month. Percentages: multiply by 100.

WHAT MOVED MOST THIS MONTH, AND WHY

ONE ACTION: WHAT, WHO, BY WHEN

KPI DEFINITIONS, FORMULAS AND SOURCES

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KPI	Formula	What it tells you	Source and target
MTBF (h)	Operating hours ÷ number of failures. Operating hours = planned production hours - downtime from failures.	How long the line runs between failures, counting operating time only, not calendar time. Higher is better. In a quiet month one failure more or less moves it a lot, so read it with the failure count.	IEC 60050-192, IEC 192-05-13: mean operating time between failures, the expected operating time between failures, for repairable items. No target given. https://www.electropedia.org/iev/iev.nsf/display?openform&ievref=192-05-13
MTTR, time to restore (h)	Downtime from failures ÷ number of failures.	How long a failure keeps the line down, from the stop until it runs again: waiting for a technician, parts or a release included. Lower is better.	IEC 60050-192, IEC 192-07-23: mean time to restoration. IEC marks "mean time to repair" and "mean time to recovery" as deprecated. No target given. https://www.electropedia.org/iev/iev.nsf/display?openform&ievref=192-07-23
Hands-on repair per failure (h)	Hands-on repair hours ÷ number of failures.	The part of each stop when someone was working on the machine. Kept apart from time to restore, so the two meanings of MTTR are never mixed.	SMRP lists metric 3.5.2 as Mean Time to Repair or Replace (SMRP Best Practices Metrics Workshop, 2018). No target given. https://pemac.org/sites/default/files/2018_SMRP_BPMW_Full_Day.pdf
Waiting share of each stop	1 - hands-on repair hours ÷ downtime from failures.	How much of each stop went to waiting rather than repair. Above 50%, most of the stop is waiting: look at call-out, spare parts and permits before repair skills.	Arithmetic on the two rows above. No standard or target.
Availability from failures	Operating hours ÷ planned production hours. The same as MTBF ÷ (MTBF + MTTR).	The share of planned hours the line was not down for a failure. Changeovers and other stops are left out, so it reads higher than the availability factor of OEE.	Arithmetic on the IEC terms above. No target given.
PM compliance	PM tasks done on time ÷ PM tasks due.	Whether the preventive plan is done when it is due. Write down what counts as on time (the due date, or a window) and keep it every month.	Common working definition; no standard is used here. No target given.
Planned maintenance	Planned maintenance hours ÷ total maintenance hours.	The share of maintenance hours that were planned before the work started (PM and planned repairs), against breakdown and rush work.	Common working definition. For context only, a different measure: in a NIST survey of US discrete manufacturers (2016 data), 45.7% of machinery maintenance was reactive (Thomas and Weiss, NIST AMS 100-34, 2020). https://doi.org/10.6028/NIST.AMS.100-34
Backlog (crew weeks)	Backlog of ready work (h) ÷ crew hours per week.	How many weeks the crew would need to clear the ready work if nothing new came in. Watch the trend: a line that keeps rising means work arrives faster than the crew clears it.	Common working definition. No published healthy band was found in a neutral source, so none is printed.
Maintenance cost as % of RAV, a year	Maintenance cost of the month × 12 ÷ replacement asset value.	Maintenance spend against what it would cost to replace the assets new, on a yearly scale so a month reads like the yearly ratio.	SMRP: top performers in all industries keep reliable plants under 3% of RAV (SMRP Best Practices Metrics Workshop, 2018). Ron Moore (Reliabilityweb) warns the ratio is not useful on its own: about 2.5% is a benchmark for a chemical company, while 4% can be excellent for corrosive processes. https://pemac.org/sites/default/files/2018_SMRP_BPMW_Full_Day.pdf

No target is printed unless a published source gives one. Ron Moore, Reliabilityweb: reliabilityweb.com/en/articles/maintenance-cost