

Process FMEA (PFMEA)

How-to guide: what the workbook does, how to use it and what every number means.

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Rate every process failure mode for severity, occurrence and detection, rank the risks, and follow each recommended action until the re-rated risk is under your limit.

For: Quality, process and manufacturing engineers and cross-functional FMEA teams at automotive, medical-device and aerospace suppliers.

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Quick start

1. On Setup, type the part, process, FMEA number, team and dates, set your RPN limit, severity limit and status date, and replace the example process steps, owners and characteristic classes.
2. On PFMEA, add one row per failure mode and cause at each step, with its effect, controls and severity, occurrence and detection ratings (1 to 10).
3. For risks over your limits, type a recommended action, owner and due date; when it is done, type what was done, the completed date and the new ratings.
4. Read the Risk, Action status and Check columns, then open the Dashboard for the top 10 risks and the highest RPN at each step.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	FMEA header, your limits and status date, and the process-step, owner and class lists.
PFMEA	One row per failure mode and cause at a process step: ratings, controls, actions and the re-rated risk.
Dashboard	The biggest process risks, whether actions are bringing them under your limits, and which actions are late.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
RPN	Severity x occurrence x detection, before actions. 1 to 1000.	S x O x D
New RPN	New S x new O x new D, when all three new ratings are typed.	S x O x D

Quantity	How it is calculated	Units
Current RPN	New RPN when the action has a completed date and new ratings; otherwise RPN.	S x O x D
Current S	New S when the action is complete and re-rated; otherwise severity.	1-10
Risk	Out of limits when current RPN >= the RPN limit; Check when current S >= the severity limit; else Within limits.	-
Action status	Complete when a completed date is typed; Overdue when due < status date; Due soon within the warning days; Check when there is no due date; blank without an action.	-
Rank	COUNTIF of current RPNs above this row + 1, ties broken by row order. 1 = highest.	-
Top 10 risks	The rows ranked 1 to 10 (MATCH on Rank), with current S, RPN before and now, risk and action status.	-
Highest RPN by step	The largest RPN among a step's rows, before actions and now, computed from the rating columns with SUMPRODUCT(MAX(...)).	S x O x D
RPN cut by completed actions	1 - sum of current RPN / sum of RPN before, over rows whose action is Complete.	%

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Harwood Die Casting, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

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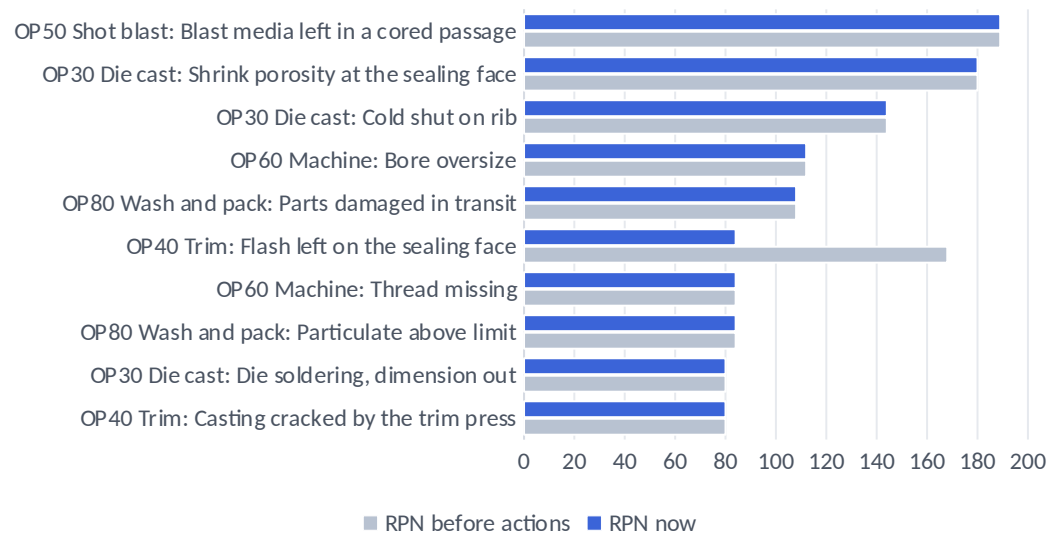
The biggest process risks, whether actions are bringing them under your limits, and which actions are late.

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FMEA PF-450-01: Pump housing, A380 aluminium die casting (PH-450 rev D). RPN limit 100, severity limit 9, actions judged at 9 Oct 2026 (Setup).

FAILURE MODES ANALYSED	OUT OF LIMITS NOW	HIGHEST RPN NOW	ACTIONS OVERDUE
20	5	189	2
Rows on the PFMEA sheet	Target 0	Limit 100	Target 0
	Above target	Above target	Above target

Top 10 risks: RPN now and before actions



Highest RPN by process step

