

TRAINING MODULE

Kaizen Idea Sheet

From a floor observation to a verified countermeasure

A working module for engineers with 1–2 years on the floor. By the end you will be able to map an observation to a real TPM loss, run a genuine 5-Whys chain, and structure a countermeasure the way a JIPM-aligned Kaizen sheet requires.

Grounded in JIPM's 16 Major Losses framework and Toyota's 5-Why root-cause discipline (Taiichi Ohno)

What You Will Be Able to Do After This Module

- 1 Name all three loss groups in TPM's 16 Major Losses framework, and place a real observation in the right one.
- 2 Explain the full logic chain: ECRS observation → TPM Loss → Problem → 5 Whys → Root Cause → Idea → Countermeasure → Result.
- 3 Run a genuine 5-Whys chain that ends at a fixable root cause — not a restated symptom.
- 4 Structure Solution Options and a selected Countermeasure the way the sheet requires.
- 5 Recognize the two most common mistakes junior IEs make when they first write a Kaizen sheet.

Sixteen Losses, Three Groups

Before a Kaizen sheet can fix anything, it names WHICH of TPM's 16 defined loss categories the observation actually belongs to:

A — EQUIPMENT LOSS

8 of 16

Breakdown, setup/adjustment, tool change, start-up, minor stoppage, speed reduction, defect/rework, planned maintenance.

B — MANPOWER LOSS

5 of 16

Management loss, operating motion loss, line organisation loss, logistics/distribution, measurement & adjustment.

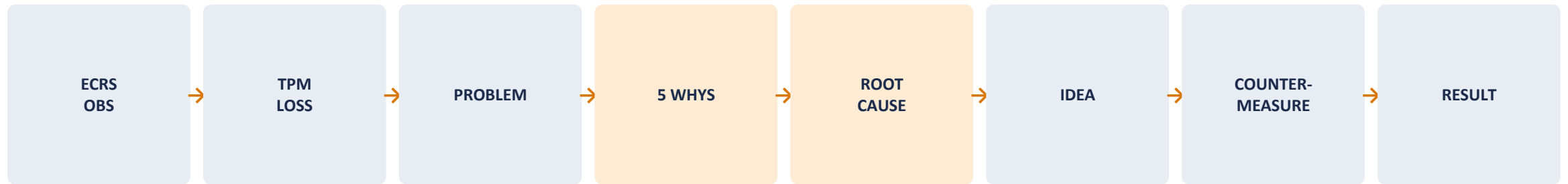
C — RESOURCE LOSS

3 of 16

Energy loss, die/tool/jig loss, yield loss.

As an IE, most of your Kaizen sheets will land in Group B, especially Operating Motion Loss — but the framework forces you to check all 16, not just the ones you already expect.

One Unbroken Chain, Observation to Result



EVERY LINK MUST HOLD, OR THE CHAIN BREAKS

- Skip TPM Loss → the sheet has no framework anchor; can't be rolled up into a loss-reduction program.
- Stop 5 Whys early → “Root Cause” is really just a restated symptom, and the fix won't stick.
- Skip Solution Options → the Countermeasure looks arbitrary, with no evidence alternatives were considered.

WHERE THIS METHOD COMES FROM

“Ask Why Five Times About Every Malfunction”

Taiichi Ohno's own words, describing the practice that became Toyota's signature root-cause method: “by repeating why five times, the nature of the problem as well as its solution becomes clear.” JIPM's 16 Major Losses framework gives that root-cause discipline a home — a defined place in TPM's loss structure, so a Kaizen isn't just a good idea floating alone, but a documented reduction against a named, trackable loss.

This sheet is both traditions in one document: Ohno's questioning discipline, inside JIPM's loss structure.

KAIZEN 改善

“Change for the better”

JIPM · Toyota Production System

TPM's Activity Pillars, Not a Truncated Guess

Every loss maps to a defined TPM pillar — the Kaizen Theme comes from THIS list, not from whatever words the observation happened to use:

KK	Kobetsu Kaizen	Focused Improvement — most IE Kaizens land here.
JH	Jishu Hozen	Autonomous Maintenance — operator-owned upkeep.
QM	Quality Maintenance	Building quality into the process itself.
PM	Planned Maintenance	Scheduled, preventive equipment care.
SHE	Safety, Health & Environment	Loss categories with a safety/environmental angle.

1

LINK 1-2

Observation → TPM Loss

Keyword-matched against all 16 losses, not just the ones you'd guess first.

Group B, Loss #10 — the one most IE floor observations land on.

ECRS OBSERVATION (from the Production Study)

“Operator reaches into a mixed bulk bin to find and grasp the correct connector — slow, and occasionally grabs the wrong one.”

↓ keyword match: reach / bin / motion

LOSS #10 — OPERATING MOTION LOSS

Group B — Manpower Loss · Primary Activity: KK (Kobetsu Kaizen)

PROBLEM STATEMENT (the next link): “Excess motion and occasional wrong-part selection at connector pick, from an unsorted bulk bin.”

A Real Chain Ends at Something Fixable

1	Why does the operator take excess time?	The bin holds mixed connector sizes, requiring a visual search every pick.
2	Why is the bin mixed?	Upstream kitting doesn't separate connectors by size.
3	Why doesn't kitting separate by size?	The kitting process was designed before this connector variant existed.
4	Why wasn't kitting updated for the new variant?	No engineering-change trigger links a BOM change to a kitting-process update.
5	Why is there no such trigger?	Kitting-process ownership was never assigned during the last changeover project.

Why #5 is a PROCESS-OWNERSHIP gap — fixable. Stopping at Why #1 (“the bin is messy”) would only fix today's bin, not the next variant's bin.

2

LINKS 4–5

Root Cause → Idea

The Root Cause is Why #5's answer, restated as a named gap — not the deepest symptom, the actual cause.

One idea can address the root cause directly, or work around it — both are legitimate, but say which you're proposing.

ROOT CAUSE

No process ownership was assigned to trigger a kitting review when a BOM/variant changes.



IDEA

Pre-kit connectors by size in dedicated compartments AND add a kitting-review checklist item to the engineering-change process at model changeover.

Notice the idea has TWO parts: one fixes today's bin (the symptom), one fixes the process gap (the root cause). A sheet that only proposes the first part hasn't actually used its own 5-Whys work.

Show the Alternatives You Actually Considered

OPTION A	3D-printed multi-compartment tray, sized per connector	Cost: LOW Time: 3 days	✓ SELECTED
OPTION B	Commercial off-the-shelf parts organizer bin	Cost: LOW Time: 1 week (procurement)	
OPTION C	Full kitting redesign with kanban signal to Materials	Cost: HIGH Time: 6–8 weeks	
COUNTERMEASURE: Option A implemented, PLUS kitting-review checklist item added to the engineering-change process, ownership assigned to the Materials Handling Lead.			

Measured After, Not Promised Before

C2C Variation	67.5%	→	≈ 22%	consistent grasp motion, no more visual search
Motion Time / Cycle	+4s vs. standard	→	on standard	matches the MTM Golden Zone target
Wrong-Part Picks	≈ 1 in 40 cycles	→	not observed in pilot	single-size compartments

Closing the loop: if this station also has a PFMEA row, its Occurrence score should now update to reflect this measured result — the exact cross-reference the PFMEA module's Kaizen link performs automatically.

Five Mistakes That Give Junior IEs Away

-  Stopping the 5-Whys chain at 2 or 3 questions — the “root cause” is still a symptom, and the fix won't stick past the next variant.
-  Skipping straight from Problem to Countermeasure with no Solution Options shown — looks arbitrary to anyone reviewing it later.
-  Filling in Result/Benefit with an ESTIMATE before the fix is even implemented — this field is for what was actually measured.
-  Forcing an observation into the nearest-sounding loss category instead of checking the real keyword-to-loss mapping across all 16.
-  Never closing the loop back to a related PFMEA row — the improvement stays invisible to the risk-ranking that should reflect it.

What generate_kaizen.py Does For You

The full logic chain, structured and pre-populated from your existing Production Study — named per station, per finding.

- 1

Maps every ECRS observation to a TPM Loss

Keyword-matched against all 16 losses and the correct A/B/C group — the Slide 7 logic, run automatically.
- 2

Scaffolds the 5-Whys structure

Five explicit prompt rows, so the chain can't quietly stop at Why #2.
- 3

Builds Solution Options alongside the Countermeasure

A structured comparison table, not just a single boxed answer.
- 4

**Names each file
StationNo_SrNo_Kaizen.xlsx**

Every Kaizen traceable back to its exact station and sequence — ready for the PFMEA cross-reference.

KEY TAKEAWAYS

Recap — Say This Back In Your Own Words

- Every Kaizen anchors to one of TPM's 16 defined losses, in one of three groups — not a free-floating good idea.
- A real 5-Whys chain ends at something fixable, usually a process or ownership gap — not a restated symptom.
- Solution Options come before Countermeasure — show the alternatives, then justify the choice.
- Result/Benefit is measured after implementation, and should close the loop back to any related PFMEA row.

TALK IT THROUGH — 3 QUESTIONS FOR YOUR NEXT LINE WALK

1. Pick a Kaizen you've written before — which TPM loss and group does it actually belong to? Did you check, or assume?
2. Re-run its 5-Whys chain out loud — does Why #5 land on something fixable, or does it just restate Why #1 in different words?
3. Does that Kaizen's measured result ever make it back into a PFMEA's Occurrence score anywhere on your line?