Manufacturers Alliance
Providing Training & Education Peer to Peer

Lean Practitioner Sample Project

Date:

Company Information:

Company Name: Pure Piping
Applicant: Bob Davis
Project Name: Improving On-Time Start in Assembly

Company Description:

Pure Piping supplies pipes and accessories for plumbers all across the country. Our value stream process starts with Machine Setup to extruding, then coil and then warehouse & distribution and finally shipped directly to the customer site.

Project Team:

List the names and Job Titles of the project team members below. Add more rows as needed

Name	Title
Bob Davis	CI Coordinator
Maria Right	Assembly Lead
Derek Smalls	Kitting Tech
Sam Armstrong	Material Handler

Approvals:

Signature verifying they are aware of and support you leading this project.

Manager: Kirby Sneen	Approval Date: X/X/XX
Peer: Frank Kessler	Approval Date: X/X/XX

Problem Statement:

Define the problem using current state and target state metrics (numerical values) and providing the call to action (why it is important that you solve this problem) does not include root cause or solution speculation.

From July through December, only 62 percent of scheduled Assembly jobs were able to begin as planned. This is below the internal target of 90 percent and has contributed to longer lead times and growing queues in the Assembly area.

Timeline & Key Actions:

Define the actions, their owners, due dates, and status. Add more rows as needed.

Action	Owner	Due Date	Status
Conduct waste walk and document initial observations	Bob	X/X/XX	Done
Create process map for kitting workflow	Bob	X/X/XX	Done
Gather baseline kit accuracy and on-time start data	Bob	X/X/XX	Done
Complete root cause analysis with team	Bob	X/X/XX	Done
5S Kitting Area	Bob	X/X/XX	Done
Develop standard kit layout reference sheets	Bob	X/X/XX	Done
Implement verification checklist for kit completeness	Derek	X/X/XX	Done
Draft standard work and review with shift leads	Bob	X/X/XX	Done
Pilot improved workflow and collect daily measurements	Bob	X/X/XX	Done
Document results and finalize sustainment plan	Bob	X/X/XX	Done

Current State:

Describe the current state conditions, documenting knowns and unknowns in relation to the problem you are trying to solve

The Assembly area relies on complete and accurate kits to begin work on time. Current data and observations show the following:

- On-time start rate: 62 percent (target is 90 percent).
- Kit accuracy: 84 percent for two primary kit types (target is 98 percent).
- Assembly operators spend 6–12 minutes searching for missing components when kits arrive incomplete.
- Staging shelves in Kitting are not labeled clearly, and duplicate storage locations exist for several common components.
- Workflows differ between first and second shift. Each shift uses informal methods to prepare and label kits, resulting in inconsistent layout and verification practices.
- Walking paths between storage areas are not direct, and parts used frequently are stored far from the workstation.

This current state shows that the process lacks stability and visual control, leading to frequent delays and increased queue times in Assembly.

Goals:

The measurable goal(s) you plan to achieve, also include the current state metric. Add extra boxes as needed

Goal	Current
Goal 1: 90% Assembly on time start rate	**Current state measurement of goal 1:** 62%
Goal 2: 98% Kit Accuracy	**Current state measurement of goal 2:** 84%

Major Project Activities:

List the key actions during the project, tell your project "Story"

• Planning Stage:

I began by completing a waste walk through the Kitting and Assembly areas to identify where problems were occurring. Several forms of waste were visible, including excess motion from searching for parts, transportation between separated storage locations, waiting in Assembly due to incomplete kits, and overprocessing from rechecking kit contents.

Next, I created a process map for the kitting workflow. Mapping the steps helped clarify where variation occurred between shifts, where backtracking was happening, and which steps lacked visual controls or clear criteria. This also helped define the true scope of the problem and ensured the team shared the same understanding of the workflow.

I gathered baseline data for kit accuracy and on-time start rate and confirmed the measurements with Assembly and Kitting. I also documented common points where kits became inaccurate, such as missing small hardware items and inconsistent labeling.

Using the data, the team completed root cause analysis by combining a fishbone diagram with 5 Whys. The main drivers of the problem were lack of visual organization, unclear part locations, inconsistent methods between shifts, and no standard verification process before kits were released to Assembly.

From this information, I developed a focused action plan that included improving workplace organization using 5S, adding visual controls for component storage, creating a standard kit layout, and implementing a verification checklist to confirm kit completeness. These actions formed the implementation plan.

• Action/Implementation Stage:

We began improvements using 5S. During Sort, the team removed obsolete items and consolidated duplicate storage locations. During Set in Order, we arranged frequently used parts near the workstation, labeled all shelves and bins, and established dedicated locations for shared components. Shine was completed by cleaning surfaces, clearing debris, and creating a starting point for maintaining the workspace.

We then created visual controls to support the new layout, including color-coded locations for shared components and simple identifiers for hardware bins. A standard layout reference sheet was developed for each kit type to reduce variation in how components were arranged.

A verification checklist was implemented so technicians could confirm completeness before a kit was moved to staging. This also created a simple way for Assembly to provide feedback if kits were missing items.

To stabilize the process, we wrote a short standard work document outlining the steps for preparing a kit, labeling it, verifying it, and placing it in staging. Both shift leads reviewed the document, and we aligned on a single method.

We piloted the improved workflow for two weeks. During the pilot, I monitored kit accuracy and on-time starts daily and checked in with Assembly to confirm whether kits were arriving complete and ready to use. Early results showed fewer delays and stronger consistency between shifts.

Tools/Skills from Workshops Used:

What tools or skills were applied from the workshops, why you chose them, and how you deployed them

- Waste Walk
    - Used to identify motion, transportation, and waiting waste. This helped clarify where delays were occurring and guided the focus of the process map.
- Process Mapping
    - Selected because it provides a visual view of the workflow. Used to identify variation between shifts and unnecessary backtracking in the kitting process.
- Root Cause Analysis
    - Chosen to understand why kits were arriving incomplete. The fishbone and 5 Whys helped pinpoint variability, lack of visual controls, and inconsistent methods as key contributors.
- 5S and Visual Management
    - Used to organize the workspace and create visual clarity. 5S helped stabilize part locations, reduce searching time, and support consistent kit preparation.
- Standard Work
    - Selected to maintain improvements long term. Standard work defined the sequence, expectations, and verification steps needed to keep the process stable across shifts.

Project Results:

Show the results compared to the goals, after impact of the project, don't use TBD. "Goal" and Current" sections will include the same information from the chart above

Goal	Current	After	Results
Goal 1 **90% Assembly on time start rate**	**Current state measurement of goal 1** **62%**	After improvement measurement of goal 1 **91%**	Change improvement amount (%) of goal 1 **47% improvement**
Goal 2 **98% Kit Accuracy**	**Current state measurement of goal 2** **84%**	After improvement measurement of goal 2 **99%**	Change improvement amount (%) of goal 2 **18% improvement**

Sustainment Plan:

Explain how the improvements will be sustained going forward.

• Ownership of the process: Derek, the Kitting Technician, will own the daily preparation and verification of kits. The Assembly Lead will monitor weekly accuracy trends. I will conduct monthly audits for the first quarter to ensure the process remains stable.

• Monitoring Plan: The verification checklist will be used as the weekly measurement tool for kit accuracy. On-time start performance will be reviewed during the weekly production meeting. Any decline in performance will trigger a quick review of the kitting workflow to confirm whether standard work is being followed.

• Potential risks to sustainment and mitigation strategies: If components begin drifting from their labeled locations, weekly 5S checks will identify and correct issues early. If variation between shifts returns, the standard work will be reviewed during shift handoff and updated as needed. If new kit types are added, the visual layout and checklist will be updated to prevent errors.

Conclusions & Lessons Learned:

Reflect on key lessons learned throughout the project:

• Lesson 1: This project helped me see how much variation can occur when processes are not clearly defined. Mapping the workflow and gathering baseline data made the problems easier to understand and gave the team a shared starting point.

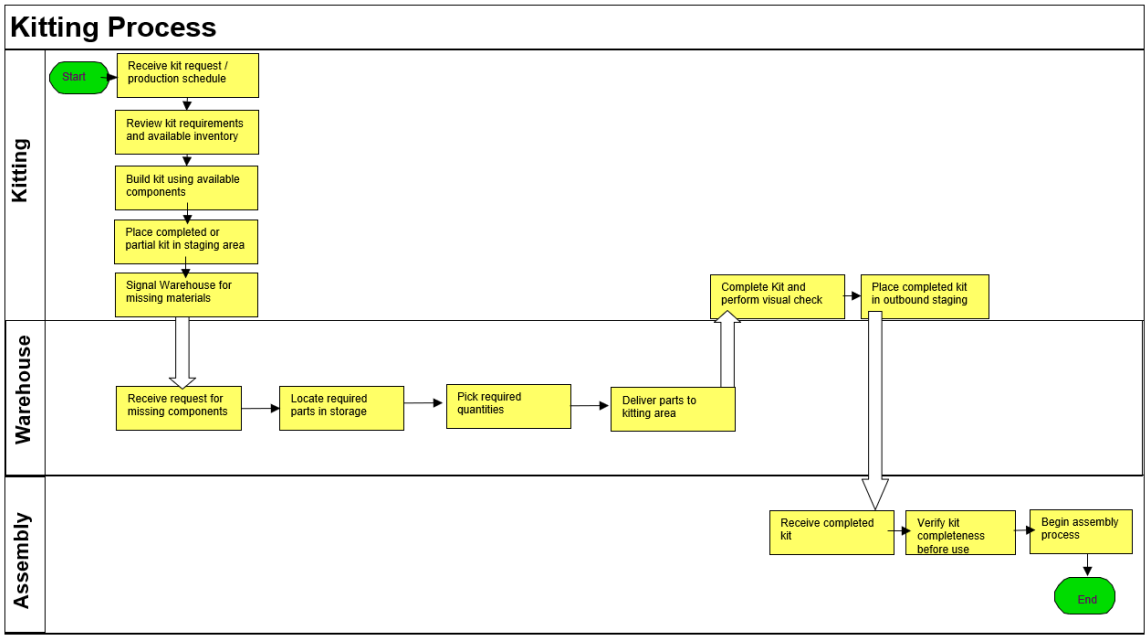
• Lesson 2: I also learned the value of involving operators early. Their feedback shaped the improvements and helped create solutions that made sense for daily work. Seeing the improvements in accuracy and flow helped reinforce the importance of visual controls and standard work.

• How These Lessons Will Change Future Approaches: This project reinforced the value of involving operators early and using their input to shape realistic, deployable improvements. Seeing how visual controls and standard work supported consistency and flow showed how important it is to build structure that teams can easily understand and sustain. Going forward, I will continue to apply these approaches to create clearer processes, stronger engagement, and more sustainable results in future lean projects and initiatives.

Appendices:

Attach any relevant photos, charts, or additional documentation that supports your project.

Swim Lane Map:



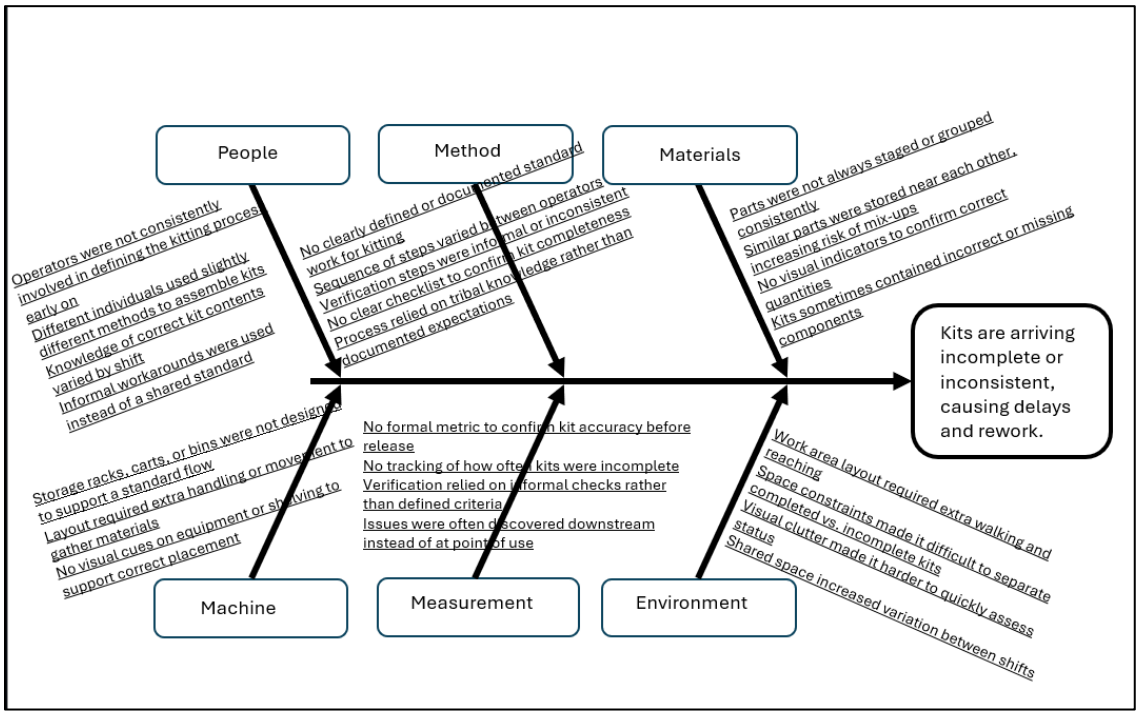
Waste Identification Worksheet

Area: __Kitting_____ **Date:_____X/X/XX_____**

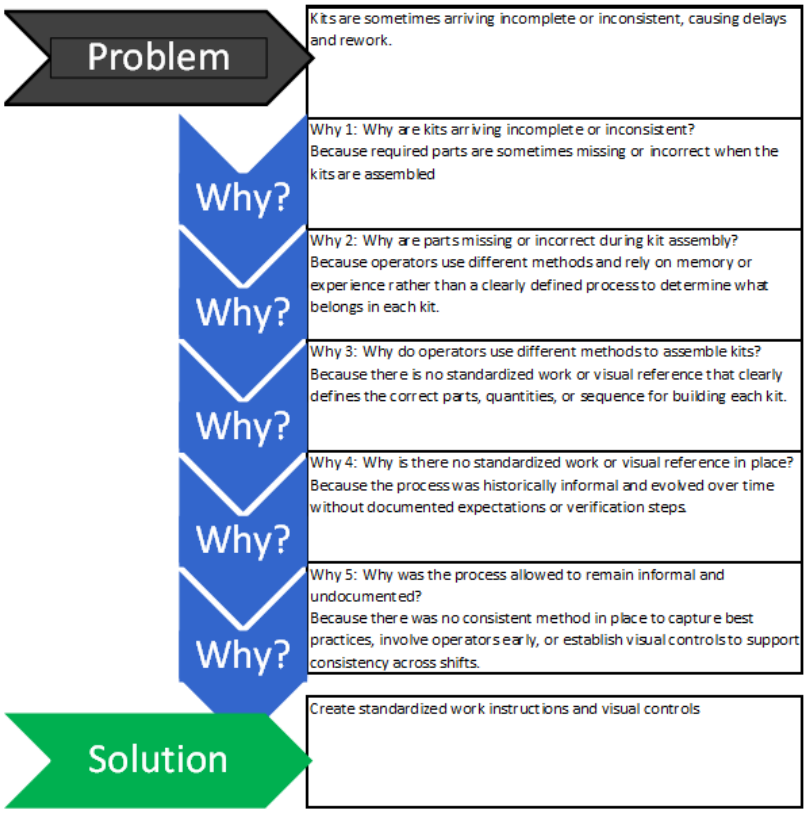
The Wastes	Definition	Examples	Observations
Transportation 	Movement of product from place to place	• Moving parts in and out of storage • Moving material from one workstation to another • Moving parts in and out of quality inspection	1. Kits or materials were moved 2–3 extra times between storage, staging, and the kitting area before use. 2. Parts were occasionally transported back to storage when issues were found, adding additional handling per kit.
Inventories 	Idle product. Material not being currently processed	• Raw materials • Work in process • Finished goods • Consumable supplies • Purchased components • Maintenance supplies	1. Observed 3–6 extra kits staged in the area beyond immediate demand. 2. Multiple part bins contained excess quantities, with no visual limit or max level defined
Motion 	Movement of people, information, or equipment not necessary to produce the product	• Searching for parts, tools, prints • Sorting through materials • Reaching for tools • Lifting boxes of parts • Walking between machines	1. Operators spent several minutes per kit searching for parts or labels due to inconsistent locations. 2. Reaching, bending, and walking across the area occurred multiple times per kit to gather missing items.
Waiting 	Any time the product is not able to move immediately to the next process	• Waiting for parts, prints, or information • Waiting for inspection • Waiting for machines • Waiting for machine repair	1. Assemblers experienced delays of 5–15 minutes at a time when kits were incomplete or needed correction. 2. Work occasionally paused while missing parts were located or verified.
Overproduction 	Producing more than needed or before it is needed	• Producing to forecasts • Producing to avoid set-ups • Batch process • More than standard WIP • Building ahead of schedule	1. Kits were sometimes built 1–2 batches ahead of immediate need to stay ahead of schedule. 2. Extra kits remained staged until needed, increasing handling and space usage.
Overprocessing 	More work done or higher quality than customer requires	• Multiple cleaning or handling • Paperwork • Over-tight tolerances • Awkward tool or part design • Multiple copies or approvals	1. Kits were checked more than once because completion criteria were not visually defined. 2. Additional verification steps were added informally to prevent downstream errors.
Defects 	Work that contains errors, rework, mistakes or is missing necessary items	• Scrap • Rework • Correction • Field failure • Missing parts	1. Incomplete or incorrect kits were found several times per week, requiring rework. 2. Missing or incorrect parts resulted in re-sorting and delayed use.
Skill 	Not fully utilizing the talents and knowledge of employees	• Boring/tedious work • Not involved in decisions • No training or advancement	1. Operators had improvement ideas related to layout and flow but were not consistently involved early in planning. 2. Knowledge about efficient sequencing and common issues was informal and not standardized or shared.

Reviewers: _Mike McDonald_____

Fishbone:



5-Why



STANDARD WORK INSTRUCTIONS – KITTING PROCESS

Purpose:

To ensure kits are assembled consistently and correctly so downstream assembly is not delayed due to missing or incorrect parts.

Applies to: Kitting activities

Used when: Preparing kits for production

Standard work steps:

Step	Task Description	Key Points / Quality Checks
1	Receive kit request or production schedule	Confirm the correct kit before starting work
2	Review the kit list to understand required parts and quantities	Use the kit list as the source of truth rather than relying on memory
3	Gather required parts from designated storage locations	Pull only the quantities listed; do not substitute parts
4	Identify and report any missing or unclear parts	Stop and notify the appropriate support person if parts are unavailable or unclear
5	Place parts into the kit container using the standard layout	Keep parts grouped and organized as shown in the layout
6	Verify kit contents using the checklist	Confirm all parts are present and quantities are correct
7	Correct any issues found during verification	Do not move the kit forward until issues are resolved
8	Place completed kit in the designated staging area	Ensure kit is labeled and ready for assembly
9	Communicate recurring issues or improvement ideas	Share feedback so the process can be improved over time