On the shop floor scheme, you can identify a tiny part of the production, where components are produced, later to be assembled into a product.

In our case, we have a group of products, with similar functionality and a different structure. Only one component is produced here, and the rest of them are purchased. The final product's assembly process is taking place here, so the finished product is delivered directly to the customer. Exists 12 types of components, as you can see in the table from type A to L. The manufactured components are stored next to the production lines, and from there goes directly on assembly lines along with other components.

The process flow is quite simple: Components Production– Stock components- Assembly final product- Products transfer in a warehouse- Delivery to the customer.
The goal of this Kaizen event is to increase productivity.

1. Discover the Improvement Potential

A Continuous Improvement Project is recommended, to start with Genchi Genbutsu 'Go and see the actual location' to observe the whole structure of the process and take notes about necessary and unnecessary activities taking place on the shop floor.

List of observation based on 7 types of Waste:

Types of Waste	Observation	
Motion	Changeover time too long	Adjuster searching tools for machine setup
Inventory	Parts are randomly placed on pallets	Components produced for months ago
Waiting	Operator waiting for boxes	Error on the production line, lines are not supervised
Overproduction	Too many parts produced	
Over-Processing	Adjuster looking for the right parts for the assembly line	
Defects	Too many defects during production	

Besides this list, I made a list of 5S activities with an observation regarding cleaning, organizing workplaces.

| Observation list			
Instructions	Work instructions are not updated	Machine setting instruction not used	List of programs doesn't exist (printed)
Quality	Defect catalog is not detailed		
Tools	Missing tools at the workstations	Tools are used	
Cleaning	Maintenance activities are not registered		
Organizing	Inventory is not organized by product type	JIT system is not functional	

As we can see, these two lists highlight minor issues, that cause big problems in the process flow. After this quick analysis, we realize how many things can be done differently.

2. Analyze the Current Methods

In the second step, I will collect data to analyze the actual situation. I have already made lists with problems that must be solved, but in this phase, we are focusing on actual numbers, to evaluate the severity of the situation.

Please note that the following numbers are not real values, they are used just for exemplification!

The OEE (Overall Equipment Effectiveness) in our case is 96% and combined with the Pareto analysis, the result shows, the biggest problems that affect production. As we can see, these two lists highlight minor issues, that cause big problems in the process flow. After this quick analysis, we realize how many things can be done differently.

Pareto Analysis combined with OEE
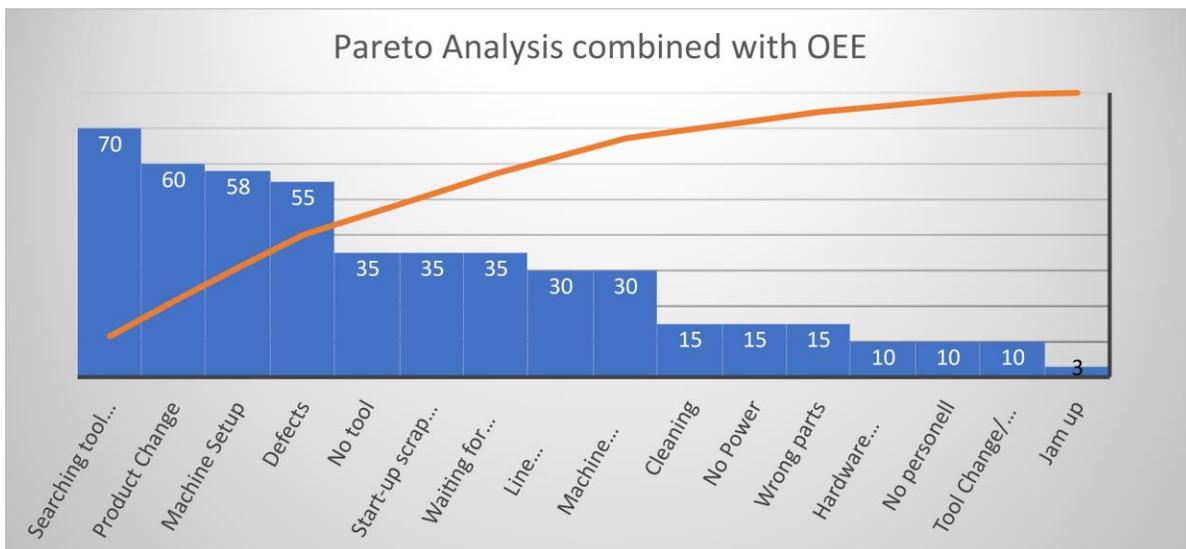
The first categories of the chart are connected somehow to each other. Defects are caused by the wrong program or parameter used by the adjuster. Tool searching, product changing, machine setup, start-up scrap parts, are related. Component searching is a possible waste for the assembly line.

After these two steps, the conclusion is, standards and procedures must be updated and applied. Most of the quality issues can be solved by organizing workplaces, creating instructions, and also training employees to follow those rules.

3. Generate Original Ideas

As we discovered the major problems, now we must focus on new ideas to implement on the shop floor for future improvements.
Continuous Improvement embraces changing, from planning a new production layout to changing the box size. It is a complex project connecting different departments. We can use Osborn's Checklist to activate our brain if we don't have any ideas.
Let's begin with some solutions for our case:

Problem	Cause	Solution
Change-over time too long	Instructions are not complete and updated	A new procedure for change-over
Machine Setup-Defect	The program or parameters are created for another type of part	The actual list of parts and creating/updating programs for each one with the required parameters. List of products with programs (printed version)
Searching Program	The list of programs is limited and exists old unnecessary programs, new ones don't have space on the computer	
Searching the right Parts	Parts are randomly placed on pallets with no rules	The Heijunka method for creating a layout and using JIT system
Tool searching for machine setup	Tools can be used by other adjusters too	5S location with a toolset for each adjuster
Used tools	Not specified the exact nr of tools required on each line	Kanban inventory for necessary tools
Defects	Machine Setup Problems	More detailed instructions for each workstation
	Assembly defects	Detailed defect catalog and defects used as dummies for exemplification
Maintenance activities are not registered	Just one team exists for this type of activities and they are overwhelmed with tasks	Creating a list of maintenance activities to be easier to register it

Besides these solutions, I'm sure other tools will be essential, like lists, layouts, instructions, checklist, etc. to keep everything under control.

4. Develop an Implementation Plan

I highly recommend creating a Time Plan with tasks and responsibilities in a time limit.

The Time Plan is a live document, which suffers changes permanently, moreover, in this way, management can follow the status of each activity.

5. Implement the Plan

First, we present the implementing activities to management, to get approval, and feedback about the Kaizen event.

If they agree, with the possible changes, which will take place on the shop floor, managers, engineers, team leaders will present the new methods to everybody. I consider it helpful to create a list of implicated departments. Each department is divided into small teams and team leaders, to be sure everybody is well-informed.

6. Evaluate the New Method

After the implementation phase is done, with patience the benefits will appear. The only thing is left, data to be collected and compared with the old results.