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KAIZEN IDEA: A STRATEGIC MINDSET TO BOOST ENGINEER PERFORMANCE AND VALUE

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ABSTRACT

Many fresh graduate engineers, upon entering the industry, tend to follow their superior instructions passively to complete assigned tasks. Due to limited working experience, junior engineers often struggle to understand how to increase their value within the organization, which in turn affects their chances of fast career advancement or higher annual salary increments.

This research project aims to propose a structured flowchart to guide engineers in effectively presenting and amplifying the value of their Kaizen ideas. The key objectives are to encourage engineers to regularly apply Kaizen practices, foster the development of problem-solving soft skills, and emphasize their individual contributions to the company. The research methodology incorporates the expectations of top management within a realistic working environment. The experimental conditions are based on the author's personal industrial experience, providing practical insights into the implementation process.

KEYWORD

Kaizen, Problem-solving skills, Engineer mindset, Career advancement, Performance evaluation

INTRODUCTION

In today's fast-paced and competitive industrial environment, engineers are expected to do more than just execute technical tasks—they must continuously identify issues, propose solutions, and drive improvements. Cultivating such a mindset requires a structured approach, and Kaizen provides a practical framework to achieve this.

Kaizen, a Japanese term meaning "continuous improvement" promotes a mindset rooted in constant learning, reflection, and incremental progress. It is an approach that emphasizes small, ongoing positive changes, which over time can lead to substantial improvements in processes and performance. Kaizen application process as shown in Figure 1.

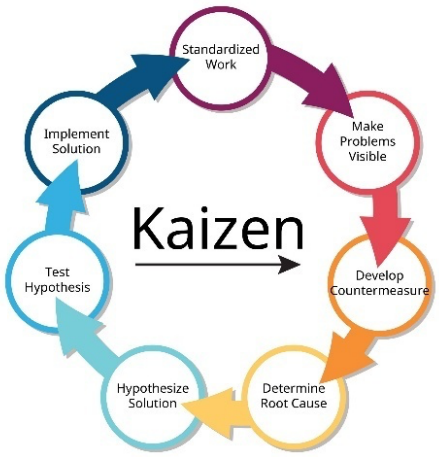


Figure 1: Kaizen Process Diagram.

The Kaizen process involves seven systematic steps that engineer can follow to implement effective improvements and solve workplace problems. The first step is standardized work, where engineer create or adhere to a standard workflow to reduce variation in task execution. For example, developing a Standard Operating Procedure (SOP) can guide operators in consistently performing the component assembly process. Next is making problems visible, which involves fostering a transparent, open, and blame-free work culture. By assigning line leaders to record daily rework issues and their causes, problems become clear and serve as opportunities for improvement.

Once issues are identified, engineer move to the development of countermeasures by drafting action plans based on a problem tracking list. These actions should be prioritized according to the severity of the problems such as low productivity, high defect rates, or delays in shipment. The fourth step is to determine the root cause, using analytical tools like the "5 Whys" and Fishbone Diagram to ensure the correct cause is addressed rather than surface-level symptoms.

With the root cause identified, engineer proceed to hypothesize solutions, listing practical and relevant ideas that can be realistically tested in the workplace. These ideas are evaluated in the test hypothesis stage where the proposed solution is implemented on a trial basis and its effectiveness monitored. If the results are positive, the final step is to implement the solution. This includes officially updating procedures, communicating the improvement across teams and ensuring everyone adopts the new standard to sustain long-term benefits.

As a core principle of lean manufacturing and the Toyota Production System, Kaizen was originally developed in the manufacturing industry to reduce defects, eliminate waste, increase productivity and foster innovation. It also helps cultivate a sense of purpose, responsibility and empowerment among workers making it a powerful tool for sustainable organizational growth.

This paper explores how the Kaizen concept can be used as a developmental tool to strengthen engineer soft skills, promote continuous learning and create measurable impacts on both personal growth and organizational performance.

METHODOLOGY TO PRESENT KAIZEN

Engineer should actively develop their problem-solving skills by applying the Kaizen concept. Each engineer is encouraged to initiate and implement one to two Kaizen idea per month. By following the step-by-step process outlined in Figure 2, engineer can present their performance and contributions more clearly and effectively to supervisor and top management.

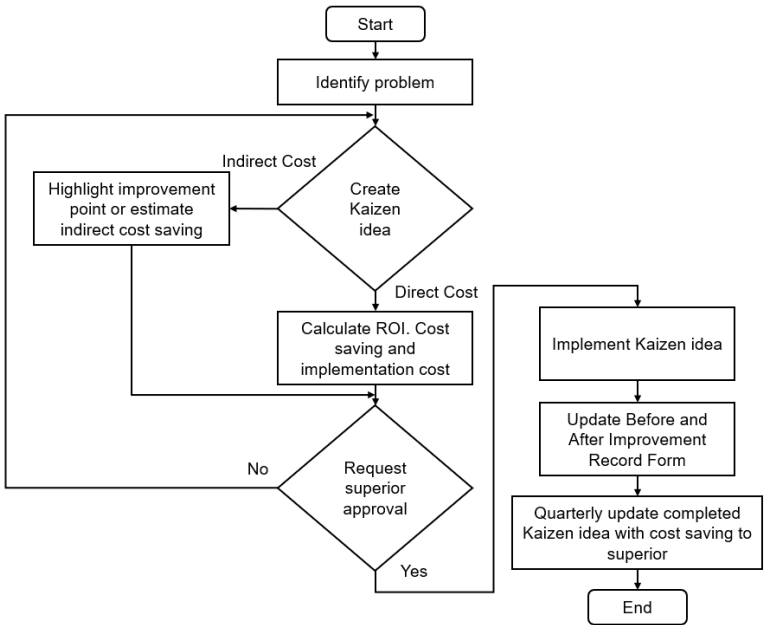


Figure 2: Kaizen Implementation Flow

Engineer can begin the Kaizen improvement process by applying the 8 types of waste methodology to effectively categorize problems. These wastes include transportation, inventory, motion, waiting, over-processing, overproduction, defects, and non-utilized talent. By identifying which category a problem falls under, engineer can analyze the situation more efficiently and discuss suitable improvement strategies with their superior. When proposing Kaizen ideas, engineer is encouraged to align their solutions with cost saving objectives, as this provides a tangible way to demonstrate the value of the improvement. The benefits may come in the form of a onetime cost reduction or continuous monthly savings for the company.

Once a solution is identified, the engineer should systematically present the problem, proposed idea, expected benefits, and measurable outcomes to their superior for evaluation and approval. Upon receiving management approval, the engineer must implement the Kaizen idea within the planned timeframe. After implementation, it is important to document and record the completed Kaizen in a designated format sheet to ensure proper tracking and for future reference. Lastly, the engineer should proactively update their superior about the completed activity to allowing management to monitor the progress and clearly assess the impact of the improvement.

CASE STUDY DISCUSSION

Factory X is an electronic manufacturing service company, which is provide the contract manufacturing service to customer. As shown in Figure 3, it is factory X case study by implement the Kaizen idea to solve the production unit defect issue. This Kaizen idea has been discussed and approved by the customer, involving the additional checking process and increase the product takt time. The customer responded positively and expressed satisfaction with the improvement, as they prioritize product quality over output quantity. During one month monitoring period, the number of rejected units at the LED light test station was dropped significantly to only 1 or 2 pieces per month.

The before and after improvement record form as shown in Figure 4. The remaining rejected units were found due to operator mistake mixing tested and untested POGO pin assy part. It will be addressed in a separate Kaizen initiative for further study and analysis.

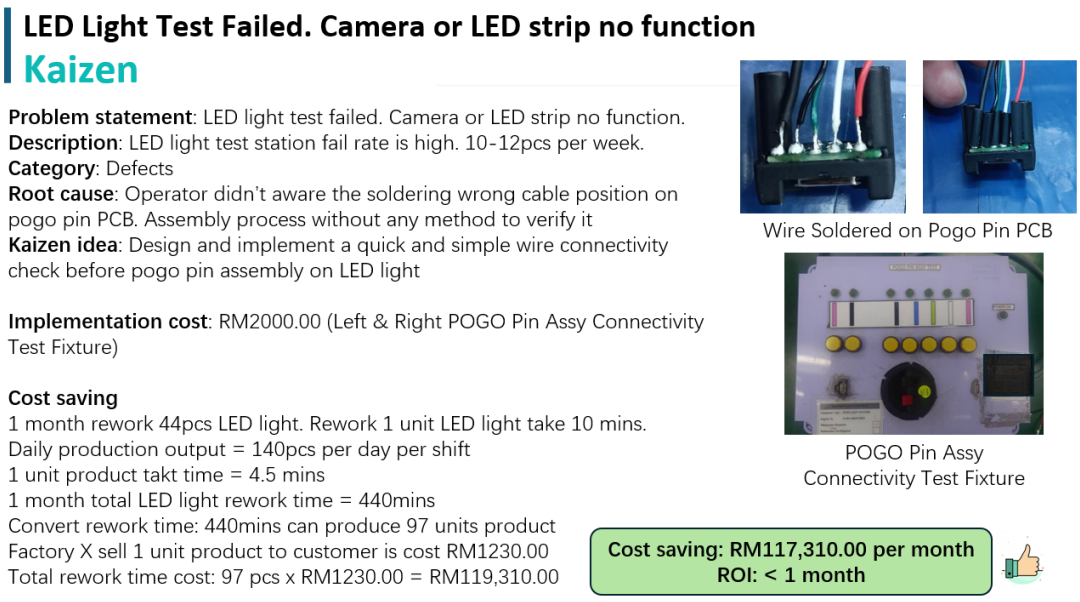


Figure 3: Kaizen Implementation Case In Factory X

KAIZEN PLAN – LED Light Test Failed. Camera or LED strip no function

Location: Pogo Pin Soldering Station

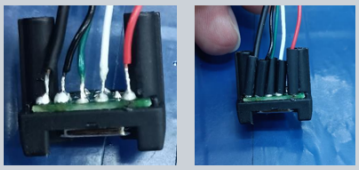
No	Objective	Before	After
1	Reduce LED light test station reject rate. Target less than 5pcs per month.	1. Operator will assembly the pogo pin assy on LED light part after soldering process. 2. Operator not able to verify the soldered wire connection is OK or NG. 3. Reject rate: 40-48pcs per month  Wire Soldered on Pogo Pin PCB	1. Develop a test fixture to assist operator verify the wire connection. 2. Total 2 units test fixture cost RM2000. For left and right pogo pin assy. 3. Reject rate: 1-2pcs per month 4. Cost saving RM117,310.00 per month and ROI less than 1 month  POGO Pin Assy Connectivity Test Fixture

Figure 4: The Kaizen Before And After Record In Factory X

SUMMARY

This paper presents a method to enhance engineer value and problem-solving skills through the application of the Kaizen approach. Kaizen serves as an effective tool for identifying problems and implementing practical solutions, continuously training engineers to think critically and resolve issues efficiently.

By following a structured Kaizen implementation flow, engineer can systematically present the problem, proposed idea, expected benefits, and measurable outcomes. This approach not only enhances individual skills and experience but also contributes to tangible performance results that can support career growth and advancement.

Importantly Kaizen is not limited to the production floor, it can also be applied across various departments such as the office, warehouse, and quality systems. Furthermore, consistent progress in Kaizen activities enables management to objectively assess an engineer's performance based on tangible outcomes. This not only contributes to operational improvements but also reflects strongly on the engineer's soft skills and proactive mindset.

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REFERENCE

Diann Daniel. (2021). Kaizen (continue improvement),
https://www.techtarget.com/searcherp/definition/kaizen-or-continuous-improvement.
Linda Schmid. (2022). Continuous Improvement (Kaizen): Putting it into Practice,
https://rollformingmagazine.com/continuous-improvement-kaizen-putting-it-into-practice/.