

**PERSPECTIVA**  
*A Case Research Journal*  
Volume V (2019)

---

**Kaizen – Implementation and Challenges at Expert Engineering Enterprises**

Dr. Kirti Shivakumar<sup>1</sup>, Prof. Ameet Kulkarni<sup>2</sup> and Mr. Salil Joshi<sup>3</sup>

<sup>1</sup>Professor, <sup>2</sup> Assistant Professor, <sup>3</sup>Student- MBA (III Sem.)  
KLS Institute of Management Education and Research, Belgaum

---

**Abstract**

Expert Engineering Enterprises was established in 1981. Today, it is looked upon as a responsible partner and an OEM supplier of Industrial Valves to several companies in India, Russia, East and South Africa. Though continual improvement was happening over the years, it was not done or recorded in a scientific manner. To address the challenges of the competitive business scenario and ensure sustainability, the management of Expert took a decision of introducing Kaizen in the year 2015, a method to encourage innovation and creativity amongst the employees. The company had always been innovative and had a system where employees of each section met every morning at 8.30 am. During the meeting, they discussed their day to day issues and themselves came up with suggestions or solutions to overcome the problem. This intervention was called Chintan. When Kaizen was introduced, the employees were trained in Kaizen through the discussions held during the Chintan intervention. Tools like fixed point photography, identifying 7 wastes etc. were used to generate possible ideas. Currently the firm focuses on continuous improvement rigorously and the employees have understood that Kaizen is an inevitable practice in the path of growth. The case focuses on the concept of Kaizen, its benefits, challenges in implementation and the way ahead for Expert. It also allows the reader to get a clear understanding of 5S and Kaizen. It can also be used to understand how the mandatory implementation of contributing to Kaizen has been fruitful to the organization.

**Keywords:** Kaizen, OEM, Chintan

---

\*Corresponding Author: Tel.: <sup>1</sup>+91-9449007550, <sup>2</sup>+91-9980936364, <sup>3</sup>+91-7204743236

E-mail address: <sup>1</sup>dr.kirti@klsimer.edu, <sup>2</sup>ameet\_kulkarni@klsimer.edu, <sup>3</sup>salil\_joshi@klsimer.edu

Mr. Vinayak Lokur was intrigued. The calm, cool CEO of Expert Engineering had a subtle smile on his face, which was prompted by the interaction he had with Salil, the young management intern. Salil was a student pursuing his MBA from a well-known B-School. He had chosen to study the impact and implementation of Kaizen at Expert Engineering. Earlier in the day, Mr. Lokur had an interaction with Salil and asked him how his project was going on. Salil explained to Mr. Lokur what he was currently doing and how Mr. Kotwal, the Marketing Engineer and Kaizen head was helping him. At the end of the interaction Salil asked Mr. Lokur, “Sir, I understand that the company has benefitted immensely because of the implementation of Kaizen. I have myself in this short while, seen how different your company is from other companies’. I have observed how attention is paid to minute details in all departments, how organized the storage is and how any tool/document can be retrieved quickly. I know that you believe that those organizations which nurture their employees and involve them in Quality Management can expect their products or services to be of a high quality. At Expert, the management has introduced a policy of submission of one Kaizen idea per month per employee. How was implemented Kaizen so effectively at Expert? I would also like to understand how we can classify an improvement as belonging to 5S category or Kaizen?”

### **About Expert Engineering**

Expert Engineering Enterprises, was established in 1981, today is looked upon as a responsible partner and an OEM supplier of Industrial Valves to several companies in India, Russia, East and South Africa. Though continual improvement was happening over the years, it was not done or recorded in a scientific manner. To address the challenges of the competitive business scenario and ensure sustainability, the management of Expert took a decision of introducing Kaizen in the year 2015, a method to encourage innovation and creativity amongst the employees. The company had always been innovative and had a system where employees of each section met every morning at 8.30. During the meeting, they discussed their day to day issues and themselves came up with suggestions or solutions to overcome the problem. This intervention was called Chintan. The concept of Kaizen was explained and implemented through the discussions held during the Chintan intervention. Slowly but steadily Kaizen as a practice was accepted, understood and appreciated. Tools like fixed point photography, identifying 7 wastes etc. were used to generate possible ideas. Currently the firm focuses on continuous improvement rigorously and the employees have understood that Kaizen is an inevitable practice in the path of growth.

### **Introduction to Kaizen**

The foundation of Kaizen can be traced to Japan, post-World War II. It was after the US conflict with Korea, that Japan became a major supplier to the US Military. This helped Japan rebuild its

industries. The US helped Japan to rebuild its industries in various ways. It was in the 1950s that Quality Guru Edwards Deming guided Japanese managers to develop quality systems with the help of statistical quality control methods. The core philosophy of Kaizen is based on the Deming wheel which involves the steps of Plan, Do, Check and Act called as the PDCA cycle. It was the Japanese management consultant, Masaaki Imai who popularized the concept of Kaizen through his works “Kaizen: Japanese spirit of improvement” (1985), and Gemba Kaizen: A Commonsense, Low-Cost Approach to Management (1997). Masaaki Imai, defined Kaizen and “continuing improvement in personal life, home life, social life, and working life. When applied to the workplace, Kaizen means continuing improvement involving everyone – managers and workers alike.”

The term “kaizen”, is made up of two Japanese terms; “kai” meaning change and “zen” meaning good, simply means “change for the better”. Literally translated it covers all steps and efforts taken to implement improvements continuously. Kaizen refers to an organization wide approach with its foundation on common sense, voluntary discipline, and conscious effort to reduce wastage and rework. It forms the essence of lean manufacturing and is applicable to everything in the organization right from personal efforts, production processes, purchase, supply chain and even software development. The hall mark of Kaizen is that it involves everyone right from the CEO/head of the organization to the shop floor operator as well as the security guard at the gate of the organization. Kaizen became an integral part of the “Toyota Production System”, and was looked upon as an effective way to get the entire organization get involved in the effort to enhance production, quality and reduce wastage. Since then Toyota has been synonymous for improvement and growth and several companies follow the “Toyota way of Life”, as it is popularly called. The Japanese consider Kaizen as the stepping stone for growth and respect the practice of Kaizen immensely.

According to a Toyota internal document, "The Toyota Way 2001," released in April 2001, the basic principles of the Toyota way are as follows: -

Kaizen has been understood as an approach which leads to continuous improvement as a result of basic and voluntary but ongoing positive changes at the workplace. The essence of Kaizen is the cooperation and voluntary commitment to bring about changes in small, inexpensive ways suggested by the person who is doing a task on a daily basis. It does not refer to radical changes but small continuous improvements. Kaizen as the core to lean manufacturing, or The Toyota Way was practiced in the manufacturing sector to reduce defects, reduce rework and waste, enhance productivity, boost employee involvement /accountability, and stimulate innovation.

### Continuous improvement

- **Challenge** - Develop a long term vision , overcoming challenges with courage and creativity .
- **Kaizen** - Focus on continous improvement , keep working towards innovation
- **Genchi Genbutsu**- Find out the root cause so as to understand the whole situation and then make proper well informed decisions.

### Respect for people

- **Respect** - Respect each other in organization, involve everyone , and allow individuals to make decisions in those tasks which they do on a day to day basis , because no one knows their job better than them.
- **Teamwork** - Encourage team work , stimulate each team member to contribute and create synergy .

Several companies like Boeing and Caterpillar, have over the years, redesigned their plants and entire processes to adopt the Toyota Way, which have become synonymous to efficiency, reduced wastage and quality control.

Tara Jones: 2017, gives several examples of how companies used have Kaizen effectively: -

- a. At the Great Western Bank opening a checking account used to take 34 steps. With the adoption of Kaizen, the numbers of steps have been reduced to 24.
- b. When Ford was going through a tumultuous period in the year 2000, they focused on efficient processes based on the Kaizen principles and were able to recover.
- c. When the American furniture manufacturer Herman Miller adopted Kaizen, they were benefitted with a 500% increase in productivity and quality. Earlier it took them 82 seconds to manufacture one chair, now the similar chair is produced in 17 seconds.

By following the principles of the Toyota way, organizations became more profitable, agile and quicker to respond to change. Kaizen with its focus on continuous improvement is the integral part of the Toyota Way.

In short Kaizen is not a just a onetime activity for improvement or a set of tools to improve quality. It is continuous journey to improve productivity, by reducing waste (Muda), eliminating rework and tiresome effort, empowering employees to identify changes and improvement. Kaizen is not a one day or one-time process, but a practice where employees are involved every day to incorporate such changes and improvement.

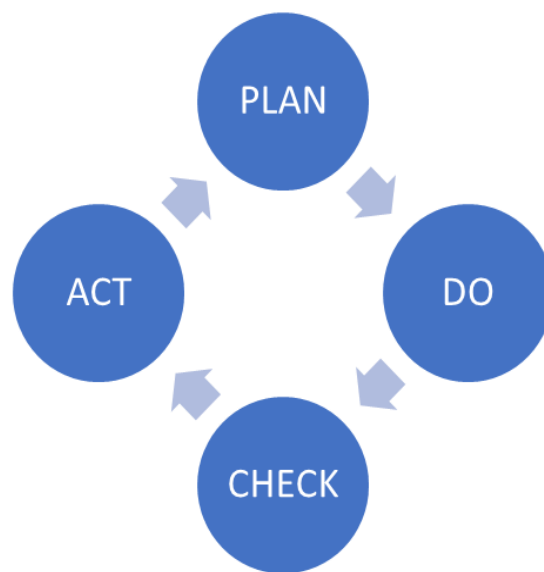
Any improvement under the umbrella of kaizen would follow the PDCA cycle;

**Plan** – Mapping the change so that everyone knows what to expect when the team wants to implement some improvement

**Do-** To implement the best or most feasible solution to the problem

**Check** – Evaluating if the solution has worked and has led to improvement

**Act-** At this stage, the team or organization decides whether this change should be adopted as practice in the company or if further change is needed. If further changes are required, the kaizen cycle repeats again from the planning stage.



## Company profile

### Overview

Expert Engineering Enterprises, was established in 1981, today is looked upon as a responsible partner and an OEM supplier of Industrial Valves to several companies in India, Russia, East and South Africa. The mission of Expert Engineering is to create value and in the process pass on the derived advantage to their customers. The foundation of the mission statement rests on their two values, "Winning together" and "Continuous Business Excellence".

Expert has been striving to achieve long term relationships with their customers and suppliers, based on integrity, cost and constant quality control. The main advantage that Expert has is qualified, experienced and committed people, backed up by their focus on continuous improvement. They have developed their supply chain ensuring them reliable supply of quality castings and forgings which enables them to maintain competitive cost. They have been accredited by several national and international organizations. (ISO 9001:2008, ISO 14001:2004, OSHAS 18001:2007, EIL (Engineers India Ltd.), IBR (Indian Boiler Regulatory Authority) as well as by Project Consultants namely Mecon, Toyo, PDIL , UHDE , DVC and Avant Garde. In the words of the CEO, “We at Expert continuously focus on Business Excellence. We strive to innovate and improve the effectiveness of our organization, we pay utmost attention to the minute details of all our important business functions as Human Relationship Management, Vendor Management, Capacity up-gradation/automation and Quality Control Management.” In their quest for Business Excellence they have worked to achieve numerous certifications including the prestigious API certification in 2011.

### **Clientele**

The clients of Expert Engineering belong to sectors like Prestigious Valve Manufacturers, Original Equipment Manufacturers (OEM's), Project Organizations, Paper Industry, Cement Industry, Steel Industry, Sugar Industry, Ash Handling Equipment Manufacturers, Chemical Industry, Water Treatment Industry, Irrigation and water Supply Schemes, Dealers & Distributors in India and Abroad.

### **Quality**

They are very stringent about quality and have ensured that quality is imbibed right from design to manufacturing through assembly and delivery. Every Expert Valve / Component is 100% inspected before dispatching. Every step from procurement through production, welding, assembly, testing and packaging is in accordance with written rules contained in QA manuals. Each valve is pressure tested in accordance with the relevant standard or special customer requirements as applicable. The test status is recorded product wise.

### **Continual Improvement**

Today continual improvement has become an integral aspect of everything they do. As Arif Kotwal, the Kaizen Head stated “right from initiating best practice within the manufacturing environment, to managing the flow of data through the business, and involving employees at every step, we have a dedicated cross functional team which is accountable for continual improvement. Our Chintan programme is like a Quality Circle. It is the base unit for our Kaizen Programme. You can see we have implemented measures which draw from 'Lean' methodology.

Through Kaizen practices we have been constantly eliminating waste, enhancing efficiency and concentrating on the value addition for customers.”

### **Vision and Philosophy**

Vision: “To Become a 100 Crore company by the year 2020, and attain business excellence.”

Philosophy: "Winning Together"

### **Kaizen Evolution in Expert Engineering Enterprises:**

Kaizen process was adopted in the system of Expert in the year 2015. From the year 2015, the implementation of Kaizen was being carried out in the organization. The employees were voluntarily asked to come up with kaizen ideas and then with the help of the management and other employees, the change was implemented. The results were seen immediately and there was increase in the productivity of the organization. All the Kaizen activities were properly documented in a given format and those documents are stored till date. Also, at the end of every financial year, the top management awarded a “BEST KAIZEN” award to the most effective Kaizen carried out. From then on, there were numerous Kaizen activities carried out in all the departments to attain continuous improvement in the organization.

There have been 445 Kaizen activities carried out in the year 2015-16 and 430 Kaizen activities in the year 2016-17. (Please refer Exhibit II, III and IV for details) Earlier the employees were voluntarily asked to submit the kaizen ideas, but now the company has employed a policy of one Kaizen idea compulsory for each employee every month. The staff distributes slips to the employees working on the shop floor in which the employees can fill out their Kaizen idea in brief and then carry out the same. Due to the compulsion, every employee submits at least one kaizen idea every month which contributes to the continuous improvement in the organization.

Due to the documentation of Kaizen in the specific format, there is availability of entire data related to the Kaizen, which further helps in confirmation and verification of the Kaizen activity after some time, to check whether the Kaizen is still in continuation or not.

### **Kaizen Process in Expert Engineering Enterprises**

The Process of Kaizen mainly involves two aspects: -

1) What leads to a Kaizen? 2) Actual Process of Kaizen.

**1) What Leads to a Kaizen?** This further involves three aspects. They are as follows: -

**a) Process Problems:** - This involves the problems encountered by the workers, staff or management while carrying out a process. If there is any obstruction or hindrance for smooth completion of the process, then that leads to a Kaizen idea.

**b) Feedback:** - This involves feedback from various people which may lead of the generation of Kaizen idea. There may be feedback from the customers, suppliers, vendors, or even internal feedback from the employees or the management about any activity leads to a Kaizen activity.

**c) Management Decisions/ Programs:** - The management may take a decision or develop a program which may lead to development of a Kaizen activity. The decision may be taken owing to a change which is desired in the organization. The above aspects lead to a Kaizen activity in the organization.




## **2) Actual Process of Kaizen:** (see Exhibit I for flowchart)




The actual process of Kaizen is as follows: -




- i. **Kaizen inputs:** The first step in the kaizen process is the kaizen inputs. These are the inputs given by various people involved in the process. This is the preliminary step where there is recognition of the problem and need for the kaizen activity arises.
- ii. **Problem definition:** - The next step is the definition of the problem. Here what is the exact problem is clearly defined, so that it becomes clear and easy for taking further steps.
- iii. **Why analysis:** - The next step is the why- why analysis. In why analysis there is focus on why is there problem and then with the further analysis, the root cause of the problem is understood.
- iv. **Root cause –** After the why analysis the root cause of the problem is understood. Why exactly has the problem arrived, and what are causes leading up to the problem?
- v. **Kaizen planning:** - After the root cause is found out, there is planning activity of the kaizen. What can be done to eliminate the problem at hand, what are the different methods that may be used in the kaizen activity in an effective manner? All these things are planned in this step.
- vi. **Implementation:** - After the kaizen planning, the next step is the implementation of the planned kaizen. How effectively the kaizen is being implemented and how effective and helpful is it to eliminate the problem at hand.
- vii. **Monitoring and measurement:** - Once the kaizen activity is implemented, the last step is the monitoring of the kaizen activity. Is the activity being beneficial or not to the process and is the problem at hand being solved or not?






Every Kaizen Idea is classified under the following heads: Quality/ Cost Reduction/ Delivery/ Safety/ Morale/ Environment/ Hygiene.

	<b>KAIZEN EXAMPLE 1</b>		KAIZEN FORM NO:	
			DEPARTMENT	Welding Unit -I
			SUGGESTION DATE	29/06/2016
			SUGGESTED BY	Laxman Lohar
<b>KAIZEN IDEA: PLANNING FOR IMPROVEMENT IN: PRODUCTIVITY/QUALITY/ COST REDUCTION/ DELIVERY/ SAFETY/ MORALE/ ENVIRONMENT/ HYGIENE (PLEASE TICK MARK)</b>				
<b>PROBLEM /PRESENT STATUS BEFORE KAIZEN</b>		<b>WHY –WHY ANALYSIS &amp; SUGGESTIONS FOR IMPROVEMENT</b>		<b>STATUS / AFTER KAIZEN</b>
		<p style="text-align: center;"><b><u>Problem Definition</u></b></p> <p>Welding from one place to another was a problem since machine had to be carried manually</p> <p style="text-align: center;"><b><u>Why-Why Analysis</u></b></p> <p>Why : Welding from one place to another was a problem since Why: since machine &amp; accessories had to be carried manually Why: No separate trolley / mechanism for moving welding machine &amp; it accessories How : To make a separate trolley for welding machine</p>		
<p style="text-align: center;"><b>PROBLEMS / DIFFICULTIES/LOSSES</b></p> <p>Welder had to carry welding machine &amp; accessories to welding place It was tiresome &amp; time consuming Chances of machine falling are more</p>		<p style="text-align: center;"><b><u>Root Cause</u></b></p> <p style="text-align: center;">Trolley was not available</p>		<p style="text-align: center;"><b>BENEFITS (IN TERMS OF P.Q.C.D.S.M)</b></p> <p>Now a separate trolley has been made which is used to carry welding machine from one place to another Also accessories can be carried simultaneously Trolley acts like a housing thus safeguards the machine Easy to move from one place to another in quick time</p>
<p style="text-align: center;"><b>SCOPE FOR HORIZONTAL DEPLOYMENT</b></p> <p>Yes , can be done for other zones also</p>		<b>TEAM LEADER</b>	Laxman Lohar	
		<b>TEAM MEMBERS</b>	Hanmant Kolkar	
		<b>START DATE</b>	04/07/2016	<b>TEAM LEADER &amp; H.O.D : Anil Islampur</b>
		<b>END DATE</b>	07/07/2016	

	<b>KAIZEN EXAMPLE 2</b>	KAIZEN FORM NO:	EX-U-3-25
		DEPARTMENT	PRODUCTION
		SUGGESTION DATE	05/03/2016
		SUGGESTED BY	SHEETAL PATIL
<b>KAIZEN IDEA: PLANNING FOR IMPROVEMENT IN: PRODUCTIVITY/QUALITY/ COST REDUCTION/ DELIVERY/ SAFETY/ MORALE/ ENVIRONMENT/ HYGIENE (PLEASE TICK MARK)</b>			
PROBLEM /PRESENT STATUS BEFORE KAIZEN (PHOTO IF POSSIBLE)	WHY –WHY ANALYSIS & SUGGESTIONS FOR IMPROVEMENT		STATUS / AFTER KAIZEN (PHOTO IF POSSIBLE)
	<b><u>Problem Definition</u></b> Time required for setting in case of KGV door width milling was more.		
	<b><u>Why-Why Analysis</u></b> 1. For doing right angle we have to measure depth in each set up. 2. We can use master guide for this depth measurement.in this guide we can set the door within minute and we can start machining.		
	<b><u>Root Cause</u></b> MEASUREMENT OF DEPTH REQUIRES MORE TIME.		
PROBLEMS / DIFFICULTIES/LOSSES	TEAM LEADER	SHEETAL PATIL	BENEFITS (IN TERMS OF P.Q.C.D.S.M)
1. Set up time for machining of door of KGV for all sizes was more. 2. Every time to set the master pin.	TEAM MEMBERS	MANOHAR PATIL. KISHOR DESAI.	1. After doing master guide for set up, productivity increases by 3 per shift. 2. Monthly increased productivity= 75 nos 3. Yearly increased productivity= 900 nos. 4. We can do machining of 3 additional doors in one shift. 5. Every time pin removing and fitting time saved
	START DATE	10/03/2016	
	END DATE	18/03/2016	
SIGN :	TEAM LEADER : SHEETAL PATIL H.O.D : ANIL ISLAMPURE		
SCOPE FOR HORIZONTAL DEPLOYMENT	NO		

	<b>KAIZEN EXAMPLE 3</b>		KAIZEN FORM NO:	
			DEPARTMENT	Packing Area –Unit 1
			SUGGESTION DATE	07/07/2015
			SUGGESTED BY	Subhash Dhadve
<b>KAIZEN IDEA: PLANNING FOR IMPROVEMENT IN: PRODUCTIVITY / QUALITY / COST REDUCTION/ DELIVERY / SAFETY / <u>MORALE</u></b>				
<b>PROBLEM /PRESENT STATUS BEFORE KAIZEN</b>		<b>WHY –WHY ANALYSIS &amp; SUGGESTIONS FOR IMPROVEMENT</b>		<b>STATUS / AFTER KAIZEN</b>
		<p>Why 1): End caps were difficult to find</p> <p>Why 2) End caps were stored in plastic bags having no identification</p> <p>How : To make a stand &amp; bin arrangement for size wise allocations</p>		
<b>PROBLEMS / DIFFICULTIES/LOSSES</b>		<b>TEAM LEADER</b>		Subhash Dhadve
Earlier End caps for Forge bellow seal valve were stored in plastic bags , which led to confusion & was untidy & more time was spent for searching size wise		<b>TEAM MEMBERS</b>	Sandeep Kamble	<b>BENEFITS (IN TERMS OF P.Q.C.D.S.M)</b> A new stand has been made from scrap by which all End caps can be stored size wise & in vertical arrangement, which looks neat & easy to use size wise
<b>SCOPE FOR HORIZONTAL DEPLOYMENT</b> Yes : can be made for other section also		<b>START DATE</b>	08/07/15	<b>TEAM LEADER :</b> SubhashDhadve <b>H.O.D :</b> Anil Islampur
		<b>END DATE</b>	10/07/15	

	<b>KAIZEN EXAMPLE 4</b>	KAIZEN FORM NO:	
		DEPARTMENT	Compressor
		SUGGESTION DATE	17.05.2016
		SUGGESTED BY	Anil Islampure
<b>KAIZEN IDEA: PLANNING FOR IMPROVEMENT IN: PRODUCTIVITY/QUALITY/ COST REDUCTION/ DELIVERY/ SAFETY/ MORALE/ ENVIRONMENT/ HYGIENE (PLEASE TICK MARK)</b>			
<b>PROBLEM /PRESENT STATUS BEFORE KAIZEN</b>	<b>WHY –WHY ANALYSIS &amp; SUGGESTIONS FOR IMPROVEMENT</b>	<b>STATUS / AFTER KAIZEN</b>	
	<p style="text-align: center;"><b><u>Problem Definition</u></b></p> <p style="text-align: center;"><b><u>Why-Why Analysis</u></b></p> <p>WHY: Both generators have to be switched on to run the compressor if required for Unit-II separately          WHY : No provision to change over current/generator power from Unit – II to compressor          How : To make a change over switch between main switch off compressor such that as per requirement one can make changes</p>		
<b>PROBLEMS / DIFFICULTIES/LOSSES</b>	<b><u>Root Cause</u></b>	<b>BENEFITS (IN TERMS OF P.Q.C.D.S.M)</b>	
<p>Earlier main switch board of compressor was connected to unit –I generator &amp; thus if compressed air required in only Unit –II, then generator of Unit-I &amp; Unit –II both have to be switched on Thus leading to wastage</p>	<p>Change over switch was not available</p> <p>TEAM LEADER Maruti L Gurav TEAM MEMBERS Mnt Team</p>	<p>Now a Change over switch has been provided to main switch such that the power supply to compressor can be provided with Unit –II generator, Thus saving one generator operating cost</p>	
<b>SCOPE FOR HORIZONTAL DEPLOYMENT</b>	<b>H.O.D : Anil Islampure</b>	<b>START DATE : 19.05.2016</b>	



## Implementation of 5S in the Purchase Department



**Objective:** To clean the work desk and enable easy access of the needed items.

**Description of the Problem:** - The work desk was cluttered, disorganized and untidy, was not cleaned since a long time. Undue wastage of time was incurred to search items like the paper punch, calculator, scissors, etc.

**Difficulties Faced:** Due to the cluttered and disorganized work desk, the necessary items such as calculators, punch machine are not found easily and require searching.

**Implementation:** Now the work place has been organized with separators following the principles of '5S'. **Sort (Seiri).** Seiri refers to going through all items /objects in a particular place and removing the unnecessary things. By removing unnecessary things and arranging only the required things neatly, it reduces time and effort in locating an item/object. It also helps in maximizing the use of available space effectively.

**Benefits:** After the implementation of the 1S principle of 5S, the necessary things such as calculator, punching machine are easily available and the work place looks clean and tidy. There is no time lost in searching for small but important items which are used on a day to day basis

Picture Before Kaizen	Picture After Kaizen
	

## Implementation of 5S in the Production Department

**Objective:** To prepare a separate shadow box for keeping the tools used in the production department.

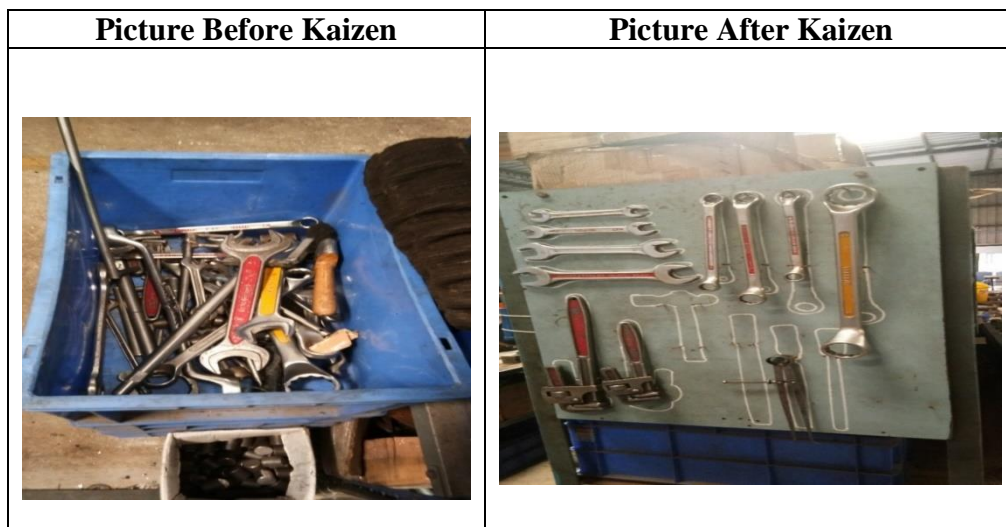
**Description of the Problem:** The tools used frequently in the production department did not have a separate board where they can be kept according to their respective sizes and tools were kept in a vague manner.

**Difficulties Faced:** Due to this there was difficulty to quickly locate the tool required for the operation which caused wastage of time. It would take around 10 minutes to locate the right tool required.

**Suggestions:** To prepare a shadow board where the tools could be arranged according to their respective shapes and sizes.

**Implementation:** By implementing the 2<sup>nd</sup> S of the 5 S principles namely “Set in order (Seiton)”, a separate shadow board has been prepared so that the tools are arranged in a proper manner and according to their shape and size.

**Benefits:** After the implementation of Five S, the tools are now arranged properly and are found easily whenever required. This prevents misplacement and loss of tools and there is no wastage of time. It has made the workflow smooth and easy. Since each item has fixed locations, it is easy to keep back the tool after to the correct location and it becomes easy to spot any missing/lost tool.



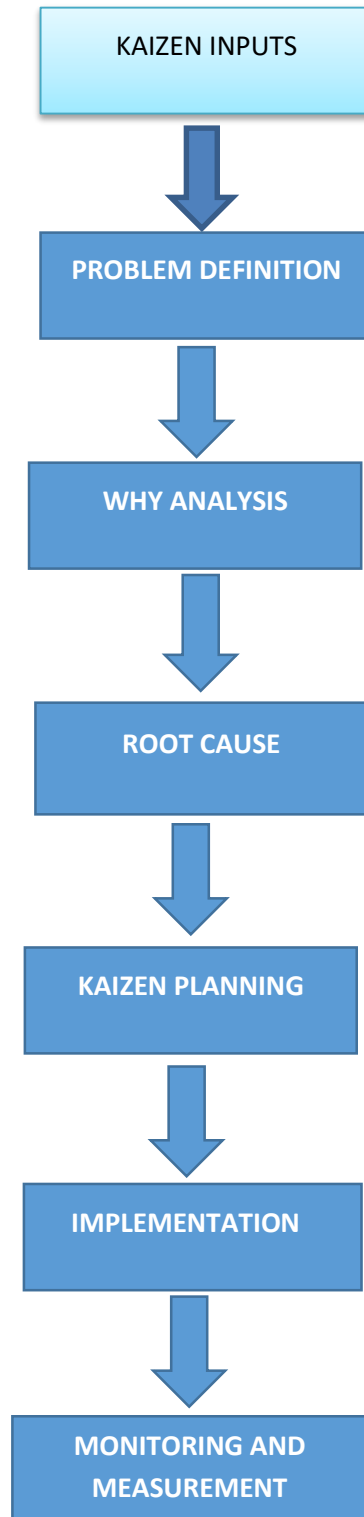
## Way Ahead

The discussion with Salil, instilled a sense of nostalgia in Mr. Lokur. He recalled his trips to Japan where he had observed that every individual, irrespective of his/her designation or level in the organisation voluntarily contributed to quality improvement by making small improvements and incorporating simple changes in the system. He remembered his discussions with Arif Kotwal about quality and was glad that they both agreed that the implementation of Kaizen cannot be the responsibility of any single employee, and must involve every person who is in the organisation.

Mr. Lokur explained to Salil, “You have misunderstood our practice of Kaizen. There is a mandatory requirement of every employee to submit at least one Kaizen idea. But this is not viewed as a burden by any one. We do not penalize anyone who does not submit a Kaizen idea every month, on the other hand we encourage participation by awarding Best kaizen of the month with a prize of Rs. 500. You may have observed from the data collected about Kaizen that even I am a participant in the Kaizen process and have made certain improvements in my own scope and are of work. (See Exhibit V). I have interacted with several shop floor employees. They have said that they feel a sense of pride when they change they have suggested and implemented have resulted in a positive impact, maybe in quality improvement, reduced wastage, time /effort saved, increased productivity and so on. To understand this, you must ask Mr. Arif Kotwal how we implemented Kaizen in the first place.”

Salil went to Mr. Arif and asked him to explain the process of implementation of Kaizen at Expert. “There was a practice of having brief meetings every morning at 8.30”, explained Mr. Arif. “In these meetings, the day to day issues that the section was facing was discussed. This intervention was called as Chintan. The concept of Kaizen and 5S, objectives and benefits were explained to the employees. Each employee was asked to first make one small improvement at home. They would come back and share the Kaizens they had done at home. Some had implemented 5 S in their kitchens, some in their storage rooms or cupboards. We convinced our employees that they are best ones to identify what changes or improvements can be made, since they are the ones who are involved in these operations on a daily basis. Gradually all employees have understood that the foundation of quality improvement rests on the belief that any aspect of an organisation and its operations can be improved. And since Kaizen itself is about continuous improvement, we know there is always further scope for improvement”

**Exhibit I** - The flow chart below depicts in sequence the various steps in the Kaizen process





**Exhibit II - KAIZENS FOR THE YEAR 2015 - 2016**

<b>IMPROVEMENT IN TERMS OF</b>	<b>NUMBER OF KAIZENS</b>
1S	3
2S	58
3S	1
<b>COST REDUCTION</b>	<b>64</b>
ENVIRONMENT	20
<b>MORAL</b>	<b>65</b>
QUALITY	61
SAFETY	52
SETTING TIME REDUCTION	2
PRODUCTIVITY	7
TIME SAVING	63
<b>TOTAL</b>	<b>396</b>

**KAIZENS FOR THE YEAR 2016 - 2017**

<b>IMPROVEMENT IN TERMS OF</b>	<b>NUMBER OF KAIZENS</b>
1S	3
2S	41
3S	5
3C	1
<b>COST REDUCTION</b>	<b>70</b>
ENVIRONMENT	1
<b>MORALE</b>	<b>161</b>
<b>QUALITY</b>	<b>78</b>
SAFETY	39
DELIVERY	10
PRODUCTIVITY	2
TIME SAVING	14
<b>TOTAL</b>	<b>425</b>

**Exhibit III - Kaizen Analysis and Segregation according to each department**

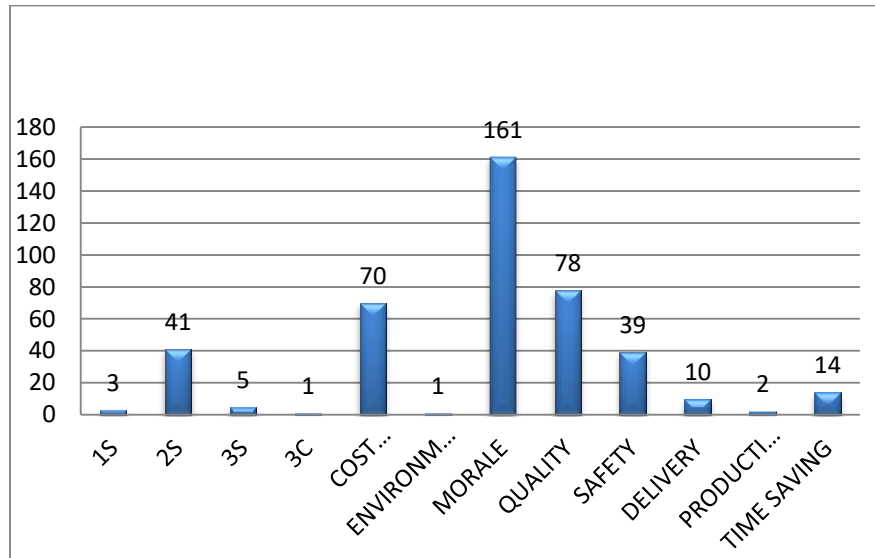
(for the year 2016-17)

<b>DEPARTMENT</b>	<b>TOTAL NO. OF KAIZENS</b>	<b>KAIZENS PRACTICED</b>	<b>KAIZENS UPGRADED</b>	<b>KAIZENS NOT PRACTICED</b>
<b>PRODUCTION</b>	156	151	2	3
<b>ACCOUNTS</b>	16	16	0	0
<b>DESIGN</b>	44	44	0	0
<b>EDP</b>	30	30	0	0
<b>MAINTAINENCE</b>	19	19	0	0
<b>PURCHASE</b>	49	46	3	0
<b>MARKETING</b>	79	77	0	2
<b>OTHERS</b>	2	2	0	0
<b>QUALITY</b>	35	35	0	0
<b>TOTAL</b>	<b>430</b>	<b>420</b>	<b>5</b>	<b>5</b>

**Exhibit IV - Number of Kaizens classified according to improvement in various aspects**

(for the year 2016-17)

<b>IMPROVEMENT IN TERMS OF</b>	<b>NUMBER OF KAIZENS</b>
<b>1S</b>	3
<b>2S</b>	41
<b>3S</b>	5
<b>3C</b>	1
<b>COST REDUCTION</b>	70
<b>ENVIRONMENT</b>	1
<b>MORALE</b>	161
<b>QUALITY</b>	78
<b>SAFETY</b>	39
<b>DELIVERY</b>	10



**Exhibit V**

Documentation of KAIZENS DONE IN December 2015 and status as on December 2018				
Now a centralized switch board an emergency inverter backup system has been made near to the security cabin which enables the security guards quick access & also power backup when current goes off	Moral	Anil Islampure	Maruti Gurav	Practiced
RV door weight ring drilling of 150mm & 200mm. Why-1) New fixture made to accommodate more rings to drilling at the same time. Why-2) Earlier 3 rings were used to drill on bed. Why-3) It was standard practice followed in shop.	Cost saving	Ganpat Desai	Ganpat Desai	Practiced
Now all wire harness have been guarded by a PVC pipe which covers all wire harness & avoid chips & metal scrap from entering into wire & thus preventing any short circuit	Safety	Vinayak Lokur Sir	MarutiGurav	Practiced

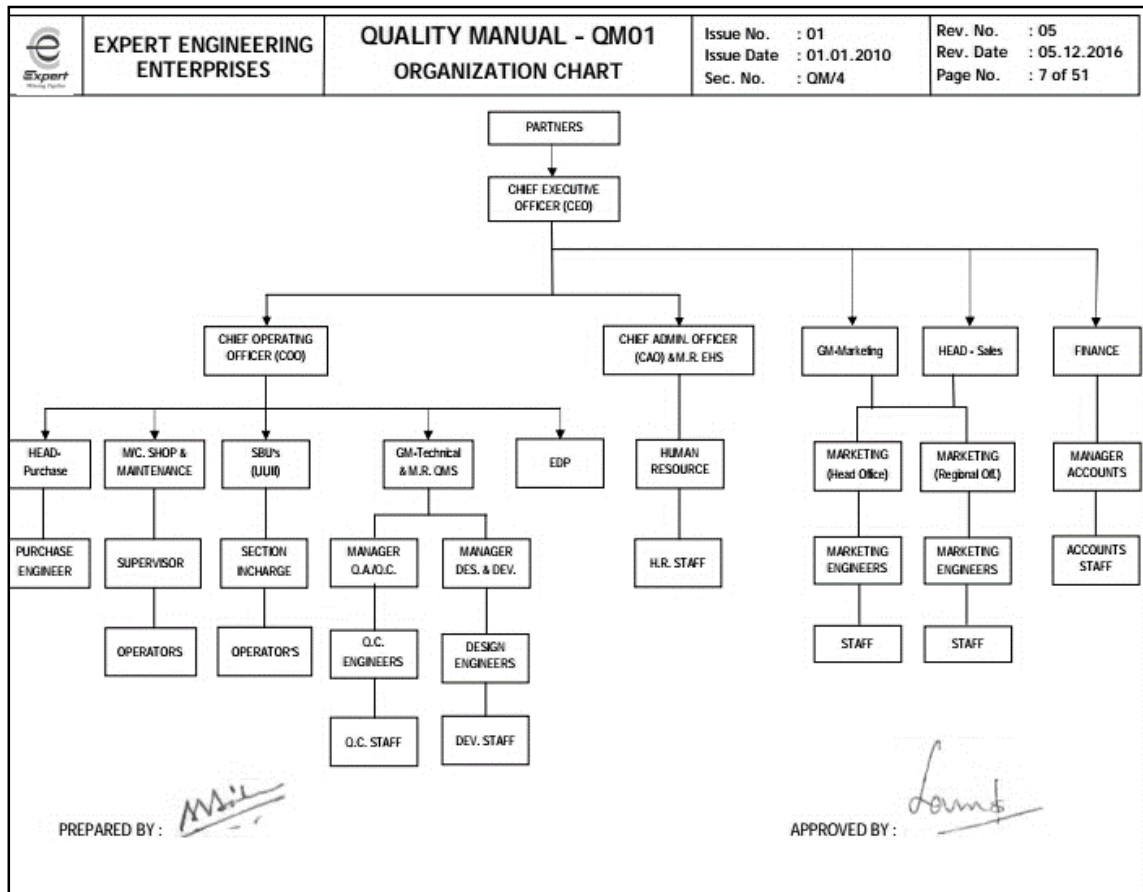
We prepared identification labels and stick them on box. Also we write sizes on top of box so that it is very easy to identify correct seat guide pin and stem guide pin. Also we prepare one sheet partition and kept seat guide pin and stem guide pin of same size in one box. Hence time to search both pins is reduced.	Time saving	B.M.Jain	B.M.Jain	Practiced
A new holder has been made in house which is designed such that it uses the remaining unused edges of the tip leading to full utilization & thus saves Rs150 per piece & Rs 8000 for holder saved	Cost saving	AnjayZende	AnjayZende	Practiced
1. We are using stud and nut which increases the cost 2. If we can use hex. Bolt instead of stud and nut, we can save rs.5.5 (app.) Per assembly. We are suggesting to use hex bolt instead of stud which will reduce cost	Cost saving	R.M.Kulkarni	R.M.Kulkarni	Practiced
Contract review format revised	Morale	SumitKakade	SumitKakade	Practiced
Separate files made as per customer wise, so that all details should be available in one file	Time saving	SumitKakade	SumitKakade	Practiced
A new tool cutter consisting of two interchangeable insert has been made in-house by which its accuracy , efficiency & tool life is increased	Moral	AnjayZende	AnjayZende	Practiced
Proper place identified for keeping the Stationary items	2'S'	VinayakLokur Sir	Anjali Shahpurkar	Practiced
Weight reduced in GTV 250#150 Body, Bonnet, Yoke, More clearances.	Cost saving	VinayakLokur Sir	ShwetaDhulap	Practiced
Instructions provided near Washroom doors	Morale	SumitKakade	SumitKakade	Not Practiced
1. Consumption of soap will be very low. 2. No spillage of soap in and around wash basin.	Morale	SumitKakade	SumitKakade	Not Practiced
1. Cost of some brought items like yoke sleeve, stem, seat ring, seat guide is more. 2. We didn't calculate cost technically before and hence we didn't reduce rates with technical support before 3. We observed that for yoke sleeve there is much more difference in our costing and supplier's cost 4. If we reduce cost of yoke sleeve initially, we can reduce cost by much more margin 5. Finally supplier is convinced and he	Cost saving	VinayakLokur Sir	AishwaryaAinapure	Practiced

gave revised rates for yoke sleeve				
1. Cleaning by hand can be hazardous for health. 2. We can use another tool than cotton for collection of lapping waste which can avoid contact of hazardous lapping waste to human being. 3. We can use steel tool for collection of lapping waste.	Safety	LaxmanLohar	LaxmanLohar	Practiced
1. We didn't create logic so that we will get it directly from ERP. 2. We can get actual purchase cost by linking purchase order to production BOM so that we can get total valve purchase price easily from ERP itself. 3. No need of updating	Time saving	VinayakLokur Sir	VinayakRevankar	Practiced
1. Casting kept in such a manner that dust accumulated in inner side of powder coated body. 2. Dust wiping of inner side requires more time than the outer side 3. If we keep casting in reverse manner, require time for cleaning will be less.	2'S'	GautamDhamnekar	GautamDhamnekar	Practiced
Clamping done at Reception table Glass	Safety	S.S.Lokur sir	Anjali Shahpurkar	Practiced
1. Labelling is done on racks to identify the materials and also arrangement is done properly	2'S'	ShekharBhojgar	Anand Bhatkande	Practiced
1. All fastener jars are kept in Tray with proper arrangement	2'S'	ShekharBhojgar	Anand Bhatkande	Practiced
1. Spanner operated head stock was difficult while doing machining 2. It is unsafe condition of working 3. Usage of spanner increases operation time 4. If we use hand wheel instead of spanner, problem will be solved	Safety	SheetalPatil	SheetalPatil	Practiced

<p>1. For doing right angle we have to measure depth in each set up</p> <p>2. This measuring of depth increases required time for set up and also wear of depth Vernier</p> <p>3. We can use master guide for this depth measurement.in this guide we can set the door within minute and we can start machining</p>	Quality improvement	Manohar Patil	Sheetal Patil	Practiced
<p>1. Hard wooden surface causes scratches on powder coated casting</p> <p>2. This scratch affects on aesthetic look as well as quality of powder coated castings.</p> <p>3. We can avoid direct contact of such powder coating by sticking rubber on wooden blocks so that scratches will not be formed on powder coated casting</p>	Quality improvement	Deepak Patil	Deepak Patil	Practiced
<p>1. Sending reports directly from ERP</p> <p>2. Reports are got converted to pdf&amp; than attached to outlook mail directly</p> <p>3. Sending ERP reports to customers/vendors becomes easy</p>	Moral	Vinayak Revankar	Vinayak Revankar	Practiced

**PLEASE NOTE:-**There is documentation for every Kaizen implemented and also whether it is currently practiced or not. Information is also there regarding how much cost has been reduced , those which are not practiced are shown in the red for action to be taken.

**Exhibit VI: Organization Structure of Expert Engineering**



## References

Daniels R C (1995), ' Performance Measurement at Sharp and Driving Continuous Improvement on the Shop Floor", Engineering Management Journal Vol. 5, No. 5 pp. 211- 214.

[https://en.wikipedia.org/wiki/Toyota\\_Production\\_System](https://en.wikipedia.org/wiki/Toyota_Production_System), retrieved on 19<sup>th</sup> December, 2018, at 5.47 pm.

Imai M (1986) Kaizen: The Key to Japan's Competitive Success, McGraw Hill, New York, USA.

Jagdeep Singh and Harwinder Singh Kaizen Philosophy: A Review of Literature, The Icfai University Journal of Operations Management, Vol.VIII, No.2, 2009..

Koichi Shimizu , Transforming Kaizen at Toyota, Okayama University\_

“Kaizen as a Method of Management Improvement in Small Production Companies”  
<https://www.degruyter.com/downloadpdf /j/eam.2015.16.issue-2/eam-2015-0024/eam-2015-0024.pdf> accessed on 02/11/18 , at 1.53 pm 1<sup>ST</sup>

Ohno T. (1988), Toyota Production System : Beyond Large-Scale Production , Productivity Press, Cambridge (Japanese version,1978)

Palmer V S (2001) " Inventory Management Kaizen " , Proceedings of 2<sup>nd</sup> International Workshop on Engineering Management for Applied Technology, pp. 55-56 Austin ,USA.

Suzaki K (1987), The New Manufacturing Challenge-Techniques of Manufacturing Systems, John Wiley and Sons, Inc., New York.

Teian K (1992), Guiding Continuous Improvement Through Employee Suggestions, Productivity Press Portland,US.

Womack JP and Jones D T (1996), Lean Thinking, Simon & Schuster NewYork.

Wormack J.P., Roos D., and Jones D.T. (1990), The Machine that changed the World, Macmillan