CHAPTER - 4

UNIDO
Chapter 4

UNIDO

Introduction:

For automobile Industries nowadays world is depending on India. Due to the tremendous efforts by Mr. Narsingham, CEO, Sundaram Kletan, TVS India won Deming Award. It is the first Indian Company and the 4\textsuperscript{th} company in the world to get this prestigious award.

For excellence, big companies can hire the services of experts but it is not possible for small companies to do the same. So Automobile Components Manufacturers' Association of India (ACMA) decided to introduce a programme for automobile industries for quality excellence.

ACMA approached Government for financial help. When proposal was submitted, Government took assistance of United Nations [UN]. Thus UNIDO programme is supported by ACMA, UN and Government of India.

The committee has been formed which consists of -

1. One Representative of UN.
2. One Representative of Indian Government.
3. One Quality Expert.
4. One member of the company.

After rigorous tests, some automobile companies have been selected for the UNIDO Programme.

UNIDO is a roadmap to excellence. The basic concept behind it is that the practical improvement is to be seen in every aspect. Efforts should be made
to grow and achieve the target of world-class competition. The theme behind this is to accept openly that the improvement is needed. If the people accept it then it is easier to make necessary changes.

**Need for UNIDO**

Though India is presently competing in the world market, it is very difficult for her to stand in this competition in the long run. The world is changing fast and if we don’t change, we will be nowhere in the world market.

Let us see the present situation. All the countries in the world have become the members of World Trade Organization (WTO). India is also a member of WTO. The decisions taken by WTO are binding on all the member countries.

WTO has taken an important decision that in future there will not be any import duty on the goods. Presently 30% to 35% import duty is levied by India (formerly it was 50%).

What will be the consequences of the decision taken by WTO? Any country can buy goods from any other country, without any difficulty. Suppose you are manufacturing transmitters but if they are available at cheaper rates in any other country, your business will go into liquidation. This may happen in coming 4-5 years. Throughout the world, sale price will be the same.

Like WTO, WP 29 is another organization that works for UNO. This organization decides the global standards. Presently India attends the meeting of this organization but has not yet become the member of this organization. We may become member of WP 29 in the time to come. [May be within 5 years.]

Source-J.M.Kulkarni [G.M.]
Because of the working of these 2 organizations, throughout the world, the quality and price of any product will be the same. Those who can face this can only stand in the competition.

India is world class in the fields like I.T.; Hospital, Education etc. Again in the production of some commodities, we are on number one. We export bananas with its 42 varieties to the whole world. We are number one in the production of coffee, milk and on number two in the production of leather.

But we are not considered world class in the manufacturing techniques and here is the importance of cluster (in UNIDO). Through this programme companies are trying to become world class in the techniques of production.

Japan is known for its high quality and low cost. Even to day, India exports iron core to Japan and imports steel from it. Instead, why don’t we go for value addition to produce steel ourselves? It will be beneficial for us. For this we will need to produce zero defect products and for that what is important is a change in our thinking (mentality). The target for wastage, rejection, and rework should be zero only. By joining the cluster we can do so. We can produce product of total value addition.
WORKING OF UNIDO:

Diagram 4.1

CLUSTER ACTIVITIES

There are different clusters of UNIDO programme. In a cluster, different zones are made and there are 10 to 12 members in each zone.

Generally the senior person is the leader but it may be led by the worker. The programme begins with 3 M, reducing the waste and reducing unnecessary movements or actions while working. The cluster members observe and find out the errors and decide to remove them.
In the cluster, national counselor of UNIDO programme visits monthly and stays with the zonal members. He trains the people, gives them homework and checks it in the next visit, which helps in maintaining continuity. This continuity is one of the reasons for a greater involvement of the people in UNIDO.

In a cluster, cluster expert makes internal audit. In a 30 minutes presentation programme, the members give the report of the monthly progress. This review helps in the improvement of the cluster as experts the Savita Nagpal, Mr. Jain from C.I.I. attend the presentation.

In a MRM (Monthly Review Meeting) 20 members of 10 clusters visit one cluster along with C.I.I. experts & share their views & opinions which help the cluster to progress.

In a company, further division is made zone wise. The leader tries to see that everyone will be given some responsibility. This helps in developing a sense of belonging towards a programme. A picture of togetherness can be seen which is very important for any organization. The results state that the companies, which were in bad condition before the commencement of this programme, have shown tremendous change in the performance & productivity.

**Working of UNIDO**

**Red Tag Campaign:** It is very important. If the problem is found, red tag is attached to it. When the problem is solved the tag is removed. The tags, which are pending over one month as well as action plan for their disposal, are also highlighted.

The data of Red Tags is maintained to show the progress of tagging zone wise; telling where work is pending, and what type of work it is.
The graphs of Tags put & Tags removed are maintained. They show the time gap between Tagging & Removal. Action can be planned on the basis of this chart if target of removal of all Red Tags is fixed.

**INVENTORY MANAGEMENT**

Inventory Management is very important in the production process. Action plan is decided and the target is set.

<table>
<thead>
<tr>
<th>Table 4.1</th>
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<td><strong>STAGES</strong></td>
<td><strong>ACTIVITIES</strong></td>
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</table>
| 1. TAGGING | I Classify Red / Green / Gray.  
II Putting Tags on Red inventory.  
III Action plan to dispose Red inventory.  
IV Action plan to Convert grey into Green.  
To be done monthly. |
| 2. Operational Control | I No inward of material beyond schedule. (Daily)  
II No inward of material after a particular time (Daily)  
III No inward of material after a particular day of each month. (Monthly) |
| 3. Rack pallet removal | I Prepare pallet and rock list. (One time)  
II Identify F-4 Pallet / WIP pallet (onetime)  
| 4. Flexi Storage | FIFO method / system to be introduced in manufacturing area (one time) |
Inventory management results into high Inventory Turnover Ratio (ITR) and working capital management.

3M

The programme works on 3M.

1. Mudas
2. Mura
3. Muri

It improves the company’s ability to identify & eliminate unnecessary actions or movements, inconsistency and stress. A number of KAIZEN check point systems have been developed to help both workers and management, to be constantly mindful of the areas of improvement.

The following is a widely used example utilizing three checkpoints of Muda (Waste), Muri (strain) & Mura (Discrepancies).

1. Manpower
2. Technique
3. Method
4. Time
5. Facilities
6. Jigs & Tools

7. Materials
8. Production Volume
9. Inventory
10. Place
11. Way of Thinking

The company taking into account its process may classify 3M Themes into 7 types of Mudas, Mura and Muri (like in a case study of Nashik Industry).
Classification of 3M may be done as:
1. Overproduction.
2. Transport.
3. Waiting.
5. Movement.
7. Interior product / Rework

In a Company in Nashik, where UNIDO programme is in operation

classification of 3M on the basis of above was done as follows:

Table 4.2

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<td>-</td>
<td>8</td>
<td>18</td>
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* ID - Identified.
E - Eliminated.

When zone wise record of 3 M identified and eliminated is maintained
areas, which are ignored, can get focused. For e.g. in the above
classification, it is found that maximum Muda elimination was done in waiting.

This also helps the company to check whether opportunities in all these areas are taken note or not.

**FIVE-S MOVEMENT**

The five S Movement takes its name from the initials of five Japanese words that start with S:

1. Seiri
2. Seiton
3. Seiso
4. Seiketsu
5. Shitsuke

As a part of the visual management of an overall programme, signs that repeat the steps are often posted in the Workshop.

**Step 1 - Seiri (Straighten up)**

- Work in process
- Unnecessary tools
- Unused machinery
- Defective products
- Papers and documents.

Differentiate between the necessary and unnecessary and discard the unnecessary.
Step 2 – Seiton (put things in order)

Things must be kept in order so that they are ready for use when needed. An American Mechanical Engineer recalls that he used to spend hours searching for tools and parts, when he worked in Cincinnati. Only after he joined Japanese company and saw how easily the workers were able to find what they needed, did he realize the value of Seiton.

In connection with Seiton, I remember the tailoring shop I visited during my research work. It was a pleasant and uncommon experience.

The tailoring shop in this example is a famous tailoring shop where a large number of customers visit to get their clothes stitched. The number of dresses this tailor stitches is much more than that of dresses stitched by many of the tailors.

This tailor is an outstanding fashion designer [without a degree in fashion designing]

He is with a staff of 15 trained tailors and they stitch around 50 to 55 dresses every day.

If one visits his shop he finds a heap of clothes arranged one over the others. When the tailor gives the bill he does not even write the name of his customer. When his customers call him to make enquiry or ‘status’ of the clothes given for stitching, he is able to tell it within a minute. I found this very astonishing as I had different experience in tailoring shop. Only after showing a receipt on which a piece of cloth given for stitching is pinned, after a search my tailor would tell me the status of my clothes. I was curious to now how he keeps track of all these clothes, and the answer was, of course, Seiton.

Everyday in the morning he begins his work with re-arranging the clothes or material as per the date wise delivery. If material is taken for stitching the
mark is put on the second copy of bill. If the dress material goes for embroidery work, different sign is put on the bill. Normally he gives delivery within 15 days and in season within 20 to 25 days if a customer requires an urgent delivery he puts another mark on the bill. Accordingly every morning he keeps the material in proper order, at proper place. So on time delivery has not remained a problem for him, which is uncommon in his profession.

It proves that implementation of Seiton is useful for every individual, profession and organization.

In one company under UNIDO programme applying I S, 2 S in its working proudly displayed the photographs of its achievements.

**Picture 4.1**

![Thread Rolling Machine Electrical Control Panel Before After](image)
It clearly showed company’s ability to carry out improvement systematically and in a planned manner. It also showed the perseverance of people to get improvement.

**Step 3 - Seiso (Clean-up)**

Keep the machine and workplace clean. Seiso is cleaning and also inspecting and simple repairs and preventive maintenance. For e.g. if the machine is cleaned everyday likely defects may be noticed. So preventive maintenance is possible.

**Step 4 – Seiketsu (Personal Cleanliness)**

Make it a habit to be clean and tidy starting with your own person.

**Step 5 – Shitsuke (discipline)**

Follow procedure in the workshop.
My Machine Campaign –

My machine campaign is a part of UNIDO Programme. The worker is supposed to maintain/clean machine on which he works. It is expected that while cleaning the machines, unnoticed things such as looseness of bolts at different places, oil leakage etc. get noticed and timely attention can be given to avoid breakdown of machines. This may also develop a sense of ownership, “My Machine” feeling among the workers.

It has been experienced that in many cases workers brought to the notice of their supervisors many likely faults and have even made important changes in the machines to improve the process.
The above problem was solved by the worker of Electrical Maintenance through Kaizen.

3 M, 5 S and My machine Campaign help the company –

- To bring discipline in daily management

- To eliminate waste.

- To improve overall culture of the organization.

- Employee involvement through suggestion scheme, safety measures and Kaizens and Quality Circles.

Employees’ involvement is a foundation of any improvement. The success of any quality improvement programme depends on the employees’ involvement in it. For employees’ involvement, efforts are made at all levels.
The employees will get involved only when they feel and experience management support for that programme. For employees’ involvements various steps are taken –

1. CEO visits the plant regularly and communicates with the employees.
2. Feedback of other cluster visits are given to the employees.
3. Freedom to the employees for making changes in the layout (in some cases)
4. Opportunity to workers for presentation at the time of Counselor’s visit.
5. Everyone is given some responsibility.
6. Appreciation is given for the slightest improvement.
7. Suggestions from the employees are welcome.
8. By making leaders as facilitators and sub-leaders as leaders and then adding 2-3 members in a zone, more and more numbers of workers are accommodated.

Suggestion Scheme is an integral part of individual oriented Kaizen.

In the post war years Deming & Juran brought the concepts of Small Group Activities [SGA] and its managerial implications to Japan. About the same time the suggestion system was brought to Japan by TWI (Training within Industries) and the U.S. Air Force. In addition many Japanese executives who visited the United States right after the war learned about the suggestion system and started it at their companies.

The American style suggestion system gave way to Japanese style system. The American style stressed the suggestion’s economic benefits and provided financial incentives. The Japanese style stressed the moral boosting benefits of positive employee participation. Over the years, the Japanese system has evolved into two segments – individual suggestions and group suggestions, including those generated by QC circle, JK (Jishu Kanri or
voluntary management) groups, ZD (Zero defects) groups and other group-based activities.

Suggestion schemes are currently in operation at most large manufacturing companies and about half of the small and medium size companies in Nashik. According to the Japan Human Relations Association, the main subjects for suggestions are:

- Improvement in one’s own work.
- Saving the energy, material and other resources.
- Improvement in the working environment.
- Improvement in the machines and process.
- Improvement in the Jigs and Tools.
- Improvement in the Office work.
- Improvement in the product quality.
- Ideas for new product.
- Customer service and customer relation.
- Others.

Thus suggestion system covers the entire process of production. So it has been made an important part of UNIDO programme.
“Positive participation in the suggestion scheme makes each worker problem conscious and helps him to do a better job”* Management should encourage participation by making workers feel free to make all sort of suggestions that do not cost much to implement. Since most of the workers are not used to writing down their ideas, they need to be encouraged and trained to put down their ideas on a piece of paper until it becomes a habit.

Under UNIDO programme, every suggestion made by an employee is taken note of and when it cannot be implemented, management promptly explains why.

Management encourages both individual and group suggestions. In some companies prizes are given for best suggestions or some sort of appreciation is made for the best suggestions.

Management follows several guidelines to promote workers’ active participation in suggestion system such as –

1. Always show a positive response to suggestion for improvement.
2. Help worker to write easily and give them helpful suggestions about their work.
3. Try to identify even a slightest inconvenience for the workers.
4. Make the target very clear for e.g. how many suggestions in which area do we need?
5. Use competitions and games to arouse interest.

Quality circles and Kaizen are also made an important part of UNIDO programme.

- Aisin-Warner Managing Director, Haruki Sugihara
PROCESS CAPABILITY

Process capability - Process capability is a statistical measure of inherent variation for a given event in a stable process. More generally it is ability of the process to achieve certain results based on performance testing. Process capability answers the questions, what can your process deliver?

If capability index is high, it means there are fewer variations in the process.

It helps the company in quality management, which further results in reducing in-house rejection, warranty claims and customer complaints.

POKA-YOKE

Poka-Yoke is a mistake-proofing methodology developed by a Japanese manufacturing engineer Shigeo Shingo of Toyota, in the 1660s. Poka-Yoke (pronounced “Poh-kah yoh-kay” translates into English as to avoid (Yokeru) inadvertent error poka.

Poka-Yoke for assembly means designs that will not allow improper assembly. Poka-Yoke in processes means designing the process, equipment, and tools to prevent errors by ensuring that an operation cannot be performed incorrectly. Poka-Yoke is also useful in non-manufacturing businesses. A Poka-Yoke device is one that prevents incorrect parts from being made or assembled or that easily identifies a flaw or error.

Poka-Yoke is one of the main components of Shingo ‘s Zero Quality Control (ZQC) system, which intends to produce Zero defective products. One means is through Poka-Yoke, small devices that are used to either detect errors or prevent them.
Shingo has worked on developing the concepts of Poka-Yoke for the past three decades. Distinction he made was between an error and a defect.

Errors are inevitable; people cannot be expected to concentrate on their work 100% of the time or to completely understand their instructions. Defects result when a mistake is allowed to reach a customer, and defects are avoidable. The goal of Poka-yoke is to engineer the process in order to either prevent mistakes or immediately detect and correct them.

Good Poka-Yoke devices share the following characteristics.

They are **simple** and **cheap** if they are too complicated or expensive, they will not be cost effective.

They are **part of the process** and receive immediate inspection.

They are **placed close** to where mistakes occur, providing quick feedback to workers so mistakes can be corrected.

**Poka Yoke** – Poka-Yoke device may even break/stop the production process immediately after defect in the process/product is noticed. Poka Yoke helps in reduction of defects, customer complaints and in house rejection.

For e.g. in a big company in Nashik manufacturing spare parts of automobile, Pokayoke is applied to sorting out Products. If a product is placed in a wrong basket, red light is flashed with alarm. It does not stop till that product is removed from that basket. This is nothing but Poka Yoke.

In another small company in Nashik where spare parts of a machine are manufactured, through Pokayoke defect in the spare part is immediately noticed when it passes from one stage to another as it stops that spare part
passing to the next stage. It reduces in house rejection as well as the time required to find out where the defect is.

Thus UNIDO programme covers feature of many quality systems such as Quality Circle, Kaizens, Suggestion schemes, T.P.M and Six Sigma.

What is different in UNIDO programme is Cluster Company’s alignment/association with other clusters. Everyone likes to do quality work. So every company follows quality system suitable to its requirement process and capacity within its own area. In UNIDO, automobile industries work together for the improvement of quality of their products to stand in the world market

The following case study of Automobile industry in Nashik gives an idea of how UNIDO programme is being implemented.

**Case Study UNIDO**

In Nashik only in one manufacturing company UNIDO programme is being in operation. It is a big manufacturing company engaged in the production of Machine tools required for automobile industries.

The company had to undergo very hard tests for being selected for this programme. Since, April 2003 this programme is being in operation in the said company.

The company has worked a lot on workers’ participation in the programme and has been honoured by other cluster for maximum involvement of the employees.

For involvement of the workers/employees in any quality programme, management support is necessarily to be seen. Also proper communication
between management and employees is required. The company took following steps for employees' involvement in UNIDO Programme.

1. CEO visits the plant regularly and communicates with the employees.
2. An agenda before the visit of Counselor is circulated.
3. Feedback of other cluster visits is given to the employees.
4. Employees are given freedom of making changes in the layout.
5. My machine concept has been introduced in the company.
6. 'Resourcing without resources' is the principle followed to make use of scrap effectively. For that scrap from all departments is collected at one place.
7. Opportunity is given to the workers for presentation at the time of counselors' visit.
8. Responsibility is given to everyone at the time of visit of counselor.
9. Suggestions from the employees are duly noticed.
10. More and more workers are being accommodated by making the leaders as facilitators and sub-leader as leaders and then adding few members in a zone.

The steps taken by company have helped developing a sense of belonging to UNIDO.

In the 9th MRM (Monthly Review Meeting) the company was awarded prize for maximum involvement of the employees. At the said meeting all the 15 zones were divided in 3 groups and arrangements was made in such a way that the guests who had come for the meeting could see all the changes made by zones. A picture of togetherness was clearly seen which helped the company to bag an appreciation award for employees' involvement.

Before the commencement of the programme the company was in bad condition but after a year of its inception a tremendous change has been
found in the mentality of the workers, which has resulted into positive changes in the performance and productivity.

The programme started with IS – 2 S & 3 M.

The following pictures of front view and scrap yard gave the idea now the company improved the scrap yard through 1 S and 2 S.

Picture 4.6  

1S – 2 S

Before  

After

Il Red Tag campaign was made a part of a programme. The following trend chart shows the gap between Red Tag Put and Red Tag Removed. Accordingly, Target for removal of Red Tag was fixed.
III Also Company stressed on clearing bad practices or intolerance for worst thing. Zone wise changes have been made. It gave motivation to the persons who had done it. They were also assigned the responsibility of maintenance clearly.
IV The ability to carry out improvement systematically and in a planned manner was developed and is seen from the following photograph.
### Fixed Point Photography

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**Zone:** #Hubham  
**Date:** 11.07.03  
**Zone:** #Hubham  
**Date:** 15.02.04

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6/61
Picture 4.9

**Fixed Point Photography**

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**Zone: SHUBHAM**
- Date: 10.07.82

**Zone: SHUBHAM**
- Date: 26.02.84

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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**2S Shining Examples**

**Before**

**Zone: Caliber**
- Date: 18.03.84

**After**

**Zone: Caliber**
- Date: 12.03.84

**Zone: Eshwar**
- Date: 18.03.84

<table>
<thead>
<tr>
<th>Zone</th>
<th>Unique</th>
<th>Caliber</th>
<th>Sh thumbnail</th>
<th>Shing</th>
<th>Udayan</th>
<th>Bidas</th>
<th>Chhotan</th>
<th>Gumshur</th>
<th>Eshwar</th>
<th>Pragnt</th>
<th>ZEP</th>
<th>Utagam</th>
<th>Khibal</th>
<th>Ambate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>56</td>
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<td>10</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
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<td>4</td>
<td>13</td>
<td>7</td>
<td>8</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Rel.</td>
<td>2</td>
<td>.</td>
<td>.</td>
<td>1</td>
<td>1</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>6</td>
</tr>
</tbody>
</table>
V Company was keen in really introducing 2 S principles of easy to take and easy to return without asking and searching. Also, 3 S was introduced seriously and the results are seen.

VI Company was looking for opportunities in 3 M areas. Ability to identify and eliminate 3 M was developed among the employees. The following graph shows the pace of improvement.
The above graph is explanatory enough. i.e. 3M result into reducing waste, stress and inconsistency. From March 2003 to March 2004 a rapid progress is seen. Employees are taking initiative in finding out 3M and eliminating. Through Kaizen how Muda, Mura & Muri eliminated is shown below.
Diagram 4.2

**EXAMPLE OF MUDA**

**ZONE:** SHUBHAM

**KAIZEN THEME:**
To eliminate OD grinding operation of 562 Roller Tooth.

**PROBLEM STATUS:**
1) OD grinding (p=0.001 mm, w=0.0004 mm) was below spec of 0.03 ± 0.04 mm. (Spec of 0.03 ± 0.04 mm was too tight.)

**PROBLEM ANALYSIS:**
- OD was non-circular.
- OD was not decalibrated.

**ROOT CAUSE:**
- OD was not decalibrated.

**KAIZEN IDEA:**
Modify Process Dimension.

**COUNTER MEASURE:**
- OD grinding operation was eliminated.
- OD became round in decalibrations.

**RESULT:**
OD grinding operation was eliminated.

Diagram 4.3

**EXAMPLE OF MURA & MURI**

**ZONE:** UDAN

**KAIZEN THEME:**
To eliminate inconsistency of quality & standards on the size of an operation due to the lack of adequate pre-calibration.

**PROBLEM STATUS:**
1) OD size not consistently maintained with inner calipers.
2) OD size not consistently maintained with outer calipers.

**PROBLEM ANALYSIS:**
- OD size was not consistently maintained.
- OD size was not decalibrated.

**ROOT CAUSE:**
- OD size was not decalibrated.

**KAIZEN IDEA:**
Provide adequate pre-calibration.

**COUNTER MEASURE:**
- OD size was decalibrated.
- OD size was consistently maintained.

**RESULT:**
- OD size was decalibrated.
- OD size was consistently maintained.

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VII ‘Not right first time’ is the key indicator of ‘quality’ programme.

The success of any company depends on the customer’s satisfaction. For that the key indicators are number of complaints from customers, number of returns from the customers, number of in-process rejection.

The following graph speaks enough of company’s step to improve these and the results show the downward trend.
Graph 4.3

CUSTOMER COMPLAINT
RESPONSIBILITY: MR. S. F. RANJ - MANAGER (GA)

GRAPH 4.3

Graph 4.4

CUSTOMER RETURNS
RESPONSIBILITY: MR. S. F. RANJ - Manager (GA)
VIII Labour Productivity Trend is another key indicator. Labour Productivity Trend shows the upward Trend, shows the effect of work simplification by IS-2S-3S and elimination of 3 M.  

Graph 4.6
VIX Inventory Turn Ratio shows upward Trend. We can see the performance of conversion of inventory to saleable product.

X Delivery Schedule Adherence is an important key indicator, which also shows upward trend. It seems that the company is coming closer to the Target decided.

Graph 4.7

XI Also upward Trends are shown in the following areas.

Value added per employee cost,

and

Floor space utilization
XII  The following graph shows how effort is put to bring more machines in lesser and lesser time for tool Change.

Graph 4.9
XIII In Inventory Control 'Red' is eliminated, Gray is reduced and Green is increasing.
Red refers to raw material inventory,
Green refers to work in progress,
Grey refers to finished goods

For that measures taken were –

1. Tagging
2. Operational Control
3. Rack and Pallet removal
4. Flexi stores

Company took action to dispose Red inventory.
XIV Company has also made 3 C arrangements in the parts going to customer. Company has taken efforts to improve Quality and Quantity of inventory.
XV Company has paid attention towards the safety of the employees.

Graph 4.10

Picture 4.12 A
XVI  Energy cost saving – in RS.

<table>
<thead>
<tr>
<th></th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30623</td>
<td>32378</td>
<td>32130</td>
<td>38245</td>
</tr>
</tbody>
</table>

Proposed plan for energy saving by street light modification. A.C. system modification, removing hydraulic leakage, energy saving on compressed air has been made.

XVII In house Training & Evaluation of employees was completed or in progress ----
- 1 S 2 S - Why why analysis
- 3 M - Safety
- Kaizen - 3 S
- Pokayoke - Inventory Control
- SMED - 7 C Tools.

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Table 4.3

<table>
<thead>
<tr>
<th>SR NO</th>
<th>ZONE</th>
<th>NO. of EMPS</th>
<th>1 S 2 S</th>
<th>S M</th>
<th>K A Z E N</th>
<th>POKAYOKE</th>
<th>SMEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UNIQUE</td>
<td>40</td>
<td>40-40-40</td>
<td>24-24-24</td>
<td>20-20-20</td>
<td>04-04-04</td>
<td>00-00-00</td>
</tr>
<tr>
<td>3</td>
<td>SAMARIA</td>
<td>30</td>
<td>30-30-30</td>
<td>44-44-44</td>
<td>32-32-32</td>
<td>08-08-08</td>
<td>00-00-00</td>
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<tr>
<td>4</td>
<td>SHUBHANGA</td>
<td>13</td>
<td>13-13-13</td>
<td>13-13-13</td>
<td>13-04-04</td>
<td>11-02-02</td>
<td>00-00-00</td>
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<tr>
<td>5</td>
<td>SWING</td>
<td>5</td>
<td>05-05-05</td>
<td>05-05-05</td>
<td>05-05-05</td>
<td>05-05-05</td>
<td>00-00-00</td>
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<tr>
<td>6</td>
<td>UDAN</td>
<td>6</td>
<td>06-06-06</td>
<td>06-06-06</td>
<td>06-06-06</td>
<td>06-06-06</td>
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<td>7</td>
<td>IDAS</td>
<td>9</td>
<td>09-09-09</td>
<td>09-09-09</td>
<td>09-09-09</td>
<td>09-09-09</td>
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<td>33</td>
<td>33-33-33</td>
<td>33-33-33</td>
<td>33-33-33</td>
<td>33-33-33</td>
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<tr>
<td>10</td>
<td>BHARAT</td>
<td>24</td>
<td>24-24-24</td>
<td>24-24-24</td>
<td>24-24-24</td>
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<tr>
<td>12</td>
<td>ZEP</td>
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<td>14-14-14</td>
<td>14-14-14</td>
<td>00-00-00</td>
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<td>15</td>
<td>ANIMATE</td>
<td>3</td>
<td>03-03-03</td>
<td>03-03-03</td>
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<td>03-03-03</td>
<td>00-00-00</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td>274</td>
<td>274-274-274</td>
<td>274-274-274</td>
<td>274-274-274</td>
<td>274-274-274</td>
<td>36-20-36</td>
</tr>
</tbody>
</table>

- R: Required to be trained  
- T: Trained  
- E: Evaluated

Tangible and intangible benefits

Graph 4.11

SAVINGS GENERATED TREND CHART

RECCURING

<table>
<thead>
<tr>
<th>IN THOUSANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurring</td>
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<tr>
<td>Cumulative</td>
</tr>
</tbody>
</table>

ONE TIME

<table>
<thead>
<tr>
<th>IN THOUSANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Time</td>
</tr>
<tr>
<td>Cumulative</td>
</tr>
</tbody>
</table>

SAVING GENERATED RUPEES THOUSANDS

280
**Table 4.4**

**A) TANGIBLE**

<table>
<thead>
<tr>
<th>S.</th>
<th>KAIZEN THEME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>BY REDUCING</strong></td>
</tr>
<tr>
<td></td>
<td>1) STOCK OF NON MOVING DRILLS, CUTTERS, INSERTS, BROACH, GOT IN TO USE.</td>
</tr>
<tr>
<td></td>
<td>2) STOCK OF UPG GEAR SHAFT CONVERSION, &amp; 22.0 Dia Bar Conversion to Shaft.</td>
</tr>
<tr>
<td></td>
<td>3) PURCHASE OF HARDWARES</td>
</tr>
<tr>
<td></td>
<td>4) CONSUMPTION OF GRINDING WHEEL, DIAMOND DRESSOR, ACID</td>
</tr>
<tr>
<td></td>
<td>5) USE OF COMPUTERISED STATIONARY, VISITOR'S PASS, PLASTIC PAPER</td>
</tr>
<tr>
<td></td>
<td>6) ELECTRICAL CONSUMPTION</td>
</tr>
<tr>
<td></td>
<td>7) CHANGE OVER TIME</td>
</tr>
<tr>
<td></td>
<td>8) MACHINE LEAKAGES</td>
</tr>
<tr>
<td>2</td>
<td><strong>BY IMPROVING</strong></td>
</tr>
<tr>
<td></td>
<td>1) PRODUCTIVITY THROUGH NEW FIXTURE FOR BALL FILLING</td>
</tr>
<tr>
<td></td>
<td>2) BY IMPROVING ROUGH GRINDING PROCESS TO TURNING</td>
</tr>
<tr>
<td></td>
<td>3) BY IMPROVING LIFE OF SPINDLE BEARING AND ETCHING ELECTRODS</td>
</tr>
<tr>
<td></td>
<td>4) POWER FACTOR</td>
</tr>
<tr>
<td></td>
<td>5) BY RECTIFICATION OF V BLOCKS &amp; DIAL STAND</td>
</tr>
<tr>
<td></td>
<td>6) NEW BALLAST &amp; REFLECTORS</td>
</tr>
<tr>
<td>3</td>
<td><strong>BY SAVING</strong></td>
</tr>
<tr>
<td></td>
<td>1) HYDRAULIC AND GEAR OIL</td>
</tr>
<tr>
<td></td>
<td>2) TRANSPORT COST FOR MATERIAL TO VENDOR</td>
</tr>
<tr>
<td></td>
<td>3) BY RECOVERY FROM USED K. OIL &amp; THINNER</td>
</tr>
<tr>
<td></td>
<td>4) BY INDIGENOUSLY BUILDING PUMPS AND ASSEMBLY AS AGAINST IMPORT</td>
</tr>
<tr>
<td></td>
<td>5) BY CONSTRUCTING FLOORING STRIPS ON CYCLE STAND</td>
</tr>
<tr>
<td></td>
<td>6) BY AVOIDING VASTAGE OF BINDING WIRE</td>
</tr>
<tr>
<td>4</td>
<td><strong>By Eliminating</strong></td>
</tr>
<tr>
<td></td>
<td>1) OD grinding operation of ITD Roller Teeth</td>
</tr>
</tbody>
</table>

**B) INTANGIBLE**

1) IMPROVEMENT IN HOUSE KEEPING
2) INVOLVEMENT OF STAFF AND WORKER
3) IMPROVED LAYOUT
4) CONFIDENCE BUILDING
5) SUPPORT TO Q.B., 5000 ACTIVITIES

**Graph 4.12**

*AREA GENERATED FREE SQUARE METERS*

![Graph showing area generated free square meters over months]

281
Graph 4.13

Sales

Table 4.5
Key indicators comparison status

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Description</th>
<th>As on 28/4/03 /Tracked (MRM2)</th>
<th>As on 25-3-04 MRM 13</th>
<th>Target for Oct – 04</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>15 - 25 score</td>
<td>36 / 100</td>
<td>75 / 100</td>
<td>90 / 100</td>
</tr>
<tr>
<td>2</td>
<td>Customer Complaints</td>
<td>7</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Customer return</td>
<td>6606</td>
<td>11000</td>
<td>1000</td>
</tr>
<tr>
<td>4</td>
<td>In house Rejection</td>
<td>16790</td>
<td>10171</td>
<td>5000</td>
</tr>
<tr>
<td>5</td>
<td>Labour Productivity</td>
<td>11.4</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>TTR</td>
<td>3.9</td>
<td>6.9</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Del. Schedule</td>
<td>87</td>
<td>98</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>VAPCO</td>
<td>1.11</td>
<td>1.33</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Floor space utilization</td>
<td>2040</td>
<td>3159</td>
<td>3500</td>
</tr>
<tr>
<td>10</td>
<td>Accident Frequency</td>
<td>103</td>
<td>54</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>Accident Severity</td>
<td>330</td>
<td>671</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Absenteeism</td>
<td>18</td>
<td>13.0</td>
<td>13</td>
</tr>
<tr>
<td>13</td>
<td>Cost of internal non conformities</td>
<td>2.8</td>
<td>4.89</td>
<td>1.2</td>
</tr>
<tr>
<td>14</td>
<td>M/C B/d</td>
<td>128</td>
<td>172</td>
<td>100</td>
</tr>
<tr>
<td>15</td>
<td>M/C B/d frequency</td>
<td>85</td>
<td>74</td>
<td>50</td>
</tr>
<tr>
<td>16</td>
<td>Power Consumption/Units</td>
<td>7.5 units</td>
<td>7.0</td>
<td>6.0</td>
</tr>
<tr>
<td>17</td>
<td>SMED: No. of Machines &lt; 10mins</td>
<td>Nil</td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>
From the above case study it is clearly seen that the company in the case study is showing a steady progress in every aspect related to quality improvement. A path to the quality excellence is seen closer for the company which will help the company to stand in the world market. It will surely meet the requirements set by WP-29 for global standards.

The company’s Inventory Turn Ratio as well as Labour Productivity Trend has increased.

In process rejection has decreased. Customers’ complaints as well as Returns have decreased. The Company is keen on adhering to its delivery schedule. It has come close to its target of achieving 100% Delivery schedule adherence. Accident frequency is reduced; unsafe conditions are taken note of, resulted into increased cooperation from its employees. Within one year of the beginning of UNIDO programme, the company has generated a savings of Rs. 318000; its Sales Turnover [per month] has increased from Rs.145 Lakhs to Rs.210 Lakhs.

**CONCLUSION**

The above case study of Nashik really shows how UNIDO program is being worked out and how it is helping the company to progress. It will definitely help the company to compete in the world market.

As stated earlier, the said company was in a bad condition. But after one year of commencement of UNIDO, its condition has improved a lot.

As mentioned by Mr. S.Narsingam, CEO, Sundaram Cleton, Chennai, if we want to stand in the world market it is necessary for us to produce a quality goods.
As per World trade organization’s decision, there will not be any import duty. Because of this decision any country can buy goods from any other country. In a free market what buyer will consider is the price and of course, quality.

We have to concentrate on both. So producing quality goods is the only way to stand in the world market. Again if the price of the product is to be reduced, cost factor needs to be considered. For that, elimination of wastages, defects, and rework is necessary. It will also result into improving quality of the product.

We have to improve manufacturing techniques. In cluster, Member Companies help each other in problem solving. Collectively they can bring a change in the manufacturing techniques.

Above all for all this what is necessary is to change the attitude, the way of thinking. We know that overnight change is impossible. But by becoming a member of the cluster under UNIDO, a company can make a beginning. A company in Nashik has set the example.

In UNIDO principles of five S are implemented. Seiton, which refers to putting the things in order though sound and simple, is in actual practice found of immense value.

We all say time is money and we often experience that much time is wasted in searching the things. Seiton saves much time of the employees, which can be used, for constructive work. Seiton can be applied anywhere beginning from home.
UNIDO is the combination of many systems of quality improvement such as Kaizen, TPM, Six Sigma, 3M, 5S, SGA, etc. It takes note of various aspects from cleaning the work area and machines to safety of the employees, their absenteeism, their morale, labour trend, productivity trend to inventory turn ratio, customers’ complaints, customers’ returns, rework, defects etc. So if the cluster company follows it seriously giving priority to this programme the purpose of joining in UNIDO will definitely be served.

For the success of any programme co-operation from the employees is necessary. Their wholehearted participation will bring the programme a success. UNIDO programme gives due importance to the training of the workers. It also gives due consideration to removing of stress and inconsistency through 3M activities. This is for the betterment of the employees. Further in UNIDO quality improvement is not the job of only management, everyone has a role in it and their lies the success of UNIDO.