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QUALITY CIRCLE: AN EFFECTIVE MANAGEMENT TOOL

(Applied in small scale organizations)

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Abstract: This paper entitled “Quality circle:An effective management tool (Applied in small scale organizations)” concerns with the cost reduction by some modification in processes of small scale industries. The author has studied the role of quality circle as a management tool to enhance the effectiveness of production processes and also focuses on the improvements that can give the minimum rejection level the products. In this paper some data's are collected by experimenting specially in the wire harness manufacturing companies for automotive vehicles. Here are some modifications by implementing these in the same industries the quality of the products can be improved. By adapting, the processes can be made more efficient and effective.

Keywords: Quality circle, cost reduction, Minimum rejection, continuous improvements

I. Introduction(Concept and Definition of Quality Circle)

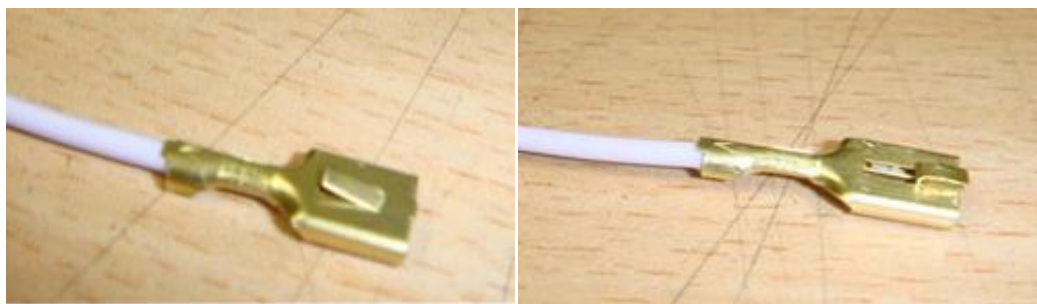
A Quality Circle is a volunteer group composed of members who meet to talk about work place and service improvements and make presentations to their management with their ideas. These are related specially to the quality of output or services in order to improve the performance of the organization/department and motivate and enrich the work of employees. The philosophy that defines management's role in continuously encouraging and implementing small improvements involving everyone. It is the process of continuous improvements in small increments that make the process more efficient, effective, under control and adaptable. Improvements are usually accomplished at little or no expenses, without sophisticated techniques or expensive equipments. It focuses on the simplification by breaking down complex processes into their sub-processes and then improving them. For the paper we have completed some experiments before and after the improvements and modifications in process, data are collected before and after modifications and on the basis of these information's the cost and rejection levels of the products are identified. Then we did calculations on standards cost basis. After calculations some conclusions are found out that are represented with the help of graph and tables. Some examples of kaizen improvements in wire harness manufacturing companies and their effect on cost and rejection levels are shown with the graphs and tables. To find out the results the certain procedure is followed.

Procedure applied for Cost reduction:

- (1). Identification of problems (2). Selection of the problem (3). Objective (4). Defining the problem (5). Data collection: Before and after (6). Root cause analysis (7). Data analysis (8). Action (9). Developing solutions (10). Achievement (11). Effectiveness (12). Tangible benefits

II. Improved activities for better:

A. **PROBLEM:** Lock reverse bend in 6.4F terminal



Terminal lock in correct condition Terminal Lock Bend condition

This is the general problem that occurs on wire and terminal crimping machine while feeding the terminal chain from feeder. The causes of this type of problems may be:

- Terminal lock stuck in terminal chain
- Terminal lock striking in cutter guide
- Loose binding of terminal roll

1. Defining the problem:



a. Material receiving b. wire feed in machine c. Terminal feed in machine (Problem)



d. Programming e.. Setup verification

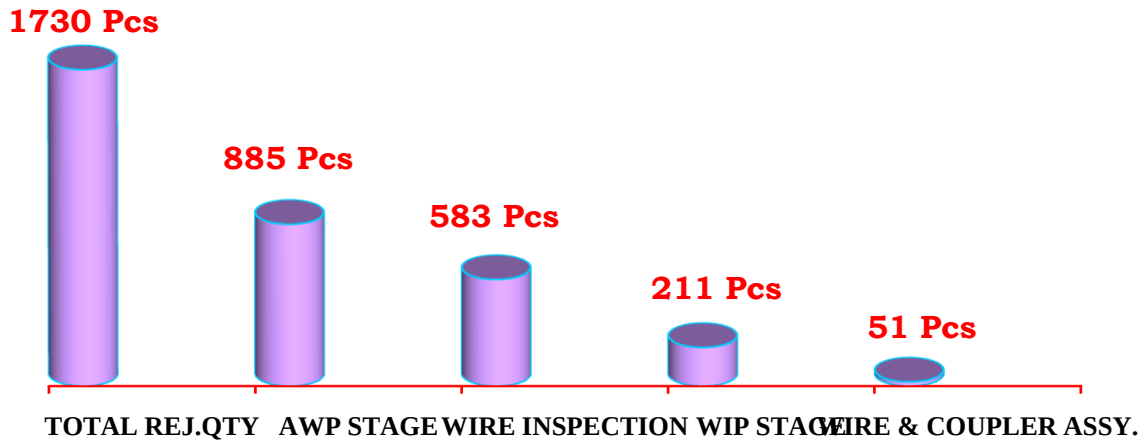
2. Impact of the problem:

- a. Insertion problem of coupler assembly
- b. Productivity loss
- c. Operator fatigue
- d. Increasev line rejection
- e. Tool breakdown
- f. Wastage of raw material

3. Data collection :

PRODUCTION AREA					
PROBLEM STAGE	AUTOMATIC WIRE PROCESSING				
	LOCK BEND (in pcs) IN ONE MONTH				
	I week	II week	III week	IV week	TOTAL
AWP AREA	200	250	225	210	885
WIP AREA	10	12	159	30	211
WIRE INSPECTION AREA	155	125	165	138	583
WIRE ASSEMBLY AREA	6	8	4	10	28
COUPLER ASSEMBLY AREA	6	5	7	5	23
TOTAL	377	400	560	393	1730

4. Problem faced at different stages:



5. Data Analysis:

S.No.	CAUSE	OBSERVATION	NO. OF FAILURES	
			NOS.	IN%
1.	Terminal lock get stuck in terminal cahin	15 times	8	53
2.	Terminal lock striking in cutter guide	15 times	4	27
3.	Loose binding of terminal roll	15 times	3	20

6. Action:

S.No.	Problem	Action	Status
1.	Terminal lock stuck in terminal cahin	Modified the hanger guide	Done

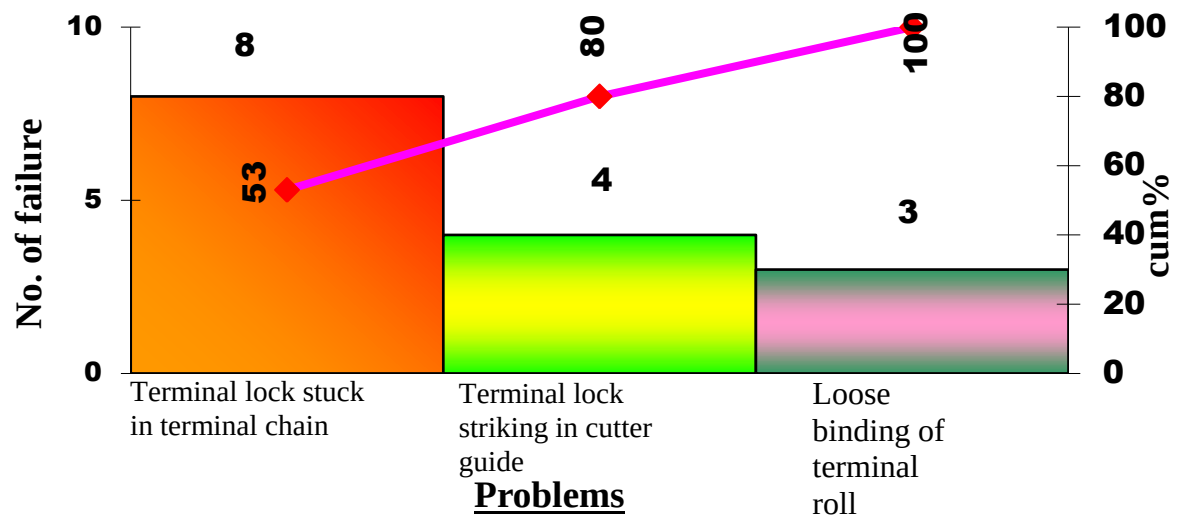
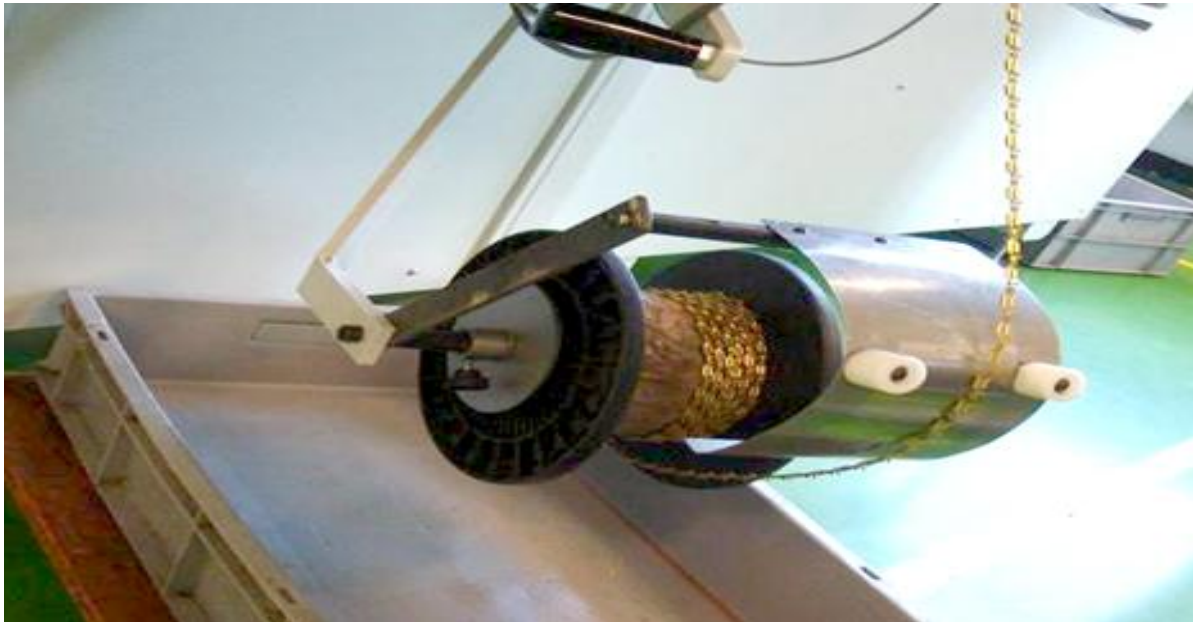




Fig: Before improvement



After improvement

S.No.	Problem	Reason	Action	Status
2.	Terminal lock striking in the cutter guide	Terminal lock height variation	Lock height controlled at vendor end	Done

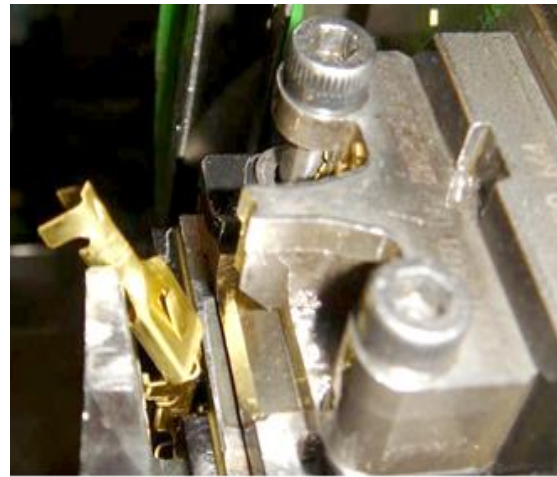
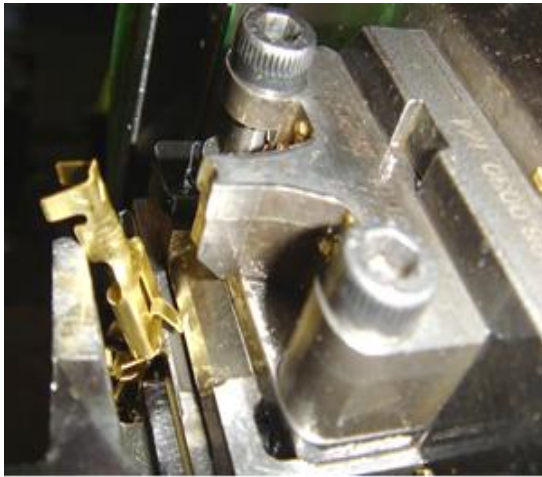


Fig: Before improvement (lock bend)
After improvement in terminal height

Fig:

S.No.	Problem	Action	Status
3.	Loose binding of terminal roll	Training provide to the operator at vendor end	Done



Fig: After Improvement

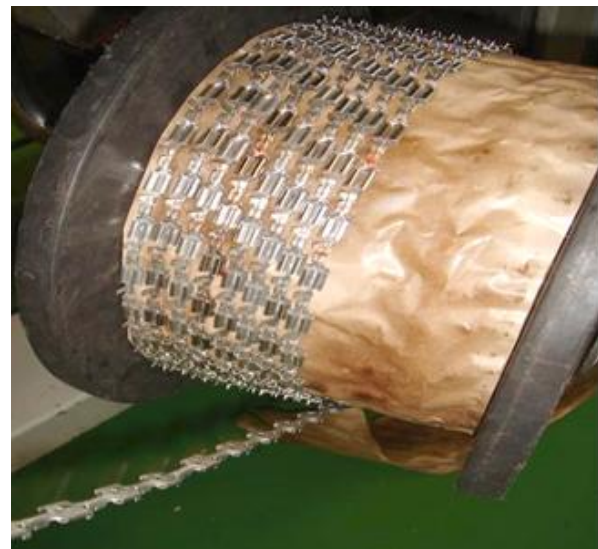


Fig: Before Improvement

7. Tangible benefits:

a. Material cost:

Monthly rejection of terminal=1730 Pecs

Cost of rejection of terminal=1730*0.36=Rs. 623

b. Manpower cost:

Operator cost for processing: 2*1730=58 hrs.*22=Rs 1276

One piece rework time: 2Min.

c. Machine cost:

Rs 0.75 per terminal

Total machine cost: $1730 \times 0.75 = \text{Rs } 1298/\text{month}$

Tool broken (punch + cutter guide) = 48 Nos.

Cost of punch or cutter guide = Rs 250

Total cost per month = Rs. 12000

Total cost saving = $623 + 1276 + 1298 + 12000 = \text{Rs } 15197/\text{month}$

Total cost saving per year = $15197 \times 12 = \text{Rs } 182364$

Conclusion: By the implementation of these kaizen activities we can save 50-60% time and cost reduction.

Tangible and Intangible benefits:

(a.) Utilization hours increased (b.) Reduction in Manpower. (c.) Cost Reduction. (d.) Productivity improvement
(e.) Over time reduction (f.) Capacity increased (g.) Reduction in wastage
(h.) Improve in aesthetics

IV. Results:

The main objectives of such types of kaizen activities in the small scale industries are:

- To increase the productivity
- To reduce labor cost
- To improve the quality and customer satisfaction
- To improve the feasibilities

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