

# Study and Analysis of Non Conformance Reduction in Machine Shop

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**Abstract:** - The work focuses on to reduce scarp for different machining operations like facing and chamfering, forming and blanking, slitting operation. Effort made to reduce the scrap when operation is in action for long duration by introducing different dimension block .The dimension block will change depend upon bearing width it can be used for equalizer adjustment. Concentration of reducing scrap for facing and chamfering operation is carried out in this paper. However, it is possible to reduce scrap for other operation too which are mentioned .scrap is reduced to great extent for facing and chamfering operations.

**Keywords:** - Facing and chamfering operation, Slitting operation, Dimensional block, Equalizer adjustment.

## I. INTRODUCTION

An industrial organization need sustainable design analysis and process optimization in manufacturing and service for increase in production rate. There is always demand for quality improvement with product price drop in end user. Hence study is required for different tools and techniques to reduce the scrap .The study identifies the scope in manufacturing industry by means of conventional methods called Cause and effect diagram, Bar chart, Total Quality Management(TQM), In industries the material in term of small amount of scrap is inevitable.

In today's business, controlling scrap is the one factor that companies focus on in order to remain competitive and maximum benefit. Scrap caused during setup may be difficult to avoid.

With complicated workpieces, and especially if there are surface relationship tolerances that cannot be measured constantly and an incorrectly machined workpiece may be impossible to rework once it is removed from the machine. But don't be too quick to give up on eliminating scrap during setup.

## II. LITERATURE REVIEW

**Uthiyakumar Murugaiah et al** studied about the document an approach to reduce scrap losses using the also totally eliminate Effects. Root cause analysis technique in a lean manufacturing environment. The application of the 5-whys analysis in a manufacturing industry provides a fact based and structured approach to problem identification and correction

that not only reduces but Corrective action has permanently eliminated the top defect, which is the "last piece material scratch" and this results in zero scrap thereafter.

**Shri ashok sarkar and Arup Ranjan Mukhopadhyay et al** studied about the document the cause and effect diagram is frequently adopted method for identifying potential causes out of a host of methods available for such identification.

**Kamalapurkar et al**, 2006 product that come out from stamping press which is process espically for blank shapes the process is continuous operation and machine turn the material into final product.

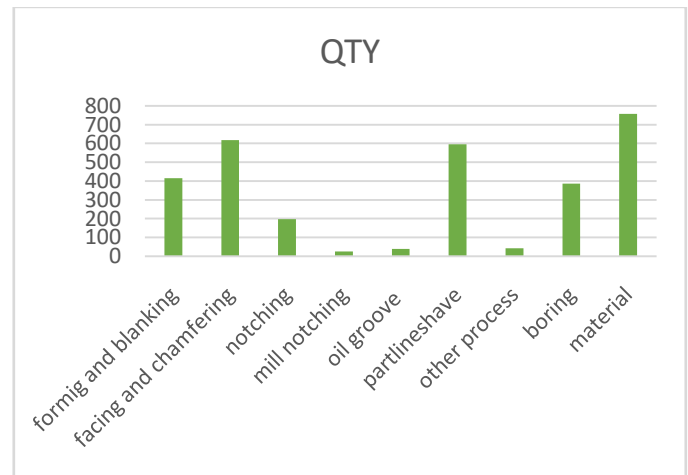
**Ralpa m.blames, 2001 frank and M. gilbreth** study to find the best way of performing a given task through analyzing the motion used by his work men and he is easily saw how to make improvement

**Duke Okes et al** studied about how to solve problems via the analytical process through figures, diagrams and tools useful for helping making our thinking visible

**Ellis Rott, Edward G.Schilling, Dean V.Neubauer et al** studied about generations of quality practitioners to be explorers of the truth through the collection and graphical portrayal of data.

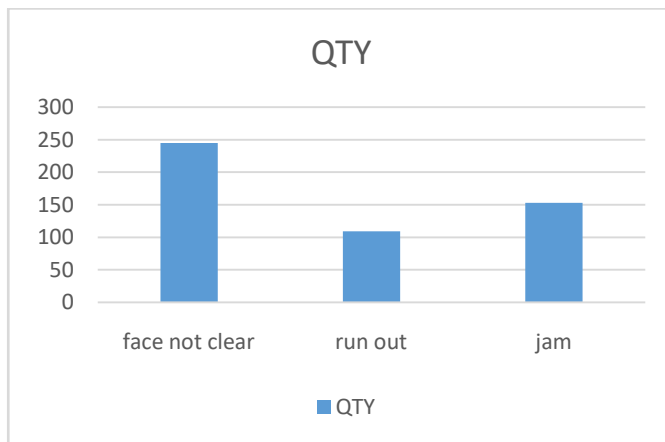
## III. DATA COLLECTION

*Scrap Data Collection for One Week*



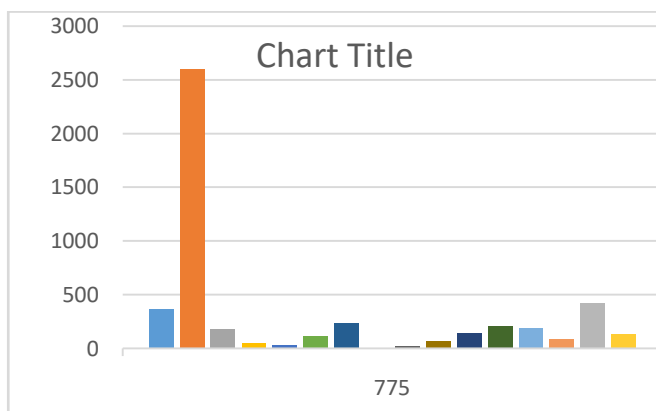
This chart shown that scarp data can be collected for all operation in the sequential manner and data collected for one week. Each operation having specific defect. From chart clearly shows that major scarp occur in some operation. The operation such as facing and chamfering, forming and blanking, slitting, material. Material play a more number of scarp and raw material comes from other company so we cannot control the material scarp. Effort is decide to control scarp in other operation from three operation we decide to reduce scarp in facing and chamfering operation.

*Scrap Data Collection in Defect for One Week*



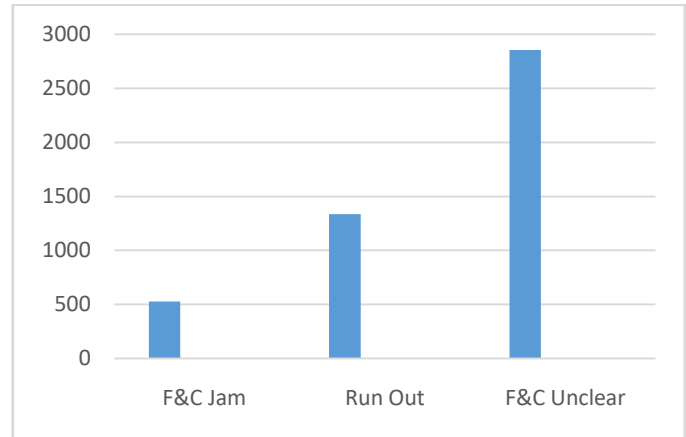
This chart shown that scraps data can be collected for major defect in facing and chamfering operation and collection of data for one week in this operation having more defect, such as facing and chamfering not clear, run out, jam, face out, id chamfering over and under size, Od chamfer over size and under size, od lines, width minus and plus and twist. these are defect are producing scarp in facing and chamfering operation from these scraps only three defect provide more scrap when comparing to other defect major defect are face not clear, run out, jam, set up here chart shows trend major defect in facing and chamfering operation

*Facing and Chamfering Operation Defect Trend in One Month*



This chart shown that data can be collected for over all defect trend in facing and chamfering operation for one month .this chart identify the major defect produce is face not clear.

*Facing & Chamfering Operation Major Defect of One Month*

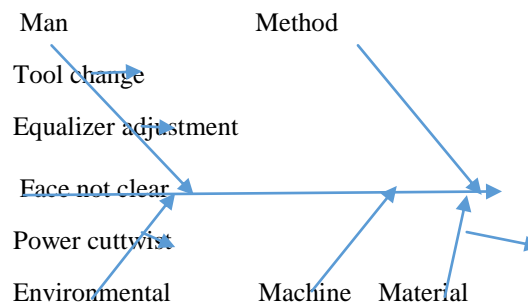


This chart shown that scrap data can be collected for major defect in facing and chamfering operation and collection of data for a month

#### IV. PROBLEM IDENTIFICATION

There are different operation are developed for Manufacturing bearing. All operation occur some defect. From scrap data collection we find out the more number scarp occur in facing and chamfering operation than other operation. In this operation major defect can be identified as face not clear

*Root Causes for Face Not Clear Defect*



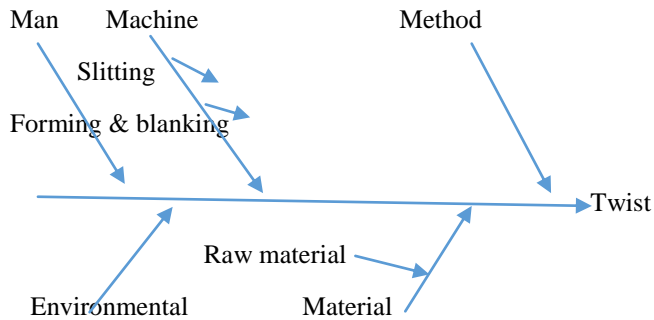
This diagram shown that face not clear defect were produced due to the following factors and their causes. Those factors are man, machine, Method, material and environmental. For the factor man tool change and equalizer adjustment are the causes. Environmental causes is power cut and for material twist is the causes.

*Corrective Action for Equalizer Adjustment*

- To make different dimensional blocks based on bearing width.

- Before starting the operation, adjust the equalizer with the help of blocks based on bearing width.
- After fixing the block face not clear defect were reduced 20%.

#### Root Causes for Twist

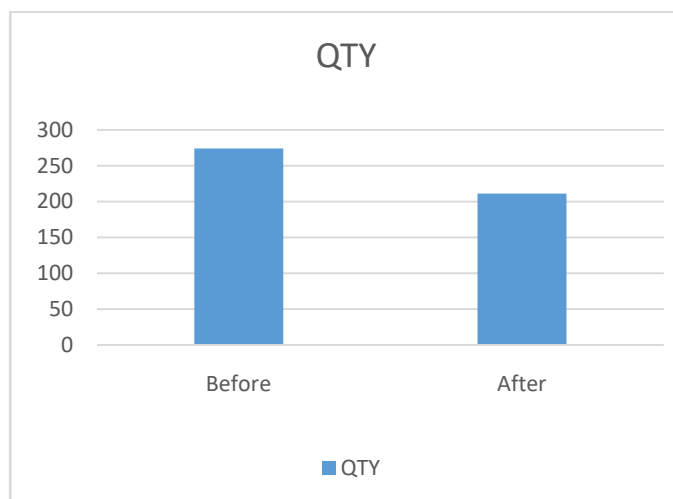


This diagram shown that twist were produced due to the following factors and their causes. Those are men, machine, material, method, Environment. Slitting and forming & blanking operations act as major role for twist defect. These process twist coming under the machine.

#### Corrective Action for Twist

- Implement the dial gauge for applied load correctly for given thickness of raw material.
- Before operation starting, given correct load using dial gauge and then only twist may be controlled and defect are reduced 30 %

#### Facing and Chamfering after Implementation



The above chart shows about the scrap trend for a block setting, before and after implementation. There are about 255 scrap components found and reduce to 211.

#### V. CONCLUSION

Scrap was found while performing machining operations like forming, blanking and slitting operations. This scrap is very much reduced by introducing a dimensional block in the machine when operations was performing. Analyses of scrap reduction is made for one week and those observations are drawn the graph.

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