MENGE MATRIX REVALIDATION

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ABSTRACT

This work analyse the reduction of scrap in automotive components. The objective of the work is to reduce the rejection of component(injector) which incurs huge costs to the company .This work aims to control the rejection occurring at the time of automotive part assembly in order to maximize the profit with reducing the scrap and it helps to increase the output as due to less vehicle hold. This work helps the companies to reduce the rejection rate with the help of quality tools.

Keywords- canopy, rejection, Pareto, Ishikawa

I. INTRODUCTION

The increasing of demand in automotive sector make all company is competed to increase their product to fulfil the requirement. Beside that the company should have the best solution in order to reduce cost, eliminate waste and improve performance and relationship. Quality with least cost is only possible by reducing the rejection rate. This project concentrates on the reduction of rejected component.

Menge matrix is matrix of assembly line and test line parameter which shows effect on each other. Test line rejection can be controlled by setting optimized on assembly line which lead to the cost reduction of rework and reassembly of type 316 injector.

First pass yield

First pass yield is define as the number of units coming out of process divided by the number of units going into that process over a specified period of time.

First pass yield = (units of products completed from process to specification with no rework)/(total units of products entering the process
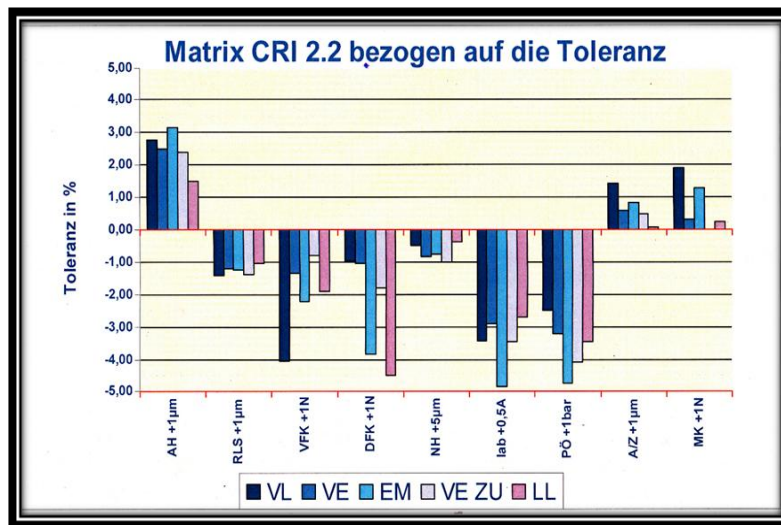
GA (Gutausbringung):

$$GA\% = \text{(good output qty)} / \text{(input qty)}$$

Why choose 316 type injector?

Rejection for type 316 injector is 4% and it contributes to 40% of total production &out of production & out of 48 types.

What is Menge matrix for CRI ?

It is graphical representation which shows the influence of assembly line parameter on injector injection quantity.

International Journal of Innovative Research in Science and Engineering
Vol. No.2, Issue 03, March 2016
www.ijirse.com

ISSN: 2454-9665

Assembly line parameters:

AH	Armature lift
Iab	Stopping current
VFK	Magnet spring force
DFK	Nozzle spring force
DNH	Needle lift
RLS	Residual air gap between magnetised core and armature plate

Table 1:Assembly line parameters

Test line parameters:

MP1(VL)	Full load pt
MP2(VE)	Combi emission pt
MP3(EM)	Emission pt
MP4(VE ZU)	Pilot injection pt
MP5(LL)	Ideal injection

Table 2:Test line parameters

Tolerance of Assembly line and test line parameters:

Assembly line Parameter	Tolerance
AH	38 ± 4 µ
Iab	7.5 ± 1.5 Amp
VFK	85 ± 1 N
DFK	34 ± 2.5 N
DNH	0.425 ± 0.025 mm
RLS	55 ± 10 µ

Table3:Assembly line

| Test line parameter	Tolerance
MP1(VL)	52.9 ± 4 cmm
MP2(VE)	22.4 cmm
MP3(EM)	21.4 ± 2 cmm
MP4(VE ZU)	1.8 ± 0.75 cmm
MP5(LL)	1.8 ± 1 cmm

Table4:Test line

II. PROCELLA

It is on line monitoring tools which shows current status of functional test point result and average level of governing assembly line parameter like electrical armature lift and stop current.
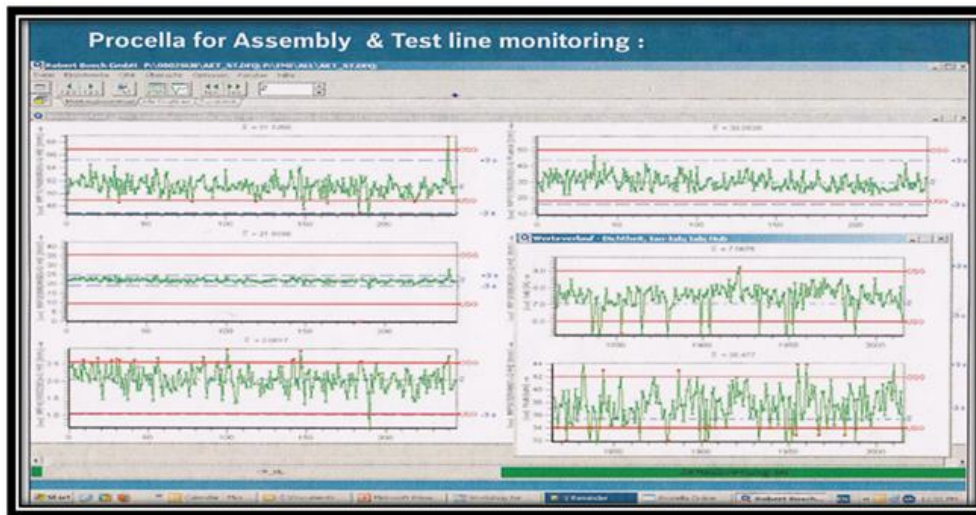
Impact of assembly line parameter on assembly line parameter:

1. Increase in RLS by 1μ will increase I_{ab} by 0.135 Amp.
2. Increase in VFK by 1N will increase I_{ab} by 0.14 Amp.
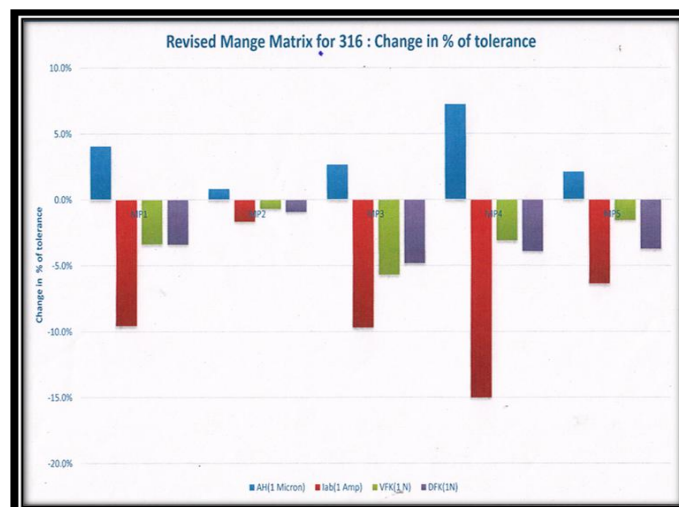
III. CONCLUSION

This work has been designed and developed for reducing the rejection and for improving the production of the company .It is known that some changes has taken for reducing the rejection and improving the productivity. This study is helpful to reduce the rejection rate due to which that can increase the profit and improve the production.

ACKNOWLEDGEMENT:

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