Reduction in Rejection Rate of Delivery Valve Assembly Using QC Tools

<table>
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<tr>
<th>Student’s Name</th>
<th>C. G. Sathyanarayana</th>
<th>EMM (PT-2010)</th>
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<tr>
<td>Academic Supervisor(s)</td>
<td>B. S. Ajit Kumar</td>
<td></td>
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<tr>
<td>Industrial Supervisor(s)</td>
<td>V. Srinivasan, Bosch Ltd., Bengaluru</td>
<td></td>
</tr>
</tbody>
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Keywords: Quality Tools, Diesel Value (DV)

Abstract:

This project was carried out in an automotive sector, in single cylinder fuel injection pump delivery valve assembly line. Today’s business scenario is customer driven. Hence it’s challenging to meet customer demands at low price, with short lead time to keep customer happy. From the manufactures perspective it’s difficult to reduce product cost unless internal scrap and repairs are avoided. This project was focused on internal quality improvement to reduce rejections in DV assembly line or FPY improvement, which was having 10% scrap; project was aimed to reduce scrap 4% out of 10%. The two major rejections were taken for study as per pareto analysis from three month rejection data. They showed 75% of problem with DV flow measurement was not being as per specification and peel riveting dimension was not confirming to the specifications.

PDCA Methodology is used to reduce internal rejections by employing QC tools, DOE. The 8 discipline problem solving methods are also adapted. Various established quality tools and techniques such as Cause & Effect Diagram, Why-Why Analysis, Pareto Analysis and Bar Charts were used. After finding the causes in brain storming study at Gemba, root causes were identified for the main two rejections in DV assembly.

In the solution stage, there were 3 main root causes were solved for through flow measurements and peel riveting dimension. Final results are that the DV flow rejections are reduced from 4% to 2.1% and dimensional rejections from 3.5% to 0% by improving the in-house process and pre-part supplier process. Benefits from this project are savings of approximately 11 Mio INR/Annum. Other tangible benefits are increase in productivity, reduction in WIP and improved production fulfillment.

Month-wise rejections

Reduction in rejection rate by using QC tools

Process flow of PF33 Pump & Delivery Valve Assembly

PF33 Pump and DV process flow