Quality Improvement in Pressure Switch Assembly Line using Quality Control Tools

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Abstract:

The Indian automobile ancillary sector is transforming itself from a low volume, high fragmented one into a competitive industry and backed by competitive strength, technology and transition up the value chain. Only quality products with optimum price can survive the stiff global competition. High rejection rate hinder the growth of companies and as well as reduces the quality of the products. Improved quality control measures are required to tackle this issue. The product chosen for the project pressure switch, is used to detect the drop in engine oil pressure and provide warning to the user to refill the engine oil.

The scope of this project was to reduce the in-process rejection in pressure switch assembly line. Quality control tools like Control charts, Pareto chart, Cause and Effect diagram were used here. Why –Why analysis was carried out to reach the root cause of problems. SPC and MSA were used to understand the variation in components, process and measurement process respectively. Trails and experiments were conducted to understand the variation and behavior of the product. Minimizing the variation was a challenging task because low pressure oil switch is very sensitive and the working pressure was very low. A CFT was formed to carry out the project effectively. The rejections were largely due to variation in child parts and hence performance variation was result of cumulative variation in child parts and process.

The rejection level has been reduced from 4000 to 3000 ppm. The rework rate also was brought down from 1.7% to 1.4%. The outcome of the project will be very useful as horizontal deployment of similar solutions on other variants of Pressure Switch is also possible.
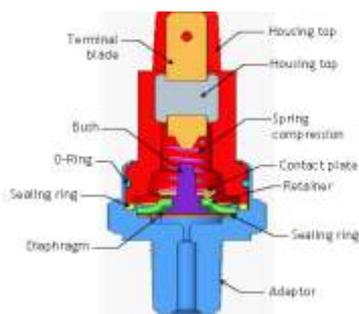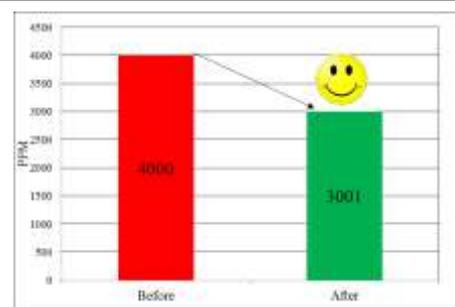
Pressure switch
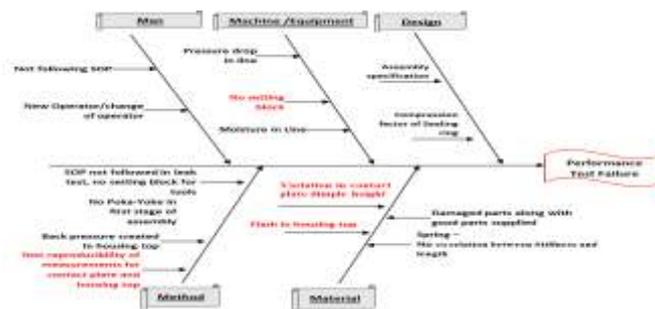
Cause and effect diagram

Improvements

Rejection before and after implementation