

ICQCC 2011-Yokohama

**“Improve manufacturing process of Apache motorcycle
countershaft Assembly”**

ENGG 3 QCC - 03

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In Motorcycle – Apache Model, it was observed that process scrap and rejection level is high due to Counter shaft assembly – 191 nos for the period Sep’09 to Dec’10. The QC Circle members observed the process and collect the details of process scrap and assembly rejection through check sheets. The team took the target to reduce process scrap and elimination assembly rejection from 191 nos to Zero within 3 months. As part of observation, we dismantled all the 4 defective Gear sets and observed one major defect of Gear shifting hard due to 2nd Drive slippage in Counter shaft assembly. The team has analyzed each of the failure modes by using 7QC tools and found root cause for each failure mode. They developed suitable solutions (Kaizen) to address root cause as follows.

Root cause and action taken details:

1. 2nd Drive slippage due to **crack** because of internal diameter grinding operation missing, and internal diameter under size components pressing with Counter shaft assembly – We introduced Preventive type Poka-Yoke in pressing stage to avoid pressing of components with ID grinding missing operation and ID under size.
2. 2nd Drive slippage due to low slip torque because of internal diameter over size (setting component mix-up) component pressing with Counter shaft assembly – Flexible air gauge unit introduced for control the diameter of setting and Preventive type Poka-Yoke provided in pressing stage to avoid pressing of ID grinding over size components.

This improvements has resulted in defect reduction from 191 nos to Zero. With team’s ideas, corrective actions were implemented and resulted in reduction of process scrap & elimination of assembly rejection. Trials were conducted through Experimental job order(EJO) & developed solutions were found to be ok, the same has been implemented and simultaneously observed for side effects and found no adverse impact in the process. Further to prevent the defects from recurrence, Standards such as FMEA, TVS M failure mode directory, Fixture drawing, Jishu - Hozen check sheet & Poka-yoke check list, Machine manual, Fixture calibration check sheet

After the effective implementation of solutions, results were monitored for six consecutive months. Significant improvements were observed & achieved benefits in terms of complaints, which reduced from 191 – to Zero - Cost saving Rs.1.16 lakhs.