

Case Study

Reduce outer race outside diameter scrap

Project background

A premier supplier of aircraft and industrial roller bearings for airframe manufacture and flight actuator applications was experiencing annular outer race outside diameter scrap issues.



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Problem

Management in the aircraft roller bearings company sought to reduce outer race outside diameter scrap costs and grinding rework which was costing \$60k per annum.

A cross-functional Lean Six Sigma team was created containing representatives from the relevant departments involved in outer race O.D. grinding.

The team discovered that over 60% of all over sized and under sized outer diameters came from a single department.

They also found measurement system errors caused by lack of consistency on gauge contacts. Furthermore, infeed gauges were providing incorrect measurements.

Hypothesis testing showed variation in feed wheel angle, incoming parts diameter and gauge magnetic base.

Finally operators did not have adequate standards for stock removal which led to individual preferences.

Solutions

Improvements included design of a new gauge fixture to check machine travel. Standard operating procedures were established for stock removal per parts on the outside diameter grinding process in order to minimise size variation related scrap and rework, cracks and burns.

Gauge tips and contacts were standardised and infeed gauges on grinders were updated so that operators could identify machine adjustments to allow better size control for extremely tight tolerance parts.

Control plans were implemented based on the key findings of the failure modes and effects analysis conducted by the team. Particular emphasis on prevention and improved capability was focused in the department that previously had been responsible for most scrap and rework.

Business benefits

Outer Diameter scrap was reduced by 74%. The volume of discrepant material reports was reduced by 71% and rework was reduced by 76% with a total saving of \$44k per annum.