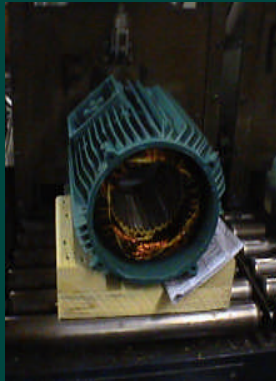


# Case Study

## Reduction in motor noise

### Project background

An industrial company manufactured AC induction motors. Every motor passed through a test verifying electrical and mechanical specifications before despatch. Motors could be rejected at final test for a variety of reasons. This project concentrated upon "Noise related" rejects, where motors were rejected for misalignment & electrical noise faults.



Paloma Consulting Limited  
Thorney House  
26 The Barton  
Cobham  
Surrey  
KT11 2NJ  
United Kingdom

☎: +44 1932 867032  
✉: info@palomaconsulting.com

[www.palomaconsulting.com](http://www.palomaconsulting.com)

### Problem

Failures due to excessive vibration noise were averaging 33,000 ppm costing €85,000 per annum. A Six Sigma project was set up. The team found electrical test failures were related to the size & accuracy of machined components, particularly motor frame spigots.

They found variation in the key process inputs of the spigot diameter machining process, within the motor feet fitting process, and also found variation in the temperature of the motor frame being machined.

They also discovered through gauge repeatability and reproducibility studies (gauge R & R ) studies that the measurement system was unacceptable. Coolant type and rate of flow were not well controlled.

### Solutions

Fitting of the motor feet was moved to a different stage in the process. New optimised process parameters were introduced to control the temperature of the motor frames during machining.

Mistake proofing techniques were introduced to control the cooling system flow and an improved coolant was specified. A new measurement system was introduced to help identify spigots which were out of specification.

### Business benefits

The noise related failure rate was reduced by 65% saving €52,000 per annum. On-time deliveries improved as a consequence. Measurement system error was reduced by over 50%.