

Case Study

High Frequency Milling Spindle Rebuild

Industry/Sector: Aerospace, Spindle Repair, High Frequency Milling Spindle

Authored By: Dave Ellis

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Introduction

MTT was approached by an Aerospace Customer for assistance with a broken-down GMN high frequency milling spindle. Repair was required as the spindle had crashed into a fixture on the machine, which had broken a piece out of the front Locknut / Labyrinth and caused damage to the spindle bearings.



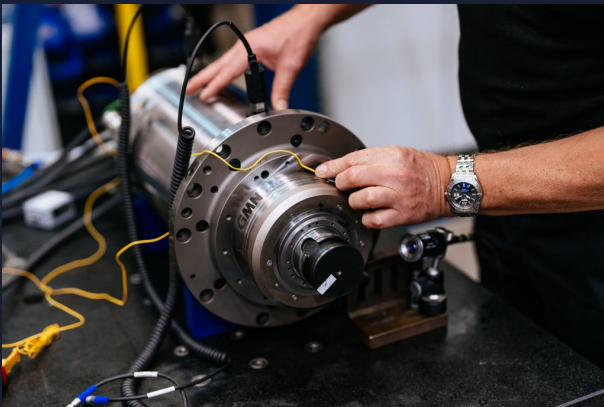
MTT's Repair Process

At the start of the repair, our expert team stripped the spindle to assess all the spindle components. This thorough process ensured our team could determine the rebuild work required, whilst also maintaining the high specifications the customer required as part of their manufacturing process.

As part of the stripping process, our engineers found the following items to be damaged or worn:

- Front and rear ceramic angular contact ball bearings
- Front locknuts
- Drawbar springs
- Screws, O rings and seals

During the rebuild process these components were replaced and rebuilt to ensure efficient operation.



Cleanliness in Spindle Rebuild

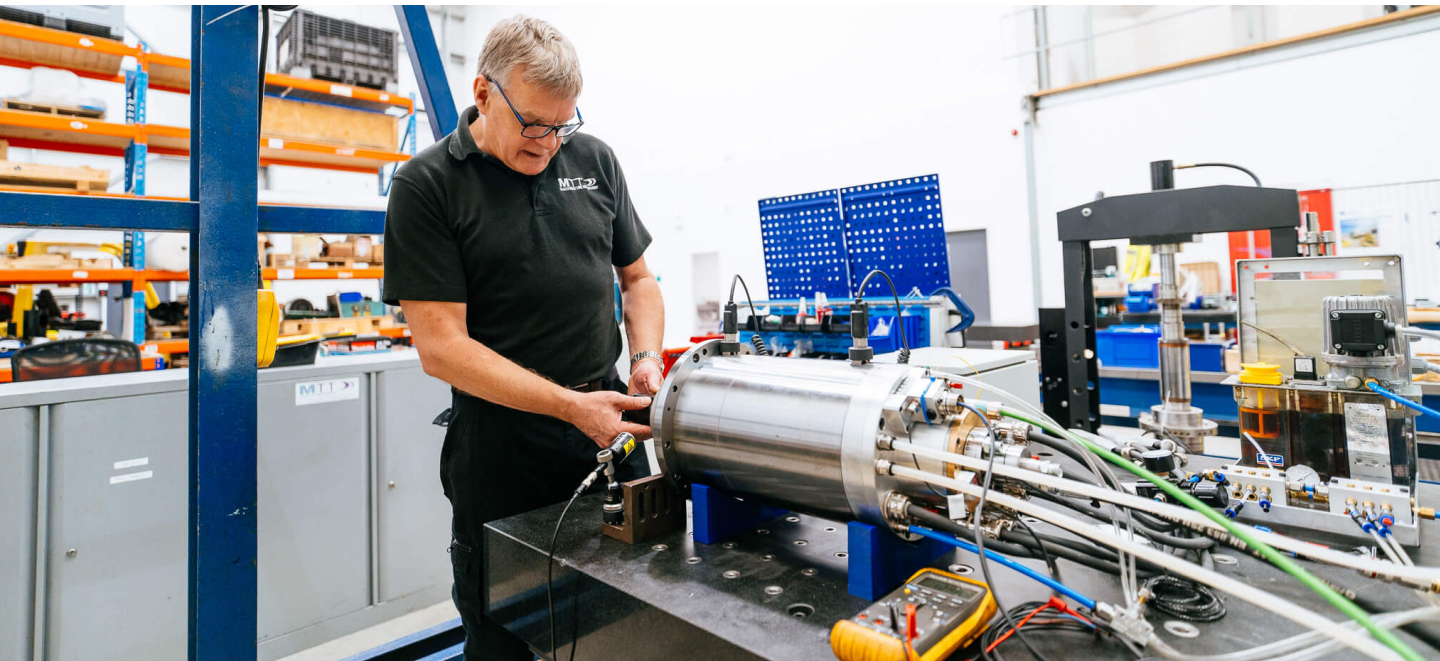
Cleanliness is critical when rebuilding high precision spindles, particularly oil/air lubricated spindles, there are many cross drillings and ports that have to be free from any debris or contamination, if anything was to be blown through to the bearings, this would result in premature failure of the.

Results and Impact

Following a thorough service, the spindle was rebuilt to a high standard, maintaining fits and run-outs throughout the process.

After the spindle had been fully assembled, it was subjected to a full test, this includes running it closed loop, to test the performance of the inbuilt encoder. During the test run, our team monitored, temperature, vibration, current and lubrication flow rates.

The spindle was trim balanced at top speed to eliminate any risk of vibration when back in production.



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info@mtt.uk.com