

# EX38 FCC EXPANDER SPARE RBSA BUILT UTILIZING A SURPLUS PEDESTAL

By Don Shafer

Rotating Machinery Services was contracted to provide a complete Ex38 FCC Expander Spare Rotor, Bearing and Seal Assembly. The scope of the project was to use the customer's existing Spare Rotor Assembly that RMS had provided previously along with their spare LEG active thrust bearing. All of the other Components used in the assembly were to be new except for the bearing pedestal and sub-base. The unique aspect of this contract was that RMS was able to re-purpose a surplus Ex38 bearing pedestal and sub-base for this application. The reuse of the pedestal was contingent upon the results of a complete dimensional inspection and non-destructive testing plan. The pedestal was completely dimensionally inspected using a portable CMM arm and state of the art scans along with it being inspected on the RMS Shop Horizontal Boring Mill.



The dimensional inspections allowed RMS Engineering to confirm interchangeability with the in-service RBSA hold down points and could accept the existing Spare Rotor Assembly with it located in the proper operating position. All of the pedestals key features were compared to new component tolerances and run outs to ensure it met the RMS design criteria. The Inspection results also defined what features needed to be reworked or re-machined. The pedestal and sub-base welds and machined surfaces were also subjected to non-destructive testing to find any relevant defects that would need to be repaired and to ensure the pedestals structural integrity.



The results of all the pedestal and sub-base inspections and testing were then used to develop the rework and repair work scopes. It was found that the pedestal and sub-base were in fairly good condition for used components and would only need minor rework to meet the RMS design criteria for these types of parts.

In parallel with the pedestal / sub-base inspections and rework all the other sub-assemblies components were designed and manufactured. This included a new inner exhaust casing and seal housing which incorporated all of the latest horizontal flange design and manufacturing techniques. The new tilt pad journal bearings and in-active thrust bearing were specified and purchased along with seals. The assembly's equipment health monitoring instrumentation was upgraded and moved internal to the bearing housing to improve the reliability of the probes.

All of the utilities piping and small bore tubing with fittings was provided new. At that point all of the new components, spare rotor assembly and refurbished pedestal were bought together to complete the assembly. The final clearance checks were performed and documented and the RBSA was prepped for shipment to the customer's site.

RMS successfully executed the inspection, rework, design and manufacture of the new components to support an aggressive schedule which allowed for the new RBSA to be at site in time to be installed during the customer's planned outage in September of 2015.

This project is another prime example of how the RMS team can provide creative solutions which are cost effective for the customer and provide improved reliability with ease of maintenance for their expander. This spare RBSA also provides the added benefit of shorting downtime should any unplanned event occur to the in-service assembly. Also the out of service RBSA can be refurbished in a controlled shop environment between planned outages on a normal schedule.

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