

CRANKPIN JOURNAL MACHINING AND ANNEALING MAN MITSUBISHI 9V 40-54 – ANNEALING SAVES ANOTHER DAMAGED SHAFT

A power plant suffered a severe accident involving one of their generators. Assessment of the Crankpin journal #5 showed that the big end bearing had failed and damaged the crankpin journal surface. The Crankpin journal surface was scored and blued by the heat generated during the bearing failure. Mechanical damages with a depth of more than 0.40mm were found. Big end bearing material was “welded” up on the Crankpin journals surface.

Magnaflux and hardness testing showed heat cracks all around the circumference of the Crankpin journal surface and severely hardened areas of more than 650 Brinell. Goltens machined the journal surface clean in order to verify there were no larger cracks underneath the bearing material residue.

Since the hardness values and the size of the hardness area itself barely changed during the first 3.00mm, and maximum reduction of 5 mm is allowed by the maker, Goltens advised annealing in order to save the shaft. Goltens annealed the crankshaft reducing hardness from 650 Brinell to between 250 and 300 Brinell and finish machined the journal at 316.00 mm (-4.00 mm).

Goltens also peened the shaft to straighten it as run out on the adjacent main journals (straightness) was more than 0.10mm

REPAIRS CONSISTED OF:

- Annealing of the CP Journal #5 in – situ
- Machining of journal to final size of 316.00mm
- Straightening of the shaft
- Fillet radii machined under journal surface
- Lube oil holes rounded off and polished
- Journal polished to 0.3Ra

RESULTS:

This job was performed by 2 men in 96 hrs

PROJECT FACTS: MAN MITSUBISHI 9V 40-54

Main Journal Diameter:	320.00 mm
Finished Diameter:	316.00 mm
Pre-Annealing Hardness:	650 Brinell
Post Annealing Hardness:	250-300 Brinell

