

IN-SITU ANNEALING AND MACHINING RESTORES PIELSTICK 2.5 GENERATOR POWER STATION IN FRENCH GUYANA

A power plant in French Guyana contacted Goltens after experiencing a casualty on its #9 generator, a Pielstick 2.5 18V. Inspection revealed that crankpin number 6 had suffered a significant casualty resulting in significant damage to the running surface as well as the fillet radii.

Further evaluation also revealed extremely high hardness areas at both the top and bottom of the crankpin with peak values as high as 647hB (Hardness Brinell). Goltens discussed removing material from the journal until it was free of cracks and then remeasuring the hardness. At -2.00mm the journal was free of cracks but the hardness remained with peak values of 600hB.

Based upon the extent of the hardness, Goltens estimated that it would extend, at a minimum, as deep as 6.00mm or more and advised the customer that it was possible to reduce the hardness via annealing and salvage the crankshaft at a undersize of only -3.00mm. The customer accepted the proposed repair method and Goltens mobilized its annealing equipment and heat treated the crankpin before finish machining and polishing the crankpin.

REPAIRS CONSISTED OF:

- Full NDT inspection (Magnaflux and Hardness)
- Machining of crankpin #6 to -2.00mm undersize pre-annealing
- Annealing of crankpin #6 to reduce hardness to below 325 hB
- Straightening of crankshaft
- Finish machining and superpolishing at -03.00mm undersize at 312.00mm
- Superpolishing crankpin # to less than 0.3Ra
- Polishing / blue fitting crankpins 1, 2, 3, 4, 5, 7, 8 and 9

RESULTS:

With annealing, Goltens was able to salvage the crankshaft with a much larger remaining diameter than if the customer had chosen to try to remove the hardness by machining underneath it. Additionally, the annealing process was faster and helped eliminate additional downtime for the powerplant.

PROJECT FACTS: French Guyana Powerplant

Engine Make/Model:	Pielstick PC2.5 18V
Crankpin Dia. Pre machining:	315mm
Crankpin Dia. Post machining:	312mm
Max Hardness before Annealing:	647hB
Max Hardness after Annealing:	325hB

