

## CREATIVE IN-SITU SOLUTION RESTORES GENERATOR TO OPERATION

### PIELSTICK 2.3 GENERATOR SHAFT

A Florida power plant experienced a casualty on its Pielstick 2.3 Diesel / Gas Generator Set. The free end Dodge bearing on the generator had failed and required replacement. Inspection of the shaft (203.2 mm dia. X 610.00 mm length) revealed that there were significant surface cracks around the shaft and it would require repair.

Goltens proposed machining the shaft until it was free of cracks and fabricating a sleeve that could be shrink fit to the shaft to return it to its original diameter. The customer accepted the proposal and Goltens mobilized tools and in-situ machinists to site to undertake the repair. Cracks were significant and Goltens stopped machining at numerous diameters to evaluate the extent of the cracks. At 23.6 mm undersize, 4 cracks remained and a decision was made to local grind the cracks until removed prior to sleeving the shaft.

Once completed, the sleeve was heated to obtain the necessary clearance and shrink fitted to the shaft before it was finish machined and the generator reassembled and aligned.

#### REPAIRS CONSISTED OF:

- Magnaflux and hardness inspection of the shaft
- Machining of generator shaft to 179.60 mm (-23.6 mm undersize)
- Design and fabrication of a shaft sleeve (ID 179.4 mm / OD 203.7 mm)
- Heating of shaft sleeve to 260°-280°C to allow sleeve to expand for shrink fit on machined shaft
- Finish machining and polishing of shaft sleeve to original diameter of 203.2mm
- Installation of replacement Dodge bearing per maker's specifications
- Inspection/replacement of drive side bearing prior to test
- Laser alignment of generator

#### RESULTS:

Goltens' ability to perform the repair in-situ and restore the shaft to its original diameter saved the customer the time and expense of replacing the generator shaft or attempting the repair offsite.

#### PROJECT FACTS:

Engine:	Pielstick 2.3
Engine Output:	6,485kW
RPM:	514 RPM
Original Shaft Diameter:	203.20 mm
Length of machined journal:	610.00 mm
Shaft Dia. Pre-sleeving:	179.60mm

Generator shaft was badly damaged with cracks along the entire length of the running surface



Damaged shaft prior to sleeve installation

