Gas turbine shell crack repair final report

Customer: Exelon Power Generation
Contact: Carlos Lopez
Address: 10202 Strang Rd
City, State, Zip: La Porte, TX 77571

Phone: (817) 791-7269
Date: 10/24/13

Part: GT-1
Inspected by: David Werther

1. Base metal
   - cast iron  
   - ductile iron
   - cast steel
   - cast aluminum
   other ____________________

2. Machinability
   - no previous repairs
   - arc-welded
   - brazed
   - heat-related cracks
   other ____________________

3. Casting shape where cracked
   - flat
   - inside/outside corner
   - radius
   other ____________________

4. Cause of damage
   - impact
   - heat
   - freezing
   - normal operation
   other ____________________

5. Length of crack/s
   - 54 total inches

6. Material thickness
   - 3/8” to 1 3/4”

7. Operating pressure

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7. Operating pressure
8. Operating temperature
   __________________________
   __________________________
   __________________________

9. Working environment
   hot
   cold
   safety concerns
   describe: ___________________
   __________________________
   ___________________________
   other ______________________

10. Remachining requirements
    bolt holes
    bearing bores
    machined surfaces
    other ______________________

11. Customer’s needs
    x permanent repair
    temporary repair
    turnaround time
    describe: ___________________
    __________________________
    ___________________________
    other ______________________

12. Accessibility
    Y room for the tools?
    Y room for the operator/s?
    Y need for disassembly?
    describe: ___________________
    __________________________
    ___________________________
    other ______________________

13. Inspection method(s): Visual and NDT
14. Damage found:

#1 Bolt hole on A side of upper shell

Drilling for lock after metal stitching

Completed repair after finish work
#2 Bolt hole on B side of upper shell

Facing off the insert to match part

Completed repair after finish work
#3 Bolt hole on B side of upper shell flange

Metal stitching in process

Stitching, locks, and insert complete
#4 Bolt hole on A side of lower shell

Installing Castmaster stitching pins

Stitching and locks completed
#5 Bolt hole on B side of lower shell

Stitching using Castmaster pins

Hand finishing to match part
Installation of custom manufactured inserts to reinforce cracked bolt holes
Reinforcement brackets were manufactured and installed on both sides for additional strength

Conclusion: The repair was completed using Castmaster stitching pins and Full-Torque inserts in order to remove and seal the cracks that were found in the unit. Locks and reinforcement brackets were installed for added strength.