

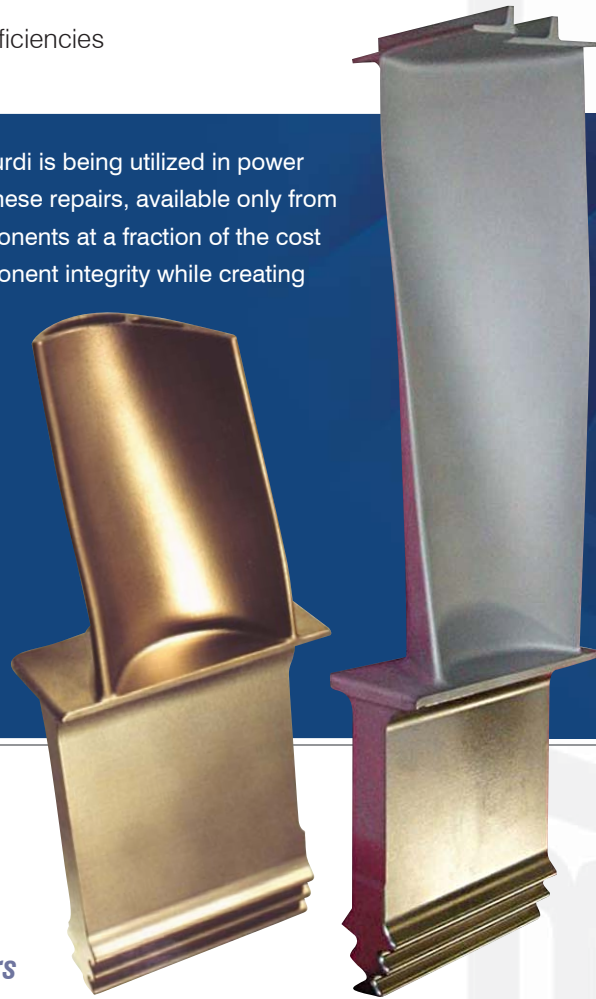
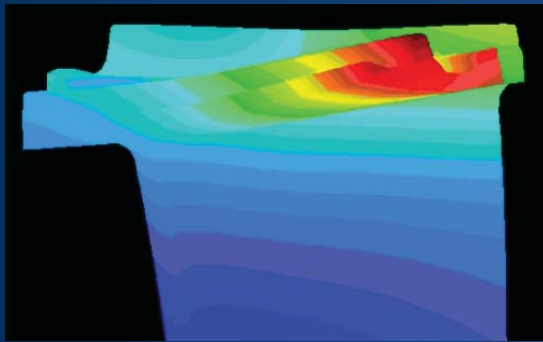
GE Frame 3 and Frame 5

Advanced Repairs available only from Liburdi Turbine Services

The Liburdi Advanced Repair Program offers:

- Extended Reliable Service Life
- Reduced Maintenance Expenses
- Upgraded Components that Eliminate Design Deficiencies

The unique Advanced Repairs program developed by Liburdi is being utilized in power generation and oil & gas applications around the world. These repairs, available only from Liburdi Turbine Services, fully restore critical turbine components at a fraction of the cost of new replacement parts; maintaining or improving component integrity while creating significant savings for the operator.



Proven Repairs for Frame 3 and Frame 5 Buckets

Stage 1 Buckets – Life Extended to 100,000 Hours

- Coating strip and recoat
- FSR® Full Solution Rejuvenation® heat treatment process – restores alloy strength
- Re-coat airfoil with - MCrAlY plus over aluminizing coating
- Reliable life extension beyond conventional service bulletin limitations

Stage 2 Buckets – Upgraded and Life Extended to 100,000+ Hours

- High strength LPM® process – restores shroud lift distortion
- FSR® Full Solution Rejuvenation® heat treatment process – restores alloy strength
- Critical Z-notch restoration by weld and re-machining to original dimensions
- Airfoil coating upgrade available for extended service

Advanced Repairs for Frame 3 and Frame 5 Nozzles

Stage 1 Nozzles – Extended Life Repairs

- High strength LPM® process for heavy crack repairs – outperforms conventional welding
- LPM® re-construction - restores trailing edge wall thickness
- LPM® re-construction - re-establishes critical throat dimensions
- Advanced Coatings and TBC upgrade coating



Stage 2 Nozzles – Extended Life Repairs

- High strength LPM® process for heavy crack repairs - outperforms conventional welding
- Precision machining - restores distortion and downstream lean
- Advanced TBC coating upgrade

Stage 2 Variable Nozzles – Extended Life Repairs

- Inner spigots fully restored and re-aligned
- Outer shafts reconstructed and re-aligned
- Wear resistant chrome carbide coatings applied to shaft and spigot

LPM® Powder Metallurgy is a unique process developed and patented by Liburdi Engineering Limited. It is a high strength superalloy alternative to welding and diffusion brazing, and as such has been used extensively with a proven track record for over a decade for Industrial and Aircraft gas turbine components - for both advanced repairs and new part manufacturing. LPM® re-construction techniques strengthen critical high stress areas, and permit precise control when restoring airfoil wall thickness and throat area harmonics.

Liburdi's extensive experience with heat treatment processes, combined with its unique stripping and coating capabilities, ensures that every repaired component meets or exceeds the original equipment performance and durability requirements in future service.

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