

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



Reclamation of Turbo Shaft by Laser Clad Coating

Overview

Heavy engineering industries use various big and expensive components like Turbo shaft. A localized wear or other damage on a critical location can lead to scrapping the entire component. A turbo shaft is such component which gets wear on the bearing seat area. Refurbishment was done by removing the damaged layer and rebuilding a new clad layer using laser clad deposition method. A Cobalt based powder was chosen for the refurbishment to improve the wear properties and enhance the life of the refurbished component. Defect-free coating of 1.8 mm thickness across the contour of seating area was produced by diode laser cladding with following characteristics:

- UT-defect free
- ~ 0.6 mm finish grinding allowance
- ~ 0.6% porosity
- Micro-hardness 500-550 HV
- Dilution of base metal into clad ~ 8%.

Key Features

- Negligible porosity
- Controlled heat input
- Minimal heat affected region
- Precise and controlled process
- No distortion

Potential Applications

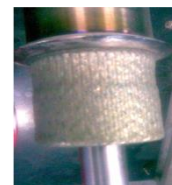
- Turbo shafts
- Steam turbine and gas turbines

Intellectual Property Development Indices (IPDI)

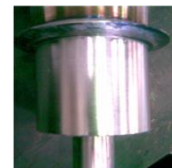
- Refurbished shaft was used by end user and demonstrated excellent performance



Repair Process



As-coated surface



Finish Grinded surface

Status	1	2	3	4	5	6	7	8	9	10

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