

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

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



Refurbishment of Cast Iron Components using Laser Cladding

Overview

Grey cast iron finds extensive applications in the Glass mould industries and automotive industries for making of components like dies, gears, links, cylinder block, cylinder head, clutch plate etc. Many times, the size of the cast component is large and a small localized wear can lead to scrapping the entire component.

Repair of cast iron has been very challenging due to presence of free carbon in the form of graphite flakes which forms CO_x gases during deposition and these gases get entrapped during the deposition process resulting in porosity. Transverse cracking is another deterrent in repair which occurs due to interfacial stresses associated with formation of hard and brittle heat affected zone. Laser cladding due to its advantages like minimal and controlled energy input can minimise the heat affected zone and minimise the formation of CO_x gases. Repair solutions with or without pre-heating were developed successfully.

Key Features

- Negligible porosity
- Crack free deposition
- No distortion
- Minimal heat affected region



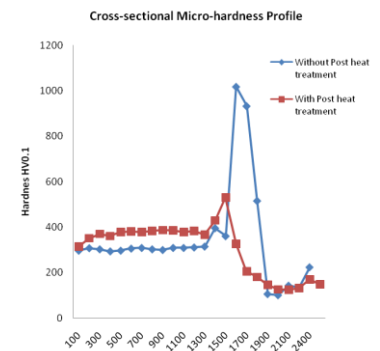
Repaired Area

Potential Applications

- Glass Mould Dies
- Cylinder Heads
- Cam Shafts
- Gear Boxes
- Heavy engineering equipment and machine beds

Intellectual Property Development Indices (IPDI)

- Performance and stability are validated at laboratory scale
- Prototypes are generated
- Field trials are underway



Cross-sectional hardness profile of laser clad repaired grey cast iron

Status	1	2	3	4	5	6	7	8	9	10

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