LASER CLADDING ON COMPRESSOR ROTOR FOR DIMENSIONAL RESTRORATION

1.0. SCOPE:

The specification defines the scope for dimensional restoration of repair compressor rotor by application of metal powder by laser cladding process. The process is suitable for dimensional restoration of “out of tolerance” dimensions on rotor shaft. The process is not applicable for restoring dimensions on the journals.

2.0. PROCESS AND CONTROL:

2.1. **Technical data**: For technical details / areas to be coated, refer the ordering document and applicable drawings.

2.2. **Coating material**: Vendor may choose the suitable material as per process requirement.

2.3. **Base Material**: Low alloy steel as per spec HY19365.

3. PROCESS QUALIFICATION:

Before initiating the coating process, qualification on representative sample is necessary. The qualification shall be carried out by coating on one test piece of HY19365 material. Coating thickness on test piece shall be minimum of 0.5 mm. Vendor shall prepare the test piece with 3.2 µ finish at its works.

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00	Refer to record of revisions	RAMU	NEMA	02.06.2020

Following test shall be carried out for test piece

a) Visual inspection
b) Liquid penetrant test / Dye penetrant test
c) Ultrasonic test / Non-destructive examination report of the coated parts
d) Hardness test: The hardness of the cladding shall be 270 BHN (Min).
e) Micro and macro hardness test with photo as per ASME 407
f) Chemical analysis of the powder

- Vendor shall submit the documents for above all tests along with the cladded test piece.
- The raw material for test sample will be supplied by BHEL.
- Vendor shall specify the test piece dimensions in their offer.

4. SHIPMENT TO VENDOR:

The pre-machined parts shall be shipped to the vendor in suitable packing so as to protect the part against corrosion and mechanical damage. Shaft journal areas shall be wrapped with protective cover at BHEL works.

5. INSTRUCTIONS TO THE VENDOR:

It is the responsibility of vendor to understand the complete scope of work before initiating the coating process on compressor rotor. The areas which are not be coated shall be masked suitably and shall not be blasted or sprayed with coating powder. The parts are finish machined and shall be handled carefully.

Thermal chalk shall be used on the adjoining areas of the surfaces to be cladded to ensure the material temperature doesn't exceed 400°C.

6. Tests to be carried on the cladded area of compressor rotor:

a) Visual inspection
b) Liquid penetrant test / Dye penetrant test
c) Ultrasonic test / Non-destructive examination report of the coated parts
d) Hardness test: The hardness of the cladding shall be 270 BHN (Min).
e) Chemical analysis of the powder

Vendor shall submit the documents for above all tests for cladded area of compressor rotor.

7. Packing and dispatch:

The compressor rotor after coating shall be suitably packed after coating to avoid any mechanical damages during transport.

The parts shall be jointly inspected by vendor & BHEL before dispatch.

RECORD OF REVISIONS

Rev. No.	Date	Revision Details	Revised by	Approved by
00	02.06.20	New Standard prepared	RAMU	NEMA