ANNEXURE-1

Dt: 04/03/2021

SCOPE OF WORK FOR LASER CLADDING OF COMPRESSOR ROTOR

W.O. No.: 1344400028

CUSTOMER: IOCL PANIPAT, BCL 405A

DESCRIPTION: LASER CLADDING OF ROTOR

ROTOR and DGS area drawings:

DGS area repair: 33320904021-00

Specification for Rotor cladding: TC72023

Base material: Low alloy steel: HY19365

Facilities required for Laser cladding of the compressor rotor:

1. Laser Facility: 5KW direct diode laser
2. Job manipulator: Synchronized robotic set up
3. Over head crane: Min. 5T
4. Job manipulator capacity: Min. 5T
5. Micro and Macro Hardness testers: Min. Hardness required on cladding – Min. 270 BHN
6. Ultrasonic flaw detector
7. Dye penetrant testing facility

SCOPE OF WORK:

1. Laser cladding on the test sample (HY19365) supplied by BHEL. (for first time vendor)
2. The minimum thickness of the cladding has to be 0.5 mm
3. The following tests to be carried out on test piece (for first time vendor only):

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

4. Vendor has to submit the documents for the all the tests conducted for approval by BHEL.
5. Laser Cladding on the compressor rotor on the DGS area as per the drawing 33320904021-00 on both T.B and O.T.B sides.
6. The following tests to be carried out on the cladded region:

    a. Visual inspection

    b. Chemical analysis of the powder

7. Vendor has to submit the documents for the all the tests conducted for approval by BHEL.

BHEL Scope	Vendor scope
Pre machining of DGS area **Supply of test sample of Raw material spec HY19365** **Finish machining of the LASER CLADDED DGS area. In case of any deviation observed while finish machining; the repair work has to be taken up by the vendor.** **a. Liquid penetrant test / Dye penetrant test** **b. Hardness test: The hardness of the cladding shall be 270 BHN (Min).**	**Laser Cladding of test sample** **Inspection tests on test sample** **Laser Cladding of Compressor Rotor on DGS area on TB and OTB sides.** **Inspection tests on DGS area** **a. Visual Inspection** **b. Chemical analysis of powder.**

<u>NOTE</u>:

1. **Laser Cladding on the compressor rotor has to be taken up only after submission of test results of sample piece and further acceptance from BHEL. (for first time vendor only).**
2. **In case, any deviation is observed, while finish machining of the rotor at BHEL works, the vendor has to take up the repair work on the rotor at their works.**

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