



PRICE BID FORMAT

Name of Work: Development of 2D closed Impeller by AM technology using DMLS process

Tender Notice Number:

Sr. No.	Scope					Acceptance Criteria	Deliverables	Price, INR
	Manufacturing	Testing	Heat Treatment	Inspection	Polishing			
1. Stage-1	Develop the 3D printing process with stainless steel 17-4 PH metal powder and submit the report for the chemical and mechanical tests carried out on test specimens.	As required to meet acceptance criteria. All testing is in vendor's scope. BHEL representative may witness the tests.	Aging of test specimens is required by heat treating test specimens at 620+/-14 Deg. C for 4 hours. Heat treatment is in vendor's scope.	N/A	N/A	1. Material of test specimens: SS 17-4 PH 2. 0.2% Proof Stress: 68-80 kgs/mm ² 3. Impact Strength: 39 J/cm ² (minimum) 4. Hardness: 300 BHN (Max) 5. Material Density: 99.5 % (minimum)	1. Test reports for chemical and mechanical properties of the test specimen. 2. Powder specification and characteristics	



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2. Stage-2	Manufacture of the 2D closed impeller prototype in single piece with 9 test rods as mentioned below. a) Square rod: 15 mm X 15 mm X 175 mm, Qty: 1 (Horizontal direction) b) Square rod: 15 mm X 15 mm X 150 mm, Qty: 2 (Vertical Direction) c) Square rod: 12 mm X 12 mm X 175 mm, Qty: 1 ((Horizontal direction)) d) Square rod: 12 mm X 12 mm X 150 mm, Qty: 2 (Vertical Direction) e) Round rod: 18 mm dia x 175 mm long, Qty: 1 ((Horizontal direction)) f) Round rod: 18 mm dia x 150 mm long, Qty: 2 (Vertical Direction)	One square test rod as mentioned in (2b) and one square rod as mentioned in (2d) shall be tested by vendor and remaining seven test rods shall be tested by BHEL. BHEL representative may witness the tests.	Aging of test specimens is required by heat treating test specimens at 620+/-14 Deg. C for 4 hours. Heat treatment is in vendor's scope.	CMM inspection of impeller is in vendor's scope.	Polishing of impeller is in vendor's scope.	1. Material of impeller and test specimens: SS 17-4 PH 2. 0.2% Proof Stress: 68-80 kgs/mm² 3. Impact Strength: 39 J/cm² (minimum) 4. Hardness: 300 BHN (Max) 5. Dimensions of the impeller: as per BHEL drawing 6. Surface roughness of impeller inside vanes: 2 micron Ra or less. 7. Material Density: 99.5% (minimum)	1. Impeller prototype (polished) – 1 No. 2. Seven test rods as mentioned in point (a) to (f) 3. CMM Inspection report for dimensions of impeller 4. Inspection report for surface roughness of impeller 5. Test report of two test rods	



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3. Stage-3	Manufacture of the impeller prototype in single piece with 2 test rods as mentioned below. a) 15 mm X 15 mm X 100 mm, Qty: 1 (Horizontal direction) b) 15 mm X 15 mm X 100 mm, Qty: 1 (Vertical direction)	Test rods will be subjected to required mechanical tests (in BHEL's scope).	Aging of impeller and test specimens is required by heat treating at 620+/-14 Deg. C for 4 hours. Heat treatment is in vendor's scope.	CMM inspection of impeller is in vendor's scope.	Polishing of impeller is in vendor's scope.	1. Material of impeller and test specimens: SS 17-4 PH 2. 0.2% Proof Stress: 68-80 kgs/mm ² 3. Impact Strength: 39 J/cm ² (minimum) 4. Hardness: 300 BHN (Max) 5. Dimensions of the impeller: as per BHEL drawing 6. Surface roughness of impeller inside vanes: 2 micron Ra or less. 7. Material Density: 99.5% (minimum)	1. Impeller prototype (polished) – 1 No. 2. Two test rods as mentioned in point 3.3 (i) to 3.3 (ii) 3. CMM Inspection report for dimensions of impeller 4. Inspection report for surface roughness of impeller 5. A report, in word format, that includes process details and parameters used for the 3D printer.	
A. SUB TOTAL (Sr. No. 1 + Sr. No. 2 + Sr. No. 3)								
B. Service Tax _____ % on Stage-1 (Sr. No. 1)								
C. VAT/CST (Form C will not be provided)/Customs Duty _____ % on Stage-2 (Sr. No. 2)								
D. VAT/CST (Form C will not be provided)/Customs Duty _____ % on Stage-3 (Sr. No. 3)								
TOTAL AMOUNT (A+B+C+D)								

NOTE:

1. The bidder shall fill the applicable service tax and VAT/CST/Customs Duty details in blank cells.
2. The amount should be quoted only in the Price-Bid and should be submitted in a separate sealed cover along with tender.

Signature of Bidder with Seal and Address