



Technical Specification for inlet guide vane of axial flow compressor

Ref. : 002-TML-2017-IGV

Dt. : 27.07.2017

Rev. no.: 00

1. Scope of work:

The scope of work is to manufacture and supply of inlet guide vanes (IGV) of axial flow compressor as per the manufacturing drawing (No. RD DG3 TM16 01) and solid model provided by BHEL. Delivery, packing, forwarding & unloading of the IGVs at BHEL R & D, Hyderabad is also included in the scope of work.

2. Material:

The IGV shall be manufactured from steel grade X20Cr13 as per the specification given below:

2.1 Chemical composition of the material:

Element		C	Si	Mn	Cr	Ni	S	P
Melt analysis	% Min.	0.17	0.10	0.30	12.50	0.30		
	% Max.	0.22	0.50	0.80	14.00	0.80	0.020	0.030
Variation product analysis %		± 0.02	± 0.05	± 0.04	± 0.15	± 0.03	± 0.005	± 0.005

2.2 Mechanical properties of the material:

Tensile Strength M/mm ²	0.2% proof stress N/mm ² min.	%Elongation (1=5d) min.	Reduction of Area (%) min.	Impact strength ISO-V Notch j min.	Brinell Hardness HB 30 max.
800-950	600	15	50	20	280

Vendor should submit the material test certificate along with the finished product.

3. Inspection:

- Profile contour should be checked by the vendor using CMM for at least 3 cross sections (A, B & C as per drawing) along vane height for min. 5 blades and coordinate data should be generated to superimpose on the vane solid model provided by BHEL. Dimensional deviation more than ± 0.2 mm is not acceptable.
- Dye penetration test should be carried out by the vendor.
- BHEL shall conduct any stage wise inspection as required and vendor shall communicate the same.
- Material shall be dispatched only after clearance from BHEL.

**Turbo Machinery Laboratory,
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4. General:

1. The guide vane along with the spindle should be manufactured per the manufacturing drawing (No. RD DG3 TM16 01) considering the vane profile contours as per the solid model provided by BHEL.
2. Minor changes may be incorporated in the drawing (No. RD DG3 TM16 01) and solid model supplied during execution of the job.
3. Vendor should get clarified from BHEL, for any ambiguity found in the drawing or in the solid model, before proceeding further.
4. Stress relieving after machining as required shall be done by the vendor.
5. IGV blades are to be supplied with rust preventive coating on all the surfaces after proper cleaning and degreasing of the surfaces.
6. Vendor should quote price of the single IGV blade considering the total no. the blade to be supplied as 28.
7. Any defect in the manufacturing/ fabrication of the IGVs identified during assembly shall be rectified by the vendor without any cost to BHEL. Also, associated disassembly, transport, machining, rework and re-assembly will be under the vendor's scope of work.
8. Vendor must submit dimensional report along with all the finished product.

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