

**Mandatory Pre-Qualification requirements for Vortex flow meter
W96415002910(dual sensor) & W96415002902(single sensor) as per TG60665**

Description: - The vortex flow meter is used to measure volume flow of De-mineralized water at outlet of stator winding in Turbo generators. The vortex flow meters shall be suitable for mounting in horizontal/vertical direction of flow with flanged connections.

Mandatory Pre-Qualification requirements

- 1.0 Vendor should have experience of supplying vortex flowmeter in thermal power plants. The vendor should be a regular manufacturer of Vortex flow meter with following technical requirements-


Sl No.	Parameter	Value
(i)	Application fluid	DM Water
(ii)	Flow rate	$\geq 50 \text{ m}^3/\text{hr.}$
(iii)	Working Pressure	1.5 bar (minimum)
(iv)	Measuring accuracy	$\pm 0.75\%$ or better
(v)	Electrical output	4-20 mA, 2 wire output HART protocol
(vi)	No. of sensor	Single/ Dual
(vii)	Turn Down Ratio	Not less than 10:1.

- 2.0 In support of Sl. No. 1 above, vendor shall furnish technical details in below mentioned format for at least five (5) nos. of vortex flow meter for the P.O. executed in past 10 years (from date of enquiry) along with P.O. copies meeting requirements as per point no. 1 above.

Sl. No.	Purchase Order (PO) No. /Date	Qty. (Nos.)	Application Fluid	Flow Rate	Working Pressure	Measuring Accuracy	Electrical Output	Turn Down Ratio
			DM Water					

- 3.0 Vendor to furnish the test certificate for calibration and hydraulic test of vortex flow meter for any one of the P.O. submitted against clause 2. Vendor to also furnish the NABL accreditation details of calibration facility.
- 4.0 Vendor to submit experience certificate from the end user for successful operation of the vortex flowmeters in thermal power plants for at least two years. Original Experience Certificate or through e-mail from the customer. Certificate shall contain information like item details and its application or correlation with P.O. The Experience certificate should not be older than 10 years from the date of enquiry.

Note: BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false / incorrect, the offer shall be rejected.

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN						TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
 BHEL	VENDOR'S NAME	ITEM	FLOW METER			QP NO.	QA/BE/QP/925						
			(Vortex Type)			REV.	00	Date: 07.03.2022					
		Drg. No.	As per PO										
		Spec.	TG60665										
		Spec. Rev.	As per PO					Page 1 of 1					
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS	
									M	B	N		
1	2	3	4	5	6	7	8	9	D	10		11	

1.0 RAW MATERIALS													
1.1	Flange, body, sensor, bluff body and all water contact parts	Chemical composition	Major	Measurement	1 sample/lot	Ord. Drg./Spec.	Ord. Drg./Spec.	MTC	√	P	V	-	
1.2	Electronic housing	Chemical composition	Major	Measurement	1 sample/lot	Ord. Drg./Spec.	Ord. Drg./Spec.	MTC	√	P	V	-	
2.0 FINAL TESTING													
2.1	Visual & Dimensional check	--	Major	Measurement	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	IR	√	P	W	-	
2.2	Hydraulic test	--	Major	Physical	100%	Ord. Drg./Spec.	No leakage	IR	√	P	W	-	
2.3	Calibration test	--	Major	Physical	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	IR	√	P	W	-	
2.4	Electrical output check	--	Major	Electrical	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	IR	√	P	W	-	
2.5	Compliance to technical specification	--	Major	Review	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	COC	√	P	V	-	
2.6	Marking	--	Major	Review	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	-	-	P	V	-	
2.7	Packing	--	Major	Review	100%	Ord. Drg./Spec.	Ord. Drg./Spec.	-	-	P	V	-	

Note: 1. Witness by inspection agency to be random 10% of each material code (minimum 1 pieces per material code) from each lot. However, vendor to carry out 100% tests internally and tests report shall be reviewed by inspection engineer during inspection at Vendor's works. 2. Manufacturer to maintain calibrated instrument having better accuracy than the item under the test. Inspection engineer shall check the same.

Digitally signed
by Sachin Jain
Date:
2023.09.22
14:43:03 +05'30'

MANUFACTURER/ SUBCONTRACTOR	LEGEND: ORD.: PURCHASE ORDERING, DRG: BHEL APPROVED DRAWING, SPEC: BHEL SPECIFICATION, MTC: MATERIAL TEST CERTIFICATE, T.C.: TEST CERTIFICATE, I.R.: INSPECTION REPORTS, COC: CERTIFICATE OF CONFORMANCE, M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOMINATED INSPECTION AGENCY, N: CUSTOMER, 'P': PERFORM, 'W': WITNESS, 'V': VERIFICATION, "√" RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	APPROVED BY
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