

उत्पाद क्रय विनिर्देश

TG60432



PRODUCT PURCHASE SPECIFICATION

पृष्ठ 8 का 1

Page 1 of 8

Based on BHEL's own experience

VAPOUR EXHAUSTER

1.0 SCOPE AND APPLICATION:

This specification intended to cover design, manufacture, assembly testing & delivery of vapour exhauster, complete with motor, coupling, base plate and other accessories. The vapour exhauster is required to handle mixture of turbine oil vapours, air & H₂ and for creating partial vacuum in generator bearing chamber & oil tanks of Turbo-generators.

2.0 DESIGNATION:

The Vapour exhauster shall be designated as below: -

2.1 ON DRAWINGS INDENTS:

- | | | |
|-----------------------------------|---|------------------|
| (1) Material specification column | : | TG-60432 |
| (2) Description Column | : | Vapour Exhauster |
| (3) Material Code Column | : | W 96415000578 |

2.2 ON ENQUIRES AND PURCHASE ORDER:-

In addition to incorporating the above details, a copy of the standard shall be enclosed along with enquiry.

3.0 TECHNICAL REQUIREMENTS:


3.1 TECHINCAL DATA OF VAPOUR EXHAUSTER:

- | | | |
|--|---|-------------------------|
| (1) Continuous discharge capacity at operating point | : | 396 m ³ / hr |
| (2) Normal discharge pressure at operating point | : | 96 mmWC |
| (3) Operating temp. of the medium | : | 70°C |
| (4) Ambient temp. | : | 50°C |
| (5) Speed | : | 2820rpm |

दिनांक एवं हस्ताक्षर
 SIGN & DATE
 SUPERSEDES
 INVENTORY
 NO.
 माली सूची संख्या को अधिकृत करता है
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 स्वलाधिकार एवं गोपनीय
 इस दस्तावेज में दी गई सूचना भारत हेवी एलैक्ट्रिकल्स की सम्पत्ति है इसका प्रयोग एवं प्रसारण अन्य किसी भी उद्देश्य के लिए बिना लिखित अनुमति के किया जा सकता है अन्यथा कानून से दंडनीय होगा।

TSX	D. CANGWAN	अनुवादक	TRANSLATED BY		नाम	NAME	दिनांक एवं हस्ताक्षर	SIGNATURE & DATE	
PSC Member	R.K SHARMA	निर्माणकर्ता	WORKED BY	Kunal Mishra					
QAX	PREETI	जांचकर्ता	CHECKED BY	Manju Azad					
महत्वत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता	SUPERVISED BY	R. L. VYAS				
SUPERSEDES			स्वीकृति	APPROVED :	Rakesh Kumar (AGM/EME)	30-1-2018	Gr. NO.	8.10	
REV.NO.	04	निर्माणकर्ता	PREPARED :	EME	जारीकर्ता	ISSUED :	TSX	दिनांक	DATE : 09.09.92
Date.	11.01.18	CHANGE ADVICE NO.	TGE-18- 02						

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3/2/18

SIGN & DATE ४ ६४४४४४ SUPERSEDES INVENTORY भारतीय सूची संख्या में अतिरिक्तित संख्या है		उत्पाद क्रय विनिर्देश PRODUCT PURCHASE SPECIFICATION	TG60432 पृष्ठ 8 का 2 Page 2 of 8															
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	<p>3.2 DESIGN AND CONSTRUCTION OF VAPOUR EXHAUSTER</p> <p>3.2.1 The material of the exhauster shall be such as to resist corrosion and shall give long trouble free service.</p> <p>3.2.2 The design shall be such as to keep the friction and wear minimum caused by end thrust. Wear in mechanical seals bearings shall be minimum. The rotor of the exhauster shall be dynamically balanced as per ISO 1940, so that vibration of the exhauster is not greater than 25 micron peak to peak as per IEC 60034-14. The noise level shall not be greater than 85dB when measured at a distance of 1 meter from the base of the equipment, measurement should be done as per IEC 60034-9.</p> <p>3.2.3 Seals must comply with the following: - (a) Easy access for maintenance work. (b) No contamination of the medium from materials abraded from the seals. (c) No seepage of lubricants into the flow medium. (d) No leakage of gases outside in the atmosphere (e) No seepage of oil toward, motor and outside along with the shaft. (f) Shaft shall be sealed with grease lubricated axial seal as shown in the figure.</p> <p>3.2.4 Exhauster bearing shall be designed so as to ensure 50000 hours of continuous service.</p> <p>3.2.5 The exhauster shall be provided with a drain plug.</p> <p>3.2.6 Fan impeller is to be directly mounted onto rotor shaft as shown in the figure at page 8.</p> <p>3.2.7 The critical speed of the exhauster shall not lie within $\pm 30\%$ of the operating speed (2820 rpm) of the exhauster.</p> <p>3.2.8 Minimum clearance between impeller & casing shall be 2mm to ensure that there is no rubbing.</p> <p>3.2.9 The construction, mounting and base frame dimensions shall be generally as per figure at page 8.</p> <p>3.2.10 Materials of Construction:-</p> <table border="0"> <tr> <td>(1) Casing</td> <td>:</td> <td>Carbon Steel as per IS:2062 E250 BR</td> </tr> <tr> <td>(2) Impeller</td> <td>:</td> <td>Carbon Steel as per IS:2062 E250 BR</td> </tr> <tr> <td>(3) Base Frame</td> <td>:</td> <td>Carbon Steel as per IS:2062 E250 BR</td> </tr> <tr> <td>(4) Sleeve</td> <td>:</td> <td>Brass</td> </tr> <tr> <td>(5) 'O' ring</td> <td>:</td> <td>Neoprene</td> </tr> </table>			(1) Casing	:	Carbon Steel as per IS:2062 E250 BR	(2) Impeller	:	Carbon Steel as per IS:2062 E250 BR	(3) Base Frame	:	Carbon Steel as per IS:2062 E250 BR	(4) Sleeve	:	Brass	(5) 'O' ring	:	Neoprene
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स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत सूची एलईएचएलसीएम की सम्पत्ति है इसका प्रयुक्त एवं अप्रयुक्त रूप में किसी भी तरह प्रयोग और कि सम्पत्ती के हित में हानिकारक हो न किया जाय।																		
SIGN & DATE भारतीय सूची संख्या INVENTORY NO.	REV. NO. 04		निर्माणकर्ता WORKED BY Kunal Mishra जांचकर्ता CHECKED BY Manju Azad															
भारतीय सूची संख्या INVENTORY NO.			११/०१/१८ ११/०१/१८															

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उत्पाद क्रय विनिर्देश

TG60432

पृष्ठ 8 का 3

PRODUCT PURCHASE SPECIFICATION

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SUPERSEDES
INVENTORY

सामग्री सूची संख्या को
अधिकृत करवा है

MATERIAL CODE OF VAPOUR EXHASTER ASSEMBLY	EFFICIENCY CLASS OF MOTOR AS PER IEC-60034-30	STARTING CURRENT (IN % OF FULL LOAD CURRENT) + 20% (Tolerance as per IEC: 60034-1)
W96415000578	IE-2	650
W96415003127	IE-3	700

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स्वत्वधिकार एवं गोपनीय

यह सूचना में की गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है। इसका प्रयोग एक अन्यत्र या किसी भी तरह प्रयोग जो कि कंपनी के हित में हानिकारक हो न किताव आए।

हस्ताक्षर
SIGN & DATE

- 3.3.6 Permissible voltage variation : ± 10%
- 3.3.7 Permissible Frequency variation : ± 5%
- 3.3.8 Combined voltage & frequency variation : + 10%
- 3.3.9 Min. voltage required under starting : 85%
- 3.3.10 Conditions to bring driven equipment to rated speed
- 3.3.11 Starting Torque : Min. 1.3 times the rated torque.
- 3.3.12 Breakdown torque : Min. 2 times the rated torque.
- 3.3.13 Starting : DOL
- 3.3.14 Acceleration time with full load connected: 3.5 + 0.5 sec.
- 3.3.15 Starting duty : 3 starts spread over on hour and 2 consecutive starts from hot
- 3.3.16 Condition without injurious heating to the winding.
- 3.3.17 Overload capacity : Motor shall be capable of running at full load with 80% of rated
- 3.3.18 Voltage for 10min. and 70% of rated voltage for 1 min.
- 3.3.19 Class of insulation : 'F' with temperature limited to Class B (70 °C)
- 3.3.20 Ventilation : Totally enclosed & fan cooled
- 3.3.21 Enclosure protection : IP 55 as per IEC 60034-5
- 3.3.22 Explosion proof : Group II T4 as per IEC 60079
- 3.3.23 Bearing : as per suppliers design. Life not less than 50000hrs.
- 3.3.24 Earthing : Suitable arrangement to be provided at 2 places.
- 3.3.25 Terminal box : Terminal box shall be explosion proof as per Group II T4 IEC 60079.
- 3.3.26 Cable gland also to be provided in terminal box for 3 core Aluminium cable.
- 3.3.27 Fault level : 50 KA for 1 sec.

4.0 PUMP DATA SHEET (TO BE FURNISHED ALONGWITH OFFER :

- 4.1 Capacity M3 / Sec. :
- 4.2 Head MWC :
- 4.3 Efficiency :
- 4.4 Rated speed :
- 4.5 Exhauster B.H.P. / kw at Rated Capacity :
- 4.6 Material: Casing Impeller base Frame 'o' ring :
- 4.7 Type of bearing used :
- 4.8 Type of coupling :
- 4.9 Type of Sealing :
- 4.10 Suction size :
- 4.11 Discharging size :

सामग्री सूची संख्या
INVENTORY NO.
P-5894

REV. NO. 04

निर्माणकर्ता
WORKED BY
Kunal Mishra

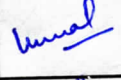

जांचकर्ता
CHECKED BY
Manju Azad

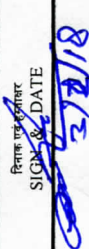

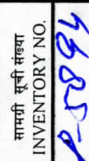
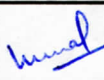
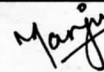
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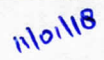
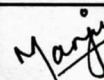
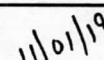
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SUPERSEDES INVENTORY मामली सूची संख्या को अधिस्थित करता है	<p>4.12 Wt. of exhauster with motors base frame</p> <p>4.13 Wt. of exhauster</p> <p>4.14 General assy. & cross sectionals drawing enclosed with offer</p> <p>4.15 Capacity Vs discharge pressure curve enclosed</p> <p>4.16 Power consumption Vs discharge pressure curve enclosed</p> <p>4.17 Capacity Vs efficiency curve enclosed</p>
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मामली सूची संख्या INVENTORY NO. P-5894	REV. NO. 04		निर्माणकर्ता WORKED BY Kunal Mishra	 11/01/18
			जांचकर्ता CHECKED BY Manju Azad	 11/01/18

नमूना संख्या INVENTORY NO. 25894	दिनांक SIGN & DATE 	स्वत्वाधिकार एवं गोपनीयता This information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	सामग्री सूची संख्या SUPERSEDES INVENTORY भारतीय सूची संख्या से अधिकार प्राप्त है	मी एम डी एम 	उत्पाद क्रय विनिर्देश PRODUCT PURCHASE SPECIFICATION	TG60432 पृष्ठ 8 का 5 Page 5 of 8
				5.33 Relevant standard : 5.34 Motor GD2 Valve : 5.35 Type of bearings (DE) : 5.36 Type of bearings (NDE) : 5.37 Type of lubricant : 5.38 Frequency of lubrication : 5.39 Wt. of motor : 5.40 Insulation class :	6.0 QUALITY ASSURANCE, INSPECTION AND TESTING. 6.1 The manufacture shall conduct all tests required to ensure that the exhauster conforms to the requirements of application codes and standards. 6.2 The bidder shall submit the particulars of proposed shop tests along with procedures for information. 6.3 The equipment shall be dispatched only after inspection and clearance by BHEL / owner. 6.4 The min. tests checks to be carried out on vapour exhauster, as envisaged by BHEL are given below:- 6.4.1 The material of Casing, Impeller, Base frame, Sleeve & O Ring shall be tested as per relevant standard for the chemical composition and mechanical properties. 6.4.2 TESTS DURING VARIOUS STAGE OF MANUFACTURING 1) Check for dimension and finish of the components. 2) D.P.T on all welding as per ASME section VIII. 3) Dynamic balancing of impeller as per ISO 1940 Gr. 6.3. 6.4.3 FINAL TESTS: - Following tests shall be carried out: - 1) Flow rate of air 2) Vibration test as per IEC 60034-14. 3) Noise : shall not be greater than 85dB when measured at a distance of 1 meter from the base of the equipment, measurement should be done as per IEC 60034-9 4) Speed 5) Dimensional check 6) Smooth running 7) Performance test as per ISO:5801 6.4.4 Type & Routine tests on motor as per IEC:60034-1 6.4.5 Vendor to furnish the test certificates for the following 1) Motor Enclosure certificate as per IP 55 as per IEC 60034-5 2) Explosion proof certificate for motor for Group II T4 as per IEC60079 3) Certificate for enclosure of Terminal box for explosion proof as per Group II T4 IEC 60079. 4) Certificate for minimum clearance of 2mm between impeller & casing.	
सामग्री संख्या INVENTORY NO. 25894	दिनांक SIGN & DATE 			निर्माणकर्ता WORKED BY Kunal Mishra		11/01/18
		REV. NO. 04		जांचकर्ता CHECKED BY Manju Azad		11/01/18

न हस्ताक्षर SIGN & DATE		उत्पाद क्रय विनिर्देश PRODUCT PURCHASE SPECIFICATION		TG60432 पृष्ठ 8 का 6 Page 6 of 8	
SUPERSEDES INVENTORY	<p>6.4.6 After testing the exhauster, all the surface and internal shall be thoroughly cleaned, dried and conserved. All the metallic surface except bright parts exposed to weather shall be given suitable primary coating.</p> <p>7.0 DOCUMENTS TO BE FURNISHED AT THE TIME OF OFFER</p> <p>7.1 Assembly drawings part list, nozzle size, their coordinates base plate details etc.</p> <p>7.2 Technical data sheet of pump as per clause 4.</p> <p>7.3 Technical data sheet of motor as per clause 5.</p> <p>7.4 Performance curves.</p> <p>7.5 Quality plan in BHEL format, incorporating checks/tests at material stages, in process & final testing.</p> <p>7.6 Clause wise confirmations of specification TG60432.</p> <p>8.0 DOCUMENT TO BE SUPPLIED</p> <p>8.1 AFTER PLACEMENT OF ORDER</p> <p>8.1.1 G.A. drawing with parts list & material details.</p> <p>8.1.2 Final quality plan.</p> <p>8.2 DOCUMENT FOR FINAL SUBMISSION</p> <p>8.2.1 Performance curves.</p> <p>8.2.2 Test certificates for all test checks in clause 6.4 shall be furnished.</p> <p>9.0 CLEANING, PAINTING, CONSERVATION AND PACKING</p> <p>The surface shall be cleaned and prepared for application of paint by shot blasting. The protective coating should be oil resistant. After testing the exhauster, its internals shall be thoroughly cleaned, dried and conserved before packing. The exhauster packing shall be strong enough to safeguard against any damage during transit. The exhauster shall be packed such that it is safe for at least 2 year of storage in damp atmosphere.</p> <p>10.0 GUARANTEE</p> <p>10.1 The supplier shall guarantee trouble free and satisfactory operation of the equipment for a period of 12 months after commissioning at site or 18 months from the date of dispatch, whichever is earlier.</p> <p>10.2 The supplier shall guarantee the tested capacity head and capacity of the exhauster.</p> <p>10.3 The supplier shall repair /replace the defective parts at his own cost during the guarantee period.</p>				
मासिक सूची संख्या को अधिकृतित करना है	<p>7.0 DOCUMENTS TO BE FURNISHED AT THE TIME OF OFFER</p> <p>7.1 Assembly drawings part list, nozzle size, their coordinates base plate details etc.</p> <p>7.2 Technical data sheet of pump as per clause 4.</p> <p>7.3 Technical data sheet of motor as per clause 5.</p> <p>7.4 Performance curves.</p> <p>7.5 Quality plan in BHEL format, incorporating checks/tests at material stages, in process & final testing.</p> <p>7.6 Clause wise confirmations of specification TG60432.</p> <p>8.0 DOCUMENT TO BE SUPPLIED</p> <p>8.1 AFTER PLACEMENT OF ORDER</p> <p>8.1.1 G.A. drawing with parts list & material details.</p> <p>8.1.2 Final quality plan.</p> <p>8.2 DOCUMENT FOR FINAL SUBMISSION</p> <p>8.2.1 Performance curves.</p> <p>8.2.2 Test certificates for all test checks in clause 6.4 shall be furnished.</p> <p>9.0 CLEANING, PAINTING, CONSERVATION AND PACKING</p> <p>The surface shall be cleaned and prepared for application of paint by shot blasting. The protective coating should be oil resistant. After testing the exhauster, its internals shall be thoroughly cleaned, dried and conserved before packing. The exhauster packing shall be strong enough to safeguard against any damage during transit. The exhauster shall be packed such that it is safe for at least 2 year of storage in damp atmosphere.</p> <p>10.0 GUARANTEE</p> <p>10.1 The supplier shall guarantee trouble free and satisfactory operation of the equipment for a period of 12 months after commissioning at site or 18 months from the date of dispatch, whichever is earlier.</p> <p>10.2 The supplier shall guarantee the tested capacity head and capacity of the exhauster.</p> <p>10.3 The supplier shall repair /replace the defective parts at his own cost during the guarantee period.</p>				
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निका नं हस्ताक्षर SIGN & DATE	मासिक सूची संख्या INVENTORY NO. 45894	REV. NO. 04	निर्माणकर्ता WORKED BY Kunal Mishra		
निका नं हस्ताक्षर SIGN & DATE	जांचकर्ता CHECKED BY Manju Azad				

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 SUPERSEDES INVENTORY

11.0 IDENTIFICATION

A name plate of stainless steel with following information engraved on it, shall be affixed to the equipment at appropriate location –

- Item description
- Manufacturer's name
- Year of manufacturing
- Sl. No.
- Main technical parameters i.e. Flow rate, Discharge pressure, Speed, Flow Medium, operating temperature, Motor KW Rating.
- BHEL specification no.
- BHEL material code.
- BHEL P.O. No.

12.0 GENERAL


Bidder shall furnish all the documents as per clause 7 of the specification along with offer. Any deviation shall be clearly spelled out. The offer may not be considered if all the technical particulars and information called for in the specification are not submitted along with the offer.

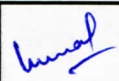
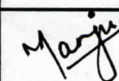
13.0 CROSS REFERRED STANDARD

- ISO 1940, ISO 5801
- IEC 60034-14, IEC 60034-9, IEC 60034-1, IEC 60034-5, IEC 60079
- IS:2062

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स्वत्वाधिकार एवं गोपनीय
 इस प्रलेख में दी गई सूचना भारत हेवी एलेक्ट्रिकल्स की संपत्ति है। इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह का प्रयोग जो कि कंपनी के हित में हानिकारक हो सके बिना न करें।

ब्रह्मचर एवं दिनांक
 SIGN & DATE


सामग्री सूची संख्या INVENTORY NO. P-5894	REV. NO. 04		निर्माणकर्ता WORKED BY Kunal Mishra	 11/01/18
			जांचकर्ता CHECKED BY Manju Azad	 11/01/18



**MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT
(FOR GHAVP- 1&2, KAIGA-5&6 AND GHAVP- 3&4)**

**मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट
(GHAVP- 1&2, KAIGA-5&6 और GHAVP- 3&4 के लिये)**

Ref No: संदर्भ सं.:	BHEL/VP/	Date: तिथि:	
i.	Main Contractor मुख्य संविदाकार	BHEL, Haridwar	
ii.	Project / परियोजना	GHAVP- 1&2, KAIGA-5&6 AND GHAVP- 3&4 (NPCIL)	
iii.	Package Name पैकेज का नाम	TURBINE ISLAND PACKAGE	
iv.	Proposed Item / प्रस्तावित मद		
v.	Name and Address of the proposed Sub-vendor's works / प्रस्तावित सब-वेंडर का नाम तथा पता: Manufacturing vendor name and its address (If applicable)		
vi.	Brief description of the Sub-contractor, their products and capabilities in terms of manpower, machines, testing facilities etc.: - Details are mentioned below; (attached documents as Annexure-A) PRODUCT: CAPABILITIES: MANPOWER:		



**MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT
(FOR GHAVP- 1&2, KAIGA-5&6 AND GHAVP- 3&4)**

**मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट
(GHAVP- 1&2, KAIGA-5&6 और GHAVP- 3&4 के लिये)**

TESTING FACILITIES:

vii.	Supplier Performance Rating out of 100 (If applicable)																					
viii.	BHEL PO Numbers already Placed on Vendor (attach Unpriced P.O. copies as Annexure-B)	1. 2. 3.																				
ix.	Details of and financial capability of Sub-contractor: - Details are mentioned below (attached Valid documents as Annexure-C)																					
	<table border="1"><thead><tr><th>Sl. No.</th><th>Year</th><th>Sales</th><th>Profit Before Tax</th></tr></thead><tbody><tr><td>1</td><td>2018-2019</td><td></td><td></td></tr><tr><td>2</td><td>2019-2020</td><td></td><td></td></tr><tr><td>3</td><td>2020-2021</td><td></td><td></td></tr><tr><td>4</td><td>2021-2022</td><td></td><td></td></tr></tbody></table>	Sl. No.	Year	Sales	Profit Before Tax	1	2018-2019			2	2019-2020			3	2020-2021			4	2021-2022			
Sl. No.	Year	Sales	Profit Before Tax																			
1	2018-2019																					
2	2019-2020																					
3	2020-2021																					
4	2021-2022																					
x.	Whether the Sub-contractor supplied the Equipment/item/component to BHEL/NPCIL earlier. If supplied, please mention the project name and year; - Details are mentioned below																					
	<table border="1"><thead><tr><th>Sl. No.</th><th>Relevant Equipment/item/component</th><th>Project Name</th><th>Year</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></tbody></table>	Sl. No.	Relevant Equipment/item/component	Project Name	Year																	
Sl. No.	Relevant Equipment/item/component	Project Name	Year																			
xi.	Details of the other customers of the Sub-contractors: - Details are mentioned below. (attached Valid documents as Annexure-D)																					
	1. 2. 3. etc.																					
xii.	Details of their ISO and other certifications: - Details are mentioned below (attached Valid documents as Annexure-E)																					
	1. ISO 9001:2015 2. Other certificates are																					



**MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT
(FOR GHAVP- 1&2, KAIGA-5&6 AND GHAVP- 3&4)**

**मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट
(GHAVP- 1&2, KAIGA-5&6 और GHAVP- 3&4 के लिये)**

We confirm that as per BHEL assessment, the proposed sub-vendor is fully capable for supplying the item in the project.

BHEL के आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता प्रस्तावित मद की आपूर्ति के लिए इस परियोजना में उपयुक्त है।

Additional Remarks: -

Name / नाम	Design./ पद	Sign / हस्ताक्षर	Date/ तिथि
RAJENDER SINGH	SR. ENGG., QAX		
A. K. SWAMI	SDGM, QAX		
P. K. BANSAL	AGM, QAX		

NUCLEAR POWER CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

CHECKLIST & RECOMMENDATION FOR EVALUATION OF VENDORS

Tender No : CMM/ETM/00/40/11/0005

Item/Package : TURBINE ISLAND PACKAGE

Name of Main Contractor : BHEL, Haridwar

Address and contact details of Main Contractor : Heavy Electrical Equipment Plant, BHEL
Ranipur, Haridwar, Uttarakhand-249403,
Contact: - 01334-281363

Name of Sub-contractor/Vendor :

Address of Sub-contractor :

Items for which approval is sought :

1.0 General:

- 1.1) Key Personnel contacted :
- a) Senior Management :
- b) Quality Co-ordinator :
- c) Others (Production, Planning etc.) :

FOLLOWING ARE TO BE COMMENTED

- 1.2) Recognition details if any code Stamps like U1, U2, ASME N, NPI or certification Like ISO :
9001, 14000 etc. (Verify the records)
- 1.3) Floor space availability for present Activities/for future expansion :
- a) Indoor :
- b) Outdoor :

- 1.4) Level of Housekeeping (enclose documentary evidence as : annexure-1.4)
- 1.5) Whether NPC jobs executed earlier (enclose documentary : evidence as annexure-1.5)
- 1.6) Delivery Performance (Schedule vs Actual) (Verify records) (enclose documentary evidence as : annexure-1.6)

2.0 Technical

- 2.1) Quality Control
 - (a) Incoming Material Inspection :
 - (b) Process Inspection :
 - (c) Final Inspection :
- 2.2) Plant & Machinery :
 - (a) General condition & Age :
 - (b) Confirms to the details submitted in application :
- 2.3) Calibration facilities (Also inform, whether the calibration facilities are : 'Available in-house' or 'Outsourced'.)
- 2.4) Calibration records (enclose documentary evidence as : annexure-2.4)
- 2.5) NDE Qualification records (Enclose list of qualified personnel's : in applicable NDE methods with NDE record as aneexure-2.5)
- 2.6) Is there a system of selecting/ short listing Sub-vendors? :

- 2.7) Availability of Testing facilities :
- 2.8) Whether working of following are satisfactory?
 - (a) Production :
 - (b) Quality control: :
- 2.9) Understanding of scope of work : YES
- 2.9.1) Understanding of technical requirement of Job : YES
- 2.10) Availability and understanding of related standards. :
- 2.11) Capacity of the Vendor to fabricate and inspect :
- 2.12) Understanding of special Examination/ Testing (like ultrasonic Examination/ Helium Leak testing, Optical alignment testing etc.) :
- 2.13) Availability of special facilities :
- 2.14) Facilities/Machineries/testing equipment available in the shop floor to meet technical requirement of the job :
- 2.15) Qualified and experience Manpower in the shop floor to execute the specified job : YES

3.0 Quality System:

- 3.1) If ISO certified, check the availability and accessibility of Quality system manual :
- 3.2) Validity of ISO certification :
- 3.3) Whether Quality Control plan and Procedures are prepared? :

- 3.4) Whether organisation chart is available? (enclose documentary : evidence as annexure-3.4)
- 3.5) What is the level of Quality Control in the organisation? :
- 3.6) Whether working of following are Satisfactory? (enclose documentary evidence as annexure-3.6)
- (a) Document control :
- (b) Process Control :
- (c) Non-conformances control :
- 3.7) Whether Internal Quality Audits are carried out? (enclose documentary evidence as annexure-3.7) :
- 3.8) Whether non-conformities during Internal Audits are recorded and disposed off following laid down : procedure? (enclose documentary evidence as annexure-3.8)

4.0 Assessment

4.1 Understanding and interpretation by vendor

Sl No	Area of Assessment	Observation	Remark
1	Scope of work	Good/Satisfactory/Unsatisfactory	
2	Related standard	Good/Satisfactory/Unsatisfactory	
3	Construction features	Good/Satisfactory/Unsatisfactory	
4	Functional Requirement	Good/Satisfactory/Unsatisfactory	

4.2 Capability of Vendor

Sl No	Area of Assessment	Observation	Remark
1	To design/develop	Good/Satisfactory/Unsatisfactory	
2	To fabricate	Good/Satisfactory/Unsatisfactory	
3	To inspect	Good/Satisfactory/Unsatisfactory	

4	Specify remark on the capability of vendor to execute the job	Good/Satisfactory/Unsatisfactory	
---	---	----------------------------------	--

4.3 Comments if any w.r.t. delivery schedules:

4.4 Comments if any on quality of product:

5.0 Conclusion:

Signatures of Team Members.

Sl No	Name	Designation	Signature & Date
1	RAJENDER SINGH	SR. ENGG., QAX	
2	A. K. SWAMI	SDGM, QAX	
3	P. K. BANSAL	AGM, QAX	

General Requirements for Quality Assurance Plans of Turbine Island Package for GHAVP-1&2

Legends used in Quality Assurance Plan:

- W: Witness, not hold, BHEL to give advance notice to customer to associate during checks/tests but work shall proceed.
- R: Review of records (by customer as indicated under column 'C').
- H / CHP: Customer Hold Point
- MTC: Material Test Certificate
- Obs. Sheet: Observation Sheet
- LS: Log Sheet
- COC: Certificate of Compliance

Abbreviations:

CRITICAL:- The characteristic of a component, process or operation failure of which will surely cause operating failure or intermittent troubles which is difficult to rectify at site or render the unit unfit for use or cause safety hazards.

MAJOR :- The characteristic of a component, process or operation whose failure may cause operation failure which cannot be readily corrected at site or cause substandard performance, increased erection and maintenance cost, reduce life or seriously affect aesthetics.

MINOR :- The characteristic of a component, process or operation whose failure neither materially reduce the use ability of the product in operation nor does it affect the aesthetic aspects

1. H / CHP - Customer Hold Point: NPCIL QS witness/clearance is mandatory before proceeding with further activities. This activity shall be kept under hold till inspection clearance or written waiver is obtained from the agency responsible for this stage (NPCIL QS/their authorized representative).
2. W-Witness point: Witness points are critical steps in manufacturing and examination/inspection/esting where the supplier is obliged to notify NPCIL QS sufficiently in advance (at least 7 days) the start of the operation / test so that the same may be witnessed. The above notice periods are for BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "W" shall be 15 days. The supplier may proceed with the work past a witness point in consultation with NPCIL.. QS or their authorised representative.
3. All test reports, test certificates & Quality control records shall be reviewed & accepted by BHEL, before submitting the same for the review of NPCIL QS.

Buyi Bhushan

[Signature]
08.10.2022

10/10/2022
गौरीशंकर शर्मा
NPCL 9
गौराडी

N.K. Paul
10.10.2022
N. K. Paul
NPCIL

4. Castings shall be procured from NPCIL/BHEL approved Foundries. Pouring for casting (Body & Disc) shall be done along with test bar. First pouring of casting will be witnessed by the supplier/NPCIL approved TPA & sub vendor (as applicable). SS casting and forging shall be received in pickled & passivated condition.
7 days in advance intimation shall be given to all agencies.
5. Raw-material on the basis of co-related original material test certificate (MTC) from NPCIL/BHEL approved material manufacturer is acceptable. In absence of co-related material test certificate, all items will be PMI tested for establishing no. of heat/lot. And subsequent further tests as per material standard to be conducted on sample basis. Sampling will be decided on the basis of PMI. The samples for chemical and mechanical tests shall be drawn and witnessed by BHEL/NPCIL. Approved TPA / NPCIL. Chemical and mechanical tests shall be conducted in NPCIL/NABL approved laboratory only. BHEL QS shall submit all, MTCs and test reports after their review & acceptance to NPCIL. QS for final review and clearance. This review/verification & clearance by NPCIL QS is CHP. Stamping of raw material and stamp transfer shall be done by BHEL QS/NPCIL QS.
6. Wherever Customer Hold Point (CHP) is indicated, the supplier is to notify NPCIL QS or its authorised representative at least 7 days in advance. The above notice periods are BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "CHP" shall be 15 days.
7. Sample selection, for random witnessing of the inspection, examination, testing shall be done by NPCIL QS. Sampling plan, unless otherwise indicated, should generally be in accordance with IS 2500, Part-1, AQL:1%, Normal Level-II. (Refer - QAD/MISC/PROC/SAMPLING/001 Rev.: 0).
8. All the procedures mentioned in the QAP like NDE procedures, hydro test, WPS etc. shall be checked, reviewed and approved by BHEL before submitting to NPCIL for approval. All NDE procedures shall have approval of Level III qualified personnel and prepared by Level-II person of BHEL/Sub-vendor.
9. The heat treatment furnaces shall have temperature recorder and valid calibration report. Calibration shall be done as per national standard /international standard/ as per NPCIL specification, if specified. All the calibration report will be checked by the NPCIL QS.
10. Calibrated instruments/gauges/thermocouples etc. shall be used during inspection and testing.
11. All NDT shall be carried out by Level-I/Level-II/Level-III & evaluated by Level -II/Level-III qualified person from ISNT/ASNT.
12. Chemicals used for LPT and MPT shall be from NPCIL approved brands only. BHEL will review TC's and reports before submitting to NPCIL.
13. Welding consumables shall be from NPCIL approved brand list. All batches of electrodes shall be tested as per referencing document.
14. Supplier can prepare their own NDE procedures meeting requirement of NPCIL specification and submit for approval. Alternatively, NPCIL procedure can be adopted by the supplier. The supplier shall submit the same and technique sheet along with modification, if any, for approval.
15. Inspection stages in the QAP are considering suppliers are from India based on past experience. In case of foreign suppliers, the QAP remains same, but the stage inspection extent (witness and hold points) may change, based on the type and strength of supplier to be

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08.10.2022

10/10/2022
10.10.2022
N. K. Paul
 NPCIL

- finalized after mutual discussion. Change in inspection extent will depend upon the participation of BHEL during manufacturing of items in foreign countries. It is expected that the participation of BHEL will be same or more as indicated in the QAP.
- 16. Spares shall undergo same testing/inspection requirements as per original items.
- 17. All items shall be stamped by vendor's name/monogram apart from item description, size, serial no., class, material code, rating, grade, etc. and meeting MSS-SP-25 and NPCIL specification.
- 18. Certified material test report (indicating material, size, item description, lot no., heat no., NDE report nos., check test certificate, vendors final certificate nos., etc.) shall be submitted.
- 19. The contractor / manufacturer shall prepare "History Docket" for the items supplied, compiling various inspection / test reports and also other relevant documents as per the tender specification/NPCIL procedure, and submit to NPCIL QS prior to issue of complete/ final Shipping Release (SR) (on completion of entire PO/SPO). As the final SR will be a part of History Docket, issuance of final SR & review of History Docket by NPCIL. QA shall be done simultaneously.
- 20. Bevel end/SW ends shall be suitably protected from any damage.
- 21. In case of material/item acceptable to NPCIL on the basis of compliance certificate, the same to be provided by OEM and shall be certified by the BHEL.
- 22. Reference documents as mentioned in Quality Assurance Plan shall be shown to Customer at the time of inspection for BHEL shop manufactured items.
- 23. Brazer and Brazing Procedure Qualification shall be NPCIL approved. Brazer and Brazing Procedure Qualification shall be done in the presence of NPCIL QA representative. Only approved Brazer by NPCIL shall perform NPCIL jobs.
- 24. During manufacturing, only latest revision of drawings/specifications/procedures/code shall be used.
- 25. Whenever witnessing (W) by NPCIL is specified, BHEL's representative shall also witness the test.
- 26. Inspection call should be raised such that there is optimisation of visits and inspection activities.

Brij Blunkar
 CB. B. Tripathy
 BHEL HWR

Arvind Susani
 08.10.2022
 BHEL, HWR

10/10/22
 10/10/22
 NPCIL
 10/10/22

10.10.2022
 N. K. Paul
 NPCIL



न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)

NUCLEAR POWER CORPORATION OF INDIA LTD.

(A Government of India Enterprise)

गुणवत्ता आश्वासन निदेशालय

Directorate of Quality Assurance

नाभिकीय ऊर्जा भवन, अणुशक्तिनगर, मुंबई-400 094

Nabhikiya Urja Bhavan, Anushaktinagar, Mumbai-400094

Corporate Identification No. U40104MH1987GOI149458



थॉमस मॅथ्यू Thomas Mathew

उत्कृष्ट वैज्ञानिक Outstanding Scientist

अधिसासी निदेशक (गुणवत्ता आश्वासन) Executive Director (QA)

Phone: 022- 25995030/25558487

Fax.No.: 022-25565354

e-mail: edqa@npcil.co.in

संख्या /No. NPCIL/ED (QA)/2023/M/152

तिथि: 12th July, 2023


Sub: Updated List of approved brands of welding consumables

The lists of approved brands of welding consumables for use on NPCIL jobs as on 12.07.2023 are enclosed herewith:

- 1) List of approved Carbon steel & Low Alloy Steel Welding Electrodes (2 sheets)
- 2) List of approved Stainless Steel & other Ni Alloy electrodes (2 Sheets)
- 3) List of Approved Brands of Wire and Wire flux combination (2 Sheets)

The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev2) and latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases will have to be carried out separately.

For use in nuclear application, welding consumable manufacturing requirement shall be as per lot class C3 /S2 as per ASME Section II Part C and any other specific requirements mentioned in purchase document.


12.07.2023 12.07.2023
(थॉमस मॅथ्यू Thomas Mathew)

Executive Director (QA)

1). LIST OF APPROVED CARBON STEEL AND LOW ALLOY STEEL ELECTRODES AS ON 03-07-2023



SR. NO	MANUFACTURERS	BRAND NAME	AWS NO.	VALID UP TO
1.	ADOR WELDING LIMITED, SILVASSA	MOLYTEN	E7018-A1	July 2026
2.	ADOR WELDING LIMITED, SILVASSA	CROMOTEN	E 8018 B2	July 2026
3.	ADOR WELDING LIMITED, SILVASSA	CROMOTEN C	E 9018 B3	July 2026
4.	ADOR WELDING LIMITED, SILVASSA	TENALLOY Z PLUS	E7018-1	Jul 2027
5.	ADOR WELDING LIMITED, SILVASSA	SUPABASE X PLUS	E7018	Feb 2024
6.	ADOR FONTECH LIMITED, BENGALURU	LH511	E NiCu7	Dec 2025
7.	ADOR FONTECH LIMITED, BENGALURU	LH-521	NiCrFe3	Dec 2025
8.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPERON 7018S (SUPERCITO)	E7018-1	Jun 2026
9.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPERON 7018 (SUPERCITO)	E7018	Jun 2026
10.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPERON 6013S (OVERCORD S)	E6013	Jun 2026
11.	HONAVAR ELECTRODES PVT. LTD, THANE	Ultimate-18SPL	E 7018-1	Sep 2025
12.	HONAVAR ELECTRODES PVT. LTD, THANE	Ultimate-18	E 7018	Sep 2025
13.	HONAVAR ELECTRODES PVT. LTD	Regular S	E 6013	Sep 2025
14.	ROYAL ARC ELECTRODES LTD, VASAI	ROYAL THERM SPL.	E 7018-1	Mar 2027
15.	RAAJARATNA ELECTRODES PVT. LTD, AHMEDABAD	RATNA 7018 SPL E 7018-1	E 7018-1	Feb 2025
16.	RAJRATNA ELECTRODES PVT LTD , AHMEDABAD	RATNA 7018	E7018	NOV 2023
17.	MAILAM INDIA LTD, PUDUCHERRY	MAILARC-1 CR	E 8018-B2	Jun 2024
18.	MAILAM INDIA LTD, PUDUCHERRY	MAILARC-18 PLUS	E-7018-1	May 2026
19.	MAILAM INDIA LTD, PUDUCHERRY	MAILARC-2 CR	E 9018-B3	Jun 2024
20.	D&H SCHERON ELECTRODE Pvt. Ltd, Indore	SUPERTHERME(SPL)	E7018-1	NOV 2023
21.	D&H SCHERON ELECTRODE Pvt. Ltd, Indore	EXOBEL	E6013	May 2026
22.	D&H SCHERON ELECTRODE Pvt. Ltd, Indore	MEDIO	E6013	May 2026
23.	D&H SCHERON ELECTRODE Pvt. Ltd, Indore	SUPRATHERME	E7018	May 2026
24.	D&H SCHERON ELECTRODE Pvt. Ltd, Indore	MOLYTHERME	E7018-A1	May 2026
25.	Weld fast Electrodes Pvt ltd, Nagpur	WELDFAST LH-18	E7018	August 2026
26.	Weld fast Electrodes Pvt ltd, Nagpur	WELDFAST LH-18-1	E7018-1	August 2026

The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:2) and latest edition of ASME Section II

Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.

For use in nuclear application the welding consumable manufacturing requirement shall be as per lot class C3 as per ASME Section II Part C.



 
12.07.2023
(थॉमस मैथ्यू Thomas Mathew)
Executive Director (QA)

2). LIST OF APPROVED STAINLESS-STEEL & OTHER ALLOY ELECTRODES AS ON 03-07-2023

SR. NO	MANUFACTURER	BRAND NAME	AWS No.	VALID UP TO
1.	ADOR WELDING LIMITED, SILVASSA	BETANOX-DL	E309L-16	July 2026
2.	ADOR WELDING LIMITED, SILVASSA	SUPERINOX-2C	E316L-16	July 2026
3.	ADOR WELDING LIMITED, SILVASSA	SUPERINOX-1C	E308L-16	July 2026
4.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPER OPTIMAL 309 MOL	E309 MoL-16	Feb 2025
5.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPER OPTIMAL 308 L	E308L-16	Feb 2025
6.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPER OPTIMAL 309 L	E309L-16	Feb 2025
7.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPER STAINLESS 347 L	E347L-16	Feb 2025
8.	SUPERON SCHWEISSTECHNIK INDIA LTD, DELHI	SUPER OPTIMAL 316 L	E316L-16	Feb 2025
9.	HONAVAR ELECTRODES PVT. LTD, THANE	SILVER SHINE 308L-15	E308L-15	Feb 2024
10.	HONAVAR ELECTRODES PVT. LTD, THANE	SILVER SHINE 316L	E316L-16	Nov 2023
11.	RAAJARATNA ELECTRODES, AHMEDABAD	RATNA 308L	E 308L-16	Feb 2025
12.	RAAJARATNA ELECTRODES, AHMEDABAD	RATNA 316L	E 316L-16	Feb 2025
13.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-A	E 308-16	Jun 2024
14.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-AL	E 308L-16	Jun 2024
15.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-AL-15	E 308L-15	Jun 2024
16.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-25/12	E 309-16	Jun 2024
17.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-25/12L	E 309L-16	Jun 2024
18.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX-25/12-MO	E 309 Mo-16	Jun 2024
19.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX MO	E 316-16	Jun 2024
20.	MAILAM INDIA LTD, PUDUCHERRY	MAILEX MOL	E 316L-16	Jun 2024
21.	D&H SECHERON, INDORE	D&H 309L	E309L-16	NOV 2023
22.	D&H SECHERON, INDORE	RUTOX-A	E308-16	NOV 2023
23.	D&H SECHERON, INDORE	RUTOX-A ST	E347-16	NOV 2023
24.	D&H SECHERON, INDORE	RUTOX-MO	E316-16	NOV 2023
25.	ROYAL ARC ELECTRODES, VASAI	ROYAL 1C	E308L-16	OCT 2024
26.	ROYAL ARC ELECTRODES, VASAI	ROYAL 2C	E316L-16	OCT 2024
27.	ROYAL ARC ELECTRODES, VASAI	ROYAL D2L	E309L-16	OCT 2024
28.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	RUTOX-D	E316L-16	May 2026
29.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	RUTOX-B	E308L-16	May 2026
30.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	Cronitherme-25/12	E309-16	May 2026

31.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	BATOX B	E308L-15	May 2026
32.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	D&H-1212 (NS)	ENiCrFe-3	May 2026
33.	D&H SECHERON ELECTRODE Pvt. Ltd, Indore.	D&H-1250	ENiCu-7	May 2026
34.	Weld fast Electrodes Pvt Ltd, Nagpur	WELDFAST 308L	E 308L-16	August 2026
35.	Weld fast Electrodes Pvt Ltd, Nagpur	WELDFAST 316L	E 316L-16	August 2026
36.	Weld fast Electrodes Pvt Ltd, Nagpur	WELDFAST 309L	E 309L-16	August 2026
37.	Weld fast Electrodes Pvt Ltd, Nagpur	WELDFAST 309 MoL	E 309 L-Mo-16	August 2026

The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:2) and latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.

For use in nuclear application the welding consumable manufacturing requirement shall be as per lot class C3 as per ASME Section II Part C

(थॉमस मॅथ्यू Thomas Mathew)
 12-07-2023

Executive Director (QA)


3) List of Approved Brands of wire and wire flux combination as on 03-07-2023

SR NO	MANUFACTURERS	BRAND NAME	AWS NO.	VALID UPTO
1	ADOR FONTECH LIMITED, BENGALURU	TIG 120	ER 308L	OCT 2024
2	ADOR FONTECH LIMITED, BENGALURU	TIG 121	ER 316L	OCT 2024
3	ADOR FONTECH LIMITED, BENGALURU	TIG 123	ER 309L	OCT 2024
4	ADOR FONTECH LIMITED, BENGALURU	TIG 120S	ER 347	OCT 2024
5	ADOR FONTECH LIMITED, BENGALURU	TIG 521	ER NICR3	OCT 2024
6	ADOR WELDING LIMITED, SILVASSA	TIGINOX-308L	ER 308L	JUL 2026
7	ADOR WELDING LIMITED, SILVASSA	TIGINOX-309L	ER 309L	JUL 2026
8	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 308L	ER 308L	NOV 2026
9	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 316L	ER 316L	NOV 2026
10	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 309L	ER 309L	NOV 2026
11	VENUS WIRE INDUSTRIES PVT. LTD, KHOPOLI	VENUS 347	ER 347	NOV 2026
12	RAAJARATNA ELECTRODES PVT. LTD, AHMEDABAD	RAAJTIG ER 308L	ER 308L	FEB 2025
13	RAAJARATNA ELECTRODES PVT. LTD, AHMEDABAD	RAAJTIG ER 316L	ER 316L	FEB 2025
14	ADOR WELDING LIMITED, SILVASSA	TIGFIL 90S-B3	ER 90S-B3	JAN 2026
15	ADOR WELDING LIMITED, SILVASSA	TIGFIL 70S-2	ER70S-2	JUL 2027
16	ADOR WELDING LIMITED, SILVASSA	AUTOMIG 70S-6	ER 70S-6	DEC 2023
17	ADOR WELDING LIMITED, SILVASSA	AUTOMELT B71+ AUTOMELT EH14	F7A2- EH14	FEB 2024
18	D&H SECHERON ELECTRODE Pvt. Ltd, Indore	F70S-2	ER70S-2	May 2026
19	D&H SECHERON ELECTRODE Pvt. Ltd, Indore	FW-309L	ER309L	May 2026
20	D&H SECHERON ELECTRODE Pvt. Ltd, Indore	FW-308L	ER308L	May 2026
21	Weld fast Electrodes Pvt Ltd, Nagpur	MIG FAST-1	ER70S-6	August 2026
22	Weld fast Electrodes Pvt Ltd, Nagpur	TIGFAST-3	ER70S-2	August 2026

The approvals are granted in conformance to the requirements stipulated in procedure for approval of Welding Consumables (QAD/Proc/Welding Consumables/002 Rev:2) and latest edition of ASME Section II Part C. However, batch qualification wherever called for in specific cases, will have to be carried out separately.

For use in nuclear application the welding consumable manufacturing requirement shall be as per lot class C3 as per ASME Section II Part C




12.07.2023
(थॉमस मैथ्यू Thomas Mathew)
Executive Director (QA)

P.O.NO: CMM/MEQ/22-41-2-1062/PO-6437
(MAIN CONTRACTOR/SUB-VENDOR AS APPLICABLE)
DATE: 14.08.2012

QUALITY ASSURANCE PLAN
ITEM : VAPOUR EXHAUSTER

QAP NO: NPCIL/RAPP7&8 /41230/VP/306
REV. NO. 04 DATE: 12.11.2021

PROJECT: RAPP UNIT-7&8
DATE: 14.08.2012

NAME OF PACKAGE: TURBINE GENERATOR PLANT PACKAGE
SUB PO NO. : B7V1362/01
DATED : 04.05.2021

NPCL QA REF. NO.: 2210438
PAGE : 1 OF 6

NAME OF PACKAGE CONTRACTOR/MAIN ADDRESS CONTRACTOR AND ADDRESS:
BHARAT HEAVY ELECTRICALS LTD
HEEP, HARIDWAR
UTTARAKHAND



NAME OF MAIN CONTRACTOR'S VENDOR AND ADDRESS:
DUSTECH ENGINEERS PRIVATE LIMITED,
PLOT NO.- 78, 13/3 MILESTONE,
MATHURA ROAD, FARIDABAD-121003

DATA SHEET/VSS NO. DRG NO.	ITEM	BRIEF DESCRIPTION	DESIGN CODE/ SPEC. NO.	FOR MAIN CONTRACTOR'S VENDOR		AFFIX STAMP OF MAIN SUB-VENDOR
381/R0	VAPOUR EXHAUSTER ER	W/96415000578 VAPOUR EXHAUSTER	TG 604320	SIGNATURE	PREPARED BY	CHECKED/ REVIEWER
TG 60432				NAME	DATE	DATE
FOR PACKAGE / MAIN CONTRACTOR			AFIX STAMP OF PACKAGE CONTRACTOR		FOR NPCIL	
CHECKED BY	REVIEWED BY	APPROVED BY	SIGNATURE	CHECKED BY	REVIEWED BY	APPROVED BY
Vibhuti Palwal	A K Swami	P K Bansal		JAPAL MUNDRI (EETGP)	Subodh Kumar	Sandeep Kumar Jain
DATE	12.11.2021	12.11.2021	DATE	15.11.2021	18.11.2021	24.11.2021

NPCCIL		QUALITY ASSURANCE PLAN		Page 2 of 6	
SUB VENDOR/SUB CONTRACTOR/ MANUFACTURERS NAME & ADDRESS		VAPOUR EXHAUSTER		PROJECT : RAPP 7&8	
VENDOR'S NAME : DUSTECH ENGINEERS PVT LTD 7B, 13/3 MATHURA ROAD, FARIDABAD, HARYANA E-MAIL : dustech@rediffmail.com		ITEM	NAME OF THE PACKAGE: VAPOUR EXHAUSTER	PO NO. - B7V1362	
		QAP No., REV. No.	NPCCIL/RAPP 7&8/41230/NP/306 04	SUB PO NO. - B7V1362/01	
		DATE	12.11.2021		

QAP REVISION CONTROL SHEET

Sl No	Description of Revision	No. of Pages	Revision No. with Date	Sub-vendor		
				Prepared by	Checked by	Approved by
1.	a) Change in QP sl no from NPCCIL/RAPP7&8/NP/306 to NPCCIL/RAPP7&8/41230/NP/306 b) Addition of Sub PO NO B7V1362, headers, legends and correction in Page no c) Addition NPCCIL QA Reference no d) Addition of BHFL Spec and Drg in Front page e) Changes done in reference and acceptance norms as per NPCCIL comments dtd 25.06.2021 f) Inclusion of Explosion Proofness in AC Induction Motor g) Addition of Witnessing /verification checks h) Addition of clause 5 (shipping release in QP) i) Changes done in GENERAL Notes as per NPCCIL Comments dtd 25.06.2021 j) Addition of Note 03 in QP as per NPCCIL Comments dtd 03.08.2021 k) Changes done in GENERAL Notes as per NPCCIL Comments dtd 03.08.2021 l) Changes done in GENERAL Notes as per NPCCIL Comments dtd 23.08.2021 m) SPECIFICATION OF MOTOR changed to IEC 60034 from IS325 in clause 1.3	04 (QP pages)	REV 04 DATE: 12.11.2021	Himanshu	RAMJI	Rishab

MANUFACTURER/ SUB-CONTRACTOR SEAL & SIGNATURE WITH DATE	LEGEND 1. NPCCIL 2. PACKAGE/MAIN CONTRACTOR 3. MANUFACTURER/SUB-CONTRACTOR/SUB-VENDOR 4. NOMINATED INSPECTION AGENCY/APPROVED LAB M: MANUFACTURER / SUBCONTRACTOR B: BHFL / NOM. INSPECTION AGENCY H: HOLD POINT; "P" PERFORM "W" WITNESS AND "R" REVIEW AS APPROPRIATE MA-MAJOR, CR-CRITICAL	SEAL & SIGN OF MAIN / PACKAGE EPC CONTRACTOR	NPCCIL	  12/11/2021
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NPCCIL

SUB VENDOR/SUB CONTRACTOR/
MANUFACTURERS NAME & ADDRESS

QUALITY ASSURANCE PLAN

Page 3 of 6
PROJECT : RAPP 7&8

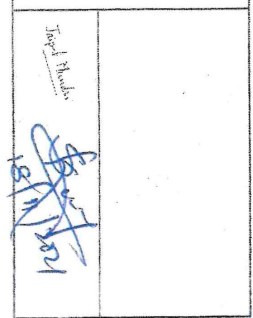
VENDOR'S NAME :
DUSTECH ENGINEERS PVT LTD
7B, 13/3 MATHURA ROAD,
FARIDABAD, HARYANA
E-MAIL : dustech@rediffmail.com

ITEM
QAP No., REV. No.

VAPOUR EXHAUSTER
NPCCIL/RAPP 7&8/41230/VP/306
04
12.11.21

NAME OF THE PACKAGE:
VAPOUR EXHAUSTER
PO NO.- B7V1362
SUB PO NO.- B7V1362/01

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTU M OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	SIGNATU RE OF AGENCY	REMARKS					
1.0	Raw Material								P	W	R	H	3	2	1	
1.1	Casing, Impeller blades & Base frame/plate, sleeve, O-ring	Chemical & Mechanical Properties & Size	Major	Test & Measurement	100%	BHEL Appd Drawing & BHEL Approved tech-spec. & Data sheet	BHEL Appd Drawing & BHEL Approved tech-spec. & Data sheet	LAB TEST REPORT	3	2	1	-				Note : Chem & Mech tests shall be carried out at independent lab on the samples identified by BHEL & shall be witnessed by BHEL
1.2	Nuts & Bolts	Trade Mark & Property Class	Major	Visual	100%	IS1367	BHEL Appd Drg.	MTC	3	-	2,	1				Note 3
1.3	AC Induction Motor	Routing & Type Tests Certificate Including Degree of Protection & Explosion Proofness	Major	Review	100%	IEC 60034 / IEC60079-1 / BHEL approved drg	IEC 60034 / IEC60079-1 / BHEL approved drg	Test Certificate	3	-	2,	1				
2.0	In-process Inspection															
2.1	All Welds	Quality of Welds	Major	DPT	100%	NPCCIL Approved Procedure BHEL appd. Dwg.	NPCCIL Approved Procedure Ordering Dwg.	INTERNAL REPORT	3	2	2,	1				
2.2	Impeller	Dimensions	Major	Measurement	100%			Internal Report	3	2	1	-				

LEGEND		SEAL & SIGN OF MAIN / PACKAGE EPC CONTRACTOR	
1. NPCCIL	2. PACKAGE/MAIN CONTRACTOR	<p>NPCCIL</p> 	
3. MANUFACTURER/SUB-CONTRACTOR/SUB-VENDOR	4. NOMINATED INSPECTION AGENCY/APPROVED LAB		
M: MANUFACTURER./SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY	H: HOLD POINT; "P" PERFORM "W" WITNESS AND "R" REVIEW AS APPROPRIATE		
MA-MAJOR, CR-CRITICAL			

NPICL

QUALITY ASSURANCE PLAN

Page 4 of 6
PROJECT : RAPP 7&8

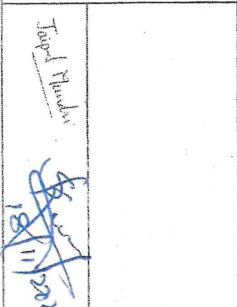
SUB VENDOR/SUB CONTRACTOR/
MANUFACTURERS NAME & ADDRESS
VENDOR'S NAME :
DUSTECH ENGINEERS PVT LTD
7B, 13/3 MATHURA ROAD,
FARIDABAD, HARYANA
E-MAIL : dustech@rediffmail.com

ITEM
VAPOUR EXHAUSTER
QAP No., REV. No.
NPICL/RAPP 7&8/41230/VP/306
04
DATE
12.11.21

NAME OF THE PACKAGE:
VAPOUR EXHAUSTER
PO NO.- B7V1362
SUB PO NO.- B7V1362/01

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY					SIGNATURE OF AGENCY	REMARKS	
									10	11	12	13	14			
1.			Major	Measurement	100%	ISO 1940	ISO 1940/Gr6.3	Internal Report	P	W	R	H	3	2	1	
2.3	Assembly of Fan	Dynamic Balancing Internal Clearance Between Impeller & casing	Major	Measurement	100%	BHEL appd. Dwg.	BHEL appd. Dwg.	Internal Report	3	2	1	-				
3.0	Final Inspection															
3.1	Complete Assembly	Over all Dimensions	Major	Measurement	100%	BHEL appd. Dwg. & Tech. spec/ Datasheet	BHEL appd. Dwg. & Tech. spec/ Datasheet	Inspection Report	3	2	1	-				
3.2		Performance (including Air Delivery, Pressure & Power Consumption)	Major	Performance	100%	IS 4894	IS 4894/ BHEL appd. Dwg.	Test certificate & Performance curve	3	2	1	-				
3.3		Fan Speed smooth Running & Direction of Rotation	Major	Visual	100%	Ordering Spec.	BHEL Approved Tech Spec. / BHEL appd. Dwg.	Inspection Report	3	2	1	-				

LEGEND
 1. NPICL
 2. PACKAGE/MAIN CONTRACTOR
 3. MANUFACTURER/SUB-CONTRACTOR/SUB-VENDOR
 4. NOMINATED INSPECTION AGENCY/APPROVED LAB
 M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY
 H: HOLD POINT; "p" PERFORM "W" WITNESS AND "R" REVIEW AS APPROPRIATE
 MA-MAJOR, CR-CRITICAL

SEAL & SIGN OF MAIN / PACKAGE EPC CONTRACTOR
 NPICL


NPCCIL

SUB VENDOR/SUB CONTRACTOR/
MANUFACTURERS NAME & ADDRESS

QUALITY ASSURANCE PLAN


Page 5 of 6
PROJECT : RAPP 788

VENDOR'S NAME :
DUSTECH ENGINEERS PVT LTD
7B, 13/3 MATHURA ROAD,
FARIDABAD, HARYANA
E-MAIL : dustech@rediffmail.com

ITEM
QAP No., REV. No.
VAPOUR EXHAUSTER
NPCCIL/RAPP 788/41230/NP/306
04
DATE 12.11.21

NAME OF THE PACKAGE:
VAPOUR EXHAUSTER
PO NO. - B7V1362
SUB PO NO. - B7V1362/01

Sr. No.	COMPONENT / OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTU M OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									10	11	12	
3.4	Noise Level	Major	Measurement	100%	IS 12065	BHEL appd. Dwg. & Spec	Inspection Report	3	2	1		
3.5	Vibration	Major	Measurement	100%	IS12075	BHEL appd. Datasheet & Spec	Inspection Report	3	2	1		
3.6	Condition of oil seals	Major	Visual	100%	BHEL approved Tech. Spec.	BHEL approved Tech. Spec.	Inspection Report	3	2	1		motor being of small size, grease nipple not provided by mfg.
3.7	Appearance including Paint thickness (DFT)	Major	Visual & Measurement	100%	BHEL Approved Tech. Spec.	BHEL Approved Tech. Spec.	Inspection Report	3	-	2	1	
3.8	Compliance of Technical Requirements	Major	-----	100%	BHEL Approved Tech. Spec.	Ordering Spec. BHEL appd. Dwg.	COC	3	-	2	1	
3.9	Completion of Documents	Major	Physical	100%	Ordering Spec. / BHEL appd. Dwg. / QP / PO	Documents	Documents	3	-	2	1	
4.0	Packing	Major	Physical	100%	Ordering Spec. / Vendor's std.	Ordering Spec. / Vendor's Std.	Internal Reports	3	-	2	-	
4.1	Soundness of Packing Against Transit Damage	Major	Physical	100%	Ordering Spec. / Vendor's std.	Ordering Spec. / Vendor's Std.	Internal Reports	3	-	2	-	
5.0	Shipping Release	Major	Record	NA	NA	NA	IRN	2	-	1	1	
5.1	BHEL SR	Major	Record	NA	NA	NA	SRM	1	-	-	-	
5.2	NPCCIL SR	Major	Record	NA	NA	NA	SRM	1	-	-	-	

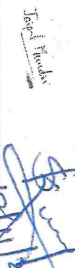
MANUFACTURER/ SUB-CONTRACTOR SEAL & SIGNATURE WITH DATE	LEGEND 1. NPCCIL 2. PACKAGE/MAIN CONTRACTOR 3. MANUFACTURER/SUB-CONTRACTOR/SUB-VENDOR 4. NOMINATED INSPECTION AGENCY/APPROVED LAB M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY H: HOLD POINT, "P" PERFORM "W" WITNESS AND "R" REVIEW AS APPROPRIATE MA-MAJOR, CR-CRITICAL	SEAL & SIGN OF MAIN / PACKAGE EPC CONTRACTOR	NPCCIL	 Inspector 12/11/2021

NPCL		QUALITY ASSURANCE PLAN		Page 6 of 6
SUB VENDOR/SUB CONTRACTOR/ MANUFACTURERS NAME & ADDRESS		VAPOUR EXHAUSTER		PROJECT : RAPP 7&8
VENDOR'S NAME : DUSTECH ENGINEERS PVT LTD 7B, 13/3 MATHURA ROAD, FARIDABAD, HARYANA E-MAIL : dustech@rediffmail.com		ITEM	NAME OF THE PACKAGE: VAPOUR EXHAUSTER	PO NO. - B7V1362
		QAP No., REV. No.	NPCL/RAPP 7&8/41230/VP/306 04	SUB PO NO. - B7V1362/01
		DATE	12.11.21	

GENERAL NOTES

1. Stage wise inspection documents shall be conducted /completed with signature of all inspection agencies including NPCL-QS before taking up and presenting for next stage of inspection.
2. All requirements of PO, Tender, Tech Specification are incorporated in the QAP
3. Co-related material test certificate is acceptable. In case of non-availability of co-related material test certificate, sample per lot (lot means, all material having same heat mark/material specification, requirement constitute the lot) for Chemical and physical test shall be carried out in NABL accredited labs acceptable to NPCL and shall submit all material verification reports and test reports to NPCL Q.S. for checking/verification and clearance. Sample selection by NPCL QA shall be done for QA1 & QA2 quality categories for other as indicated in tender spec/ QAP.
4. H-Hold point: Witness is mandatory before proceeding the further activities. This activity shall be kept under hold till inspection clearance or written waiver is obtained from the agency responsible for this stage (NPCL QS /its authorized representative). W-Witness Point: Witness points are critical steps in manufacturing and examination/inspection/testing. Where the supplier is obliged to notify in sufficient advance of the start of the operation / test so that it may be witnessed. In case the test results are not in line with TC submitted/material specification the cost will have to be borne by the package/main contractor.
5. Welding Procedure and welder performance qualification shall be witnessed by Main/Package contractor QS and report along with test results shall be submitted to NPCL, QS for review.
6. All test reports, test certificates and inspection reports shall be reviewed by Manufacturer before submitting the same for verification by Purchaser.
7. Chemical and mechanical tests on the material shall be performed in the NABL accredited laboratories acceptable to NPCL.
8. Calibrated instruments shall be used during inspection, examination and testing.
9. NPCL approved chemicals for liquid penetrant examination shall be used.
10. Non-destructive examinations & evaluation shall be carried by personnel qualified to Level-II of ISNT or ASNT.
11. Electrodes/ Filler wire shall be of brand approved by NPCL. Batch testing of electrodes is required if specified in the applicable specification.

Any deviation to this QAP shall be brought out by vendor in his offer failing which this QAP shall be complied fully.

MANUFACTURER/ SUB-CONTRACTOR SEAL & SIGNATURE WITH DATE	LEGEND 1. NPCL 2. PACKAGE/MAIN CONTRACTOR 3. MANUFACTURER/SUB-CONTRACTOR/SUB-VENDOR 4. NOMINATED INSPECTION AGENCY/APPROVED LAB M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY H: HOLD POINT; "P" PERFORM "W" WITNESS AND "R" REVIEW AS APPROPRIATE MA-MAJOR, CR-CRITICAL	SEAL & SIGN OF MAIN / PACKAGE EPC CONTRACTOR	NPCL	
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