



# BHARAT HEAVY ELECTRICALS LIMITED

( A Government of India Undertaking )  
HIGH PRESSURE BOILER PLANT  
PURCHASE DEPARTMENT - FOSSIL BOILERS  
THIRUCHIRAPALLI - 620014  
TAMILNADU (INDIA)

Page  
1/2  
PHONE :2575731  
GRAMS : BHARATELEC  
FAX NO: 2520719  
E-mail: akumar@bheltry.co.in  
Web:

Enquiry No	Enquiry Date	Due Date for Quotation
2611600082 - 29	07.07.2016	05.08.2016
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. <b>Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date &amp; Enq. Due date must be written on all three covers.</b>		

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	54233171DNP EQNiCr3 Inconel Strip size 60X0.5 mm Batch testing at vendor's works as per BHEL spec WCPS 805 rev 05. The para 3.6 of WCPS shall be read as "The base material for the batch testing shall be given by BHEL free of cost."	KG	2000.000	2,000.00	30.11.16
20	54253100DNP Flux for inconel strip Batch testing at vendor's works as per BHEL spec WCPS 805 rev 05. The para 3.6 of WCPS shall be read as "The base material for the batch testing shall be given by BHEL free of cost."	KG	2000.000	2,000.00	30.11.16

### General Note:

The Enquiry is governed by terms and conditions as mentioned in Annexure-A and no modifications / alterations are allowed in any case. If any modification / alteration is proposed or any other condition advanced by the bidder, it shall be ignored and the bidder will be bound by the terms of Enquiry notwithstanding any modification / alteration etc. proposed by them.

### Annexures :

- WCPS 805 Rev 05
- Annexure A : TERMS AND CONDITIONS OF THE ENQUIRY
- Annexure B : BHEL COMMERCIAL TERMS AND CONDITIONS
- Annexure C : PRICE BID FORMAT
- Annexure D : REQUIREMENTS OF TEST CERTIFICATE


All the tenders may be addressed to the following address:

**The Tender Opening Cell / MM  
Room No: 26, Building 24, Ground Floor  
Bharat Heavy Electricals Limited  
TIRUCHIRAPALLI 620014**

In case personal delivery of the offer, it shall be dropped into the respective box kept in Room No: 26, after

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

  
MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,



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2611600082 / 07.07.2016

23505

duly entering the data in the system.

Offers will be accepted only up to 14.00 Hrs on the due date. Therefore, vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from vendors will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid submission of offers through e mail / fax. In case of any unavoidable situation, offers shall be sent through e mail to the following mail ID only tender\_cell@bheltry.co.in.

As tenders are being opened by Common Tender Opening Cell, offer covers should be sealed with tenderer's distinctive seal and super scribed with correct Tender No. item of supply and due date of opening.

The offers will be opened at 14.30 hrs on the due date of the tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

The bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

The supplier shall submit EI/EII forms to BHEL time to time as indicated by the BHEL and in case of inordinate delay in issuing EI/EII forms, then BHEL reserves the right to deduct 5% of the value of the supplied items against which EI/EII forms pending to be issued

Enclosures:

"LD clause has to be confirmed without fail."

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Yours faithfully,  
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE  
(FOSSIL BOILERS)  
Yours faithfully,



**BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPPALLI-620 014**

**WCPS - 805**

**WELDING CONSUMABLE PROCUREMENT SPECIFICATION FOR INCONEL  
STRIP ELECTRODE & FLUX FOR CLADDING**

**WCPS 805**

Rev. No.	00	01	02	03	04	05
Prepared By MW/ATP/BHEL	SIGNED	SIGNED	SIGNED	SIGNED	SIGNED	<i>P. K. S. Kumar</i> 23.04.2016
Reviewed By QA/BHEL	-	-	-	-	-	<i>[Signature]</i> 23/04/16.
Approved By MW/ATP (BHEL)	SIGNED	SIGNED	SIGNED	SIGNED	SIGNED	<i>[Signature]</i> 23/04/16.
Approved By (CUSTOMER)	SIGNED	SIGNED	SIGNED	SIGNED	SIGNED	<i>M/S</i> 26/4/16 (M. R. S. Saxon)

## 1. SCOPE

- 1.1. This specification prescribes the requirements for Inconel strip electrode and suitable flux for cladding by submerged arc welding process.

## 2. QUALIFYING CRITERIA

- 2.1. Offers from such vendors only will be considered who have supplied the Inconel Strip and Flux in the past 10 year period. The reference list of customers to whom the earlier supply were made along with details (Name/Phone number/mail) of the contact person for cross reference by BHEL, shall be attached with the offer.
- 2.2. Test certificate of the supplied lot shall be enclosed with the offer. The test certificate should contain chemical analysis & mechanical properties for the above electrode & flux combination. Offers without such a test certificate will not be considered.
- 2.3. The vendor shall agree to the requirements of this document. Any deviation from the requirements shall be clearly mentioned in the offer. Acceptance of any such deviation is subject to approval by BHEL's customer.
- 2.4. Notwithstanding the qualifying criteria, purchaser shall be allowed to visit the vendor's manufacturing and testing centre for further evaluation, if required.

## 3. GENERAL REQUIREMENTS

- 3.1. The Strips shall, in general, be classified according to the EQNiCr-3 classification of SFA 5.14 specification of ASME Section II Part C - latest edition. However, wherever this document, i.e. WCPS 805 rev 05, is found to be in variance with the aforementioned classification, the requirements of WCPS shall take precedence over those of Code.
- 3.2. The total quantity delivered shall be in the least possible number of lots. The consumable shall be lot tested at supplier's works. Level of testing shall be as per Schedule K of SFA 5.01 of ASME Sec II Part C – latest edition. Entire testing shall be done for every lot of consumable. All testing shall be done at a Lab certified by ISO/IEC 17025.
- 3.3. Vendor shall submit Certified Material Test Report (CMTR), duly attested by TPI (see Clause 3.4 below), along with all relevant test reports to BHEL and only on approval by BHEL, the item shall be dispatched. The CMTR shall be as per Type 3.2 of BS EN 10204.
- 3.4. The supplies made by foreign vendors shall be inspected and certified by a Third Party Inspection (TPI) agency. The TPI shall be engaged by the vendor on BHEL's behalf. The TPI shall be one of the following three agencies only: TUV Nord, BVQ, SGS. For supply source within India, the inspection shall be carried out by NPCIL and BHEL.
- 3.5. The manufacture and testing of consumable including various stages of manufacture viz. raw material inspection, plate material, test weld assy. preparation, NDE examination, HT and mechanical, metallurgical testing shall be carried out as per the Quality Assurance Plan given in Annexure I.
- 3.6. The base material for the batch testing shall be arranged by the vendor. The cost for arranging the base material in such case shall be indicated separately in the offer. In the event that vendor is unable to arrange the plates, the same shall be provided by BHEL free of cost. Accordingly, vendor is advised to quote keeping the offer exclusive of base material cost.

## 4. STRIP ELECTRODE

- 4.1. The chemical composition of the strip electrode shall in general conform to EQNiCr-3 of ASME Sec IIC, SFA 5.14 with the following restrictions:

C	0.025% max.	Co	0.03 % max
Cr	19.5% min	Co + Ta	0.08% max
Nb	2.5% min	N	To be reported
Si	0.2% max	Al	To be reported

Ti	0.4% max	Fe	1.0% max
P	0.015% max		

Note: Since it is contemplated to use this strip in conjunction with an all mineral type agglomerated flux, it is suggested that all necessary care be taken to maintain the minimum essential levels of intentionally added alloys like Cr & Nb and restrict to the extent possible the maximum levels of permitted impurities like Si, Ti & Fe.

#### 4.2. FINISH AND TEMPER

- 4.2.1. The electrode shall have a smooth finish, free from slivers, depressions, seams, laps, scratches, scale or other foreign matter that would adversely affect the welding characteristics, the operation of the welding equipment, or the properties of the deposited weld metal.
- 4.2.2. Electrodes shall be suitable for uniform uninterrupted feeding on automatic or semi-automatic welding equipment.

#### 4.3. WINDING REQUIREMENTS

- 4.3.1. Liners used in coils with support are for the purpose of preventing damage or distortion during normal handling and use of electrodes upon them. Liners shall be of such material and design to accomplish this. Liners shall be sufficiently clean and dry to maintain the cleanliness of the electrode.
- 4.3.2. Each coil shall be of only one heat and be of continuous length of electrode.
- 4.3.3. A spooled electrode shall be closely wound in layers, with or without gap between layers and without kinks, waves, sharp bends, which would interfere with the free feeding of the electrode or easy unwinding of the spool. The free end of the spooled electrode shall be secured and identified to enable easy location.

#### 4.4. COIL SIZE

Inner diameter	300 mm
Width	60 mm
Approx. Weight	25 kg.

#### 5. FLUX

- 5.1. The proposed flux is for use on 20 MnMoNi55 material with strip electrode mentioned in para 4.0. The flux, therefore, shall be suitable for cladding on 20MnMoNi55 material. It shall be capable of making uniform clad deposit. The weld beads shall merge smoothly with each other and base material.
- 5.2. The slag shall be easily removable by normal means and the clad deposit shall be free from slag entrapment, depressions, and cavities.
- 5.3. The flux particle size shall conform to the following and each batch/lot of flux shall be furnished with Mesh size certificate.

<u>Sieve size in mm</u>	<u>% Cumulative weight %</u>
+ 1.5 (1.75)	5 max.
+ 0.5	40 - 70
+ 0.25	≥ 70

#### 6. TEST REQUIREMENTS

A test assembly for cladding shall be prepared meeting the requirements of this specification. Test samples orientation and location shall be as shown in MSTP in Annexure VI. All tests shall be carried out after simulated heat treatment. All test reports shall indicate the Standard followed for the test, acceptance criteria and the actual test results obtained.

Consumable	Size (mm)	Current (Ampere)	Voltage (Volts)	Polarity	*Preheat(°C)
					*Interpass(°C)
EQ NiCr3 Strip & Flux	60*0.5 mm	725±10	28-30	DCRP	150°
					200°

\*Soaking: 280°±20° C X 6 hours  
 During any interruption in welding, soaking shall be done before cooling below the preheat temperature.  
 Note: Stick out of the strip shall be 30 mm.

#### 6.1. TEST WELD ASSEMBLY PREPARATION

A test weld assembly shall be made using the ordered consumable of strip and flux by cladding on base material 20MnMoNi55 or equivalent material of minimum thickness 50 mm & meeting the requirements of para 6.2. The thickness of cladding and the size of base material shall be sufficiently adequate to cover the standard specimen sizes for tests asked for in this specification. Number of weld layers, thickness of clad deposit and the welding parameters employed shall be recorded in the welding data sheet. Weld beads shall be of uniform size, shape and the slag shall be easily detachable. The welding parameters to be used for preparing the cladding test weld assembly shall be as follows.

#### 6.2. REQUIREMENTS OF BASE MATERIAL

The chemical composition of the base metal shall meet the following requirements:

Element	Weight %age	Element	Weight %age
C	0.17-0.23	Sn	0.011 max
Mn	1.2-1.5	As	0.015 max
Si	0.15-0.30	Sb	0.007 max
Mo	0.4-0.55	P	0.010 max
Ni	0.5-0.8	S	0.008 max
Cr	0.2 max	N <sub>2</sub>	0.013
Cu	0.12 max	H <sub>2</sub>	1 ppm max
V	0.02 max	O <sub>2</sub>	20 ppm max
Al(total)	0.01-0.04		

The mechanical properties of the base material shall meet the following requirements:

Property	Limits
Ultimate tensile stress	570-670 N/mm <sup>2</sup>
Yield Stress (0.2%)	430 N/mm <sup>2</sup>
Percentage elongation	18
Percentage reduction in area	45
Charpy V notch impact test	Average of 3 specimens – 41 Joules Lowest single value – 34 Joules
Bend Test	No failure at 4t, 180°
Hardness along length, width & thickness	To be reported

### 6.3. SIMULATED HEAT TREATMENT (SHT)

The test assembly shall be subjected to simulated HT as shown in figure 1.

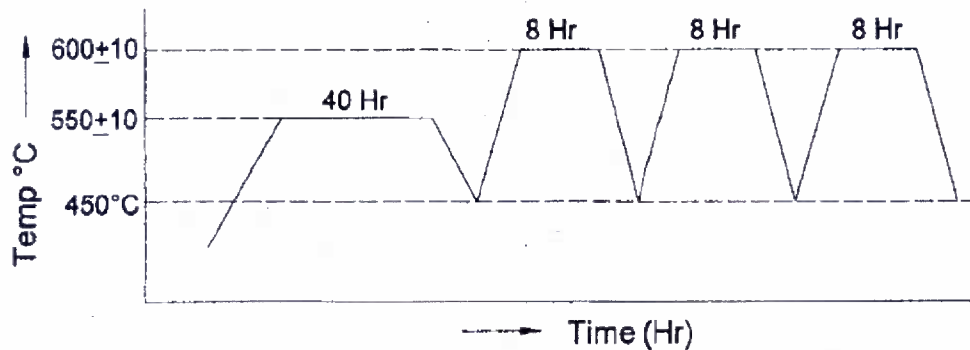


Fig 1: Simulated Heat Treatment

### 6.4. WELD METAL COMPOSITION

The chemical composition of the machined clad deposit at 5mm and 6 mm above the base metal shall meet the requirements given below.

Element	Wt. %	Element	Wt. %
C	0.025% max.	Mn	2.5-3.5
Si	0.50% max.	S	0.015 max.
Nb	2.00 - 2.5%	Ti	0.75 max.
Co	0.03 max.	Cu	0.50 max.
Co+Ta	0.08 max.	Fe	3.0 max.
P	0.015 max.	Mo	2.0 max.
Cr	18.0-22.0	N	To be reported
Ni	67 min.	Al	To be reported

The sum total of all other residual elements including Nitrogen and Aluminium shall not exceed 0.5%. In addition to the above, chemistry analysis shall be done at 1 mm, 2 mm, 3 mm and 4 mm for information, and at least for the following elements: Carbon, Silicon, chromium, nickel & niobium.

### 6.5. NDE EXAMINATION

All required NDE as per Annexures II and III shall be carried out by the trained, qualified and certified NDE personnel as per SNT-TC-1A. NDE reporting shall be done taking care of Annexures IV and V. NDE shall be done both before and after the simulated heat treatment.

### 6.6. MECHANICAL TESTS

The mechanical test as per MSTP in Annexure VI shall be carried out on the undiluted clad metal deposit after subjecting to simulated heat treatment. All mechanical test shall be carried out as per ASME Sec IIC and AWS B4.0.

### 6.6.1. TENSILE TEST

The Inconel cladding undiluted weld metal shall have the following mechanical properties in the simulated heat treated condition.

One transverse strip tensile test per each layer of deposit shall be carried out and the tensile properties shall meet the requirements.

Tensile strength min.	600 N/mm <sup>2</sup>
Yield strength min. (0.2% min)	380 N/mm <sup>2</sup>
% Elongation (5d) min.	30%
% reduction in area	To be reported

### 6.6.2. BEND TEST

Bend test shall be carried out as per MSTP in Annexure VI. Four transverse side bend test specimens of size 10mm thick X 30 mm wide and 300 mm long shall be bent through 180° around a mandrel of 40 mm diameter and shall pass the test. Two transverse face bend specimens of 30 mm X 30 mm cross section and 300 mm long shall be bent through 180° around a mandrel of 120 mm diameter such that the cladding is in tension.

#### 6.6.2.1. Acceptance Criteria for Side Bend Test

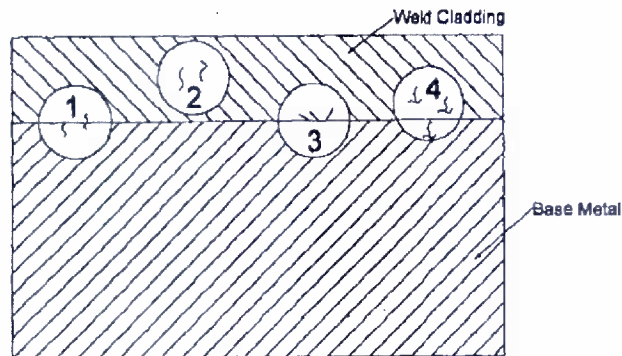


Fig 2: Defects in Side Bend specimen

- Defect Type 1: Cracks extending into the base metal are not acceptable.
- Defect Type 2: Cracks in weld cladding which do not touch the fusion line are not acceptable.
- Defect Type 3: Isolated cracks in the cladding which form at an angle to and start from the fusion line are allowed provided they do not exceed 1.6 mm in length.
- Defect Type 4: Discontinuities which already existed in the unbent condition are not cause for rejection provided these discontinuities do not exceed 1.6 mm in cladding and 3 mm along base metal-weld interface.

#### 6.6.2.2. Acceptance Criteria for Face Bend Test

The bend sample when evaluated with an unaided eye, shall be free from any opening/ fissure that are attributed to welding. Openings due to pre-existing acceptable defects like slag, gas pores shall be carefully examined and analysed. Openings attributable to discontinuities which existed before the specimen was bent are not cause for rejection provided these discontinuities do not exceed 1.6 mm.

6.7. MACRO and MICRO EXAMINATION

A section, transverse to the welding direction shall be examined for macro and microstructure at suitable magnification. The examination shall be as per ASTM E340-15 and E 407-07 for macro and micro examination respectively, and shall cover all typical location of the cladding, interface overlap of beads and layers, heat affected zones and base metal.

The specimen shall be free of cracks. Isolated small pores and slag inclusion shall not be cause of rejection. Systematic defects are unacceptable.

6.8. HARDNESS TEST

Hardness shall be measure on the specimen used for metallographic examination, by Vickers pyramid method using 1 kg load. The hardness check shall cover transition, overlap of beads & layers, heat affected zone of base material and typical cladding.

Approximately 15 indentations space at 0.5mm, apart shall be taken in interface region (oblique line) and indentations spaced approximately at 1 mm shall be taken in base material & overlay sections, as shown below.

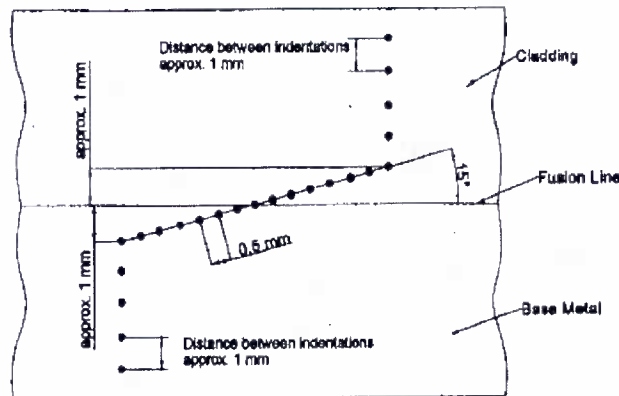


Fig 3: Hardness test

6.9. HOT CRACK TEST

Resistance to hot crack shall be checked by depositing a sequence of cross welded stringer beads on the cladding *after* simulated heat treatment.

The beads shall be approximately 25mm spaced, and shall be both along and transverse to the welding direction. The bead shall be deposited using the available size of coated Inconel electrodes and a single fusion pass using GTAW process, as shown in figure 4. The welding parameter shall be same as used in the cladding of the components. No preheat shall be applied for this welding.

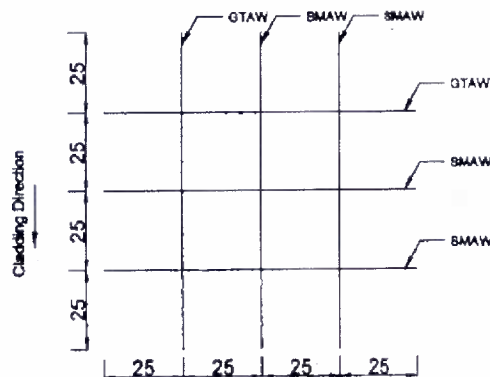


Fig 4: Hot crack test

After grinding to the cladding surface the weld shall be examined by Liquid penetrant examination as per approved procedure. The cladding shall be further ground in steps each of 0.5mm such that the underlying layer is reached. Every step shall be subjected to penetrant examination.

The acceptability conditions are given below.

- Round indications shall show no material separation visible to unaided eye.
- Linear indications shall not be longer than 2mm.
- The spacing between indications shall not be less than 50 mm.
- There shall not be more than 5 indications in an area of 100 cm<sup>2</sup>.
- The arrangement of indications shall not indicate systematic nature.
- Metallographic investigations of the indications specified further shall be satisfactory.

Metallographic investigations shall be performed in all cases where there is reason to suspect the presence of cracks or the presence of systematic defects. Particular attention shall be paid to possible discontinuities in the heat affected zone of the stringer beads within the underlying cladding.

#### **7. PACKAGING AND STORAGE**

- 7.1. The coils shall be wrapped and sealed with polythene paper or any other moisture proof packing. Each of such packs shall be contained in cardboard boxes, several such boxes being crated in sea worthy wooden cases. The electrodes shall be suitably packaged to insure against injuries during shipment or storage under normal conditions.
- 7.2. An identification tag shall be attached to each coil in addition to the label put on every spool and cardboard box.
- 7.3. Flux shall be suitably packaged in a water tight packaging to insure against damage during shipment or storage under tropical conditions.
- 7.4. A flux in the original unopened package shall withstand storage under tropical conditions for at least four years without such storage affecting its welding characteristics or the weld properties.

#### **8. MARKING**

- 8.1. The following information shall be legibly marked on each spool and drum package:
    - Classification and specification number.
    - Supplier's name and trade designation.
    - Electrode size and net weight.
    - Lot, control or heat number.
    - Date of manufacture.
-

## Annexure I - QUALITY ASSURANCE PLAN (QAP) for cladding

Sl No.	Description	Type of check	Ref. document	Inspection/ Test by Vendor	Inspection agency	Format of record
1.	Strip size	Dimension & surface finish	SFA 5.14	RR	RR	Inspection report
2.	Strip	Chemical analysis for each melt	WCPS 805/ 05 & SFA 5.14	HP	HP	Test report
3	Flux	Dry mix chemical analysis for each lot & control	Vendor doc.	HP	RR	-
	Flux	Particle size	WCPS 805/05	HP	RR	Inspection Report
4.	Test plate material Spec,size-20MnMoNi 55 or equivalent	Chemical & mechanical properties	WCPS 805/ 05	RR	HP	Test Report
5.		Welding parameters, weld thickness	WCPS 805/05 & SFA 5.14	WP	WP	Welding data sheet
6.	Test assy. Welding	Bead uniformity for size & shape Slag release characteristics	WCPS 805/ 05	WP	RR	Welding data sheet

Sl.No.	Description	Type of check	Ref. document	Inspection/ Test by Vendor	Inspection agency	Format of record
7	NDE before SHT	LPI on cladding UT on Cladding	WCPS 805/ 05	WP	WP	NDE report
8	Simulated Heat Treatment (SHT)	No. of cycles, Rate of Heating / Cooling, Soaking temp. & Time	WCPS 805/ 05	WP	Witness SHT start & end; Review of HT Chart	HT chart
9	NDE after SHT	LPI on cladding UT on Cladding	WCPS 805/ 05	WP	WP	NDE report
10	Cladding	Chemical analysis	WCPS 805/ 05, SFA 5.14	WP	WP	Test report
11	Mechanical tests	Tr. Strip tensile , face bend, transverse side bend, macro, micro, hardness test for each lot	WCPS 805/ 05, SFA 5.14 , AWS B4.0	WP	HP	Test report
12	Hot crack test	Sensitivity to hot cracking	WCPS 805/05	WP	WP	Test report
13	Strip, flux packing & shipping	Packing, identification	WCPS 805/ 05, SFA 5.14	HP	HP	Test certificate

RR- Review of reports / Records, WP- Witnessing of activity, HP- Hold point

Annexure II

Ultrasonic Examination of Cladding

1.0 Scope

1.1 This specification provides the technical requirements for the straight beam and angle beam ultrasonic examination of weld deposited cladding.

1.2 This specification is intended to detect defects parallel to surface and also perpendicular to surface.

2.0 Time of Examination

The final acceptance examination shall be carried out after the cladding has been subjected to heat treatment.

3.0 Surface Condition

The surface of the cladding shall be plane, free of notches and machined to a finish to ensure acoustical contact of the search unit. Waviness of surface shall be such that distance between surface and probe does not exceed 0.5 mm.

4.0 Scanning zones

Scanning shall be done over 100% of the surface with at least 10% overlap.

5.0 Examination

5.1 Equipment

5.1.1 Pulse Echo type of equipment generating frequencies over the range of 1 to 5 MHz shall be used.

5.1.2 Equipment calibration procedure shall be submitted by the manufacturer for approval by the purchaser.

5.1.3 The equipment shall have proven accuracy and stability.

5.2 Search Units

The transducer dimensions shall not exceed 12 mm x 25 mm. Transmitter receiver probes (SE probes) of test frequency 2 to 4 MHz shall be used for straight beam examination.

Angle beam search units type SEL MHz "System BAM" or equivalent shall be used for angle beam examination.

The use of the search units requires Purchaser's approval. The search units shall have their maximum sensitivity at the clad/base metal interface.

### 5.3 Calibration

The adjustment of the pulse energy and gain shall be carried out using a standard calibration block. The calibration block shall be made by cladding on a similar base material as that of test assembly overlaid with the same technique as on the test assembly. A flat bottom hole 1.5 mm in diameter by 38 mm minimum depth shall be drilled into the block at the clad interface as shown in sketch I for straight beam cladding. For angle beam cladding, 2 mm FBH is used as shown in sketch II. The probe shall be placed over the cladded surface and directed towards the hole. The settings of the unit shall be adjusted so that the amplification of the peak is 80% of the screen height.

5.4 Calibration of the equipment shall be done at every half an hour of the testing. When significant deviations occur, all areas which are examined after the last calibration control shall be reexamined.

5.5 After calibration of the equipment as above, the component shall be examined. Contact method and manual scanning shall be used.

5.6 The couplant (glycerin or SAE 30 or equivalent) shall not have halogens and sulphur exceeding 25 ppm each. The same couplant shall be used for calibration and examination.

5.7 The maximum speed of testing shall be 150 mm/sec.

5.8 As far as possible, scanning shall be done at twice the amplitude setting of the calibration of defect standard.

### 6.0 Recording and acceptance criteria

6.1 All indications having an amplitude equal to or greater than 50% of the reference level shall be recorded. If the signal: noise ratio is less than 6DB, this is to be recorded and further activities have to be agreed upon.

6.2 All indications with a signal amplitude equal to or greater than the reference level are unacceptable.

6.3 For straight beam scanning, 30 recordable indications with a maximum continuous length of 10 mm subject to a total length of 250 mm/meter length of the scanned area are acceptable.

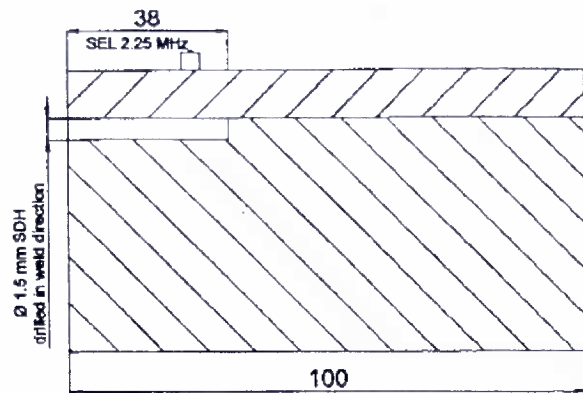
6.4 Whenever the indications are interpreted as cracks they are unacceptable regardless of the length and amplitude.

### 7.0 Final Cleaning

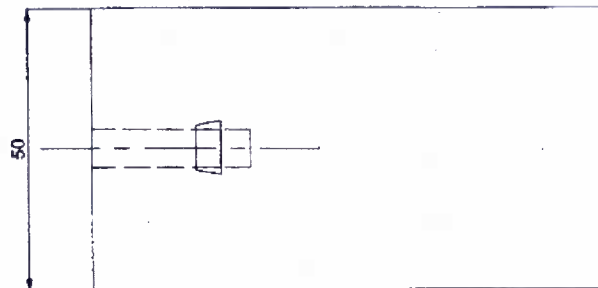
After the examination is over, the couplant shall be thoroughly cleaned and removed from the surface.

### 8.0 Report

Final report describing the details of the technique adopted together with the analysis of results shall be submitted by the manufacturer.

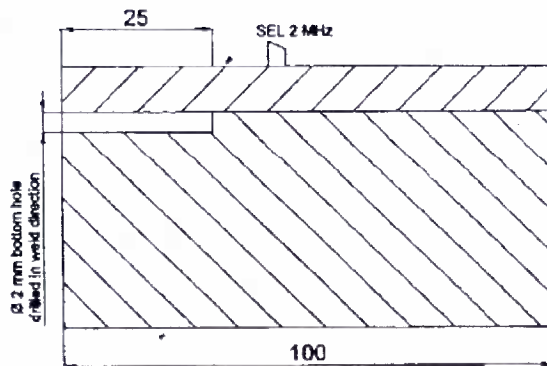


CALIBRATION BLOCK

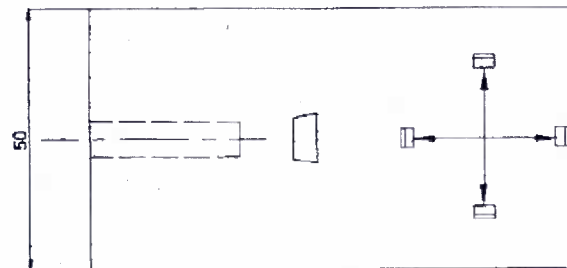


ULTRASONIC STRAIGHT BEAM EXAMINATION OF WELD DEPOSITED CLADDING

Sketch I



CALIBRATION BLOCK



ULTRASONIC ANGLE BEAM EXAMINATION OF WELD DEPOSITED CLADDING

Sketch II

Annexure III  
Liquid Penetrant Examination of Cladding

1. Scope

- 1.1. This specification covers procedure for liquid penetrant examination of cladding deposited with Inconel consumable.

2. Surface Condition

The surfaces to be examined shall be free from dirt, lint, grease, scales, weld spatters, welding flux, oil and other extraneous matters that can interfere with the examination. The surface finish for machined surface shall be better than 6.3 microns.

3. General remarks

Liquid penetrant examination shall be carried out using approved penetrants, cleaners and developers. Suitability of the employed media, if not already established, shall be determined using ASME Comparator Block. Medium used for Liquid Penetrant Examination shall not contain halogen and sulphur more than 25 ppm each.

4. Procedure

4.1. Application of Penetrant

Penetrant shall be applied by means of brushing or spraying. In case, compressed air type apparatus is used for spraying the penetrant, filters shall be placed on the upstream side near the air inlet to preclude contamination of the penetrant by oil, water or dirt sediments that may have collected in the lines. The entire surface shall be covered by the penetrant.

4.2. Penetration Time and Temperature

Duration of penetration and test temperature shall be in accordance with ASTM E165. Sufficient penetrant shall be applied during the period of the test to prevent drying of penetrant upon the surface.

4.3. Cleaning of the test surface

When chemical solvent is being used as the cleaner, care should be taken to ensure that the penetrant is not removed from the flaws. When the cleaner is water, the pressure of the jet should be kept low (not exceeding 3.5 kg/cm<sup>2</sup>, and temperature below 43°C).

4.4. Application of the Developer

The developer shall be applied with spray nozzle of a spray gun. The developer shall be sprayed on the entire test surface in such a way that a uniform thin layer is deposited.

4.5. Cleaning of the tested object

All the residual media of the liquid penetrant test shall be removed before subsequent welding operation.

5. Interpretation of Test results

When using the Liquid Penetrant Inspection, the interpretation shall be restricted to, citing the absence or presence of flaws, their general nature, magnitude and location. Evaluation of the Inconel cladding shall be performed after following durations.

- a. First time after drying of developer.
- b. After ½ hour
- c. After 1 hour
- d. After 3 hours
- e. After 4 hours

All results shall be recorded.

#### 6. Acceptance Standards

- 6.1. All indications shall be examined in terms of the acceptance standards of the referencing "Examination and Testing Specification".
- 6.2. Broad areas of pigmentation which could mask indications of discontinuities are unacceptable and the areas should be cleaned and re-examined.

#### 7. Procedure Qualification

Before application of the procedure, the supplier shall demonstrate that the procedure strictly conforms to the stipulation laid down in the preceding paragraphs.

#### 8. Personnel Qualification

The examination shall be performed and the results evaluated by qualified personnel only. The personnel shall be qualified to comparable levels of competency by subjection to examination on the particular method adopted.

#### 9. Report

Final report, describing the details of the technique adopted together with the analysis of the results shall be submitted by the vendor.

**Annexure IV**  
**LIQUID PENETRANT EXAMINATION REPORT**

<b>S No</b>	<b>Description</b>	<b>Remarks</b>
1	Certificate No. & Date	
2	Purchase Order No. & Date	
3	Customer Name	
4	Procedure reference	
5	Description of test piece	
6	Identification of test piece	
7	Material specification	
8	Description of filler metal	Specification & Brand
9	Stage of test	Before SHT/ After SHT
10	Surface condition	
11	Details of chemical used	
12	Dwell time of penetrant	
13	Dwell time of developer	
14	NDE operator level	
15	Test results	
16	Approved by - NDE level	

**Annexure V – ULTRASONIC EXAMINATION REPORT**

S No	Description	Remarks				
1	Certificate No. & Date					
2	Work Order No.					
3	Purchase Order No.					
4	Customer Name					
5	Description of test piece					
6	Material specification					
7	Welding filler metal specification					
8	Stage of testing					
9	Ultrasonic Test Method					
10	Details of the Equipment					
Item No.	Component	Drg. No./Size (in mm)	Qty.	Job Sl. No.	Group No.	Material Specification
	Surface Condition			Type of Couplant used & Brand Name		
	Search Unit(including Sl. No.)			Scanning		
	Search Unit Size			Range (mm) of CRT		
	Frequency			Pulse Energy		
	Ultrasonic Test Standard			Amplitude		
	Acceptance Standard			Suppression		
	Applicable Procedure, Specification with Rev. No.			Type of Cable and length		
	Identification of Calibration Block			Operator Name		
	Examination Conducted Surface			NDE Qlfn LEVEL		
11	Attenuator Setting					
11a.	Attenuator Reference Standard:					
11b.	Attenuator Testing Sensitivity:					
12	Test Result					
13	Operator Name & level					
14	Approver Name & level					
15	Inspection agency remark					



**TEST SPECIFICATION  
WCPS 805**

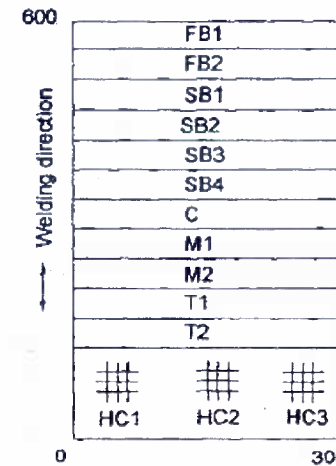
**Annexure VI - MATERIAL SAMPLING AND TESTING PLAN**

**MSTP NO: MSTP:1:805**

**Consumable Qualification for Covered Inconel Strip and flux for Cladding**

Sl. no.	Specimen details			Position	Identification
	Description	Size w x t	Length		
1.	Face Bend	30x30	280	Tr	FB1-2
2.	Side Bend	10x30	300	Tr	SB1-4
3.	Chemical	30x30	300	Tr	CH1
4.	Micro	10x30	100	Tr	M1
5.	Macro	10x30	100	Tr	M2
6.	Hardness	10x30	100	Tr	M1
7.	Strip Tensile	19x3	300	Tr	T1-2
8.	Hot Crack Test	100xT	100	Tr	HC1-3

Base Material designation and Size are as per WCPS:804  
(Size of Plate to be cladded =50T x 300W x 600L)



**Note:**

- 1) Bend diameter 4t for 180°. For Side bend, two specimens the bead overlap in the first layer and for two others specimens the bead overlap in the second layer will be at the point of maximum bending. For Face bend, bead overlap shall be at the point of maximum bending
- 2) Micro: 100 X magnification with photograph. Macro: 10X with photograph.
- 3) HV-1kg load (Refer clause: 9.4 of WCPS).
- 4) Tensile: Two transverse strip tensile specimens covering the top and bottom regions of the cladding.

TERMS AND CONDITIONS OF THE ENQUIRY

**Bidders are requested to read the following points / guidelines / instructions and ensure that the offer is prepared and submitted strictly as per the requirements. Offers with insufficient details would not be considered for evaluation.**

**(A) SCOPE OF SUPPLY :**

- Supply shall be made strictly as per the technical specifications mentioned in the Enquiry and Pre-Qualification criteria.

**(B) PRE BID MEETING :**

- A pre bid meeting will be conducted at 21<sup>st</sup> July 2016 at 2.00 PM at the following address:  
Purchase Conference Hall  
4<sup>th</sup> Floor, Building 24  
Bharat Heavy Electricals Limited  
Tiruchirapalli – 620014  
Tamilnadu, India
- All prospective bidders, who intend to participate in the tender, may attend the pre bid meeting at their own cost. BHEL will not provide any lodging or boarding facilities to the bidders coming to attend the pre bid meeting
- The purpose of the pre bid meeting is to clarify any concerns of bidders about the tender requirements.
- The bidder, if interested to attend the pre bid meeting, shall send the details of the representatives by Email before 20<sup>th</sup> January 2016 3.00 pm to create visitor entry pass :  
The Email must be sent to the following two Email IDs only:  
shrivastava@bheltry.co.in  
akumar@bheltry.co.in

The details required are Name, Company name, Designation, Mobile No., Company address etc. All representatives must carry the authorisation letter from their company. The authorisation letter must be signed and stamped. No representatives will be allowed to attend the meeting without authorisation letter.

- No bidder will be allowed to attend the pre bid meeting without prior intimation.

**(C) TWO PART BID SYSTEM :**

- The Bidders shall submit the offer in Two Part Bid System i.e. (i) Techno-Commercial Bid and (ii) Price Bid.
- Techno-Commercial Bid should contain the following details:  
Complete scope of supply and confirmation to all points of WCPS  
Confirmation of Tender Quantity  
Duly Filled Annexure-B

Techno-Commercial bid shall be put in a cover (1) and super scribed as "Techno-Commercial Bid" for Enquiry No: .....Dt: .....Due Dt: .....

- Price Bid: Containing the price details as per ANNEXURE –C shall be put in a separate cover (2) and superscribed as "Price Bid" for Enquiry No: .....Dt: .....Due Dt: ..... (Submitted in your company letter head).
- You are requested to put the above two envelopes (Techno-Commercial Bid & Price Bid) inside a separate larger sealed envelope and this envelope shall be super scribed as "Techno-Commercial Bid and Price Bid" for Enquiry No: .....Dt: .....Due Dt: ..... Bidder's name and address shall be mentioned clearly on this envelope.
- Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested; all amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.

## ANNEXURE – A

### TERMS AND CONDITIONS OF THE ENQUIRY

- Please submit point wise compliance to our specifications, terms and conditions as per Annexure-B. Otherwise it will be presumed that you are accepting BHEL's terms and conditions. Please Ensure That All Terms & Conditions Should Be Indicated in The Un-Priced Bid To Be Attached With The Techno-Commercial Bid Positively.
- All pages of the bid shall be signed and stamped by the bidder

#### (D) LANGUAGE OF BID :

- The bid prepared by the Bidder shall be written in English language only.
- The Supplier shall bear all costs of translation, if any, to the English language and all risks of the accuracy of such translation, for documents provided by the Supplier.

#### (E) SUBMISSION OF OFFER :

- Your Offers should be sent to the following address only :  
The Tender Opening Cell / MM  
Room No. 26, Building 24, Ground Floor,  
Bharat Heavy Electricals Limited  
Tiruchirapalli – 620014  
Tamilnadu, India
- In case personal delivery of the offer, it shall be dropped into the respective tender box after duly entering the data in the system kept in room no. 26
- Vendors are requested to avoid submission of offers through Email/Fax. In case of any unavoidable situation, offers shall be sent through E-mail to the following ID only :

tender\_cell@bheltry.co.in

The Enquiry No. shall be clearly mentioned in the subject of E-mail.

- Offers received after due date and time: 02:00 pm will not be considered under any circumstances. Therefore Vendors shall ensure to submit the offers before this time.

#### (F) OPENING OF BIDS :

- The Purchaser will open all bids one at a time in the presence of Bidder representatives who choose to attend, as per the schedule given in invitation for bids. In the event of the specified date of Bid opening being declared a holiday for the Purchaser, the Bids shall be opened at the appointed time and location on the next working day.
- In two part system, the Price bid shall be opened only for technically acceptable (short listed) bids, found ACCEPTABLE after technical evaluation.
- Price bids of only short-listed ACCEPTABLE bidders will be opened in presence of the representatives of the bidders who decide to remain present during the bid opening. The date of opening of the price bid will be notified by Email, three days prior to price bid opening date.
- It may be noted that the dates of opening of Technical bid (Part I) and Price bid (Part II) are DIFFERENT.

#### (G) OFFER VALIDITY :

- Validity of offer should be minimum 120 days from the date of Tender opening. The quoted / finalized prices shall be Firm till completion of the supplies

#### (H) DELIVERY TERMS :

- **For Indian Bidders :**
  - The prices are to be quoted on F.O.R. BHEL Stores basis (Inclusive of Packing & Forwarding Charges). Freight and Insurance Charges shall be quoted extra in %. All the items should be supplied at BHEL Stores at your own cost. Offers with any other delivery conditions will be rejected
  - Delivery condition like Ex-works / Ex - godown / Transportation of materials through transport carriers from your works up to the transport carrier's office and taking delivery of goods by BHEL from such office of transport carriers is not acceptable to us.
- **For Foreign Bidders :**

## ANNEXURE – A

### TERMS AND CONDITIONS OF THE ENQUIRY

- Bidders should submit their offer for CFR / Chennai Seaport basis with freight break up details and Place of delivery – INTVT6 – CONCOR ICD.
- PORT OF LOADING SHOULD BE INDICATED WITHOUT FAIL.
- PORT OF DISCHARGE should be CHENNAI and PLACE OF DELIVERY - INTVT6 – CONCOR ICD

#### CONTAINERIZED CARGO

- For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost.
- In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable".
- Place of delivery – INTVT6 – CONCOR ICD should be clearly specified in the Bill of Lading.

#### BREAKBULK CARGO

- For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis.
- Place of delivery – INTVT6 – CONCOR ICD should be clearly specified in the Bill of Lading.

#### (I) PAYMENT TERMS :

##### ▪ For Indian Bidders :

- Payment term is "100% direct EFT payment after 45 days from the date of receipt and acceptance of materials at BHEL Stores".
- The duplicate copy of the invoice meant for the transporters should accompany the material as stipulated under C.E. rules 52a and 173c (or) 57gg. A Photostat copy of the above invoice for each Delivery Chelan should be submitted along with the original bills routed through bank or submitted directly to BHEL finance department.
- Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.
- Payment through bank is not preferred. In case of payment through bank is opted by supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of goods to site/stores with consignee copy attached. In this case loading will be 3% on the offered value.
- Offers of indigenous Suppliers with payment terms as LC / Advance Payment etc. will be rejected.

##### ▪ For Foreign Bidders :

- BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account.

## ANNEXURE – A

### TERMS AND CONDITIONS OF THE ENQUIRY

- Any deviation in the above payment term will attract loading as mentioned below :  
“Base rate of SBI (as applicable on the date of bid opening. Techno Commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.
- If the LC payment is insisted, TWO sets of original TCs to be submitted prior to dispatch and a certificate to that effect from BHEL should form a part of the documents to be negotiated. If this condition is not complied by the vendor, the offer is liable for rejection.
- In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value.
- For LC at sight the loading will be considered @ 3.5% on the offered Value.
- Offers with payment terms as Advance payment, CAD at sight and Confirmed LCs will be rejected.

#### **(J) LIQUIDITY DAMAGES / PENALTY :**

The delivery of the goods specified in the purchase order should be made within the time prescribed. Where the seller supplies or despatches the goods beyond the delivery period, Liquidity damages will be applicable as mentioned below:

- Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value
- For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part there of subject to a maximum of 10% of the total order value.
- Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value)

#### **(K) RISK PURCHASE CLAUSE :**

- Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause. Offers with Non-acceptance to Risk Purchase Clause will be rejected

#### **(L) TENDER EVALUATION :**

- Tender evaluation will be carried out on the basis of Technical Specifications and Commercial Terms and Conditions specified in the tender documents and changes thereof (if any) will be communicated to all bidders before Price Bid Opening.
- The Tender will be evaluated on total package basis.

#### **(M) COST EVALUATION :**

- Evaluation will be done on the basis of “Total landed cost to BHEL”.
- For evaluation, the exchange rate (TT selling rate of SBI) on the date of Part-I bid opening shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous working day shall be considered.
- BHEL will consider the ranking after the loading is applied as referred above, wherever deviations are observed
- Ranking (L-1, L-2 etc.) will be done only for the Techno-Commercially acceptable offers.
- In the event of more than one vendor becoming L-1 the enquiry quantity will be shared equally among all the L1 vendors.
- BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion.

## ANNEXURE – A

### TERMS AND CONDITIONS OF THE ENQUIRY

**(N) TAXES AND DUTIES :**

All Taxes, Duties, Service Taxes etc. payable as extra to the quoted price should be specifically stated in offers along with CST & TIN No / Tariff No. etc., failing which BHEL will not be liable for payment of such Taxes and Duties. Our TIN No. , CST No. BHEL ECC No. IE Code and Assessment circle for the particular BHEL Unit will be notified at the time of ordering. The original Excise Duty Gate Pass will be required to be furnished in case Excise Duty is applicable.

**(O) TEST CERTIFICATE :**

The supplier shall submit the Test Certificate as per WCPS and Annexure-D during order execution.

**(P) INDIAN AGENTS OF FOREIGN SUPPLIERS :**

- BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement
- It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.
- If the offer is submitted by Agents, duly signed agency agreement shall be submitted along with the offer in Techno-Commercial bid. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.
- Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.
- In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services will be checked by BHEL, before opening of price bids. It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on [www.bhel.com](http://www.bhel.com).  
The responsibility for successful execution of the contract lies with the OEM/ foreign principal.
- Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item in the same tender. If offer is received by both Indian agent and Principal/OEM, then the offer from Principal/OEM only will be considered.
- If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit bid on behalf of another Principal/OEM for the same item. If an agent submits bid on

**TERMS AND CONDITIONS OF THE ENQUIRY**

behalf of more than one Principal/OEM for a single item, his offer will be completely rejected for the concerned item.

**(Q) PACKING AND MARKING :**

- The supplier shall arrange for securely protecting and packing the material to avoid loss or damages during transit.

**(R) ARBITRATION :**

Any dispute arising out of or in connection with this Tender shall be finally settled by binding arbitration in accordance with the Arbitration and Conciliation Act, 1996 as may be amended from time to time. Executive Director / BHEL, Trichy – 620 014 or his authorized representative shall be the Sole Arbitrator and his decision shall be final and binding on both the parties. The place of arbitration shall be Tiruchirapalli, and the language shall be English. The courts at Tiruchirapalli shall have exclusive jurisdiction on any dispute arising out of or in connection with this Agreement, if intervention of court is warranted, subject to the arbitration provided above.

**(S) FRAUD PREVENTION POLICY :**

The bidder along with its associate/ collaborators/. sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

**(T) OTHER TERMS AND CONDITIONS :**

- No revision of prices will be entertained at any circumstances after tenders are opened.
- On the due date of tender opening, only the Techno-commercial bids will be opened. Techno-commercial bids will be evaluated by us and clarifications required, if any, will be called from the bidders on technical and commercial points.
- If any difference is found in the terms in the Techno-commercial bid and price bid, the terms mentioned in the Techno-Commercial Bid will be considered.
- BHEL reserves the right to negotiate or refloat the tender opened, if L1 price is not the lowest acceptable price to BHEL due to inter-alia other reasons.
- The correspondence between the bidder and BHEL through Email is considered as valid document Legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties.
- The quality of the supplies should strictly conform to Technical specifications applicable for the item. The offer should specifically confirm this.
- If any quality problem is pointed out by BHEL w.r.t. supplied material, the same shall be settled and corrected immediately by the supplier. If the material cannot be accepted by BHEL, supplier has to replace the material with no extra cost. Collection of rejected material will be sole responsibility of the supplier.
- BHEL shall be at liberty to accept any tender, part or in full, at their discretion without giving any reason.
- BHEL shall be at liberty to cancel the tender at any stage, without giving any reasons.
- BHEL reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at any of BHEL projects / Units.
- For any clarifications, you may contact to the following Email IDs :  
[akumar@bheltry.co.in](mailto:akumar@bheltry.co.in)  
[shrivastava@bheltry.co.in](mailto:shrivastava@bheltry.co.in)

## ANNEXURE – B

## BHEL COMMERCIAL TERMS AND CONDITIONS

## (a) TECHNICAL TERMS CONFIRMATION (TO BE SUBMITTED IN COVER NO: 1)

ENQ S. NO.	BHEL SPECIFICATIONS	VENDOR'S SPECIFICATION	Quantity (Kg)	Consignment weight against each item separately	whether quoted/ not quoted
10					
20					

## (b) COMMERCIAL TERMS CONFIRMATION (TO BE SUBMITTED IN COVER NO: 1)

SL NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION
1	VALIDITY	MINIMUM 120 Days from Date of tender opening	
2	PRICE QUOTED	As per Clause (H) of Annexure-A	
3	EXCISE DUTY WITH CESS <b>(Whether inclusive (or) extra)</b> Clearly mention the percentage	SUPPLIER TO QUOTE. ED Invoice to be submitted for availing CENVAT benefit.	
4	VAT % Clearly mention the percentage	SUPPLIER TO QUOTE	
5	CST % against form 'C' Clearly mention the percentage	SUPPLIER TO QUOTE	
6	FREIGHT & INSURANCE CHARGES FOR DELIVERY AT BHEL STORES – FOR INDIAN BIDDER	SUPPLIER TO QUOTE <b>IN % OF BASIC PRICE ONLY</b>	
7	FREIGHT & INSURANCE CHARGES FOR DELIVERY AT CHENNAI SEAPORT – FOR FOREIGN BIDDER	SUPPLIER TO QUOTE <b>IN % OF BASIC PRICE ONLY</b>	
7	DEIVERY SCHEDULE FROM THE DATE OF PURCHASE ORDER / LETTER OF INTENT	SUPPLIER TO QUOTE IN NO. OF <b>DAYS / WEEKS</b>	
8	PAYMENT TERMS	As per <b>Clause (I)</b> of Annexure-A	
9	LIQUIDATED DAMAGES CLAUSE	As per <b>Clause (J)</b> of Annexure-A	
10	RISK PURCHASE CLAUSE	As per <b>Clause (K)</b> of Annexure-A	
11	TEST CERTIFICATE	To be submitted during order execution	

**ANNEXURE – B**

**BHEL COMMERCIAL TERMS AND CONDITIONS**

12.	ORIGIN OF DISPATCH	SUPPLIER TO QUOTE	
13.	PORT OF LOADING – FOR FOREIGN BIDDER	SUPPLIER TO QUOTE	
14.	CURRENCY – FOR FOREIGN BIDDER	SUPPLIER TO QUOTE	
15.	CONTACT PERSON DETAILS	NAME:	
		MOBILE NO:	
		LAND LINE NO:	
		EMAIL :	
		FAX:	

**NOTE:**

a). It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.

b).No row shall be left blank. Please indicate NA, in case the item is "not applicable"

Full postal Address:

Signature & Office Seal of the Vendor

**ANNEXURE – C**  
**PRICE BID FORMAT**

ENQ SL NO	BHEL SPECIFICATIONS	VENDOR'S SPECIFICATION	Quantity (Kg)	Basic Price per Piece	<b>Total Value</b>
10					
20					

**NOTE :**

**IF YOU HAVE NOT QUOTED FOR ANY ITEM, YOU SHOULD MENTION AS "NOT QUOTED" AGAINST THAT ENQ SL NO. (SUBMITTED IN SEPARATE COVER NO: 2)**

Full postal Address:

Signature & Office Seal of the Vendor

**ANNEXURE - D**  
**REQUIREMENTS OF TEST CERTIFICATE**

1. A Test Certificate for every batch of consumable, indicating the actual results of the testing for that batch, shall be submitted by the vendor. The TC, in general, shall comprise of Certified Material Test Report (CMTR), supported by test reports for each test.
2. Each page of the Test Certificate shall be signed by vendor's quality representative and the inspecting agency. The inspection authority shall clearly indicate whether the test has been witnessed/reviewed. The name and designation of the signing authority and date shall be clearly visible below the signature.
3. Each test report shall compulsorily list the following:
  - 3.1. Identifying reference number of the test report
  - 3.2. Batch number and/or Heat number and quantity
  - 3.3. Classification of consumable as per ASME Sec IIC, Brand name and size of the consumable
  - 3.4. Buyer's Purchase Order(PO) reference
  - 3.5. Identification of testing center/Laboratory where the test is conducted
  - 3.6. Date of conduct of test
  - 3.7. Standard/Code followed for that test
  - 3.8. Test done in As Welded (AW) or Post Weld Heat Treated (PWHT) state
  - 3.9. Testing Equipment make/model and its capacity
  - 3.10. Calibration status of testing equipment
  - 3.11. Specimen identification and size
  - 3.12. Acceptance criteria
  - 3.13. Actual test results obtained during the test
  - 3.14. Remarks – indicating whether the test results are acceptable/not acceptable.
4. Each test report shall be linked to the Quality Assurance Plan (QAP) against the relevant stage of testing. The QAP shall be signed by inspection authority to ensure that all stages of testing and inspection have been completed before giving final clearance for the batch.
5. The Heat Treatment (HT) chart shall be signed by inspecting authority at the start and end of the heat treatment.
6. The TC for the base material used for the consumable qualification shall also be attached along with the consumable TC.