



Project Group I  
Power Sector, Project Engineering Management  
Bharat Heavy Electricals Limited  
NOIDA

|              |                                                            |
|--------------|------------------------------------------------------------|
| Project      | 2X660 MW UDANGUDI SUPERCRITICAL STPP ST-I                  |
| Package      | DC LEAD ACID BATTERIES                                     |
| Enquiry Ref. | PE/PG/UDN/E-6194/2019 Dt: 07.05.2019                       |
| Dated        | 21.09.2019                                                 |
| Subject      | Corrigendum-XIII: Amendment-02 to Technical Specifications |

Please note the following:

1. Please refer Amendment-02 to technical specifications attached herewith.

Please ensure submission of bids on or before due date i.e.25.09.2019 2:00 PM.

Thanking You.

For and on behalf of BHEL

*Niyati*  
21/09/19  
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भारत भारी इलेक्ट्रिकल्स लिमिटेड / Bharat Heavy Electricals Ltd.  
पावर सेक्टर-प्रियोजन अभियंत्रण प्रबंधन  
Power Sector-Project Engineering Management  
पीपीईआई भवन, एच.आर.डी. एंड. ई.एस.आई. कॉम्प्लेक्स  
PPEI Bldg. H.R.D. & ESI Complex,  
प्लॉट नं. 25, सेक्टर 16 ए, नोएडा - 201301  
Plot No. 25, Sec. 16 A, Noida - 201301

**2 X660 MW UDANGUDI SUPER CRITICAL THERMAL  
POWER PROJECT-STAGE-1**

**AMENDMENT – 02**

**TECHNICAL SPECIFICATION  
FOR  
220V DC LEAD ACID BATTERY**

**SPECIFICATION NO: PE-TS-435-508-E001**



**BHARAT HEAVY ELECTRICALS LTD  
POWER SECTOR  
PROJECT ENGINEERING MANAGEMENT  
NOIDA-INDIA**



TECHNICAL SPECIFICATION FOR 220V DC  
LEAD ACID BATTERY

SPECIFICATION NO. PE-TS- 435-508-E001

DATE: 18.09.2019

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| Technical Specification Reference:                    | Clause as per technical Specification:                                  | The clause Revised as:                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amendment no. 1,<br>dated 31.07.2019<br><br>Section-I | Type tests on battery<br><br>(Clause no. 3.1, Sl. no. 12, Sheet 3 of 5) | Following 'additional tests' required as per Amendment no.1, stands <b>deleted</b> & same are <b>not</b> to be considered:<br><br>(i) Test for High Rate discharge at Normal temperature and at Low temperature.<br><br>(ii) Accelerated aging test followed by seismic test. |
| Section-I                                             | Type tests on battery<br><br>(Clause no. 3.1, Sl. no. 12, Sheet 3 of 5) | Following Type test to be read as:<br><br>"Endurance test only" (instead of Life & Endurance test).                                                                                                                                                                           |

Was.  
18.09.19.

V. L. Gupta  
18/09/19

18/09/2019

Pre-Bid Clarifications  
**Tender Enquiry No: PE/PG/UDN/E-6194/2019**  
**Project: 2 X 660 MW Udangudi Supercritical STPP ST-I**

1. Battery Stand: In the technical specification, material of Battery Stand is mentioned as Teak wood as well as Mild Steel.

In the Corrigendum-08 Amendment No 1 of Tech Spec, it is mentioned that accelerated aging test followed by seismic test.

Please clarify the materials type of Battery Stand.

Please also confirm whether Seismically qualified Battery Stand is required for this project.

If the Seismically qualified Battery Stand is required for this project, then the Battery Bank will be supplied after approval of Seismic Test of Battery Stand.

Please clarify the followings for conducting Seismic Test of Battery Stand,

☐ Elevation level of Battery Room

☐ Required response spectra

☐ Seismic Zone

Please note that 5 months time will be required to conduct Seismic Test of Battery Stand from date of approval of GA Drawing and Battery Sizing Calculation.

**BHEL's Reply to SI.no.1:**

(i) Material of battery rack shall be insulated mild steel racks suitably treated/coated with alkali/acid resistant compound mounted on the insulators. Please refer to section-1 (clause 3.1 (8)) and data sheet-A (SI.no.5) for the same. Further please note that the stipulations of Section-I, followed by those of Data Sheet-A, followed by Section-II shall prevail in case of any conflict between the stipulations of Section-I, Section-II & Datasheet-A.

(ii) Please note that seismically qualified battery stand is not required for this project.

2. As per SI No A.2.2, A.5.2 & A.8.2 of tender Bill of Materials, Electronic Syringe type Hydrometer with temperature measurement and with built in memory has to be supplied.

Please note that Bidder will not be able to supply this item as this type of item is not available in market.

Bidder will supply the Syringe type Hydrometer.

**BHEL's Reply to SI.no.2: Bidder to supply in line with specification.**

3. Please clarify the SI No A.2.18, A.5.18 & A.8.18 of tender Bill of Materials, "Wall mounted teak wood/Acid resistant rubber insulated steel rack for above items".

**BHEL's Reply to SI.no.3:** Wall mounted teak wood / acid resistant rubber insulated rack shall be provided to accommodate items listed A.2.1 to A.2.17, A.5.1 to A.5.17 and A.8.1 to A.8.17.

4. Please clarify the SI No D.8, E.8 & F.8 of tender Bill of Materials, "BHMS sensors for each type and rating".

**BHEL's Reply to SI.no.4: BHMS sensors which are fixed on battery.**

5. In the Corrigendum-08 Amendment No 1 of Tech Spec the following test to be considered,

☐ Test for High Rate discharge at normal temperature and at low temperature.

☐ Accelerated aging test followed by Seismic Test.

Please note that the above mentioned tests are not included in IS-1652:2013.

BHEL has to clarify for the same.

**Pre-Bid Clarifications**  
**Tender Enquiry No: PE/PG/UDN/E-6194/2019**  
**Project: 2 X 660 MW Udangudi Supercritical STPP ST-I**

**BHEL's Reply to SI.no.5:** These tests are not required.

6. As per S. No 12 of Section-II, Clause no. 7.3 (A)): INSPECTIONS & TESTING, Life & Endurance test report shall be submitted by Bidder.

Please note that as per IS-1652:2013, there is no Life Test. Only Endurance test is there. Bidder will submit the Endurance Test report (as per IS1652:2013) of similar type of higher rating.

**BHEL's Reply to SI.no.6:** Only endurance test is acceptable. Type test report can be furnished for BHEL / customer's approval. Type test certificates offered shall be within 5 years from date on contract (i.e. 15.12.2015). Please refer to specification clauses regarding type test reports.

7. As per S. No 12 of Section-II, Clause no. 7.3 (A)): INSPECTIONS & TESTING, Test for loss of capacity on storage test report shall be submitted by Bidder.

Please note that as per IS-1652:2013, there is no Test for loss of capacity on storage. In IS-1652:2013, Retention of Charge is included. Bidder will submit the report for Retention of Charge (ROC) as per IS-1652:2013.

**BHEL's Reply to SI.no.7:** Please follow specification. Loss of capacity on storage is mentioned in clause 10.8 of IS-1652.

8. As per S. No 12 of Section-II, Clause no. 7.3 (A)): INSPECTIONS & TESTING, Test for resistance to overcharge report shall be submitted by Bidder.

Please note that as per IS-1652:2013, there is no resistance to overcharge test. Hence Bidder will not submit Test for resistance to overcharge report.

**BHEL's Reply to SI.no.8:** Please follow specification. Test of resistance to overcharge shall be as per IEC 60896 clause no. 17.

9. As per S. No 12 of Section-II, Clause no. 7.3 (A)): INSPECTIONS & TESTING, Internal resistance of cells shall be conducted for battery (Acceptance Test).

Please note that as per IS-1652:2013, there is no test for Internal resistance of cells. Hence Bidder will not conduct the test for Internal resistance of cells.

**BHEL's Reply to SI.no.9:** Please follow specification. Internal resistance of cells is mentioned in clause 10.14 of IS-1652.

10. As per Clause no. 5.1,m of section II, BHMS shall capable to calculate the net charge of battery, please clarify the point.

**BHEL's Reply to SI.no.10:** Please follow specification. BHMS will capable to calculate total AH input & total AH output from the battery bank. BHMS can identify the weak cell from the whole battery bank.

11. As per Clause no. 5.1,m of section II, BHMS shall measure Cell temperature, please clarify the point.

**BHEL's Reply to SI.no.11:** Please follow specification. As per catalogue, Chloride BMS captures various parameters like voltage, current, cell temperature, ambient temperature etc. on an on-going basis

**Pre-Bid Clarifications**  
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**Project: 2 X 660 MW Udangudi Supercritical STPP ST-I**

12. As per Clause no. 5.1,m of section II, DC FAIL alarm shall be generated and given in Central Control Room buzzer (Audio Visual Fascia), please clarify the point.

**BHEL's Reply to SI.no.12:** This is excluded from Bidder's scope.