

Ref No. : PE/PG/APP/E-5429/2016/CORRIGENDA/01

Date: 17.01.2017

**CORRIGENDA / ADDENDUM-01**

**Projects: 1 X 800 MW Krishnapattanam TPS & 1 X 800 MW Vijayawada TPS**  
**Package: Oxygen Dosing System**  
**Tender Enquiry No: PE/PG/APP/E-5429/2016 dated 11.01.2017**

| <b>DUE DATE</b>   |
|-------------------|
| <b>02.02.2017</b> |
| <b>BY 10:00AM</b> |

Please note that Quality Assurance Plan of Technical specifications has been revised.

All bidders are requested to visit the website **www.bhel.com** (Tender Notifications Section), **www.bhelpem.com**. All future corrigenda/ amendment and due date extension, if any, for this tender shall be hosted only on above websites.

Encl:-

- Revised Quality Assurance Plan to Technical Specification (PE-TS-419-154-12000-A001 & PE-TS-420-154-12000-A001)

Thanking You,

With Regards,

For & on behalf of BHEL

(Ashutosh Sharma)

SR ENGINEER/PG1-1

Please reply to:

**Sh Ashutosh Sharma,**  
**Sr. Engineer / PG1-1**

Power Project Engineering Institute Building  
HRD & ESI Complex Plot No. 25, Sector -16 A,  
BHEL-PEM,Noida-201301 (U.P.)  
Tel No.0120-4213510 / 9953038740

|                                                                                                                                                                                                                   |                                                           |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                         |   |               |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------|---|---------------|----|
|                                                                                                                                                                                                                   |                                                           | MANUFACTURER'S<br>NAME & ADDRESS :                                                                                                                                                                                                                                                                            |          | MANUFACTURING QUALITY PLAN                                                                    |                    |                                               |                                                               | PROJECT<br>PACKAGE<br>CONTRACT NO.<br>MAIN SUPPLIER<br>BHEL QP. NO |          | :1X800 MW APPDCL KRISHNAPATNAM<br>STAGE-II<br>: OXYGEN DOSING SYSTEM<br>: BHEL/PEM/NOIDA<br>: PE-V0-420-154-12000A-A004 |   |               |    |
|                                                                                                                                                                                                                   |                                                           |                                                                                                                                                                                                                                                                                                               |          | ITEM:<br>OXYGEN DOSING SYSTEM<br>SUB - SYSTEM :<br>DEAERATOR & CEP DISCHARGE DOSING<br>SYSTEM |                    | QP. NO :<br>REV. :<br>DATE :<br>PAGE :        |                                                               |                                                                    |          |                                                                                                                         |   |               |    |
| S.NO.                                                                                                                                                                                                             | COMPONENTS/ OPERATION                                     | CHARACTERISTICS CHECKED                                                                                                                                                                                                                                                                                       | CATEGORY | TYPE/ METHOD CHECK                                                                            | EXTENT OF<br>CHECK | REFERENCE DOCUMENT                            | ACCEPTANCE NORMS                                              | FORMAT OF RECORDS                                                  | AGENCY** |                                                                                                                         |   | REMARKS       |    |
| 1                                                                                                                                                                                                                 | 2                                                         | 3                                                                                                                                                                                                                                                                                                             | 4        | 5                                                                                             | 6                  | 7                                             | 8                                                             | 9                                                                  | D*       | M                                                                                                                       | C | N             | 11 |
| 1.0                                                                                                                                                                                                               | WELDER'S QUALIFICATION                                    |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                         |   |               |    |
| 1.1                                                                                                                                                                                                               | WELDING PROCEDURE<br>SPECIFICATION (WPS)                  | CORRECTNESS                                                                                                                                                                                                                                                                                                   | MA       | SCRUTINY                                                                                      | 100%               | ASME IX                                       | ASME IX                                                       | QW 482                                                             |          | P                                                                                                                       | V | V             |    |
| 1.2                                                                                                                                                                                                               | WELDER PERFORMANCE &<br>PROCEDURE QUALIFICATION<br>RECORD | WELD SOUNDNESS & WELDING<br>PERFORMANCE                                                                                                                                                                                                                                                                       | MA       | PHYSICAL TEST                                                                                 | 100%               | ASME IX                                       | ASME IX                                                       | QW 483 & QW 484                                                    |          | P                                                                                                                       | V | V             |    |
| 2                                                                                                                                                                                                                 | EMPTY OXYGEN CYLINDER                                     | MTC, HYDRO TEST & RELEVANT<br>TESTS AS PER IS 7285                                                                                                                                                                                                                                                            | MA       | IS 7285                                                                                       | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS<br>CERTIFICATE                                                |          | P                                                                                                                       | V | V             |    |
| 3                                                                                                                                                                                                                 | VALVES (BODY & BONNET)                                    | MATERIAL                                                                                                                                                                                                                                                                                                      | MA       | --                                                                                            | 100%               | APPROVED DATASHEET                            | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                       | V | V             |    |
| 4                                                                                                                                                                                                                 | INSTRUMENTS                                               |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                         |   |               |    |
| 4.A                                                                                                                                                                                                               | PRESSURE GAUGE                                            | MOC FOR WETTED PARTS,<br>CALIBRATION & BOURDON OVER<br>PRESSURE PROTECTION & TYPE<br>TEST CERTIFICATE                                                                                                                                                                                                         | MA       | MEASUREMENT                                                                                   | 1/TYPE             | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS<br>CERTIFICATE                                                |          | P                                                                                                                       | V | V             |    |
| 4.B                                                                                                                                                                                                               | PRESSURE TRANSMITTER                                      | CALIBRATION, OVER LOAD<br>PROTECTION & TYPE TEST<br>CERTIFICATE                                                                                                                                                                                                                                               | MA       | MEASUREMENT                                                                                   | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MANUFACTURERS COC                                                  |          | P                                                                                                                       | V | V             |    |
| 5                                                                                                                                                                                                                 | SOLENOID VALVES                                           | MATERIAL                                                                                                                                                                                                                                                                                                      | MA       | VISUAL                                                                                        | 100%               | APPROVED DATASHEET                            | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                       | V | V             |    |
| 6                                                                                                                                                                                                                 | CYLINDER PRESSURE<br>REGULATOR                            | MATERIAL                                                                                                                                                                                                                                                                                                      | MA       | VISUAL                                                                                        | 100%               | APPROVED DATASHEET                            | AS PER MANUFACTURERS<br>CATALOGUE                             | MANUFACTURERS COC                                                  |          | P                                                                                                                       | V | V             |    |
| 7                                                                                                                                                                                                                 | TERMINATION BOX                                           | COUNTUNITY.IR-HV-IR & DEGREE<br>OF PROTECTION                                                                                                                                                                                                                                                                 | MA       | ELECTRICAL                                                                                    | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS COC &<br>INSPECTION REPORT                                    |          | P                                                                                                                       | V | V             |    |
| 8                                                                                                                                                                                                                 | TUBING                                                    | CHEMICAL & PHYSICAL                                                                                                                                                                                                                                                                                           | MA       | CHEMICAL & PHYSICAL<br>TEST                                                                   | 100%               | APPROVED DRAWING<br>DATASHEET                 | APPROVED DRAWING<br>DATASHEET                                 | LAB REPORT                                                         |          | P                                                                                                                       | V | V             |    |
| 9                                                                                                                                                                                                                 | MASS FLOW CONTROLLER                                      | CALIBRATION REPORT                                                                                                                                                                                                                                                                                            | MA       | ELECTRICAL                                                                                    | 100%               | APPROVED DRAWING &<br>DATASHEET               | APPROVED DRAWING &<br>DATASHEET                               | CALIBRATION REPORT                                                 |          | P                                                                                                                       | V | V             |    |
| 10                                                                                                                                                                                                                | FITTING                                                   | MATERIAL                                                                                                                                                                                                                                                                                                      | MA       | VISUAL                                                                                        | 100%               | APPROVED DRAWING                              | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                       | V | V             |    |
| 11                                                                                                                                                                                                                | FINAL ASSAMBLY                                            | DIMENSION, ORIENTATION &<br>COMPLETENESS.                                                                                                                                                                                                                                                                     | MA       | MEASUREMENT                                                                                   | 100%               | APPROVED DRAWING                              | APPROVED DRAWING                                              | INSPECTION                                                         |          | P                                                                                                                       | W | W             |    |
| 12                                                                                                                                                                                                                | FAT                                                       | LEAKAGE                                                                                                                                                                                                                                                                                                       |          | N2 FILL FOR 2HR                                                                               | 100%               | APPROVED DRAWING /<br>FACTORY ACCEPTANCE TEST | NO LEAKAGE                                                    | INSPECTION                                                         |          | P                                                                                                                       | W | W             |    |
| 13                                                                                                                                                                                                                | PMI Test for SS                                           | GRADE CONFIRMATION                                                                                                                                                                                                                                                                                            | MA       | CHEM.TEST                                                                                     | 100%               | BHEL APPD.DATA SHEET/DWG                      | BHEL APPD.DATA SHEET/DWG                                      | INSPECTION REPORT                                                  |          | P                                                                                                                       | W | W             |    |
| 14                                                                                                                                                                                                                | POWDER COATING STAMPING                                   | DFT MEASUREMENT                                                                                                                                                                                                                                                                                               | MI       | VISUAL                                                                                        | 100%               | APPROVED PAINTING SCHEME                      |                                                               |                                                                    |          | P                                                                                                                       | W | V             |    |
| NOTES: ALL INSTRUMENTS/VALVES ETC. SHALL BE OXYGEN CLEANED AND SUITABLE FOR OXYGEN SERVICE. MANUFACTURERS COC CERTIFYING THE SAME REGARDING OXYGEN CLEANED SHALL BE SUBMITTED FOR REVIEW DURING FINAL INSPECTION. |                                                           |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                         |   |               |    |
|                                                                                                                                                                                                                   |                                                           | LEGEND :<br>* RECORDS IDENTIFIED WITH "TICKS" SHALL BE ESSENTIALLY<br>INCLUDED BY CONTACTION IN QA DOCUMENTATION.<br><br>** M : MANUFACTURER/SUB-CONTRACTOR<br>C : BHEL, N:TSGENCO<br><br>INDICATE "P" PERFORM, "W" WITNESS, AND "V" VERIFICATION AS APPROPRIATE,<br>"CHP" SHALL BE IDENTIFIED IN COLUMN "N". |          |                                                                                               |                    |                                               |                                                               | DOC NO.                                                            |          | REV :                                                                                                                   |   | CAT :         |    |
| MANUFACTURER/<br>SUB SUPPLIER                                                                                                                                                                                     |                                                           |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    | MAIN SUPPLIER                                 |                                                               | FOR CUSTOMER USE                                                   |          |                                                                                                                         |   |               |    |
| SIGNATURE                                                                                                                                                                                                         |                                                           |                                                                                                                                                                                                                                                                                                               |          |                                                                                               |                    |                                               |                                                               | REVIEWED BY                                                        |          | APPROVED BY                                                                                                             |   | APPROVAL SEAL |    |

|                                                                                                                                                                                                                   |                                                           |                                                                                                                                                                                                                                                                                                           |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                      |   |               |    |
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|                                                                                                                                                                                                                   |                                                           | MANUFACTURER'S<br>NAME & ADDRESS :                                                                                                                                                                                                                                                                        |          | MANUFACTURING QUALITY PLAN                                                                    |                    |                                               |                                                               | PROJECT<br>PACKAGE<br>CONTRACT NO.<br>MAIN SUPPLIER<br>BHEL QP. NO |          | 1X800 MW Dr. NTTPS VIJAYWADA<br>STAGE-V<br>: OXYGEN DOSING SYSTEM<br>: BHEL/PEM/NOIDA<br>: PE-V0-419-154-12000A-A004 |   |               |    |
|                                                                                                                                                                                                                   |                                                           |                                                                                                                                                                                                                                                                                                           |          | ITEM:<br>OXYGEN DOSING SYSTEM<br>SUB - SYSTEM :<br>DEAERATOR & CEP DISCHARGE DOSING<br>SYSTEM |                    | QP. NO :<br>REV. :<br>DATE :<br>PAGE :        |                                                               |                                                                    |          |                                                                                                                      |   |               |    |
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| 1                                                                                                                                                                                                                 | 2                                                         | 3                                                                                                                                                                                                                                                                                                         | 4        | 5                                                                                             | 6                  | 7                                             | 8                                                             | 9                                                                  | D*       | M                                                                                                                    | C | N             | 11 |
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| 1.1                                                                                                                                                                                                               | WELDING PROCEDURE<br>SPECIFICATION (WPS)                  | CORRECTNESS                                                                                                                                                                                                                                                                                               | MA       | SCRUTINY                                                                                      | 100%               | ASME IX                                       | ASME IX                                                       | QW 482                                                             |          | P                                                                                                                    | V | V             |    |
| 1.2                                                                                                                                                                                                               | WELDER PERFORMANCE &<br>PROCEDURE QUALIFICATION<br>RECORD | WELD SOUNDNESS & WELDING<br>PERFORMANCE                                                                                                                                                                                                                                                                   | MA       | PHYSICAL TEST                                                                                 | 100%               | ASME IX                                       | ASME IX                                                       | QW 483 & QW 484                                                    |          | P                                                                                                                    | V | V             |    |
| 2                                                                                                                                                                                                                 | EMPTY OXYGEN CYLINDER                                     | MTC, HYDRO TEST & RELEVANT<br>TESTS AS PER IS 7285                                                                                                                                                                                                                                                        | MA       | IS 7285                                                                                       | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS<br>CERTIFICATE                                                |          | P                                                                                                                    | V | V             |    |
| 3                                                                                                                                                                                                                 | VALVES (BODY & BONNET)                                    | MATERIAL                                                                                                                                                                                                                                                                                                  | MA       | --                                                                                            | 100%               | APPROVED DATASHEET                            | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                    | V | V             |    |
| 4                                                                                                                                                                                                                 | INSTRUMENTS                                               |                                                                                                                                                                                                                                                                                                           |          |                                                                                               |                    |                                               |                                                               |                                                                    |          |                                                                                                                      |   |               |    |
| 4.A                                                                                                                                                                                                               | PRESSURE GAUGE                                            | MOC FOR WETTED PARTS,<br>CALIBRATION & BOURDON OVER<br>PRESSURE PROTECTION & TYPE<br>TEST CERTIFICATE                                                                                                                                                                                                     | MA       | MEASUREMENT                                                                                   | 1/TYPE             | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS<br>CERTIFICATE                                                |          | P                                                                                                                    | V | V             |    |
| 4.B                                                                                                                                                                                                               | PRESSURE TRANSMITTER                                      | CALIBRATION, OVER LOAD<br>PROTECTION & TYPE TEST<br>CERTIFICATE                                                                                                                                                                                                                                           | MA       | MEASUREMENT                                                                                   | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MANUFACTURERS COC                                                  |          | P                                                                                                                    | V | V             |    |
| 5                                                                                                                                                                                                                 | SOLENOID VALVES                                           | MATERIAL                                                                                                                                                                                                                                                                                                  | MA       | VISUAL                                                                                        | 100%               | APPROVED DATASHEET                            | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                    | V | V             |    |
| 6                                                                                                                                                                                                                 | CYLINDER PRESSURE<br>REGULATOR                            | MATERIAL                                                                                                                                                                                                                                                                                                  | MA       | VISUAL                                                                                        | 100%               | APPROVED DATASHEET                            | AS PER MANUFACTURERS<br>CATALOGUE                             | MANUFACTURERS COC                                                  |          | P                                                                                                                    | V | V             |    |
| 7                                                                                                                                                                                                                 | TERMINATION BOX                                           | COUNTUNITY.IR-HV-IR & DEGREE<br>OF PROTECTION                                                                                                                                                                                                                                                             | MA       | ELECTRICAL                                                                                    | 100%               | APPROVED DATASHEET                            | AS PER APPROVED<br>DATASHEET                                  | MFRS COC &<br>INSPECTION REPORT                                    |          | P                                                                                                                    | V | V             |    |
| 8                                                                                                                                                                                                                 | TUBING                                                    | CHEMICAL & PHYSICAL                                                                                                                                                                                                                                                                                       | MA       | CHEMICAL & PHYSICAL<br>TEST                                                                   | 100%               | APPROVED DRAWING<br>DATASHEET                 | APPROVED DRAWING<br>DATASHEET                                 | LAB REPORT                                                         |          | P                                                                                                                    | V | V             |    |
| 9                                                                                                                                                                                                                 | MASS FLOW CONTROLLER                                      | CALIBRATION REPORT                                                                                                                                                                                                                                                                                        | MA       | ELECTRICAL                                                                                    | 100%               | APPROVED DRAWING &<br>DATASHEET               | APPROVED DRAWING &<br>DATASHEET                               | CALIBRATION REPORT                                                 |          | P                                                                                                                    | V | V             |    |
| 10                                                                                                                                                                                                                | FITTING                                                   | MATERIAL                                                                                                                                                                                                                                                                                                  | MA       | VISUAL                                                                                        | 100%               | APPROVED DRAWING                              | AS PER MODEL<br>DECODIFICATION MENTIONED<br>IN MFRS CATALOGUE | MANUFACTURERS COC                                                  |          | P                                                                                                                    | V | V             |    |
| 11                                                                                                                                                                                                                | FINAL ASSAMBLY                                            | DIMENSION, ORIENTATION &<br>COMPLETENESS.                                                                                                                                                                                                                                                                 | MA       | MEASUREMENT                                                                                   | 100%               | APPROVED DRAWING                              | APPROVED DRAWING                                              | INSPECTION                                                         |          | P                                                                                                                    | W | W             |    |
| 12                                                                                                                                                                                                                | FAT                                                       | LEAKAGE                                                                                                                                                                                                                                                                                                   |          | N2 FILL FOR 2HR                                                                               | 100%               | APPROVED DRAWING /<br>FACTORY ACCEPTANCE TEST | NO LEAKAGE                                                    | INSPECTION                                                         |          | P                                                                                                                    | W | W             |    |
| 13                                                                                                                                                                                                                | PMI Test for SS                                           | GRADE CONFIRMATION                                                                                                                                                                                                                                                                                        | MA       | CHEM.TEST                                                                                     | 100%               | BHEL APPD.DATA SHEET/DWG                      | BHEL APPD.DATA SHEET/DWG                                      | INSPECTION REPORT                                                  |          | P                                                                                                                    | W | W             |    |
| 14                                                                                                                                                                                                                | POWDER COATING STAMPING                                   | DFT MEASUREMENT                                                                                                                                                                                                                                                                                           | MI       | VISUAL                                                                                        | 100%               | APPROVED PAINTING SCHEME                      |                                                               |                                                                    |          | P                                                                                                                    | W | V             |    |
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|                                                                                                                                                                                                                   |                                                           | LEGEND :<br>* RECORDS IDENTIFIED WITH "TICKS" SHALL BE ESSENTIALLY<br>INCLUDED BY CONTACTION IN QA DOCUMENTATION.<br>** M : MANUFACTURER/SUB-CONTRACTOR<br>C : BHEL, N:TSGENCO<br><br>INDICATE "P" PERFORM, "W" WITNESS, AND "V" VERIFICATION AS APPROPRIATE,<br>"CHP" SHALL BE IDENTIFIED IN COLUMN "N". |          |                                                                                               |                    |                                               |                                                               | DOC NO.                                                            |          | REV :                                                                                                                |   | CAT :         |    |
| MANUFACTURER/<br>SUB SUPPLIER                                                                                                                                                                                     |                                                           |                                                                                                                                                                                                                                                                                                           |          |                                                                                               |                    | MAIN SUPPLIER                                 |                                                               | FOR CUSTOMER USE                                                   |          |                                                                                                                      |   |               |    |
| SIGNATURE                                                                                                                                                                                                         |                                                           |                                                                                                                                                                                                                                                                                                           |          |                                                                                               |                    |                                               |                                                               | REVIEWED BY                                                        |          | APPROVED BY                                                                                                          |   | APPROVAL SEAL |    |