REQUISITION FOR QUOTATION

Heat Exchanger Bottom Channel 1EA

Project Name : ’25년 No.2 BTX TA P-E3515 Bottom Channel 제작구매

Location : SK Energy, Ulsan Complex, KOREA

Client : SK Energy

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| 0 | ’25.03.04 | 1st Issue | T.H.KIM | S.R.HONG | B.M.JEONG |
| Rev. | Date | Description | Prp’d | Rew’d | App’d |

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###### 1. ITEM AND QUANTITY

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Equipment No. | Description | Quantity |
| **1** | **P-E3515 (Bottom Channel Only)** | **CCR Dryer Purge Gas Heater** | 1 Set |
| **2** |  |  |  |
| **3** |  |  |  |
| **4** |  |  |  |
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|  |  |  |  |
|  |  |  |  |
|  |  | **Total** | **1 Set** |

###### *[Special Notes]*

* Channel 내부 Coating 필요함. (Chesterton S7)

###### 2. SCOPE OF SUPPLY

[X] Items and Quantity listed in Paragraph 1 and Engineering Notes

[X] Accessories: See Engineering Notes and Attached Specifications

[ ] Construction and Commissioning Spare Parts

[ ] One (1)-year Operation Spare Parts (Optional)

[ ] Special Tools for Operation and Maintenance, if required

[X] Others specified in this Requisition and Attachments

1. **SCOPE OF WORK**

[X] Mechanical Design and Guarantee

[X] Manufacturing

[X] Shop Fabrication

[X] Test & Inspection

[X] Painting (Up to Finish)

[X] Protection & Packing (Seaworthy for foreign vendor)

[X] Transportation

[X] NDE Test per Code, Specification and NDE Plan

[ ] Erection / Installation

[ ] Insulation

[ ] Commissioning and Start-up

[ ] Supervision (Optional price)

[ ] Training (Optional price)

[X] Others specified in this requisition and attachments

**4. DELIVERY CONDITION** : On Truck at Job site

**5. DELIVERY DATE** : Best Delivery

**6. DESTINATION** : Ulsan, Korea

**7. TEST & INSPECTION** : Per approved test and inspection procedure

developed by vendor according to the applicable codes, standards and purchaser’s specification

**8. ATTACHMENTS** : For the list, refer to “Table of Contents”

Attach. #1; ENGINEERING NOTES

1. GENERAL
   * 1. All documentation and drawings shall be in the English or Korean language, but where required by other authorities, another language may be used, but the English or Korean translation shall also be given alongside.
     2. The Metric Unit System (MKS) shall be used on all design and engineering documents and drawings. However English system shall be used on nominal size and rating for piping components.
     3. Vendor shall submit all documents and drawings in accordance with the requirements of this specification and attached "Vendor data requirements". (Refer to Attachment #2)
     4. The latest editions and addenda of codes and standards, and specifications listed below shall be considered as integral parts of this requisition. If any additional code and standard to the below is stipulated and referenced in the attached specification, those also shall be considered as integral parts of this requisition.

ASME Section VIII, Division 1, Pressure Vessel

TEMA Class “R”

ASME Section IX, Welding and Brazing Qualification

ASME Section V, Nondestructive Examination

ASME Section II

API 660

~~API 663~~

API TR 938-C

ASME B16.5 Steel Pipe Flanges and Flanged Fittings

WRC Bulletin 107/297

~~EJMA~~

~~ASCE7-2005~~

~~UBC-97~~

KDS(Korean Design Standard)

~~NACE MR0175~~

~~NACE MR0103~~

Standard Specification and Drawings listed in Attachment #4

* + 1. The order of precedence for the attached documents, the related codes and standards shall be as listed.

Engineering Note

Data sheet

Standard Specifications and Drawings

International Codes and Standards

Manufacturer Standards approved by the purchaser

* + 1. If there is conflict between the documents outlined in this requisition, the most stringent requirements shall govern.
    2. Any exceptions and deviations from the requirements of this requisition or the related specifications, applicable standards and Codes shall be clearly indicated in writing for purchaser’s approval by use of the format in the attachment #7. If no exceptions and deviations are listed, we intend that the bid should be completely in accordance with this requisition and relevant documents.
    3. Vendor should confirm the specified tubes could be accommodated in given shell diameter. If needed to increase shell diameter, vendor should clearly specify new diameter on his proposal. Unless otherwise specified, vendor should bear the cost impact due to change of diameter later.
    4. The vendor shall submit the following documents with his proposal.

Complete data sheets that show major data such as material, dimension, thickness, weight and etc. for each exchanger

Vendor shall submit “Sub-vendor list” for major parts or materials in his proposal.

~~Spare parts list for construction and commissioning, and recommended spare parts for one (1) year operation.~~

“Technical Clarification Sheet” in Attachment #6 after filling out the blank

Exceptions and deviations list, if any

1. SCOPE OF SUPPLY AND WORK
   * 1. Scope of supply

Vendor shall supply the tube bundles of shell and tube heat exchangers as a complete operational unit with all necessary accessories, spares including the following major items, but not limited to; (Scope of supply shall be determined according to the extent of fabrication)

Heat exchangers proper with assemblies as per para. 1

Baffles and tube support plates

Tie-rods and spacers

Seal strips and sliding shoes

Impingement plates

Pulling eye bolts and plugs

Floating head cover, flange & backing device

Bolts & nuts, gasket for floating head flange

Pass partition plates

Vent/drain and Instrument flange type connections(No coupling thread type)

Test rings for channel side of all exchangers

Test rings for floating head side of all exchangers

Lifting lugs for channel, channel cover and shell

Anchor bolts/nuts or setting bolts/nuts for saddle

Support for vibration

Shim plates for saddle of stacked exchanger (if required)

Sliding plate with teflon coated

Name plate with bracket

Grounding lug - min. 2(two) per item

Insulation supports

Temporary steel blind cover, gasket, bolt and nut for transportation

Temporary support for shipping and transportation

Spare parts for Construction & Commissioning

All accessories in accordance with datasheets and project specifications

All documents required per “Vender Data Requirement” in Attachment #2

* + 1. Scope of Work

Mechanical design and guarantee

Performance guarantee

Shop fabrication and assembly

ASME Code Stamping

Test and Inspection per Code & Specification

NDE Test per Code, Specification

PWHT, if required per Code & Spec.

Impact Test, if required per Code

~~PMI Test per Code, Specification~~

~~Ferrite Test per Code, Specification~~

Hardness test

Hydrostatic test

Painting up to finish for external carbon steel parts

Pickling and passivation for high alloy steel parts

Rust prevention during transportation

Rust prevention coating on all machined parts

Export packing and inland transportation

Application & Approval of Local regulation

* + 1. The following items will be provided by purchaser:

Foundation

Erection

Insulation material and work

Fire proofing material and work

1. DESIGN
   * 1. The equipment shall be designed, fabricated, tested, inspected and transported according to the requirements of the data sheets, general specifications, codes & applicable laws and regulations.
     2. All materials shall be designated on ASME Code for pressure and non-pressure parts. The materials directly welded on pressure retaining components shall be of the same material as that used for the pressure-retaining components.
     3. All shop fabricated items and their internals shall be supported and/or braced to prevent damage during operating, handling and transportation. All bracing and supports shall be designed and provided by vendor. In case of internal support design, local stress due to thermal expansion should be considered.
     4. Vendor shall submit welding procedures for review and approval prior to start of welding fabrication. A weld map for each vessel, and/or parts thereof shall be submitted with welds procedures location and identify with weld procedure number.
     5. Vendor shall consider the external primary mechanical loads to perform equipment design in accordance with WRC (Weld Research Council) bulletin for nozzles, clips etc. The external loads are to be informed by purchaser later.
     6. The minimum design metal temperature is –15°C. The impact test requirement shall be applied in accordance with ASME Sec. VIII Div.1.
     7. The following heat exchangers shall be designed in stacked condition.
     8. Tubesheet, Backing Device after rough machining : UT 100%
     9. Tubesheet, Backing Device after finishing: MT/PT 100%
     10. Reinforcement of nozzles shall not limit either the maximum allowable working pressure or test pressure.
     11. Nozzles 2” and smaller shall be fabricated with long weld neck.
     12. Vent and drain connection of 1”(3/4”) long welding neck with blind flange shall be provided at high and low point on shell side.
     13. Instrument connection of 1” long welding neck nozzle with blind flange shall be provided on the nozzle necks.
     14. Unless others specified, all nozzle flanges shall be welding neck type.
     15. ~~For carbon steel bolting in wet H2S service, vendor shall use SA193 B7M bolts and SA194 2HM nuts for floating head cover bolting and specify on general arrangement drawing the proper torque value after calculating.~~
     16. The tubes shall be heat treated after the final cold draw pass.
     17. All tubes are required to pass an eddy-current test per SA450 or SA1016 and hydrostatic tested as received from the mill. Eddy-current test shall have min. 72% fill rate
     18. C.S 모관 공급사는 SK에서 승인한 모관 Vendor로 제한함.
     19. The tube wall thickness shall be expressed as a dimension and not as a gauge. The tube wall thickness is minimum size if otherwise specified.
     20. U-bends shall be stress relieve heat treated and examined by PT after heat treatment.
     21. Tube expanding ratio shall be 100% examined and recorded.
     22. FCAW shall be prohibited for pressure retaining part welding including nozzle reinforcement pad welds. In case of PWHTed item due to process reason and low alloy steel, FACW shall be prohibited for all weld seam including non-pressure parts.
     23. Entire surface of forgings and plates 50mm thick and greater shall be ultrasonically examined with 100% scanning.
     24. Entire surface of forgings, regardless of thickness, shall be magnetic particle examined (MT) after finish machining. Liquid penetrate examination (PT) may be substituted in accordance with ASME requirements after finishing machining but before welding.
     25. Stacked exchangers shall be assembled in the shop to inspect accuracy of interconnecting nozzles and support fit-up.
     26. All alloy material other than carbon steel shall be PMI tested by SK ESS-90320. PMI rating as follows;  
         - Tubes: 5% of each heat  
         - Plates: 1 test per thickness per heat  
         - Flanges: 5% (minimum of 1 test per heat)  
         - Welding consumables: 5% (minimum of 1 test per heat)  
         - Plugs and Gaskets: 5% of each heat
     27. Match marks or dowel pins shall be provided in the following cased  
         (a) Multi-Pass Channel to Tubesheet  
         (b) Multi-Pass Floating Cover to Tubesheet  
         (c) Multi-Pass Channel Cover to Channel
     28. Gasket seating surface finish shall be concentric or spiral serrated finish as follows;  
         - Gasket Type : Mating Surface Finish  
         - Nonmetallic : Commercial Standard  
         - Metal Jacketed or Solid Metal : 1.6 ~ 3.2 Micron  
         - Spiral Wound : 3.2 ~ 6.4 Micron
     29. Min. U-bend mean radius shall be one and one-half times the tube outside diameter.
     30. U-tubes shall be formed from single length of tube.
     31. The minimum ligament between tube holes, gasket grooves, and tapped holes shall be 3mm.
     32. Impingement plates shall preferably be circular and shall be welded to at least two tie rods/spacers. The impingement plate diameter shall be a minimum of 50mm larger than the I.D of the nozzle.
     33. Light rolling after tube joints welding shall commence a min. 10mm apart from weld. The reduction ratio of tube thickness shall be within the range of 1 ~ 4%.
     34. Dye penetrate test (PT) shall be done on tube joints weldments per each pass.
     35. Clad or weld overlay part shall be examined and tested by UT according to SA-578 and strength of bond according to SA-264.
     36. ~~Tube holes in tubesheets for units shall be machined in accordance with Table RCB-7.41, Column (b) (Special Close Fit), of the TEMA Standard.~~
     37. If PWHT is required according to Code & Specification, PWHT shall applied to the pressure to non-pressure part weld. (ex. Sliding shoe to Tubesheet welds etc.)
2. SITE CONDITIONS

Equipment shall be designed in accordance with conditions below for each operating, erection and full water condition.

* + 1. Wind design (to be designed per KDS(Korean Design Standard))

Basic wind velocity : 40 m/sec

* + 1. Seismic design (to be designed per KDS(Korean Design Standard))

Seismic forces shall be calculated in accordance with KDS.

1. SPARE PARTS

Vendor shall supply spare parts as follows.

* + 1. ~~Spare parts for construction and commissioning~~

~~100 % of gaskets for shell flange, channel flange and tube sheet flange~~

* + 1. ~~Recommended spare parts for one(1) year operation (to be quoted as Option)~~

~~100 % of gaskets for shell flange, channel flange and tube sheet flange~~

* + 1. ~~Vendor shall prepare lists of spare parts with each price respectively on the attached format in Attachment #7.~~

1. TEST & INSPECTION
   * 1. Vendor shall prepare test & inspection procedure based on the applicable codes, standards and purchaser’s specifications referring to the type of inspection and details of test requirements.
     2. Vendor shall perform the test and inspection according to Source Inspection Plan and Test and Inspection Procedure, which is developed by vendor and approved by purchaser.
     3. Vendor shall be responsible for arranging all types of inspection, which are specified in the approved inspection plan and procedure. The owner/purchaser and their representatives reserve the right to attend at the inspection of any equipment or material, and to visit a vendor's or sub-vendor's shop at any time.
2. PAINTING
   * 1. The external surface of carbon steel part (including surface of support part) shall be surface prepared and finished by vendor in accordance with “Attachment II, Severe Environment” of painting specification ESS-82110.
     2. After test and inspection are completed, all exposed-machined surfaces of carbon steel shall be thoroughly cleaned and coated with a rust prevention by vendor.
3. PREPARATION FOR SHIPMENT
   * 1. Unless otherwise requested by purchaser, all supplied parts shall be shipped and tested with fully shop assembled condition.
     2. All openings shall be sealed with a metal cover and gasket, and the vessels shall be filled with nitrogen gas at a pressure of 1.05 kg/cm2(g) minimum.
4. GUARANTEE
   * 1. Vendor shall guarantee and be totally responsible for all mechanical design, fabrications, test, inspection and preparation for shipping of equipment according to all the attached data sheets, specifications, drawings and applicable standards & Codes.
     2. The vendor shall be responsible for the correct function and operation of all components. This responsibility includes guarantees, warranties, and coordination of all aspects of the complete units as well as scheduling and expediting of interface drawings and data required by purchaser.

**Attach. #2 ; VENDOR DATA REQUIREMENTS**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | C : Copy | |
|  | | | | | | CD : CD-Rom | |
| ITEM CODE | DESCRIPTION | WITH BID | FOR APPROVAL | FOR  FINAL | FINAL | FOR  DATA BOOK | NOTE |
| 1. | VENDOR PRINT INDEX. |  | 5C | 5C | 5C | 5C+1 CD |  |
| 2. | MANUFACTURING SCHEDULE |  | 5C |  | 5C | 5C+1 CD |  |
| 3. | PROGRESS REPORT |  | 5C |  |  | 5C+1 CD |  |
| 4. | DEVIATION LIST, IF ANY | 5c | 5C | 5C | 5C | 5C+1 CD |  |
| 5. | SUB-VENDOR LIST FOR ALL MATERIAL |  | 5C | 5C | 5C | 5C+1 CD |  |
| 6. | FOUNDATION DIAGRAMS AND LOADING DATA |  | 5C | 5C | 5C | 5C+1 CD |  |
| 7. | CATALOG INFORMATION, CUTS, ETC., IF ANY |  |  |  |  | 5C+1 CD |  |
| 8. | COMPLETED TECH. DATA SHEET | 5c | 5C | 5C | 5C | 5C+1 CD |  |
| 9. | GENERAL ARRANREMENT AND ASSEMBLY DRAWINGS. |  | 5C | 5C | 5C | 5C+1 CD |  |
| 10. | FABRICATION DRAWINGS AND DETAIL DRAWINGS |  | 5C | 5C | 5C | 5C+1 CD |  |
| 11. | MECHNICAL STRENGTH CALCULATION |  | 5C | 5C | 5C | 5C+1 CD |  |
| 12. | WELDING PROCEDURE SPECIFICATION AND PROCEDURE QUALIFICATION RECORDS (WPS& PQR) WITH WELD MAPS |  | 5C | 5C | 5C | 5C+1 CD |  |
| 13. | WELDING OPERATOR QUALIFICATIONS |  | 5C | 5C | 5C | 5C+1 CD |  |
| 14. | NDE MAP & PROCEDURES |  | 5C | 5C | 5C | 5C+1 CD |  |
| 15. | DETAILED PREHEATING PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 16. | POST WELD HEAT TREATMENT (STRESS RELIEVE) PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 17. | ISR (INTERMEDIATE STRESS RELIEF) PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 18. | STRESS RELIEVING PROCEDURE FOR U-BEND |  | 5C | 5C | 5C | 5C+1 CD |  |
| 19. | IMPACT TEST PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 20. | PMI PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 21. | HYDROSTATIC TEST PROCEDURES |  | 5C | 5C | 5C | 5C+1 CD |  |
| 22. | SURFACE PREPARATION AND PAINTING PROCEDURE |  | 5C | 5C | 5C | 5C+1 CD |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ITEM CODE | DESCRIPTION | WITH BID | FOR APPROVAL | FOR  FINAL | FINAL | FOR  DATA BOOK | NOTE |
| 23. | ALL PROCEDURE FOR EXAM., TESTING, & INSPECTION REQUIRED IN SPEC. & CODE |  | 5C | 5C | 5C | 5C+1 CD |  |
| 24. | QUALITY PLAN |  | 5C | 5C | 5C | 5C+1 CD |  |
| 25. | CERTIFICATES OF GUARANTEE |  |  |  |  | 5C+1 CD |  |
| 26. | MATERIAL TEST REPORTS OR MILL TEST CERTIFICATES |  |  |  |  | 5C+1 CD |  |
| 27. | RECORDS OF ALL EXAMINATION, TESTING AND INSPECTION |  |  |  |  | 5C+1 CD |  |
| 28. | NAMEPLATE RUBBING OR LEGIBLE PHOTOCOPY |  |  |  |  | 5C+1 CD |  |
| 29. | SHIPPING SCHEDULE AND PACKING LIST |  | 5C |  | 5C | 5C+1 CD |  |
| 30. | SPARE PARTS LIST FOR CONSTRUCTION AND COMMISSIONING | 5c | 5C | 5C | 5C | 5C+1 CD |  |
| 31. | SPARE PARTS LIST FOR ONE YEAR OPERATION WITH PRICES | 5c | 5C | 5C | 5C | 5C+1 CD |  |
| 32. | SPECIAL TOOL LIST, IF ANY |  |  |  |  |  |  |

NOTES.

1. Drawings and Data “FOR APPROVAL” will be submitted within four weeks from receiving L/I
2. Vendor’s “FOR FINAL” or “FINAL” data are required to submit within two weeks after the return of “FOR APPROVAL” data.
3. All required documentation, drawings including information, calculations, etc., should be submitted within the schedule, which is agreed between the vendor and purchaser.
4. Major material purchase, such as heads, shells, forged nozzles, etc., and fabrication shall not be proceeded without proper approval on the fabrication drawing or from purchaser.
5. Approval of Vendor Data and Drawings
   * 1. Drawings required “for approval” would be provided with reproducible for make-up. Drawing and documents required “for approval” will be marked, signed and returned to vendor within a maximum of fifteen (15) working days.Returned documents marked “Approval as Noted” or “Not Approval” shall be corrected by the vendor and resubmitted for Purchaser’s approval within ten (8) working days of receipt of comments.
     2. Documents specified to be provided as “Certified” (i.e. not subject to change by manufacture and/or vendors) would not be assumed “CERTIFIED” until submitted by the vendor with the prominent marking “CERTIFIED”.
     3. Document Required “FOR REFERENCE” would not be returned to vendor unless they are found not to comply the purchase order requirements. In such a case, the vendor shall correct the document and resubmit it “FOR REFERENCE” within ten (8) working days of receipt of comments.
     4. Purchaser’s comments on document, or lack of comments, shall not relieve the vendor of his responsibility to meet all the requirements of the purchase order.
6. Identification of Documents
   * 1. All vendor and sub-vendor documents shall carry identification numbering marking as detailed below, when submitted to purchaser. Any document submitted without this identification numbering marking may be returned to the vendor “DISAPPROVED”.
     2. An identification numbering block approx. 3”(75mm)×1”(25mm) in size shall be completed by vendor on each separate document as below. It shall be located near the title block where it will remain visible of the sheet is folded, or on the cover sheet of multi-page documents.

|  |  |  |  |
| --- | --- | --- | --- |
| PURCHASE ORDER NO. |  | | |
| DOCUMENT CODE | See Note (1) | | |
| SK DOCUMENT NO. | See Note (2) | See Note (3) | SK Corporation |

Note (1): Vendor shall enter the applicable item code as show on vendor data requirements table hereof.

Note (2): Vendor shall enter the applicable equipment tag number, to which the documents refers. Where the document refers to more than one equipment tag number, the package or principal equipment tag number, shall be entered.

Note (3): Vendor shall enter a sequential number(commencing with number 1) for each document submitted for each equipment, or package, or tag number.

* + 1. The client’s name (SK energy) and the plant identification, project name as indicated on the requisition cover sheet, shall be marked within, or near the vendor’s documents title block.

**3. Vendor Drawing Size**

All vendor drawings shall be of the following standard sizes.

A1 841 × 594 mm

A2 594 × 420 mm

A3 420 × 297 mm

A4 297 × 28 mm

**4. Quality of Reproducible**

Reproducible must be of microfilm quality.

**Attach. #3 ; REFERENCE DRAWINGS FOR EXISTING**

|  |  |  |
| --- | --- | --- |
| DOC. NO. | REV. | TITLE |
| - | Latest | Drawings would be provided through SK ‘Ocean’ system |
| - |  |  |

**Attach. #4 ; LIST OF STANDARD SPECIFICATIONS**

|  |  |  |
| --- | --- | --- |
| SPEC. NO. | REV. | TITLE |
| ESS-40100 | 1.5 | General Specification for Welding, Heat Treating and Non-Destructive Examination of Pressure-Containing Equipment |
| ESS-40110 | 6.6 | Pressure Vessels |
| ESS-40210 | 9.1 | Shell and Tube Heat Exchangers |
| ~~ESS-40240~~ | ~~3.3~~ | ~~Sectional Hairpin Heat Exchangers~~ |
| ESS-81111 | 7 | Hot Service Insulation |
| ESS-82110 | 2.8 | Painting |
| ST-42001 | 2 | Saddle for Heat Exchanger |
| ST-42006 | 0 | Impingement Baffle |
| ST-42008 | 0 | Sliding Shoe for Heat Exchanger |
| ST-42009 | 0 | Pulling Device for Heat Exchanger |
| ST-42010 | 0 | Lifting Lug for Heat Exchanger |
| ST-43002 | 1 | Minimum Spacing Distance Between Edges of Welds |
| ST-43008 | 1 | Name Plate & Bracket |
| ST-43011 | 1 | Typical Nozzle Detail |
| ST-43010 | 1 | Construction Details for Small Nozzles Pressure Vessels |
| ST-43026 | 0 | Standard Nozzle Length |
| ST-43027 | 0 | Reinforcing Pad for Nozzle |

**Attach. #5 ; SOURCE INSPECTION PLAN**

|  |  |  |
| --- | --- | --- |
| DOC. NO. | REV. | DESCRIPTION |
| SIP-4001 | 0 | NDE PLAN FOR CARBON STEEL |
| SIP-4201 | 0 | HEAT EXCHANGER (SHELL & TUBE TYPE) |

**Attach. #6 : TECHNICAL CLARIFICATION SHEET**

**Vendor shall submit this technical clarification sheet with proposal after filling out the "Bibber's Clarification" column**

**Attach. #7 ; LIST OF SAMPLE FORMS**

|  |  |
| --- | --- |
| NO. | DESCRIPTION |
| 1 | SPARE PARTS LIST FOR CONSTRUCTION AND COMMISSIONING |
| 2 | SPARE PARTS LIST FOR ONE-YEAR OPERATION |
| 3 | CLARIFICATION/EXCEPTION/DEVIATION LIST |

|  |  |
| --- | --- |
| **SPARE PARTS LIST**  **FOR**  **CONSTRUCTION AND COMMISSIONING** | PROJECT NO. :  RFQ NO. :  MFR’R : |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ITEM NO. | NAME OF PARTS | DRAWING NO. | QUANTITY (UNIT) | | SPEC.  (MATERIAL) | SKETCH  (MANUFACTURER’S NAME) | NET WT. (Kg/PC) | REMARKS |
| PARTS NO. | INSTALLAED PER ONE SET | RECOMMENDED QUANTITY | PIECE |
|  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| **SPARE PARTS LIST**  **FOR**  **ONE(1) YEAR OPERATION** | PROJECT NO. :  RFQ NO. :  MFR’R : |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ITEM NO. | NAME OF PARTS | DRAWING NO. | QUANTITY (UNIT) | | SPEC.  (MATERIAL) | SKETCH  (MANUFACTURER’S NAME) | NET WT. (Kg/PC) | REMARKS |
| PARTS NO. | INSTALLAED PER ONE SET | RECOMMENDED QUANTITY | PIECE |
|  |  |  |  |  |  |  |  |  |

**CLARIFICATION / EXCEPTION / DEVIATION LIST**

|  |  |  |  |
| --- | --- | --- | --- |
| RFQ PACKAGE | | CLASSIFICATION | CLARIFICATION / EXCEPTION / DEVIATION |
| PAGE | DESCRIPTION |
|  |  |  |  |