**TECHNICAL REQUIREMENT**

**for Procurement of Services**

**Decontamination and Degreasing of Equipment**

h) "Turn-key" service

Specification of services:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **SAP number of the service** | **Description** | **UoM** | **Quality certificate** |
| 1 |  | It is necessary to provide decontamination and degreasing of equipment (Table 1) for the purpose of shortening the time for the preparation of equipment for safe entry of the engaged personnel into equipment in order to conduct fault-finding and perform the required works.  *Table 1. List of Equipment*   |  |  |  |  | | --- | --- | --- | --- | | Item number | Designation of equipment | Name of equipment | Unit/designation | | 1 | DA-2101 | Atmospheric main column | CDU S-2100 | | 2 | FA-2101 | Top separator of the main atmospheric column | CDU S-2100 | | 3 | FA-2151 | Desalter | CDU S-2100 | | 4 | DA-2201 and DA-2202 | Vacuum column | VDU S-2200 | | 5 | FA-2201 | Barometer vessel | VDU S-2200 | | 6 | DA-4303 | Stripper column of products | MHC/DHT | | 7 | DA-4305 | Fractionator column | MHC/DHT | | 8 | DA-2301 | Main fractionator column | FCC S-2300 | | 9 | BA-2201A/B | Furnace | VDU S-2200 | | 10 | FA-2202 | Drainage vessel | VDU S-2200 | | 11 | FA-2208 | Raw material vessel (AR) | VDU S-2200 | | 12 | EA-2201A/B/C/D T | Heat exchanger (tube: AR, shell: HVGO) | VDU S-2200 | | 13 | EA-2202A/B/C/D T | Heat exchanger (tube: AR, shell: HVGO) | VDU S-2200 | | 14 | EA-2203A/B/C/D S | Heat exchanger (tube: SW, shell: AR) | VDU S-2200 | | 15 | EA-2204A/B/C/D T+S | Heat exchanger (tube: VR, shell: AR) | VDU S-2200 | | 16 | EA-2208A/B/C/D/E S | Heat exchanger (tube: demineralised wate, shell: VR ) | VDU S-2200 | | 17 | EA-2209 T | Heat exchanger (tube: VR, shell: boiler water) | VDU S-2200 | | 18 | EA-2210 T | Heat exchanger (tube: VR, shell: demineralised water) | VDU S-2200 | | 19 | EA-2221 Т | Water cooler (tube:VR, shell: tempered demineralised water) | VDU S-2200 | | 20 | BA-2101 | Furnace | CDU S-2100 | | 21 | EA-2101A/B/C/D T | Heat exchanger (tube: crude oil, shell: gasoline) | CDU S-2100 | | 22 | EA-2102 T | Heat exchanger (tube: crude oil, shell: kerosene) | CDU S-2100 | | 23 | EA-2103 T | Heat exchanger (tube: crude oil, shell: LGO) | CDU S-2100 | | 24 | EA-2104 A/B T | Heat exchanger (tube: crude oil, shell: HGO) | CDU S-2100 | | 25 | EA-2105A-F T+S | Heat exchanger (tube: crude oil, shell: AR) | CDU S-2100 | | 26 | EA-2106А/B T | Heat exchanger (tube: crude oil, shell: LGO reflux) | CDU S-2100 | | 27 | EA-2107A-F T+S | Heat exchanger (tube: AR, shell: crude oil) | CDU S-2100 | | 28 | DA-2102 | Stripper column, kerosene | CDU S-2100 | | 29 | DA-2104 | Stripper column, LGO | CDU S-2100 | | 30 | DA-2106 | Stripper column, HGO | CDU S-2100 | | 31 | ЕС-2101 T | Overhead air cooler of  DA-2101 | CDU S-2100 | | 32 | FA-49501 | Rich Amine Flash Drum | ARU S-4950 | | 33 | DA-4302 | CLPS vapour H2S absorber | MHC/DHT | | 34 | DA-4304 | Off-gas LP H2S absorber | MHC/DHT | | 35 | DA-49501 | Amine regeneration column | ARU S-4950 | | 36 | FA-2303 | Feed Drum | FCC S-2300 | | 37 | ЕС-2306 T | Overhead air cooler of main fractionator DA-2301 | FCC S-2300 | | 38 | DA-2302 | LCGO Stripper | FCC S-2300 | | 39 | DA-2303 | LCGO Stripper | FCC S-2300 |   AR – Atmospheric Residue  VR – Vacuum Residue  HVGO – Heavy Vacuum Gas Oil  SW – slop wax  LGO – Light Gas Oil  HGO – Heavy Gas Oil  LCGO-Ligt Cycle Gas Oil  T- They should be chemically treated from tube side  S- They should be chemically treated from shell side  T+S- They should be chemically treated from tube and shell side  Decontamination and degreasing means the following:   * + Removal of pyrophoric iron within equipment   + Removal of H2S and flammable hydrocarbons   + Removal of organic impurities and greases from the equipment surfaces |  |  |
| 2 |  | Maximum time to perform the entire service of simultaneous decontamination and degreasing of all equipment is listed in Table 1:  12 +/- 3 hours, started from the moment of dosing chemicals  Objective: the work should be performed in the time period which is as short as possible. |  |  |
| 3 |  | It is necessary that a qualified person appointed by the company who provides the service, keep record files, which must include the date and time for each of those actions (e. Started / finished draining, commenced / completed dosing chemicals, started / finished washing process, sampling of control samples, etc. .) with the consent of the plant host - mechanics (both parties initialed record files); |  |  |
| 4 |  | The Unit Manager responsible for mechanical works, together with the expert appointed by the company which is the service provider, must confirm that the relevant scope of work has been performed in a quality manner and the specified time period, by signing the minutes and pursuant to the signed Contract. The Attachment to the minutes should include the records sheet. |  |  |
| 5 |  | The Bidder is obligated to conduct visual check of equipment and measure the presence of pollutants and explosiveness by way of multigas process analysers and thus confirm the successful service provision.  The same check and measurement which has been conducted by Pančevo Oil Refinery will be regarded valid. |  |  |
| 6 |  | By explosive atmosphere measuring, the successful decontamination will be confirmed  Measured explosiveness (%LEL)  Measured concentration of О2  Measured concentration of CO  Measured concentration of H2S  The same check and measurement which has been conducted by Pančevo Oil Refinery will be regarded valid. |  |  |
| 7 |  | The quality of the water part from the effluent stream must have the following characteristics: RSH<25ppm wt, H2S<10 ppm wt, hydrocarbon index <200 ppm, pH from 6.5 to 9.5, BTX <25 mg/l |  |  |
| 8 |  | It is necessary to submit the technology of decontamination degreasing for each individual piece of equipment specified in Table 1. |  |  |
| 9 |  | It is necessary to submit the Time schedule |  |  |
| 10 |  | It is necessary to provide the required number of experts who will efficiently manage the complete work and supervision during decontamination and cleaning of equipment and who are qualified for handling dangerous substances. |  |  |
| 11 |  | It is necessary to provide the continuous presence of HSE qualified officer |  |  |
| 12 |  | It is necessary to submit the list of chemicals which will be used.  The following should be defined for each individual chemical substance:   1. Designation of the chemical substance 2. Type of the chemical substance 3. Required quantity 4. TDS 5. SDS (Safety Data Sheet) in English and in Serbian   All the chemicals must be in accordance with Regulation (ЕC) No1907/2006 (REACH) No1272/2008, No 45/1999: 548/1968 |  |  |
| 13 |  | The company as a service provider must use their patenting chemicals |  |  |
| 14 |  | The Bidder must include in his offer shipping back the chemicals that have not been consumed during decontamination and cleaning. |  |  |
| 15 |  | It is necessary to provide the system for dosing chemicals and submit the list and requirements for their safe work.  The Bidder must include in his offer chemical injection pumps and their shipping. |  |  |
| 16 |  | It is necessary to submit the list of additional equipment with detailed characteristics which should be provided by the Refinery during the performance of works |  |  |
| 17 |  | It is necessary to submit the list of additional required resources including the required quality, and these should be provided by the Refinery during the performance of works (water , steam, etc.) |  |  |
| 18 |  | It is necessary to define the conditions for each individual piece of equipment, and these must be provided by the Refinery in order to ensure the start of works on decontamination and cleaning. |  |  |
| 19 |  | Used chemicals should be biodegradable and compatible with the process treatment of waste waters in accordance with the legislation of the Republic of Serbia and the Law on Environmental Protection ("Official Gazette of the Republic of Serbia", No 135/2004, 36/2009, 36/2009 - as amended, 72/2009 - as amended, 43/2011 - Decision of Constitutional Court and 14/2016), the Law on Chemicals ("Official Gazette of the Republic of Serbia", No 36/2009, 88/2010, 92/2011, 93/2012 and 25/2015) which is based on the principle of precaution and the principle stating that the manufacturer, importer or further user produces, puts in distribution and uses chemicals in such a way as not to cause adverse effects on the human health and the environment and the Law on Waters ("Official Gazette of the Republic of Serbia", No 30/2010 and 93/2012) and all by-laws of the specified Laws. |  |  |
| 20 |  | It is necessary to guarantee that the chemicals used during the application of the decontamination procedure are compatible with all the materials (Table 1) with which they come in contact: basic material, cladding, coatings, seals, etc. |  |  |
| 21 |  | It is necessary to submit the procedure for handling and disposal of waste, as well as the procedure for potential additional treatment of generated waste with the detailed description and requirements for the provision of auxiliary tanks, vessels and other resources which should be provided by the Refinery.  During cleaning, it is not allowed to generate dangerous waste. |  |  |
| 22 |  | Disposal of waste must be in accordance with the Law on Waste Management ("Official Gazette of the Republic of Serbia", No 36/2009, 88/2010 and 14/2016). |  |  |
| 23 |  | It is necessary to provide efficient and fast separation of water from hydrocarbon phase and to direct the remaining emulsion to API separator;  It is necessary to specify the time period of the separation of water part from the hydrocarbon part, generated effluent in hours (objective: the deadline should be as shorter as possible); |  |  |
| 24 |  | It is necessary to specify dosing of the chemical substance for breaking the emulsion and/or prevention of foaming, which must be included in Item 12 of this document. |  |  |
| 25 |  | It is necessary to submit the list which includes the type and time schedule of laboratory services with the acceptable analytical methods, and which should be provided by the Refinery for the purpose of checking efficiency of decontamination and degreasing; |  |  |
| 26 |  | It is necessary to submit the reference list of works on the same type of equipment as specified in Table 1.at least for the last 10 years |  |  |
| 27 |  | Disposal of packing of chemicals shall be provided by the service provider |  |  |
| 28 |  | It is necessary to enclose filled-out forms for the purpose of HSE qualification on the basis of the Company's standard for management of contractors and third parties:   * Requirement for the submission of HSE documentation * HSE qualification questionnaire   The Contractor must be included in the list of HSE qualified contractors |  |  |
| 29 |  | It is necessary to submit the Risk assessment procedure and method statement |  |  |
| 30 |  | Technical part of the offer must be submitted chronologically by items identicaly according to the order of items in the technical task. |  |  |
| 31 |  | The service must be provided for 20/8/2016. |  |  |
| 32 |  | The Bidder must sign a confidentiality agreement before the offer submission. |  |  |

Attachments / special technical requirements

Attachments:

1. Mechanical drawing of equipment
2. P&ID
3. Plot plan
4. Questionnaires of equipment
5. Time schedule of overhaul activities

Special technical requirements:

1. Required number of experts for the purpose of efficient management of the entire work and supervision
2. HSE qualified Contractor.
3. Plan of the method of the performance of works in terms of technology and HSE.