| Sl No. | Pg. No: | Cl. No: | Customer Specification | Bidder Clarifications/Deviation | BHEL Reply |
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| 1 | Pg. 50 of 470 | | C. **Material**<br>Absorber vessels and its internal : SS-304.<br>Regeneration air cooler shell & tube sheet : SA-285 Gr. C or equivalent.<br>Relief valves : Brass or SS.<br>Tube of Heat exchanger : SS.<br>Desiccant : Silica Gel / Activated Alumina. | As per specs, the MOC of absorber vessel is SS304. (refer page no 50 of 470) This is very expensive. BHEL to check and revert | Bidder to follow technical specification |
| 2 | | | i) ASTM-A-182 F304 for Ball Valves<br>ii) A351 CF8M for cast body check valves,<br>iii) A 182 F304 for forged body check valves. | The below specs for ball valve is applicable for 50NB and below. But BHEL has asked for header pipe sizing @ 100 NB. BHEL to check and revert | Bidder to use A351CF8 material for the valve size above 50 NB. |
| 3 | Specs - Pg. 251 | 10 | Time synchronization of compressor microprocessor system with the DCS has to be done. Bidder to provide necessary hardware/software at their end. | Not possible. | Bidder to follow technical specification |
| 4 | Specs - Pg. 252 | 21 | All the transmitters supplied by Bidder shall be rack mounted. The transmitter racks shall be in Bidder's scope of supply. All transmitters shall be HART compatible. | NA - Shall be directly pipe mounted .<br>Shall offer Smart Transmitter for Filed instruments only | All transmitters shall be HART compatible. |
| 5 | Specs - Pg. 253 | 28 | Bidder to provide temperature transmitter along with compensating cable, JB/Rack & other erection hardware. | Shall provide TT as per spec for FI.<br>However all FI shall be directly pipe mounted . | Bidder to follow technical specifcation. |
| 6 | Specs - Pg. 253 | 33 | Redundancy of sensors shall be provided (except skid mounted as per OEM practice)<br>A) Triple redundancy for all analogue and binary inputs required for protection of systems/drives.<br>B) For all control functions dual redundancy of the sensors shall be provided by the bidder. | Redundancy cannot be complied by any means inside the skid .<br>Shall supply Filed instruments as per Tender P&ID | The Tender P&ID is for reference and minimum requirement of the package. The P&ID for the compressed air system shall be finalized after award of contract in line with the tender specification. Bidder to follow specification requirement. |
| 7 | Specs - Pg. 255 | 2.02.00 | Hardwired interfacing shall be provided with Station DCS for time critical, interlock, control & protection signals. Further PLC based control system for FGD shall be connected to Station DCS through redundant soft communication link (OPC over Ethernet based TCP/IP) for the information exchange through Station wide LAN. | Offered compressor system will not comply redundancy by any means . ELGi offered system shall have Modbus TCP/IP ( Non redundant ) for DCS interface either from compressor /Dryer LCP or from CSP. | Clause Not Applicable for CAS Package |
| 8 | Specs - Pg. 255 | 2.05.00 | Control & monitoring of electrical distribution system, namely PCC, bus coupler, incomer etc. for FGD system shall also be controlled from the PLC based control system for FGD as well as from respective switchgear unit. | Not in our scope | Clause Not Applicable for CAS Package |
| 9 | Specs - Pg. 12 | 2.8 | Necessary instruments for control and interlocks, instruments indicated in the P&I Diagram for the compressed air system to be considered as a minimum. Any additional instrument / valves required for successful operation of the system to the discretion of BHEL, shall be provided to BHEL by successful bidder without any price implication. | Shall offer as per Tender P&I only .<br>Any changes shall be charged extra . | The Tender P&ID is for reference and minimum requirement of the package. The P&ID for the compressed air system shall be finalized after award of contract in line with the tender specification. Bidder to follow specification requirement. |

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| **10** | 12/470 | 2.4 | Sequencing Panel | Pls note since only 2 compressor and 2 dryer are offered there is no need for CSP.<br>This can be achieved through BHEL DCS it self. | Bidder to follow technical specification requirement. |
| **11** | 12/470 | 2.8 | Field Instruments | Kindly note Instrument scheme inside the skid shall be as per OEM standard only.<br>we shall comply FI as per Tender P&ID. Any additional requirement on TENDER COMMON P&ID shall be charged extra and shall be as per Mutually agreed scope of Supply | The Tender P&ID is for reference and minimum requirement of the package. The P&ID for the compressed air system shall be finalized after award of contract in line with the tender specification. Bidder to follow specification requirement. |
| **12** | 15/470 | 6.6 | Exclusion | We shall submit only detailed operational philosophy of system. Logic and its development in DCS shall be under Customer scope. | Bidder to follow technical specification requirement. |
| **13** | 17/470 | 15 | Additional points | 15.7 KKS Tags shall be followed for the Filed instruments only. Inside the skid shall be as per OEM standard . | KKS tagging not applicable for items/instruments within the skid. |
| **14** | 27/470 | 5.01.02 | | Offered compressor shall its on Controller for its safety operation as per OEM standard a and shall be pre-Wired at factory. Hence no software shall be provided for Site utilization. All alarms, trip, Status shall be displayed on HMI of compressor controller itself. Start /Stop and Reset shall be through Soft Key/ Function keys on HMI of compressor controller. | Bidder to follow specification requirement. |
| **15** | 35/470 | 7.00.00 | | Kindly note Instrument scheme inside the skid shall be as per OEM standard only .<br>No Gauges applicable inside the skid. We shall be offering Non Smart type Transmitter for compressor operation and shall be direct pipe mounted. Shall comply Filed instruments as per Spec. However the same shall be DIRECT PIPE mounted only. | Bidder to follow technical specification. |
| **16** | 36/470 | 7.02.01 | | Kindly note Offered compressor will not have any Selector switches for selection as specified in TENDER.<br>BASE and STANDBY of compressor need to be programmed in DCS or in CSP only. Individual compressor will not have this provision. | Bidder's point on the selector switches has been noted.<br>Regarding bidder's query on the programming in the CSP bidder to follow specification requirement. |
| **17** | 37/470 | 7.03.00 | Control system description | d) Kindly note offered compressor will not have any Annunciation Blocks.<br>All compressor related Alarms, trip, Status shall be displayed on HMI of individual compressor itself.<br><br>E) Offered compressor will not have any Indication lamps. All compressor related Alarms, trip, Status shall be displayed on HMI of individual compressor itself. | Bidder to follow technical specification. |
| **18** | 37/470 | 7.04.00 | | Offered compressor shall have Modbus TCP/IP provision for DCS interface.<br>We shall extend applicable Hard wired PFC for DCS connectivity.<br>**Pls note : In case of CSP to be offered by Us then DSC shall have interface only with CSP (Not with compressor).** | reply is noted with the assumption that CSP is being considered. Details shall be discussed duting engineering. |
| **19** | 37,38 /470 | 7.05.00 | Annunciation system | Kindly note offered compressor will not have any Annunciation Blocks/Windows .<br>All compressor related Alarms , trip, Status shall be displayed on HMI of individual compressor it self . | Bidder to follow technical specification. |

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| **20** | 37,38 /470 | 7.05.01 | | below are the confirmation on tender spec<br>1) Confirm<br>ii) Confirm<br>iii) Confirm<br>iv) Not available<br>v) Pls note 5 and 3 are same<br>vi) Not a part of compressor. BHEL /Customer to take this feed back from Receiver only. However the same shall be as per Tender Proposed P&ID only.<br>vii) Noted and Confirm shall comply as Non standard<br>viii) Confirm<br>ix) Since the offered m/c is LT. For motor only PTC shall be provided. which shall trip the compressor after a pre-set temperature. Hence the spec is not complied<br>x) Confirm<br>xi) x and xi are same<br>xii) NA shall be a part of FI only<br>xiii) NA<br>xiv) Confirm<br>xv) Confirm General Alarm shall be complied | Bidder to follow technical specification. |
| **21** | 38 /470 | 7.05.02 | | Duplication of Process Parameters not possible shall extend the same only through soft link (Modbus TCP/IP). We shall extend applicable Hard-wired PFC for DCS connectivity. | Noted. Bidder to follow specification requirement. |
| **22** | 38 /470 | 7.06.01 | Interlocks | a) Confirm<br>b) NA - Shall comply the same for before after cooler only .<br>C) NA<br>d) Confirm<br>e) Confirm<br>f) Confirm as per OEM Standard. We shall stand Guaranty for its equipments performance. | Bidder to follow technical specification. |
| **23** | 39 /470 | 7.06.02 | | Noted . Shall be displayed on HMI | Bidder to follow specification requiremnt |
| **24** | 40 /470 | 10.04.00 | | NA. We shall submit only Operational philosophy. | Bidder to follow specification requirement. |
| **25** | 40 /470 | 10.07.00 | | Shall submit for Field Instruments only | Bidder to follow technical specification. |
| **26** | 79/470 | 3.00.00 | Redundancy | Redundancy shall not be complied by any means inside the skid . | Bidder to note that the refered clause doesnot pertain to the redundancy in the skid. |
| **27** | 206/470 | | ELECTRICAL SCOPE | 2) LPBS : not applicable for compressor application<br>3) JB not applicable as Control cable and Instrumentation cables shall be directly interface with Customer DCS .<br>5) Customer to provide the distance from Compressor room to DCS .<br>6) Shall consider 100/50mm tray with in the compressor room<br>7) Shall be site purchased during execution<br>8) Shall comply with in the compressor room if any<br>15) Shall be as per mutually agreed scope of supply<br><br>Observation on NOTE<br>1) Make of accessories inside the skid shall be as per OEM Standard and as per Previously executed BHEL projects<br>3) BHEL / Customer to provide incomer cables to confirm on this point .<br>4) Not under our scope . This shall be under BHEL /Customer scope. Offered system shall have Electronic earthing provision only. | 2) & 3) noted. However applicability shall be reviewed during detail engineering and incase the same is found applicable based on the documents submitted, bidder has to provide the same.<br>5) The distance from Compressor room to DCS shall be considered as 350M. (approx).<br>6), 7), 8) & 15) Bidder to follow technical specification. |
| **28** | 216/470 | 6.04.02 | | Lightning Impulse and Inter turn Insulation NA for LT motor | Bidder to follow techncial specification. |

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| **29** | 218/470 | 6.09.02 | | Offered motor shall have the provision however being a skid mounted Motor. GI strip earthing is not possible due to space constrain. | Bidder to follow techncial specification.Specific contraints if any shall be reviewed during detail engineering. |
| **30** | 251/470 | | Scope of C&I of Air compressor | 3. Kindly note offered compressor will not have any Annunciation - Windows or Indication lamps. All compressor related Alarms, trip, Status shall be displayed on HMI of individual compressor itself.<br>6. In case we are offering CSP - Common Sequencing panel. Compressor and dryer will be interface with CSP and CSP will be Hooked with DDCMIS/DCS.<br>8. **Contradiction - Somewhere the spec calls for Profibus and E&I spec calls for RS-485. Customer to clarify the clear Protocol requirement.**<br>As early observed from we shall provide CSP which shall interface with Compressor and dryer in return CSP will be interfaced with Customer DCS/DDCMIS. We shall comply the required protocol in CSP.<br>9. **All filed instruments (Instruments outside the skid) shall be directly interfaced with Customer DCS/DDCMIS only. Compressor controller or dryer controller does not have provision for interface any instruments outside the skid.**<br>**10. Time Sync is not possible with offered Micro Platform.**<br>11. Inside the skid shall be as per OEM standard. Shall comply Tender approved Vendors for FI only.<br>12. NA - All filed instruments shall be taken directly to DCS only.<br>17. NA this cannot be complied. Any addition shall have additional price implication<br>21. NA all offered instruments shall be directly pipe mounted only.<br>22. Shall comply for Field instruments only.<br>23. NA shall be as per Mutually Agreed scope of supply.<br>**33. Shall consider instruments as per Tender P&ID only.** | Bidder to follow techncial specification. |
| **31** | 258/470 | 6.01.03 | | Not applicable | Bidder to follow techncial specification. |
| **32** | 258/470 | 6.01.06 | | not in our scope. | Noted |
| **33** | 262/470 | 6.05.02 | | J) Kindly note we shall provide UPS DB with Contactor based switching OR BHEL to provide Approved vendor for Static converter. | Any UPS manufacturer have this static transfer switch |
| **34** | 289/470 | 4.14.00 | Furniture | Not in our scope as our scope does not have an EWS/OWS. | Noted w.r.t furniture |
| **35** | 299/470 | 4.15.00 | | NA all offered field instruments shall be directly pipe mounted. | Noted |
| **36** | 300/470 | 4.15.08 | | NA as all Field instruments shall be interface directly to DCS | Bidder to follow techncial specification. |
| **37** | 315/470 | 6.02.02 | | NA Offered motor shall comply a starting current of 770% and shall be subjected to tolerance | Bidder to follow techncial specification. |
| **38** | 322/470 | | TYPICAL DRIVE INTERFACE | Kindly note For compressor application LT motor shall be controller from compressor controller only.<br>No Start/Stop of Motor from DCS is possible.<br>Compressor does not have provision to interface Starter current. BHEL /Customer to take this to DCS /DDCMIS directly for Starter. | The start/stop command from DCS shall be connected to LCP, further it is interfaced with MCC. |
| **39** | 335/470 | | DDCMIS/LCP/SWGR/ INTERFACE FOR INDIVIDUAL COMPRESSRO AND DRYER | 1. Winding & Bearing Temp not applicable as the offered motor is LT | Noted w.r.t LT motor |

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| **40** | 15 / 470<br>17 / 470<br>25 / 470 | 5.2<br>15.5<br>4.08.00 | Clause No 5.2<br>Cooling water supply will be provided by the purchaser outside the compressor house (5m) within vicinity of Compressor house). The return hot water shall be terminated by the<br>contractor at the same location_ Parameters at TP. shall be as below:<br>INLET TEMP. TO PHE :38 oc<br>DESIGN PRESSURE= 10 KG/SQ.CM(G)<br>Pipe Size at cooling water TP = 100 NB (both for inlet & outlet)<br>Temperature rise for DMCW = 6 oc<br><br>Clause No 15.5<br>Compressor and air dryer shall be designed for cooling water (passivated OM water) with inlet temp of 38 deg C (max.). Further the temperature of the air at the outlet of after cooler shall be<br>limited to 7 Deg.C above cooling water inlet temperature i.e. outlet air temperature from air dryer in any case shall not be more than 45 deg. C. The Compressors coolers, dryer's coolers & / or after coolers shall be designed to withstand 10 kg/cm2 i.e., shutoff head of BHEL OM cooling water pumps. The pressure drop across the complete cooling water circuit shall be 10 MWC Successful bidder shall furnish break-up of pressure drop for individual components<br>and compressors as a whole in the datasheet to be submitted for approval at the time of detail engineering. | Please clarify the cooling water inlet temperature.<br>As per Page No 15 clause No 5.2 - Cooling water inlet temp is 38 Deg.C C and<br>As per Page No 17 clause No 15.5 - Cooling water inlet temp is 38 Deg.C C and<br>As per Page No 25 clause No 4.08.00 - Cooling water inlet temp is 39 Deg.C C | Compressed air system equipment requiring DM cooling water shall be capable of operation at design capacity with DM cooling water inlet temperature subject to a maximum of 38□C in DM cooling water (DMCW) system |
| **41** | 17 / 470<br>25 / 470 | 15.5<br>4.09.00 | Clause No 15.5<br>the temperature of the air at the outlet of after cooler shall be limited to 7 Deg.C above cooling water inlet temperature i.e. outlet air temperature from air dryer in any case shall not be more than 45 deg. C<br>Clause No 4.09.2021<br>The temperature of air at outlet from after cooler shall not exceed 10°C above the cooling water<br>inlet temperature. | Please clarify on air outlet temperature.<br><br>Can we limit air outlet temperature @ 10 Deg.C C above cooling water inlet temperature as per clause no 4.08.00. | Noted. The temperature of air at outlet from after cooler shall not exceed 10□C above<br>the cooling water inlet temperature. |
| **42** | 26 / 470<br>12 / 470 | 4.13.00<br>2.3 | Air Receiver Size | Please clarify Size of air receiver.<br>Shall we strict to 10 M3 or as per holding time | Air receiver size shall be 10 M3 |
| **43** | 28 / 470 | 6.07.00 | Compressor casing, rotor and shaft | MOC within compressor skid shall be as per OEM standards | Bidder to follow technical specification |
| **44** | 29 / 470 | 6.08.00 | Lubrication Systems | Lubrication within compressor skid shall be as per OEM standards | Bidder to follow technical specification |
| **45** | 29 / 470 | 6.09.00 | Gear Box | Gear Box within compressor skid shall be as per OEM standards | Bidder to follow technical specification |
| **46** | 31 / 470 | 6.11.09 | Receiver shall be heat-treated in accordance with BS-5169 or equivalent Indian / international standard . | BS 5169 is outdated and As per ASME, heat treatment is applicable for dished ends above 16.00 mm thickness. In our case plate thickness shall be less than 16.00 mm. BHEL to confirm for heat treatment requirements. | Bidder to follow technical specification. However, the plate thickness calculations and applicabl standards shall be reviewed during detail engineering. |
| **47** | 31 / 470 | 6.12.00 | Air Intake and filter system | Air Intake and filter system within compressor skid shall be as per OEM standards | Bidder to follow technical specification |
| **48** | 34 / 470 | 6.13.03 | Sight flow indicators shall be provided on water discharge from each cylinder, Intercooler and after cooler | We can provide sight flow indicators at the outlet of air compressor and at the outlet of air dryer only.<br>Sight flow indicators on water discharge from each cylinder, Intercooler and after cooler is not possible | 6.13.03 does not specify the requirement of sight flow indicators. However, incase the flow is indicated through any other instruments in the specified components, the same shall be taken up with end customer durimg detail engineering. |

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| **49** | 35 / 470 | 6.20.00 | Dew Point Indicator<br>Dew point indicator shall be digital type for spot measurement of dew point of air. The specification of the meter shall be as follows:<br>a) Range (-) 40 Deg.C C to(+) 20 Deg.C C<br>b) Accuracy ± 0.2 oc | Range of dew point meter shall be (-) 80 Deg C to(+) 20 Deg C | Bidder to follow technical specification |
| **50** | 39 / 470 | 8.04.02.d | Volumetric and overall efficiency of machine. | We have offered screw air compressor. Calculation of Volumetric and overall efficiency of machine.<br>Is a tedious process. Hence it is not possible to carryout these testing on offered air compressor | The routine tests/ Type test of the equipments shall be carried out inline with the approved TDS & QAP to be submitted by the successful bidder during the detail engineering stage. |
| **51** | 39 / 470 | 8.04.02.f | Any other test deemed necessary for the system. | Please define | The routine tests/ Type test of the equipments shall be carried out inline with the approved TDS & QAP to be submitted by the successful bidder during the detail engineering stage. |
| **52** | 40 / 470 | 8.06.00 | Dew Point tests to be carried out on each Air Drying Plant. | Can be carried out site after installation. | Bidder to follow technical specification |
| **53** | 40 / 470 | 8.07.00 | Any other test deemed necessary as per relevant code for compressor testing for the system. | Please define | The routine tests/ Type test of the equipments shall be carried out inline with the approved TDS & QAP to be submitted by the successful bidder during the detail engineering stage. |
| **54** | 42 / 470 | A | Vibration limit (measured at top and bottom of main bearing)<br>40 microns. | We will measure vibration in terms of velocity : 12 MM / Sec as per VDI 3836 | Bidder to follow technical specification |
| **55** | 43 / 470 | C | MATERIALS OF CONSTRUCTION | MOC within compressor skid shall be as per OEM standards | Bidder to follow technical specification |
| **56** | 45 / 470 | b) | MOC of air receiver | Either IS 2002 / SA516 Gr 60/ 70 | Noted, MOS as per IS 2002 / SA516 Gr 70 is acceptable. |
| **57** | 47 / 470 | c) | c) Intercooler, Aftercooler, Moisture Separator, Piping, Valves etc. | MOC within compressor / Dryer skid shall be as per OEM standards | Bidder to follow technical specification |
| **58** | 70 / 470 | 5.1 | Specification of Ball Valve.<br>i) ASTM-A-182 F304 for Ball Valves<br>ii) A351 CF8M for cast body check valves,<br>iii) A 182 F304 for forged body check valves. | Please clarify this material specs for sizes. | Please refer reply to sl. No.2 |
| **59** | 71 / 470 | 5.3 | Seating Surface<br>Sl. No. / Description / A. Cast Iron Body Gate/ Globe/Check Valve / B. Stainless steel Body Check/Ball Valve / C. Steel Body Gate/ Globe/Check Valve<br>(blank) / (blank) / (blank) / (blank) / with Stellite (min 350 HB) for forged body.<br>5.3 / Seating surface / 13% Cr steel as per IS 1570. / For Ball valves PTFE seats and seals. / 13% Cr. Steel as per ASTM-A-182 Gr. F6 | we can offer 13% overly on disk /wedge. BHEL | Query not clear. Bidder to follow technical specification |

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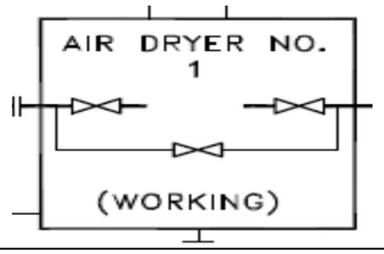
| **60** | 73 / 470 | |  | Considering HOC type air dryer, we will not suggest for y pass for air dryer. | Bidder to follow technical specification |
| **61** | 108 / 470 | | PROTECTIVE COATING AND PAINTING | Painting for air compressor and air dryer shall be as per respective OEM standards.<br>We can meet project specific painting specs for air receivers. | The painting specification shall be prepared and proposed to the end customer for their acceptance. However, the painting for air compressor and drier as per OEM standards is acceptable. |
| **62** | 341 / 470 | | List of sub vendors | we need an additional sub vendors<br>1. HAWA Engineering. Ahmedabad<br>2. Creseant Valve Manufacturing Co, Ahmedabad | Bidder to follow technical specification. Additonal sub vendors shall be proposed to Customer during detail Engineering and shall be subject to customer approval. |