

**As per the Pre-Bid meeting held on 13/03/2023 and Corrigendum No.1 issued on 03/04/2023 and subsequent site visit carried out by the Prospective Bidders, further deliberations held with the Chief Mechanical Engineer and further queries by the Bidders the following replies / Corrigendum /Amendment is issued with a request to submit the Bids through GeM Portal on or before 25/05/2023.**

|   | <b>Bidder No. 1</b>  | <b>Amendment / Corrigendum, issued.</b>   |
|---|--|---|
| 1 | Redundancy with reduction in power:<br>Redundancy feature should be available in the proposed 3 MVA system. In case of failure of one module, the system can operate on reduced capacity up to 2 MVA.  | Yes   |
| 2 | N+ 1 redundancy, to have same power from SFC in case of failure of one unit of SFC 3 MVA system can be paralleled to achieve a capacity of 6 MVA. It can also be designed and extended to 4 MVA (3 MVA working and 1 MVA standby, i.e. N+1 redundancy) Hence, such system can be used for capacities up to 8 MVA by paralleling two 4 MVA system.  | <b>As per the Technical Specification, the Shore Power requirement is 2 x 3MVA. Any alternate design beyond the capacity of 3MVA shall be designed considering the cost implications.</b> |
| 3 | In case during the peak demands above 6 MVA, SFC should have provision of connecting alternate & simultaneous power source such as battery bank for peak shaving. Peak Shaving feature of SFC: It flattens the demand peaks from grid power and thus reduces peak demand charges. Can provide power through battery modules in case of Grid Failure. <b>(Attached document for your reference)</b> | <b>Not required.</b>  |
| 4 | SFC should supply Load on the vessel with Power Factor should Up-to 0.5 lead and 0.5 lag and unity   | Power factor shall be at minimum <b>0.95 lag.</b>   |
| 5 | The minimum requirement size of the management should be 16mva.  | 6 MVA as per tender, with minimum (4) four sockets 11/6.6KV, Neutral and communications cables as per IEEE 80005-1,2,3 ETC.   |

## Bidder No.2

| Sl. No. | TD Page Reference | Clarifications raised by the Bidder  | Amendment / Corrigendum, issued.  |
|---------|-------------------|--|---|
| 1       | 128               | Please share the soil bearing capacity (SBC) of the Berth wherein HVSC substation is proposed to built.  | The safe bearing capacity at site may be considered as 5.0Ton/SqMtr.  |
| 3       | 149               | Can we offer only 1 FC with 3MVA capacity for single unit?   | As per design it may be done.   |
| 4       | 150               | What is the maximum hight of the ship power connection from Berth and extension leght within the ship?   | EPC contractor shall design the same as per the vessels' standards. The height of power connection opening is about 5 to 6 Meters from Wharf / berth level in most of the ships. Length within the ship can be 3 to 4 metres. |
| 5       | -                 | Civil Drawing of jetty showing cable trench for existing 3.3KV supply trench for crane.  | Civil drawing of Ernakulam Wharf Q8 and Q9 Wharf diagram is uploaded to show the Cable Trench available in this area.   |
| 6       | 150               | How many power cables are required on cable drum? As per IEC 80005-1 there should be 4 power cables ( 3P, 1E,1P), 1Neutral, control cables 24VDC and 110VDC and SCADA. Whereas during site visit requirement was discussed for only two power cables ie. (3P, 1E,1P) each rated for 3MVA. Please confirm how many cables are required. | Power cable shall be of 4 (Four) nos. with sockets 11/6.6KV, neutral and communication cables   |
| 7       | 150               | How many CMS systems are required? One CMS can supply power to one ship only at a time.  | One Cable Management System shall be designed and supplied to give power supply to one ship at a time.  |
| 8       | 109               | How many junction boxes are required?  | 2 nos. (11/6.6KV) outdoor SS 316 marine grade.  |
| 9       | 150               | What are the constitutions when a total of 6MVA shall be required? Will it be required for one ship or multiple ships?   | Maximum 6 MVA to a single ship with further options of two 3MVA maximum ie. The system proposed to be installed shall have provisions of connecting one 6 MVA Power to the Cruise Vessels and two 3 MVA Power.                |

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| 10 | -   | there's no existing arrangement for cable laying from proposed HVSC location to proposed junction boxes at Berth. Please clarify construction of cable trenches will be in CopA or vendors scope?                        | The Junction boxes is envisaged to be fixed at about 30M from the <b>wharf edge</b> . The trench is under the scope of the bidder. Existing trenches at berth frontage can be used by EPC by modification if any, and after laying the cables same has to be <b>restored to the original</b> condition by the contractor. |
| 11 | -   | Moving arrangement for CMS required shall be Battery or auxiliary power?.  | Auxiliary supply arrangements shall be made available by EPC contractor from new Substation or nearby location from nearest tapping point including cables.   |
| 12 | -   | Please clarify construction of cable trench from HVSC substation to new supplied 11KV/433 volt transformer location and from the transformer to LT junction boxes shall be in vendor or CoPA Scope?                      | LT shore supply of 1MVA/440V system is <b>removed from the scope of the Tender</b> . However, EPC contractor shall lay the 11kV cable from the new substation location proposed near Sagarika Cruise Terminal to Q7 berth location (250M).  |
| 13 | 122 | Tender specify requirement of 1MVA, 440V at 50 and 60 Hz both, whereas while discussion with CoPA team during our visit on 26th April 23 it was communicated that requirement is for only 50Hz. Please confirm the same. | <b>LT shore supply of 1MVA/440V is de-scoped from the Tender Specification.</b>   |
| 14 | 122 | Please specify no. of junction boxes for 440V supply and distance between them.  | <b>LT shore supply of 1MVA/440V is de-scoped from the Tender Specification.</b>   |

**Bidder No.3**

| <b>Sl. no</b> | <b>Specification</b>  | <b>Page no.</b>         | <b>Clarifications raised by the Bidder</b>   | <b>Amendment / Corrigendum, issued.</b>  |
|---------------|---|-------------------------|--|--|
| 1             | Transformers of 4MVA capacity is shown for step down and step up and for galvanic isolations. Also you have shown parallel combination of 3nos. of AFE Frequency Converters, each having capacity of 1MVA, for a total stack capacity of 3MVA . | 81 of 165<br>148 of 165 | <p>The scope of supply is mentioned as 3nos of AFE Frequency converters having capacity of 1MVA with filters etc 2nos.Please clarify whether 6 modular individual 500KVA SFCs can be considered.</p> <p>In this case the use of 500KVA to 3000KVA in 6steps is possible.</p> <p>If any units becomes faulty it can be isolated and other units can be operated safely.</p> <p><b>Galvanic isolation is needed for 1MVA units operated in parallel requiring 1250Kva seperate transformers or multi winding transformers.</b></p> <p>Please confirm whether individual 1MVA units in parallel externally is required or 6nos of 500KVA units of modular construction parallaled internally can be considered.</p> <p><b>Type of transformer- ONAN is considered with 1.2 % total losses.</b> Rated capacity of the onload tap changer for 4 MVA at 11 kV is just sufficient which is to be noted.</p> | <p><b>3 / 6 stack is also accepted as per design. The Bidder shall consider the cost implications.</b></p> <p>Tender conditions prevail. 3MVA SFC with stack as per design, with Galvanic isolation as per requirements.</p> <p><b>3 / 6 combined stack is also accepted as per design. The bidder shall consider the cost implications.</b></p> <p>Transformers shall be of minimum level 2 as per latest BEE standard. OLTC is not required since SFCs can <b>take care of</b> the voltage regulation/ fluctuations.</p> |

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|   |   |            | 3 MVA SFC's input, and output voltages are selected for 690 volts. Accordingly, voltage rating of the 4 MVA transformers will be 690 volts instead of 440 volts  | CoPA design requirements shall be met with by the bidder as per the tender specification/ Scope of work.  |
| 2 | Section III Cl 2.(n): Design, Engineering, Installation and Commissioning has to be done as per the requirements and recommendations of TPIA appointed by CoPA.   | 82 of 165  | TPIA means Third party inspection Agency, they are meant only for verifying the manufactured goods/product as per approved drawing & published specifications. Kindly clarify whether they are involved in design, Engg, Installation & commissioning. | TPIA scope involves checking the design as per QAP, Design, Engg, Supply, Installation, Testing and Commissioning and handover of the High Voltage Shore connection of 6 MVA to the satisfaction of the Engineer i/c of CoPA. |
| 3 | It is proposed that the shore power system (OPS ) shall contain the Transformers, Static Frequency Converters, HT Switchgear (at 50Hz and 60Hz), LV Distribution Panels, DC battery charger   | 113 of 165 | Please inform the battery backup time & Ampere Hour required for 110 volt and 24 volts DC  | Battery backup is envisaged for substation HT/LT control panels, protection systems supply, emergency lighting etc. with minimum 3 HRS back UP.   |
| 4 | D.1 Design requirements<br>ii. System study and calculations<br>b) The short circuit current calculations as per IEC 61363-1 shall be performed in order to take into account the prospective contribution of the shore supply and the ship's installations. The following ratings shall be defined and used in these calculations: | 132 of 165 | Ship side short circuit contribution depends on the visiting ship, hence CoPA to clarify how the same can be studied   | 25 KA as per COPA level and contractor shall design as per IEEE 80005-1-2-3 standards for HVSC.   |

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|   | <p>1) For shore supply installations, a maximum and minimum prospective short-circuit current for visiting ships;</p> <p>2) For ships, a maximum and minimum prospective short-circuit current for visited shore supply installations.</p>                            |            |  |   |
| 5 | <p>iii) The prospective short-circuit contribution level from the onboard running induction motors and the generators in operation shall be limited to a short-circuit current of 25 kA RMS.</p>  | 133 of 165 | Please clarify as IEEE 80005 version is not matching   | Shall be Designed as per IEEE 80005 standards |
| 6 | <p>ii. Quality of HV shore supply<br/>The HV shore supply system shall have a documented voltage supply quality specification</p>   | 134 of 165 | Kindly elaborate on the documentation? Should it be in line with any IEC/IEEE guideline/standard | It should be in line with IEC/IEEE standards. |
| 7 | <p>Shore connection and interface equipment<br/>Ship-to-shore connection cable extensions shall not be permitted.<br/>The suitability of connectors with regard to peak short-circuit withstand capability shall be verified during the compatibility assessment.</p> | 138 of 165 | What is the verification procedure?  | It should be in line with IEC/IEEE standards. |

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| 8  | <p>(v) Providing shore power connection in 440V System both in 50 Hz &amp; 60 Hz frequencies with capacity of 1 MVA</p> <p>B. To meet the requirements of Low Voltage Shore power connections to the vessels in both 50 Hz &amp; 60 Hz frequencies</p> <p>3) Installation of No. 1 (one) Transformer 11/.433, 50hz for Substation use.</p> | <p>109 of 165<br/>108 of 165<br/>164 of 165</p> | <p>Kindly clarify whether 1MVA 440V,60HZ, 1MVA,440V, 50HZ and transformer for substation use can be combined by installing a 2500KVA, 11/440V Transformer.</p> <p>Can we propose a line isolation transformer (440/400 volts) of suitable capacity for small power, lighting and other substation loads from the LT side of the 2.5 MVA transformer, which is feeding 2 x 1 MVA shore power?</p> | <p>LT shore supply system is <b>de-scoped</b> from <b>the scope of the Tender</b>. Only supply and laying of 11KV cable (about 250M) is considered.</p> <p><b>Installation of No. 1 (one) Transformer 11KV /433V, 50hz is considered for the Auxiliary / Control supply for the Substation.</b></p> |
| 9  | <p>(ii) Cabling from 110 KV Main Receiving Station to the proposed Substation</p>  | <p>108 of 165</p>                               | <p>Method of 11 kV cable laying from the 110 kV substation to the shore substation - HDD, direct burial, built up trench etc, location of HDDS, Trench, Direct burial may be given.</p>  | <p>The bidders have already inspected the cable route and according to the site conditions the method of cable laying may be carried out with the approval of CoPA/ TPIA.</p>   |
| 10 | <p>5 Cable management system, here shown as shore-side crane</p>   | <p>150 of 165</p>                               | <p><b>Cable management system is shown as shore side crane. Kindly advice who will provide the crane?</b></p>  | <p><b>CMS shall be equipped with telescope type of jib for facilitating the cable connection to the vessel's socket.</b></p>  |
| 11 | <p>The shore-side transformer star point shall be earthed, through a neutral earthing resistor of 540 ohms, and connected only to the ship-side (see Figure 3.1) during ship operation. When a ship is not connected, it shall be connected to earth.</p>  | <p>136 of 165</p>                               | <p><b>540 Ohms NGR can be considered for two voltage levels 11 and 6.6 kV? Kindly confirm</b></p>  | <p>Shall be done as per CEA/ IEC/ IEEE standards.</p>   |

| Sl.no. | Clarifications raised by the Bidder   | Amendment / Corrigendum, issued.  |
|--------|---|---|
| 1      | Only one Cable Management System for 11/6.6 kV sides with two feeder points conforming to IEC standards is needed.  | Only one cable Management system is envisaged and supply shall be given to one ship at a time, conforming to IEEE 80005-1,2,3 / IEC standards .   |
| 2      | <p>Cargo ships' feeders and their substations are taken out from the scope of supply.</p> <p>As such, kindly consider two power cables only from the 110/11 kV substation instead of three cables included in the tender.</p> | <p>LT shore supply system is de-scoped and all other requirements are as per tender. The 11KV cable from proposed substation near Sagarika Cruise terminal up to Q7 berth is under the scope of the contractor, including cable trench/ HDD.</p> <p><b>3 Runs of 11kV cables have to be laid from the 110kV substation to the proposed substation at Ernakulam Wharf up to the Sagarika Cruise Terminal as per tender scope of work</b></p> |
| 3      | AMC of 5 years after the two years of guarantee period to be kept as an optional item.  | <b>AMC rate for 5 years shall be quoted as per the BoQ by the Bidders after the guarantee period as per Tender conditions.</b>  |
| 4      | Penalty clauses for shutdown of the equipment may be removed.   | Tender condition prevails   |
| 5      | Consider single 3 MVA SFC's with modular units instead of three numbers of 1 MVA.   | Can be considered as per design.  |
| 6      | On load tap changers in the transformers may be taken out. SFC's can take care of the voltage variations.   | Transformers shall be of minimum Level 2 with latest BEE standard and OLTC is not required since SFCs can take care of the voltage regulations/fluctuations.  |
| 7      | Length of the moving cables shall be the shortest as possible, say maximum of 40 meters.  | Minimum 60 meters shall be considered as per the location of the ship and location of shore panels near berth.  |
| 8      | Please consider outdoor ring main units for the output side of the SFC's step up and isolation transformers instead of vacuum circuit breakers of draw out types.   | VCB panels shall be installed as per the scope of work.   |

**This corrigendum forms part of the tender document.**

**CHIEF MECHANICAL ENGINEER**



**Clarifications to Pre Bid Queries dt:03/04/2023**

| Sl. No | Name of the Firm | Query   | Reply to the query   |
|--------|------------------|---|--|
| 1      | Bidder 1         | 1) Tender due date may be extended to 31st March 2023   | Tender submission date extended till 13/04/2023  |
| 2      | Bidder 2         | As the scope is vast , the due date may be extended to 10 <sup>th</sup> April   | Tender submission date extended till 13/04/2023  |
| 3      | Bidder 3         | a) Tender Document does not specify any product related technical specifications for Power Frequency Converters, Transformers etc.<br>b) The technical Specification of all the products may be provided<br>The due date may be extended to 30 <sup>th</sup> April 2023 | Since the contract is under EPC mode the contractor shall Design , Engineering, Supply, Installation, Testing, Commissioning of 6 MVA High Voltage Shore Connection for the International Cruise vessels calling at Ernakulam Wharf as per the technical specification mentioned in the tender |
| 4      | Bidder 4         | Submitted MoM and request alternation/ remarks/ comment. Since EPC project that involves various stake holder, need time to work upon the same, hence, Tender due date may be extended for 1 month from 20/03/2023  | Tender submission date extended till 13/04/2023  |
|        |                  | 1) Fault current requirement for the 11KV panels which are at 110 KV substation   | 25kA<br>Agreed   |
|        |                  | 2) Length of Berth Q8andQ9  | 200metres<br>200 metres each   |
|        |                  | 4) Max Length of Ship   | 265 metres<br>Agreed   |
|        |                  | 5) Length from proposed facility/SS to Berth  | 30 metres<br>Agreed  |
|        |                  | 6) Ownership of the cable route land from 110 KV substation to proposed Substation at   | Land belongs to CoPA only. Required permission, if<br>Land belongs to CoPA and hence no permission is required from any other authorities.   |

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|  | Ernakulam Wharf.  | any shall be taken by CoPA only.  |  |
|  | 7) Type of Transformers to be selected Dry/oil cooled   | As per vendors design.  | Agreed   |
|  | 8) Location of the SCADA System   | SCADA shall be installed in the proposed substation near Berth.                       | Agreed   |
|  | 9) Moving arrangement of the cable management system -Tyre/Track  | CMS shall be tyre mounted and cable drum shall also be mounted on movable CMS system. | CMS shall be tyre mounted and cable drum shall also be mounted on movable CMS system with sufficient length of cable |
|  | 10) Engagement of consultant for the proposed project   | Engagement is under process   | Agreed   |
|  | 11) Tender specify requirement of stepping down 11KV voltage to 433V for convertor operation. As per our understanding convertor voltage design can be varied from manufacturer to manufacturer. This should be as per vendor design only. We shall ensure intake of supply at 11KV and output at 11KV/6.6KV with required 50 and 60 Hz | To be confirmed CoPA  | Agreed, as per the design  |
|  | 12) In the layout shown on the page two 11KV breakers shown in Series for by pass supply before transformer. As per our understanding, they are   | To be confirmed CoPA  | HT Panels shall be of draw out type  |

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|  |  | at same substation and there is no equipment in between. They are not required.   |                         |   |
|  |  | 13) In the layout shown on the page bus coupler in the incoming 11KV panel not shown. Please confirm whether same is needed.  | To be confirmed CoPA    | For flexibility and isolation of HT supply, bus coupler shall be provided                           |
|  |  | 14) Tender Specify requirement of Active front End frequency convertor. As per our understanding same is required only in case power is needs to be feed back to source (Regeneration). Please clarify the same. Let us know in case there is any load which is planned to connect which can feed power back to the source. | To be confirmed CoPA    | Tender condition prevails. Frequency converter shall be designed accordingly as per IEC/IEEE80005-2 |
|  |  | 15) THD requirement for the convertor   | As per IEC requirement. | Agreed  |
|  |  | 16) Requirement of specific protocol for communication between HVSC and ship  | To be confirmed by CoPA | As per IEC/IEEE80005-2  |

**The stipulated Completion/Contract Period of 12 months (mentioned as Item (I) of Bid Information sheet in NIT ) is revised to 10 months.**

**This corrigendum forms part of the tender document.**

**CHIEF MECHANICAL ENGINEER**