# Corrigendum-3

# To

# EOI No. MRPL/CS/2022-2023/01

## Expression of Interest (EoI)

**From**
**Any Indian/Global Company/their Affiliates/Representatives**

**For**

**Detail Engineering, Supply, Installation and Commissioning of Electrolyser module/s along with all auxiliaries for production of Green Hydrogen, of capacity 500 TPA (62.5 Kg/hr), for mixing with refinery H2 network at the Refinery located in Mangalore, Karnataka, India**

# Detail Engineering, Supply, Installation and Commissioning of Electrolyser module/s along with all auxiliaries for production of Green Hydrogen

**With reference to above Expression of Interest, applicants are requested to note the following:**

The items, conditions, specification and stipulations of the EOI Document stand modified to the extent indicated in the attached amendment as per attached **annexure**. The implications of the same, elsewhere in the tender shall be taken care of appropriately by the applicants. All other terms and conditions, stipulations and specifications of EOI shall remain unaltered.

## ANNEXURE- ADDENDUM TO EOI NO. MRPL/CS/2022-2023/01

| Sl. No. | Reference of EOI Document | | | | Existing Clause | Amendment |
|---|---|---|---|---|---|---|
| | Sec. No. | Page No. | Annexure/ Clause No. | Subject / Statement | | |
| 1. | Section-I | 4 of 29 | N.A | Critical Dates | EoI Submission End Date 22.07.2022 | EoI Submission End Date 30.07.2022 |
| 2. | Section-III | 10 of 29 | 7.5 | Technical Specification | The guaranteed service life of electrolyzer stack shall not be less than 80000 hrs (Service Life Guarantee). Any replacement cost during the guarantee period i.e. before 80000 hrs shall be borne by bidder and this requirement shall survive the termination of DJU that the bidder may have entered into with manufacturer and/or shall survive the termination of the agreement that the bidder many have entered into as a channel partner with the manufacturer. | **Revised clause shall be read as below:**<br><br>The guaranteed service life of electrolyzer stack shall not be less than **40000** hrs (Service Life Guarantee). |

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| 3. | Annexure | -- | Annexure-IV (Sl No. 22) | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br><br>Guaranteed Service Life of Electrolyzer Stack (Min. shall be 80000 hrs) | **Revised clause shall be read as below:**<br><br>Guaranteed Service Life of Electrolyzer Stack (Min. shall be **40000** hrs) |
| 4. | Section-III | 10 of 29 | 7.9 | Technical Specification | The entire plant along with all auxiliaries shall be installed with-in the available plot area i.e 500 **m2** , excluding substation. MRPL intends to supply power at the battery limit of the bidder/applicant from an existing substation located within the Refinery. The electrolyzer stack and the BOP like feed preparation section, Gas purification system, oxygen-water separator, pumps, compressors, heat exchangers, | **Revised clause shall be read as below:**<br><br>The entire plant along with all auxiliaries shall be installed with-in the available plot area i.e 500 **m2** , excluding substation. The electrolyzer stack and the BOP like feed preparation section, Gas purification system, oxygen-water separator, pumps, compressors, heat exchangers, all associated auxiliaries etc. shall be installed within this available plot area |

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| | | | | | all associated auxiliaries etc. shall be installed within this available plot area preferably as a skid or containerized unit. | preferably as a skid or containerized unit. **An additional plot area of 175 m2 will be provided for the substation.** |
| 5. | Annexure | -- | Annexure-IV (Sl No. 33) | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br><br>Execution period required (project schedule) from the date of award of job to commissioning of the facility. Applicant to specify (Shall not exceed 15 months) | **Revised clause shall be read as below:**<br><br>Execution period required (project schedule) from the date of award of job to commissioning of the facility. Applicant to specify **(Shall not exceed 20 months)** |

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<tr><th rowspan="2">Sl. No.</th><th colspan="4">Reference of EOI Document</th><th rowspan="2">Existing Clause</th><th rowspan="2">Amendment</th></tr>
<tr><th>Sec. No.</th><th>Page No.</th><th>Annexure/ Clause No.</th><th>Subject / Statement</th></tr>
<tr><td>6.</td><td>Section -III</td><td>9 of 29</td><td>7.1</td><td>Technical Specification</td><td>(Issued as part of Corrigendum-I)<br><table><tr><th>Unit</th><th>Value</th></tr><tr><td>H2 vol%</td><td>99.99 % min.</td></tr><tr><td>CO+CO2</td><td>20 ppm vol max</td></tr><tr><td>N2</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>O2</td><td>1 ppm vol max</td></tr><tr><td>H2O</td><td>5 ppm vol max</td></tr><tr><td>KOH/NaOH</td><td>Nil</td></tr><tr><td>Cl</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>Chlorine plus Chlorides</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>Metals, ppm max</td><td>Bidder to specify if any/Indicate NIL</td></tr></table></td><td>Revised clause shall be read as below:<br><table><tr><th>Unit</th><th>Value</th></tr><tr><td>H2 vol%</td><td>99.99 % min.</td></tr><tr><td>CO+CO2</td><td>20 ppm vol max</td></tr><tr><td>N2</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>O2</td><td>5 ppm vol max</td></tr><tr><td>H2O</td><td>5 ppm vol max</td></tr><tr><td>KOH/NaOH</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>Cl</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>Chlorine plus Chlorides</td><td>Bidder to specify if any/Indicate NIL</td></tr><tr><td>Metals, ppm max</td><td>Bidder to specify if any/Indicate NIL</td></tr></table></td></tr>
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| 7. | Section-III | 8 of 29 | 6.1 | Technical Eligibility Criteria | (Issued as part of Corrigendum-I)<br><br>The Manufacturer or the Channel partner should have supplied and installed at least one unit of electrolyser having minimum 5 kg/hr Hydrogen production capacity based on above technology (PEM)/Alkaline Pressurized Bipolar Technology in last 5 years, and should have been in successful commercial operation for at least 6 (six) months prior to the last date of month previous to the one in which bids are invited. This should be corresponding to the electrolyzer type being offered to MRPL. | **Revised clause shall be read as below:**<br><br>The Manufacturer or the Channel partner should have supplied and installed at least one unit of electrolyser having minimum 5 kg/hr Hydrogen production capacity based on above technology (PEM)/Alkaline Pressurized Bipolar Technology in last 5 years, and should have been in successful commercial **operation for at least 6 (six) continuous months from the last day of the month of May 2022.** This should be corresponding to the electrolyzer type being offered to MRPL.<br>**OR**<br>The manufacturer or channel partner, while meeting the electrolyzer unit capacity, |

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| | | | | | | technology criteria mentioned above, has commissioned a unit which has been in continuous operation as on the last day of the month immediately previous to the month in which EOI is invited(but lesser than 6 months)<br>**OR**<br>The manufacturer or channel partner, while meeting the electrolyzer unit capacity, technology criteria mentioned above, is installing an electrolyzer unit which is expected to be commissioned by end Nov 2022.<br>Under any qualification criteria, manufacturer or channel partner shall provide appropriate supporting documents in respect of the plant in operation/under commissioning/under execution. |

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| 8. | Section-III | 8 of 29 | Clause 6.2 | Technical Eligibility Criteria | Bidder shall be an EPC (Engineering, Procurement, and Construction) Contractor/ EPCM (Engineering, Procurement, and Construction Management) Consultant having past experience of successfully completed industrial project(s) as EPC/EPCM in the field of Hydrogen Generation Plant / Power / Oil & Gas / Chemical / Petrochemical / Hydrocarbon / Fertilizer during last 7 years ending last date of month previous to the one in which bids are invited. | **Revised clause shall be read as below:**<br><br>Bidder shall be an EPC (Engineering, Procurement, and Construction) Contractor/ EPCM (Engineering, Procurement, and Construction Management) Consultant having past experience of successfully completed industrial project(s) as EPC/EPCM in the field of Hydrogen Generation Plant / Power / Oil & Gas / Chemical / Petrochemical / Hydrocarbon / Fertilizer during last **10 years** ending last date of month previous to the one in which bids are invited. |

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| 9. | Section-III | 9 of 29 | Clause 6.3.1 | Notes for Technical Credential of Applicant | **Channel Partner**: A Channel Partner is defined for this project as an entity that has a valid authorization/agreement for 5 yrs, with a Water Electrolyser Manufacturer to market/ supply/ assemble/ sell the manufacturer's products. | **Revised clause shall be read as below:**<br><br>**Channel Partner**: A Channel Partner is defined for this project as an entity that has a valid authorization/agreement for 5 yrs, with a Water Electrolyser Manufacturer to market/ supply/ assemble/ sell the manufacturer's products.<br>**If Channel partner of manufacturer is not meeting the Technical Criteria on its own (Clause 6.1), then channel partner can qualify based on the experience of said manufacturer who meets the Technical Criteria.** |

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| 10. | Section-III | 10 of 29 | Clause 7.7 | Technical Specification | Turndown capacity of the unit (i.e. the minimum operable capacity of the Water Electrolyser system at which the system can produce hydrogen as per specification and at required pressure and temperature), shall be 25**% max.** The unit shall be capable of operating anywhere between the Turndown Capacity i.e. lower than 25% (as offered by the bidder and 100%). Bidder shall guarantee turndown capacity. | **Revised clause shall be read as below:**<br><br>Turndown capacity of the unit (i.e. the minimum operable capacity of the Water Electrolyser system at which the system can produce hydrogen as per specification and at required pressure and temperature), shall be 40**% max.** The unit shall be capable of operating anywhere between the Turndown Capacity i.e. lower than 40% (as offered by the bidder and 100%). Bidder shall guarantee turndown capacity. |
| 11. | Annexure | -- | Annexure-IV (Sl No. 21) | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br><br>Turndown capacity of electrolyzer being offered (Min. shall be 25%) | **Revised clause shall be read as below:**<br><br>Turndown capacity of electrolyzer being offered (Max. shall be 40%) |

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| 12. | Section-III | 14 of 29 | Clause 11.8 | EoI Evaluation Methodology | Life Cycle Cost of Plant | **Revised clause shall be read as below:**<br>Life Cycle Cost of Plant (Levelized Cost of Hydrogen-LCOH) shall be calculated based on the required design capacity of 62.5 kg/hr (500 TPA). Where the bidder or respondent provides an electrolyzer plant higher than design capacity, the excess capacity will be treated as bidder's design margin and the LCOH will be evaluated at design capacity only and all guarantees shall apply corresponding to design capacity(i.e. at 62.5 kg/hr) |
| 13. | Section-III | 14 of 29 | Clause 11.9 | EoI Evaluation Methodology | New | **Following new clause shall be added:**<br>The Government of India Policy to provide purchase preference (linked with local content), as applicable, shall be considered. |

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| 14. | Annexure | -- | Annexure-III Sl No. 8 | Applicant's General Information | (Issued as part of Corrigendum-I)<br><br>Foreign Electrolyser Manufacturer shall be required to manufacture part of the offered Electrolyser (i.e. at least 20%) or whole of the offered Electrolyser, in India through a subsidiary, or under license, or through transfer of technology to any Indian Manufacturer; failing which MRPL at its discretion may not consider the EOI for evaluation. Foreign OEM to indicate such tie ups for manufacturing in India. | **Revised clause shall be read as below:**<br><br>Foreign/ Indian Electrolyzer Manufacturer shall be required to manufacture parts /components of Electrolyzer system [which means the Stack, Rectifier, Feed water preparation section, Separator, Dryer/ purification and its pump, Exchangers & compressor (as applicable)] in India of value at least 20% of the total cost of Electrolyzer system. |

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| 15. | Annexure | -- | Annexure IV Sl No. 6 | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br><br>Pressure and temperature at which Green Hydrogen shall be produced (Min pressure reqd- 24 kg/cm2g at max temp of 40degC) | **Revised clause shall be read as below:**<br><br>Pressure and temperature at which Green Hydrogen shall be produced (Min pressure reqd- **23.5 kg/cm2g** at max temp of 40degC) |
| 16. | Section-III | 10 of 29 | Clause 7.2 | Technical Specification | The green H2 with 99.99% purity shall be produced at 25 Kg/cm2 min. pressure and temperature of 40degC at the battery limit of Green H2 plant. Bidder shall guarantee the product H2 quality. Bidder shall design the gas purification system accordingly. | **Revised clause shall be read as below:**<br><br>The green H2 with 99.99% purity shall be produced at **23.5 Kg/cm2** min. pressure and temperature of 40degC at the battery limit of Green H2 plant. Bidder shall guarantee the product H2 quality. Bidder shall design the gas purification system accordingly. |

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| 17. | Annexure | -- | Annexure IV Sl No. 28 | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br>Power is available in the Refinery at nameplate voltage of 6.6 KV+10% at HT level or 415V+10% at LT level. Applicant to indicate power requirement at LT level or HT level. | **Revised clause shall be read as below:**<br><br>Power is available in the Refinery at nameplate voltage of 6.6 KV+10%. Applicant to indicate power requirement at this voltage level. |
| 18. | Annexure | | Annexure IV Sl No. 29 | Technical Credential of Applicant | (Issued as part of Corrigendum-I)<br>MRPL prefers to supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that total available area is only 500m2 for the entire Green H2 plant including all required facilities/requirements.<br>Applicant to confirm acceptance. | MRPL shall supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that an area of 175 m2 shall be provided for substation. This shall be additional to 500m2 provided for the entire Green H2 plant (including all required facilities/requirements).<br>Applicant to confirm acceptance. |

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| 19. | Section-II | 6 of 29 | Clause 4.2 | Power Supply for Green Hydrogen Production | (Issued as part of Corrigendum-I)<br><br>Power is available in the Refinery at nameplate voltage of 6.6 KV+10% at HT level or 415V+10% at LT level. MRPL prefers to supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that total available area is only 500m2 for the entire Green H2 plant including all required facilities/auxiliaries. | **Revised clause shall be read as below:**<br><br>MRPL shall supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that an area of 175 m2 shall be provided for substation. This shall be additional to 500m2 provided for the entire Green H2 plant (including all required facilities/requirements). |

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| 20. | Section-III | 11 of 29 | Clause 9.2 | MRPL's Responsibility | (Issued as part of Corrigendum-I)<br><br>To supply Renewable power (AC) on an open access solution basis blending solar and wind.<br>Power is available in the Refinery at nameplate voltage of 6.6 KV+10% at HT level or 415V+10% at LT level. MRPL prefers to supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that total available area is only 500m2 for the entire Green H2 plant including all required facilities/auxiliaries. | **Revised clause shall be read as below:**<br><br>MRPL shall supply power at voltage level of 6.6KV+10%. Applicant shall step down the voltage to lower voltage level as required for operation of the Green Hydrogen plant. However, applicant to note that an area of 175 m2 shall be provided for substation. This shall be additional to 500m2 provided for the entire Green H2 plant (including all required facilities/requirements). |