

**DEPARTMENT OF MATERIALS ENGINEERING**  
**INDIAN INSTITUTE OF SCIENCE (IISc), BENGALURU, INDIA**

**Local Tender Notice**

***Tender Notification Ref No.: MT/ENQ/TNDR/SSU-CoE/23-24/05***

***Date: 20.09.2023***

*The Department of Materials Engineering (MT), Indian Institute of Science Bengaluru, invites tenders for supply of “Gas metal arc welding (GMAW) system”. This Invitation for Bids is open to all domestic (India based) manufacturers, Indian OEM or its authorised Indian distributors only.*

***The scope of the supply includes Installation, Commissioning and Training at site for the “Gas metal arc welding (GMAW) system for wire arc additive manufacturing (WAAM) application”.***

**Tender Summary**

|   |   |  |
|---|---|--|
| 1 | Tender number                             | <b><i>MT/ENQ/TNDR/SSU-CoE/23-24/05</i></b>   |
| 2 | Tender Date                               | <b><i>20.09.2023</i></b>   |
| 3 | Item Description                          | <b><i>Gas metal arc welding (GMAW) system</i></b>  |
| 4 | Tender Type                               | Two Bid System:<br>(a) Technical Bid (Part A)<br>(b) Commercial Bid (Part B)   |
| 5 | Place of Tender submission                | Prof. Satyam Suwas<br>Chair, Department of Materials Engineering, Indian<br>Institute of Science, Bangalore - 560012 |
| 6 | Last date & Time for submission of tender | <b><i>11<sup>th</sup> October 2023 at 5.00 P.M</i></b>   |

**To whom it may concern**

This is a **Request for quote (RFQ)** from **Indian Agencies** for supply including Installation, Commissioning, training at site for “Gas metal arc welding (GMAW) system” at the “**Department of Materials Engineering (MTE), Indian Institute of Science, Bengaluru.**”

*This Invitation for Bids is open to only domestic (India based) manufacturers, Indian OEM or its authorized Indian distributors.* All interested vendors shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below. ***With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 4th June 2020 will be followed.***

- As per the order the government has defined a ‘Class-I local supplier’ as “a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%”.
- A ‘Class-II local supplier’ is “a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%”.

***Only Class-I and Class-II local suppliers are eligible to participate*** in this open domestic tender. Any “Non-local supplier” i.e. “a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%” is ineligible to participate in this tender.

The deadline for submission of proposals 11<sup>th</sup> **October 2023 at 5.00 P.M** Proposals should arrive at the office of

***The Chair,  
Department of Materials Engineering  
Indian Institute of Science,  
Bengaluru,  
Karnataka 560012,  
India.***

*Direct all questions concerning the acquisition to addresses to Prof. Satyam Suwas at: [satyamsuwas@iisc.ac.in](mailto:satyamsuwas@iisc.ac.in)*

### **General Terms and Conditions**

1. The bid should be submitted in the two-cover system, i.e., technical bid and commercial bid separately in sealed covers. The technical bid should contain all commercial terms and conditions, except the price.
2. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table that should describe your compliance in a "yes" or "no" response against each of the items in the table listed in this RFQ. If "no" the second column should state, the extent of deviation. The third column should state the reason for the deviation, if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirement table below.
3. In the commercial bid, the price should be inclusive of all discounts.
4. The quotations should be on FOR-IISc Bangalore basis in INR only.
5. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
6. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected.
7. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.
8. Purchase preference as defined by the recent edits to GFR (within the “margin of purchase preference”) will be given to the Class-1 supplier.
9. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.
10. The vendor to state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.
11. The lead time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order. It should be clearly mentioned in the technical and commercial bids.
12. All the quotations must be valid for at least 90 days at the time of submission.

13. List of customers and references: **The Bidder should have supplied similar equipment in Central Universities, preferably in centrally Funded Technical Institutes (IITs, IISC, IISER, NIT). Please provide the details and contact information.**
14. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
15. Items in addition to that listed in the technical table that you would like to bring to the attention of the committee, such as data sheets, technical plots etc. can be listed at the end of the compliance table.
16. Vendors are encouraged to highlight the advantage of their Laser optics and Delivery Head over comparable Laser optics and Delivery Head from the competitors.
17. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
18. The Institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
19. Warranty terms and additional warranty options is a must for all the components. Please specify the service plan like whether the local distributor will address the issue or the parent company.
20. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
21. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
22. Please quote the price of each optional line item, separately.

## Technical requirements

Please note that the requirements listed below are only guidelines. It does not disbar bids that do not meet the criteria listed. Vendors are requested to quote for equipment that meet the criteria to the best extent possible and list deviations. Deviations are NOT an automatic reason for disqualification. They will be discussed by the technical committee prior to making an informed decision.

### 01. Gas metal arc welding (GMAW) system

|   |   |                      |
|---|---|----------------------|
| <b>Scope:</b> 400 or above amperage inverter controlled, water-cooled GMAW welding power supply, push-pull drive wire feeder system, and water-cooled push-pull drive welding torch that can be integrated on a 6-axis industrial robotic arm for wire arc additive manufacturing (WAAM) application. |   |                      |
| <b>Sr. No.</b>  |   |                      |
| <b>1.0</b>  | <b>Item description</b>   | <b>Quantity</b>      |
| 1.1   | 400 A or above capacity digital inverter power source with capability of welding both ferrous and non-ferrous metal wires.  | 1                    |
| 1.2   | Cooling unit compatible with the push-pull welding torch.   | 1                    |
| 1.3   | Robotic water-cooled push-pull welding torch with 6.0 m or more hose with wire buffering unit and drive unit.   | 1 set                |
| 1.4   | Robotic wire feeding unit compatible with the power source.   | 1                    |
| 1.5   | Push-pull torch body.   | 1                    |
| 1.6   | Remote control unit (RC) for doing parameter setting. Along with RC, the related software and SD card facility need to be provided.   | 1 set                |
| 1.7   | Wear parts' kit for wire feeder and push-pull welding torch with quantities sufficient for one year's operation.  | 1set                 |
| 1.8   | Carriage trolley for the power source and shielding gas cylinder mounting facility.   | 1                    |
| 1.9   | Connection hose pack for connection between the power source and the wire feeding unit.   | 1                    |
| 1.10  | Earthing cable with earthing clamp.   | 1                    |
| 1.11  | Robotic interface for interfacing the power source system with any industrial robot.  | 1                    |
| 1.12  | Collision sensor and flange for accommodating the push-pull torch on robot.   | 1                    |
| 1.13  | Consumables for wire spools of carbon steel, stainless steel, aluminum and titanium materials in sizes 0.8 mm to 1.2 mm diameter.   | 1 each for each size |
| 1.14  | Argon/CO <sub>2</sub> gas pressure regulator with flow meter and gas hose.  | 1                    |
| 1.15  | <i>Any other accessories or softwares necessary (other than mentioned above) for the proper installation and commissioning of the welding system as well as its hassle-free functioning also need to be supplied by the vendor.</i> |                      |

|            |   |
|------------|---|
| <b>2.0</b> | <b>Specifications of power source:</b>  |
| 2.1        | Input current range should be within the range of 5 – 400 A (or above).<br><i>Note: The machine should be able to provide a stable arc at 10 A.</i>   |
| 2.2        | Open circuit voltage should be 70 V (or above).   |
| 2.3        | Welding voltage range: 15 – 38 A (or higher range).   |
| 2.4        | Duty cycle at 100% should be 350 A or above at 40°C in a 10 min period.   |
| 2.5        | Power factor (cos phi): 0.99.   |
| 2.6        | Type of cooling should be forced air.   |
| 2.7        | Degree of protection: IP23 or better.   |
| 2.8        | Insulation class: B or better.  |
| 2.9        | Should have the facility in the machine to measure the gas flow rate.   |
| 2.10       | The machine should have the built in protection system to sense the coolant flow in the torch and prevent burning of torch in case of insufficient/stoppage of coolant flow.  |
| 2.11       | Energy saving digital inverter technology with current switching frequency up to 80 kHz.  |
| 2.12       | Programmable arc pulsing, short circuit metal transfer (coldArc/CMT/SAWP), and preset programs for different welding operations.  |
| 2.13       | Thermostat controlled fan / over temperature protection should be provided.   |
| 2.14       | The machine should be compatible for any robot and any level of automation.   |
| 2.15       | Programmability and welding for all grades of carbon steels, stainless steels, maraging steels, aluminum alloys, titanium alloys, nickel alloys, magnesium alloys, and copper alloys using both argon and helium shielding gases. |
| 2.16       | Program memory for program storage (1000 programs or more).   |
| 2.17       | Compatibility to upgrade software through computer.   |
| 2.18       | Digital indication of mains voltage monitoring and error code display for easier fault diagnosis.   |
| 2.19       | Digital display of voltage and current at a time on front panel.  |
| 2.20       | Protection against overvoltage and under voltage (indication on front panel).   |
| 2.21       | Facility for creation of new programs for different wire materials.   |
| 2.22       | Should be designed and manufactured according to international welding standards (IEC/EN60974/1,2,3,10) and certificate(s) of the same should be included.  |
| 2.23       | Machine should be tripped when overvoltage, under voltage or over temperature is there.   |
| 2.24       | The power source must be CE/S marked.   |

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| <b>3.0</b> | <b>Accessories and their specifications:</b>   |
| <b>3.1</b> | <b>Cooling unit for the push-pull welding torch</b>  |
| 3.11       | The cooling unit should be suitable to keep the torch cool during continuous welding at rated capacity.  |
| 3.12       | Cooling capacity: 1100 W or better.  |
| 3.13       | Coolant Volume: 8 liter or more.   |
| 3.14       | Protection class: IP 23 or better.   |
| 3.15       | Should be inbuilt or the size must be suitable for fitment below the power source with single connector connection.  |
| 3.16       | All functional controls through power source / remote control unit.  |
| 3.17       | In case of interruption in the flow of coolant through cable hose / torch, no welding can be done as a precautionary measure. Accordingly, error message should be indicated on control panel. |
| <b>3.2</b> | <b>Robotic push-pull welding torch and drive unit</b>  |
| 3.21       | The robotic welding torch must support wire movement in forward - backward direction.  |
| 3.22       | Wire diameter: 0.8 mm – 1.6 mm (or higher range).  |
| 3.23       | Wire buffer set for accommodating wire during backward movement of wire of suitable length of torch.   |
| 3.24       | Current capacity: 350 A or above at 40°C during 100% duty cycle.   |
| 3.25       | Maximum wire feed speed: 20 m/min or more.   |
| 3.26       | Contact tip should be suitable for making calibration of resistance and inductance of the welding circuit.   |
| 3.27       | Drive unit with external wire feeding, push button for forward and backward movement of wire, and gas test button.   |
| 3.28       | Length of the hose connected to the torch: 6.0 m or more.  |
| 3.29       | Torch, drive units and the related hoses should be made of high temperature resistant material and cooled with coolant.  |
| <b>3.3</b> | <b>Wire feeding unit</b>   |
| 3.31       | Maximum wire feed speed: 22 m/min or more.   |
| 3.32       | Wire diameter: 0.8 mm – 1.6 mm (or higher range).  |
| 3.33       | Protection class: IP 23.   |
| 3.34       | Complete enclosure for wire spool.   |
| 3.35       | Must have a 4-roller drive.  |
| 3.36       | Wire feeder must support wire inching, wire return, gas test/gas purging.  |

|   |  |
|---|--|
| <b>3.4</b>  | <b>Remote control unit for operating the system</b>  |
| 3.41  | Graphical machine display showing all the functions, menus, and parameters with their values.  |
| 3.42  | Facility for data logging, documentation, and transfer to external computers in a widely supported format (csv, xml, xls, xlsx, txt, dat, etc.).   |
| 3.43  | Online process monitoring facility. The related software also needs to be supplied by the vendor.  |
| 3.44  | Saving the welding parameters for documentation and analysis.  |
| 3.45  | SD card/USB facility for downloading data.   |
| <b>3.5 Connection hose pack between power source and wire feeder / earth cable</b>  |  |
| 3.51  | Set of power cable, high speed local net bus communication cable, and coolant inlet and outlet lines.  |
| 3.52  | The power cable should be 4.0 m or more in length.   |
| 3.53  | Current carrying capacity of 700 A or more.  |
| 3.54  | All cables to be covered in a wear protection heat resistant sleeve.   |
| 3.55  | Earth cable length should be 6.0 m or more.  |
| 3.56  | Current carrying capacity of earth cable should be 600 A or more.  |
| <b>3.6 Robot interface:</b>   |  |
| 3.61  | Digital communication interface between the power source and robot (compatible with any reputed robot OEM such as KUKA, ABB, FANUC).   |
| 3.62  | Complete signal processing / transfer in digital form.   |
| 3.63  | Facilitation of recalling the jobs / programs created from Robot.  |
| 3.64  | All necessary hardware required for seamless integration on a commercially available robot needs to be supplied by the vendor.   |
| <b>4.0 Warranty:</b> Three years warranty for all the above-mentioned items for the smooth and trouble-free working after installation and commissioning. |  |
| <b>5.0</b>  | <b>Power supply:</b> 400 V $\pm$ 25%, 3 phase, 50 - 60Hz.  |
| <b>6.0</b>  | <i>Any other accessories or software necessary (other than mentioned above) for the proper installation and commissioning of the welding system as well as for its hassle-free functioning, also need be supplied by the vendor.</i>             |
| <b>7.0</b>  | <i>It is the duty of the vendor to perform the integration operation between the welding equipment and the robot, and finally providing the system in working condition. The intended application is wire arc additive manufacturing (WAAM).</i> |

- ✚ Should have proven record of successful installations within reputed Indian education/research institutes and reputed private companies. Proof of such installation must be enclosed.
- ✚ The OEM/Supplier should have trained service engineers stationed in India for any on-site service requirement, details to be provided in the offer.
- ✚ OEM/supplier should have requisite stock of necessary spare parts in India.
- ✚ Company should have a minimum annual turnover of INR 5 crores.

## **TERMS AND CONDITIONS**

1. Warranty period: 3 years.

2. Supplier Credibility:

- a. The Bidder/Vendor Must have supplied minimum 3 GMAW systems for thin-sheet welding/WAAM application to reputed Private or Government Organizations in INDIA in the past 3 years. Copies of Purchase Orders to be enclosed along with the Technical Bid as proof.
- b. Supplier should compulsorily indicate details of facilities / expertise/ qualification of support staff in India. Factory trained engineer/s should be available in India for complete product support.
- c. Please enclose User list in INDIA.
- d. Minimum 3 Reference letters of similar system supplied in INDIA need to be submitted for further consideration.

3. Publications:

- a. As our Research Work is of critical nature, Vendors need to enclose reference publications/application note on the usage of “GMAW system for wire-arc additive manufacturing (WAAM)” to show expertise of the product being offered.

4. Institute reserves the right for final selection of items.

5. Vendors may quote for any other items/accessories separately as “Optional Items”.

For queries or clarifications, please contact:

*Prof. Satyam Suwas at [satyamsuwas@iisc.ac.in](mailto:satyamsuwas@iisc.ac.in)*



### Annexure-I

**Note:** Compliance Certificate must be enclosed with the Technical bid. Non submission of Compliance Certificate will lead to disqualification of the bidder.

| Sr. No.    | Description   | C | NC | D | Remarks |
|------------|---|---|----|---|---------|
| <b>1.0</b> | <b>Item description</b>   |   |    |   |         |
| 1.1        | 400 A or above capacity digital inverter power source with capability of welding both ferrous and non-ferrous metal wires.          |   |    |   |         |
| 1.2        | Cooling unit compatible with the push-pull welding torch.   |   |    |   |         |
| 1.3        | Robotic water-cooled push-pull welding torch with 6.0 m or more hose with wire buffering unit and drive unit.                       |   |    |   |         |
| 1.4        | Robotic wire feeding unit compatible with the power source.   |   |    |   |         |
| 1.5        | Push-pull torch body.   |   |    |   |         |
| 1.6        | Remote control unit (RC) for doing parameter setting. Along with RC, the related software and SD card facility need to be provided. |   |    |   |         |
| 1.7        | Wear parts' kit for wire feeder and push-pull welding torch with quantities sufficient for one year's operation.                    |   |    |   |         |
| 1.8        | Carriage trolley for the power source and shielding gas cylinder mounting facility.   |   |    |   |         |
| 1.9        | Connection hose pack for connection between the power source and the wire feeding unit.   |   |    |   |         |
| 1.10       | Earthing cable with earthing clamp.   |   |    |   |         |
| 1.11       | Robotic interface for interfacing the power source system with any industrial robot.  |   |    |   |         |
| 1.12       | Collision sensor and flange for accommodating the push-pull torch on robot.   |   |    |   |         |
| 1.13       | Consumables for wire spools of carbon steel, stainless steel, aluminum and titanium materials in sizes 0.8 mm to 1.2 mm diameter.   |   |    |   |         |
| 1.14       | Argon/CO <sub>2</sub> gas pressure regulator with flow meter and gas hose.  |   |    |   |         |
| 1.15       | <i>Any other accessories or software's necessary (other than mentioned above) for the proper installation</i>                       |   |    |   |         |

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|            | <i>and commissioning of the welding system as well as its hassle-free functioning also need to be supplied by the vendor.</i>  |  |  |  |  |
|            |  |  |  |  |  |
| <b>2.0</b> | <b>Specifications of power source:</b>   |  |  |  |  |
|            | Input current range should be within the range of 5 – 400 A (or above).<br><br><i>Note: The machine should be able to provide a stable arc at 10 A.</i>                      |  |  |  |  |
|            | Open circuit voltage should be 70 V (or above).  |  |  |  |  |
|            | Welding voltage range: 15 – 38 A (or higher range).  |  |  |  |  |
|            | Duty cycle at 100% should be 350 A or above at 40°C in a 10 min period.  |  |  |  |  |
|            | Power factor (cos phi): 0.99.  |  |  |  |  |
|            | Type of cooling should be forced air.  |  |  |  |  |
|            | Degree of protection: IP23 or better.  |  |  |  |  |
|            | Insulation class: B or better.   |  |  |  |  |
|            | Should have the facility in the machine to measure the gas flow rate.  |  |  |  |  |
|            | The machine should have the built in protection system to sense the coolant flow in the torch and prevent burning of torch in case of insufficient/stoppage of coolant flow. |  |  |  |  |
|            | Energy saving digital inverter technology with current switching frequency up to 80kHz.  |  |  |  |  |
|            | Programmable arc pulsing, short circuit metal transfer (coldArc/CMT/SAWP), and preset programs for different welding operations.   |  |  |  |  |
|            | Thermostat controlled fan / over temperature protection should be provided.  |  |  |  |  |
|            | The machine should be compatible for any robot and any level of automation.  |  |  |  |  |
|            | Programmability and welding for all grades of carbon steels, stainless steels, maraging steels, aluminum alloys, titanium alloys, nickel alloys, magnesium alloys, and       |  |  |  |  |

|            |  |  |  |  |  |
|------------|--|--|--|--|--|
|            | copper alloys using both argon and helium shielding gases.   |  |  |  |  |
|            | Program memory for program storage (1000 programs or more).  |  |  |  |  |
|            | Compatibility to software upgradation through computer.  |  |  |  |  |
|            | Digital indication of mains voltage monitoring and error code display for easier fault diagnosis.  |  |  |  |  |
|            | Digital display of voltage and current at a time on front panel.   |  |  |  |  |
|            | Protection against overvoltage and under voltage (indication on front panel).  |  |  |  |  |
|            | Facility for creation of new programs for different wire materials.  |  |  |  |  |
|            | Should be designed and manufactured according to international welding standards (IEC/EN60974/1,2,3,10) and certificate(s) of the same should be included. |  |  |  |  |
|            | Machine should be tripped when overvoltage, under voltage or over temperature is there.  |  |  |  |  |
|            | The power source must be CE/S marked.  |  |  |  |  |
|            |  |  |  |  |  |
| <b>3.0</b> | <b>Accessories and their specifications:</b>   |  |  |  |  |
|            |  |  |  |  |  |
| <b>3.1</b> | <b>Cooling unit for the push-pull welding torch</b>  |  |  |  |  |
| 3.11       | The cooling unit should be suitable to keep the torch cool during continuous welding at rated capacity.  |  |  |  |  |
| 3.12       | Cooling capacity: 1100 W or better.  |  |  |  |  |
| 3.13       | Coolant Volume: 8 liter or more.   |  |  |  |  |
| 3.14       | Protection class: IP 23 or better.   |  |  |  |  |
| 3.15       | Should be inbuilt or the size has to be suitable for fitment below the power source with single connector connection.                                      |  |  |  |  |
| 3.16       | All functional controls through power source / remote control unit.  |  |  |  |  |
| 3.17       | In case of interruption in the flow of coolant through cable hose/ torch, no welding can be done as a  |  |  |  |  |

|            |   |  |  |  |  |
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|            | precautionary measure.<br>Accordingly, error message should be indicated on control panel.                              |  |  |  |  |
|            |   |  |  |  |  |
| <b>3.2</b> | <b>Robotic push-pull welding torch and drive unit</b>   |  |  |  |  |
| 3.21       | The robotic welding torch must support wire movement in forward - backward direction.                                   |  |  |  |  |
| 3.22       | Wire diameter: 0.8 mm – 1.6 mm (or higher range).   |  |  |  |  |
| 3.23       | Wire buffer set for accommodating wire during backward movement of wire of suitable length of torch.                    |  |  |  |  |
| 3.24       | Current capacity: 350 A (or above) during 100% duty cycle.  |  |  |  |  |
| 3.25       | Maximum wire feed speed: 20 m/min or more.  |  |  |  |  |
| 3.26       | Contact tip should be suitable for making calibration of resistance and inductance of the welding circuit.              |  |  |  |  |
| 3.27       | Drive unit with external wire feeding, push button for forward and backward movement of wire, and gas test button.      |  |  |  |  |
| 3.28       | Length of the hose connected to the torch: 6.0 m or more.   |  |  |  |  |
| 3.29       | Torch, drive units and the related hoses should be made of high temperature resistant material and cooled with coolant. |  |  |  |  |
|            |   |  |  |  |  |
| <b>3.3</b> | <b>Wire feeding unit</b>  |  |  |  |  |
| 3.31       | Maximum wire feed speed: 22 m/min or more.  |  |  |  |  |
| 3.32       | Wire diameter: 0.8 mm – 1.6 mm (or higher range).   |  |  |  |  |
| 3.33       | Protection class: IP 23.  |  |  |  |  |
| 3.34       | Complete enclosure for wire spool.  |  |  |  |  |
| 3.35       | Must have a 4-roller drive.   |  |  |  |  |
| 3.36       | Wire feeder must support wire inching, wire return, gas test/gas purging.   |  |  |  |  |
|            |   |  |  |  |  |
| <b>3.4</b> | <b>Remote control unit for operating the system</b>   |  |  |  |  |
| 3.41       | Graphical machine display showing all the functions, menus, and parameters with their values.                           |  |  |  |  |

|            |   |  |  |  |  |
|------------|---|--|--|--|--|
| 3.42       | Facility for data logging, documentation, and transfer to external computers in a widely supported format (csv, xml, xls, xlsx, txt, dat, etc.).      |  |  |  |  |
| 3.43       | Online process monitoring facility. The related software also needs to be supplied by the vendor.   |  |  |  |  |
| 3.44       | Saving the welding parameters for documentation and analysis.   |  |  |  |  |
| 3.45       | SD card/USB facility for downloading data.  |  |  |  |  |
|            |   |  |  |  |  |
| <b>3.5</b> | <b>Connection hose pack between power source and wire feeder / earth cable</b>  |  |  |  |  |
| 3.51       | Set of power cable, high speed local net bus communication cable, and coolant inlet and outlet lines.   |  |  |  |  |
| 3.52       | The power cable should be 4.0 m or more in length.  |  |  |  |  |
| 3.53       | Current carrying capacity of 700 A or more.   |  |  |  |  |
| 3.54       | All cables to be covered in a wear protection heat resistant sleeve.  |  |  |  |  |
| 3.55       | Earth cable length should be 6.0 m or more.   |  |  |  |  |
| 3.56       | Current carrying capacity of earth cable should be 600 A or more.   |  |  |  |  |
|            |   |  |  |  |  |
| <b>3.6</b> | <b>Robot interface:</b>   |  |  |  |  |
| 3.61       | Digital communication interface between the power source and robot (compatible with any reputed robot OEM such as KUKA, ABB, FANUC).                  |  |  |  |  |
| 3.62       | Complete signal processing / transfer in digital form.  |  |  |  |  |
| 3.63       | Facilitation of recalling the jobs / programs created from Robot.   |  |  |  |  |
| 3.64       | All necessary hardware required for seamless integration on a commercially available robot needs to be supplied by the vendor.                        |  |  |  |  |
|            |   |  |  |  |  |
| <b>4.0</b> | <b>Warranty:</b> Three years warranty for all the above-mentioned items for the smooth and trouble-free working after installation and commissioning. |  |  |  |  |

|            |  |  |  |  |  |
|------------|--|--|--|--|--|
| <b>5.0</b> | <b>Power supply:</b> 400 V $\pm$ 25%, 3 phase, 50 - 60Hz.  |  |  |  |  |
| <b>6.0</b> | <i>Any other accessories or software necessary (other than mentioned above) for the proper installation and commissioning of the welding system as well as for its hassle-free functioning, also need be supplied by the vendor.</i>             |  |  |  |  |
| <b>7.0</b> | <i>It is the duty of the vendor to perform the integration operation between the welding equipment and the robot, and finally providing the system in working condition. The intended application is wire arc additive manufacturing (WAAM).</i> |  |  |  |  |

**C-Compliant, NC- Non Compliant, D- Deviation**

## Annexure-II

### MANUFACTURER'S AUTHORISATION FORM

[The bidder shall require the manufacturer to fill in this form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by the person with the proper authority to sign documents that are binding on the Manufacturer.]

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

**To: The Chair, Department of Materials Engineering (MTE), IISc, Bengaluru 560012**

We [*insert complete name of Manufacturer*], who are official manufacturers of [*insert full address of Manufacturer's factories*], do hereby authorize [*insert complete name of Bidder*] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [*insert name and or brief description of the Goods*], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this authorization on behalf of: [insert complete name of Bidder]