



NATIONAL
INSTITUTE OF
OCEAN
TECHNOLOGY

NOTICE INVITING TENDER
(NIT)

Form No.

NIOT/S&P/NIT



निविदा संख्या /Tender No	NIOT/S&P/S&GH/100140/2022-23/N141	
निविदा शीर्षक/ Tender Title	Supply of Spares for Human safety and Support system of MATSYA 6000	
निविदा प्रणाली/Mode of Tender	Single Tender (ST)	
ईएमडी जमा करना/ Earnest Money Deposit (EMD)	INR 1,10,000/- a) Scanned copy of the instrument of the EMD to be uploaded in NIC portal b) Original EMD shall be submitted through courier/speed post or dropped in the tender box in person before the due date	
निविदा जारी करनेकी तारीख/ Tender Issue date	06.04.2024	
निविदा समापन तिथि और समय/ Tender Closing Date and Time	12.04.2024@11.00Hr	
निविदा खोलनेकी तिथि और समय/ Tender Opening Date and Time	12.04.2024@11.30Hr	
निविदा दस्तावेज उपलब्ध स्थान/ Tender documents available place	Tender documents can be freely downloaded from eprocure@nic.in website www.niot.res.in till closing date and time of the Tender. The tender document fee is waived for downloading the Tender.	
बोली लगानेका प्रकार और निविदा प्रस्तुत करना/ Bidding Type &Tender submission	Single Bid Tender comprising of Techno- commercial Bid and Price Bid should be submitted electronically through CPP portal eprocure@nic.in	
ई-निविदा के लिए हेल्प मैनुअल/ Help manuals for e-Tender	0120-4001002,0120-40001005,0120-6277787 support-eproc@nic.in	
Send your queries to the email Id/ अपने प्रश्न ईमेल आईडी पर भेजें	Up to Tender finalisations/ टेंडर फाइनल होने तक	hvt@niot.res.in

1. INTRODUCTION

National Institute of Ocean Technology (NIOT) is the technical arm of the Ministry of Earth Sciences, Government of India and is involved in developing technology for utilizing ocean resources in an eco-friendly manner. Tender is invited to submit a proposal for the **"Supply of Spares for Human safety and Support system of MATSYA 6000"**.

General Conditions of Contract (GCC)

National institute of Ocean invites E-bids for **"Supply of Spares for Human safety and Support system of MATSYA 6000" at NIOT Chennai** as per details given below.

- 1. Submission of bids:** Bidders are requested to submit their Bid/quotation in single part containing Technical proposal and price bid (BOQ) should be submitted electronically through CPP Portal eprocare@nic.in. The responsibility to ensure timely submission of bid lies with the bidder. Bids submitted through FAX or e-mail will not be considered. Bidders shall also attach scanned copies of all the requisite documents i.e. other certificates/documents specified in the tender documents. The bids are to be submitted (electronically) as per the bidding type indicated in the front page of the NIT. The bidders are advised to obtain DSC (Digital signature Certificate) from the authorized register with. The bid/quotation cannot be submitted without DSC. Bidders are advised to submit their quotation in single Part. **No manual tender is acceptable.**
- 2.** This NIT shall form part of the LOI / Contract.
- 3.** Terms and conditions indicated in the NIT shall be superseded by the terms and conditions mentioned in the Special conditions of contract (SCC) as at Annexure wherever applicable.

4 INSTRUCTION TO BIDDERS:

4.1 Security: Any information / material / document supplied along with this tender or after placement order should not be disclosed or copied without written permission from NIOT.

4.2 Contacting NIOT: No correspondence / discussion / visits whatsoever will be entertained on the subject unless specifically called by this office after opening the tender or clarifications in writing. Any violation of this will render the quotation invalid and the firm is liable to be removed from our approved vendor list. However, if vendor requires any clarification on the bid, the query may be mailed to hvt@niot.res.in

4.3 Tender Opening: All the tenderers can participate in the e-tender opening with proper authorization letter from the respective Company.

4.4 Order Acceptance: The successful bidder should submit order acceptance within 15days from the date of order, failing which it shall be presumed that the bidder is not interested and his bid security /EMD shall be forfeited.

4.5 Change of Name after award: Request / intimations with regard to change of name of the Contracting company or constitution of the contracting company after the tender opening or award of contract shall not be allowed as a matter of right. The bidders /

contractors are required to submit all relevant documents with regard to change of name or/and change of constitution and the circumstances leading to such change beforehand. It shall be the discretion of NIOT to proceed with the contract after such changes and in case, NIOT decides to proceed with the contract, it may require the bidder/contractor to execute further agreements with regard to execution/ implementation of the contract.

4.6 One Bid per Bidder: A firm shall submit only one bid either individually or as a consortium / joint venture. A firm that submits either individually or, as a member of a consortium/joint venture, more than one bid will result in rejection of all the bids.

BIDDING CONDITION

5. Deadline for Submission of Bids: e-Bids must be submitted only at the NIC portal specified in the Invitation for Bids cover page on or before the due date/extended due date thereof. All bidders are advised to take adequate care to plan for bid submission in NIC CPP well ahead of closing date and time and avoid any last-minute submission.

6. Due date Extension, Corrigendum to NIT: Any corrigendum including due date extension for NIT, Pre-bid minutes of meeting will be notified in NIC portal of NIOT website. Hence bidders are requested to watch our website for such due date extension and corrigendum if any.

7. In case of the unscheduled holiday in Chennai being declared on the prescribed closing / opening day of the tender, the next working day will be treated as the scheduled prescribed day of closing/opening of the tender.

8. Unsolicited correspondences: NIOT will not entertain any unsolicited correspondence or queries on the status of offer against this tender.

9. Non-Receipt of Tender: NIOT will not be responsible for the non-submission/receipt of the tender due to any network problem or technical issues with bidder.

10. Submission of tender by a tenderer implies that he has read the Notice Inviting Tender and has made himself aware of the scope and specifications of the services/work to be done; local conditions and other factors bearing on the execution of the works.

11. Bid Validity: Bids shall remain valid and open for acceptance for a **minimum period of 90 days** from the date of opening of Un-priced Techno-commercial Bids.

12. Bid validity extension: While NIOT will finalize the tender within the bid validity sought as per this NIT, due to circumstances beyond the control of NIOT, prior to expiry of the original Bid validity period; NIOT may request the Bidder for a specified extension of the bid validity without modifying RFP or Price. The request and the responses thereto shall be made in writing. A Bidder agreeing to the request will extend the validity of his Bid and

Bid Security (EMD) correspondingly. When bid validity is extended EMD BG also deemed to have been extended automatically for which necessary action would be taken by the bidder to submit the extended BG well before the expiry of the current validity.

13. EMD / Bid security: The EMD/Bid security is mandatory as indicated in the cover page and should be submitted along with the technical bid for the value indicated in the front page of this tender document. The EMD / Bid Security shall be in the form of a Bank demand draft drawn in favour of "NIOT OTHER RECEIPT ACCOUNT" in INR or in equivalent foreign currency or a guarantee from a public sector bank or foreign bank acceptable to NIOT.

The format of the guarantee shall be in accordance with the sample form of Bid Security available at NIOT website. The format can be downloaded from the website <https://www.niot.res.in/index.php/vendor/login>.

- a) By Demand Draft/Banker's Cheque drawn in favour of "NIOT OTHER RECEIPT ACCOUNT", NIOT, payable at Chennai (or)
- b) Bank Guarantee as per prescribed format issued by an Indian nationalized bank or indicate in stamp paper of appropriate value and valid for 60 days beyond the validity of the bid. (or)
- c) Insurance Security Bond. (or)
- d) Fixed Deposit Receipt. (or)
- e) Online payment in an acceptable form.

If the EMD (scanned copy of the EMD) is not submitted along with Techno-commercial (Part-I). The bid will be summarily rejected. The original EMD should be submitted (or) reach NIOT on or before closing date the time of the tender.

EMD may be forfeited:

- (a) If a bidder withdraws, modifies and provides for unsolicited offer involuntarily revising the price in whatsoever aspect, its bid during the period of bid validity specified by the bidder on the bid form; or
- (b) In case of a successful bidder, fails to furnish order acceptance within 15 days of the order and/or fails to furnish Performance Security.

EMD for a successful contractor shall be adjusted against performance security payable if submitted in DD/refunded if performance security is paid in full /performance security is submitted

14. Conditions for EMD / Bid Security: EMD shall be returned / discharged to unsuccessful bidders within 15 days after the expiration of the period of bid validity or placement of order whichever is later. EMD may be forfeited:

- a. If a bidder withdraws, modifies for provided unsolicited offer voluntarily revising the price in whatsoever aspect its bid during the period of bid validity specified by the bidder on the bid form or
- b. In case of a successful bidder, fails to furnish order acceptance within 7 days of the order and / or fails to furnish Performance Security.

EMD for a successful contractor shall be adjusted against performance security payable if submitted in DD / refunded if / performance security is submitted.

MSME Conditions:

a) The MSE's bidder who claim EMD request should submit the relevant document towards investment on equipment and machinery. As per NIT clause no 41 make in India as per the DPIIT order under chapter 9, under MSE.

(b) the MSE's bidder to note and ensure that nature of service and goods/items manufactured mentioned in MSE's certificate matches with the nature of the service and goods/item to be supplied as per tender.

(c) Retail & Whole sale Traders: Any bidder who are retailer / Traders claim EMD / Bid security exemption shall refer Ministry OM 5/2(2)/2021-E/P&G/Policy dtd 02.07.2021 & 5/2(1)2020/E-P&G/Policy dtd 01.12.2020.

The MSME is classified as mentioned below; (Ref Ministry of MSME Notification dated 26.06.2020)

(i) Micro Enterprises: Where the investment in plant and machinery or equipment does not exceed 1 crore rupees and turnover does not exceed 5 crore rupees,

(ii) Small Enterprises: Where the investment in plant and machinery or equipment does not exceed 10 crore rupees and turnover does not exceed 50 crore rupees,

(iii) Medium Enterprises: Where the investment in plant and machinery or equipment does not exceed 50 crore rupees and turnover does not exceed 250 crore rupees.

15. Bid Validity: Bids shall remain valid and open for acceptance for a **minimum period of 90 days** from the date of opening of Un-priced Techno-commercial Bids when fully compliant tender is submitted by the bidder without any requirement for NIOT to seek additional documents towards evaluation of pre-qualification and/or in ensuring conformance to the specification/ requirements of the tender. In the event of any delay in evaluation attributable to the vendor, vendor shall extend the tender by such a time taken by them in addition to above minimum tender validity period. A Bid valid for shorter validity period will be considered as a conditional tender and treated as invalid tender.

16. Bid validity extension: In exceptional circumstances, prior to expiry of the original Bid validity period, NIOT may request the Bidder for a specified extension in the period of validity. The request and the responses thereto shall be made in writing. A Bidder agreeing to the request will not be required nor permitted to modify his bid, and will be required to extend the validity of his Bid Security correspondingly. When bid validity is extended EMD BG also deemed to have been extended automatically.

17. Signing of bids: Each page of the tender and tender document shall be digitally signed and uploaded by the bidder in e-procurement Portal.

18. The broad configuration / specification of the proposed purchase / work are given. Bidders are required to keep their proposal strictly as per the specification prescribed in this NIT.

19. The compliance sheet with reference to the specifications should be furnished against each parameter while submitting the quotation, which is absolutely necessary. THE TENDERER SHALL SUBMIT TECHNICAL & COMMERCIAL COMPLIANCE SHEETS and BOQ (Price bid) separately ALONG WITH THEIR OFFER. TENDERS WITHOUT COMPLIANCE SHEETS WILL NOT BE EVALUATED. The Price bid should be unconditional.

20. Canvassing: Exerting pressure and/or offering inducement in any form by the bidder or by any other person on behalf of the bidder shall disqualify the bid and lead to its rejection.

21. Commercial compliance as per NIT commercial compliance shall be furnished along with the bid.

22. Unrealistic bids with either cost which is impossible to achieve or for bidders who show that they are completely inexperienced or have completely inappropriate equipment will be rejected.

23. Conditional Offer/quotation will not be accepted.

24. Discounts: Bidders are advised not to indicate separate discounts. Discounts, if any, should be merged in the rates against the quoted items.

25. SUBMISSION OF TECHNICAL DOCUMENT:

Specifications are basic essence of the product. The broad configuration / specification of the proposed purchase are given in the Special contract conditions (SCC). It must be ensured that the offers are strictly as per our specifications as mentioned in the SCC. At the same time it must also be kept in mind that merely copying our specifications in their quotation shall not make firms eligible for consideration. Technically unsuitable offers and offers not conforming to tender schedule shall be rejected.

1. The vendor is required to provide their comments item-by-item on the compliance sheet provided in the SCC. Where ever the specified parameter is required within a range, the calculated/ estimated value as per the vendor's design is to be provided in the "Remarks" column. Deviations /exceptions, if any, from the specifications to be recorded in the "Remarks" column.

26. Authorisation: The bidder is qualified only if they are the OEM/dealer authorized by the OEM for the particular product or an Indian agent bidding on behalf of the OEM. For dealer/Indian agent, authorization letter from OEM is mandatory. In case of agent, the agency agreement should be provided along with the roles and responsibility. Indian Agent consideration shall be in conformance with Govt. of India directives

27. Default in Performance: If any Vendor is not successfully discharging their contractual obligations against the order/contract placed on them by NIOT within the agreed time limit, (OR) if there is any deficiency in performing such obligations, NIOT reserves the right to suspend such Vendor from their participation in future tenders of NIOT for a minimum period of one year. Even after revoking the suspension period the Vendor's performances till continues to be the same without any improvement, NIOT reserves right to BAN such Vendor permanently from participation in all the tenders of NIOT and organizations of MOES.

TERMS AND CONDITIONS GOVERNING THE CONTRACT

28. Price: The price for hiring the containerised clean room O₂ Facility shall include but not limited to

- a. Costs of goods/ services covered in this contract.
- b. Taxes and duties
- c. Transportation and packing cost (Air worthy packing of internationally acceptable practices withstand transit and Transshipments by air / road / rail)
- d. Cost of handling, documentation, freight, insurance from contractor's ware house up to NIOT warehouse.

The Bidder shall indicate on the appropriate price schedule form, the hiring prices of the goods he proposes to supply under the order strictly as per price bid format of tender.

29. Taxes and duties:

GST will be paid as per the applicable HSN Code at applicable rate for the quote received in INR. Any revision in the rate by Government of India the same shall be applicable at the time of Invoicing.

30. Guaranteed time of delivery – specific performance of contract; The time of delivery including testing and handing over in satisfactory condition is the essence of the contract and the item should be **delivered within 6 weeks** from the date of purchase order. The Hire date will commence from the date of receipt of containerised clean oxygen room facility and accepted by NIOT. The contractor should adhere the delivery schedule indicated above.

31. Extension of delivery period: If the completion of systems / components is delayed for reasons of force majeure such as acts of God, Acts of Public enemy, acts of Government, fires, floods, epidemics, quarantine restrictions, illegal strikes and freight embargoes, the Contractor shall within 3 days from the date of such occurrence, give notice to NIOT in writing of his claim for extension of delivery period. NIOT on receipt of such notice may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract. Unless the extended delivery period is agreed by NIOT in writing, contractor cannot claim the extension of delivery time as a matter of right. NIOT shall have the right to either cancel/extend the order validity/ levy LD as appropriate.

32. Delay in Completion / Liquidated Damage (LD):

if the contractor fails to deliver any or all of the Goods or fails to perform the incidental Works/ Services (e.g. installation, commissioning or operator training) within the time frame(s) incorporated in the contract, the Procuring Entity shall, without prejudice where the delivery of stores or any instalment thereof is accepted after expiry of the original delivery period, the CA may recover from the contractor as agreed, the LD a sum equivalent to 0.5 (half) percent of the prices of any portion of stores delivered late, for each week or part thereof delay. The total damages shall not exceed 10 (ten) percent of the value of delayed goods.

33. Insurance: The Goods supplied under the Contract shall be fully insured against loss or damage incidental or acquisition, transportation, storage and delivery in the manner specified in the NIT. If any such damage occurred the goods shall be replaced within the contract price immediately without waiting for the insurance claim. The insurance shall be the scope of the bidder.

34. Performance Security: The successful bidders shall deposit 5% of the order value as Performance Security within two weeks from the date of issue of order. The performance security shall be in one of the following forms:

1. By Demand Draft/Banker's Cheque drawn in favour of "Director, NIOT" payable at Chennai (or)
2. Bank Guarantee as per prescribed format issued by a nationalized bank and valid for 60 days beyond the scheduled delivery/completion period as per order. (or)
3. Insurance Security Bond. (or)
4. Fixed Deposit Receipt. (or)
5. Online payment in an acceptable form.

This format can be downloaded from the link <https://www.niot.res.in/index.php/vendor/login>. Performance security shall be forfeited in the event of breach of order by the supplier in terms of the order. If Performance Security is not paid within the specified time, NIOT reserves its right to cancel the order and EMD will be forfeited. It will be returned after the completion of the hire period.

35. Payment: No Advance payment will be made. As per standard terms 90% will be made after supply and acceptance of the item at NIOT within 30days. Bidder has to submit cancelled cheque and RTGS banking details for processing the payment. The Balance 10% will be paid after completion of warranty period

36. Performance Guarantee/ Warranty Bank Guarantee: As per the MoFS guidelines 10% of the item value to be retained towards warranty to ensure the performance of the equipment's/systems to avoid any defect due to material/workmanship or any omission on the part of the order to rectify the same during the warranty period. If performance bank guarantee for 10% of the item value is submitted and valid till completion of the warranty period and acceptance then 100% payment will be released. The warranty Bank Guarantee will be discharged after completion of the standard warranty period.

37. Arbitration/Disputes:

In the event of any dispute, difference, interpretation or application relating to this agreement arises, the same shall be settled amicably by the parties. In case the dispute or differences could not be settled amicably, the same shall be referred for adjudication through Arbitration by an Arbitrator to be appointed by the Director, NIOT. The Indian Arbitration shall be concluded in accordance with the provisions of Arbitration & Conciliation Act, 1996 or any statutory modifications or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings. Venue of such arbitration shall be at Chennai in India. The language of arbitration proceedings shall be English. The Arbitration shall make a reasoned award (the "award"), which shall be final and binding on the parties. The cost of the arbitration shall be shared equally by the parties to the contract. However, expenses incurred by each party in connection with the preparation, presentation etc., shall be borne by each party.

38. Insurance: The insurance to be covered under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the NIT. If any such damage occurred, the goods shall be replaced within in the Contract price immediately without waiting for the insurance claim. The cost of insurance shall be in the scope of the bidder.

39. Termination: a) The purchase order shall become effective from the date of purchase order and shall automatically get terminated after successful completion of all contractual obligation and warranty obligation as per the terms of the order.

b) (i) Termination of the order due to breach of order by the supplier

(ii) Termination of order due to default,

(iii) Termination of the order due to insolvency,

(iv) Termination of the order for convenience.

If the termination of the order happens due to the above factors, [(i), (ii) &(iv)] initially the written notice will be issued within 30 days to settle the issue on mutually agreed terms with mutual consent.

40. Force Majeure: For purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of NIOT either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. If a Force Majeure situation arises, the Contractor shall promptly notify NIOT in writing of such conditions and the cause thereof. Unless otherwise directed by NIOT in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

41. INDEMNITIES: The Work Order hereby agrees to indemnify and hold harmless NIOT and its Director, officers and employees, from and against any and all suits, losses, liabilities, damages, claims, settlements, costs and expenses, including reasonable attorneys' fees, based on or arising, directly or indirectly, from:

i. breach of this Agreement by the Work Order

ii. Not performing the Scope of Work or any other obligation under this Agreement or Tender in accordance with the provisions and schedules of this Agreement or the Tender

iii. Violation or contravention of any Legislation on the part of the Work Order

iv. Any negligence or wilful misconduct of Work Order, which violates any provision of this Agreement

v. Infringement of any intellectual property belonging to any third party by the Work Order

vi. Any breach of an agreement or understanding between Work Order and any and all Third Parties due to which a liability arises on NIOT.

vii. Any claim that any representations or warranties contained herein are not true or Any breach thereof

viii. Any loss or damage caused by the Work Order to NIOT, its personnel or property

ix. Any loss or damage caused by the Work Order to any and all Third Parties for which a claim against NIOT has arisen

x. Breach, expiry, cancellation, revocation or invalidity of any and all licenses, permits, authorizations and registrations which the Work Order is required to obtain, keep valid and comply with under any Legislation in order to perform its obligations hereunder xi.

Any obligation of the Work Order performed by NIOT under this Agreement or under any Legislation.

Section I Commercial Terms Compliance sheet (To be filled by bidder)

Sl. No	Particulars	Yes	No	Page Ref
1	Whether EMD for INR 1,10,000/- scanned copy and uploaded along with the technical document?			
2	Whether every page of the tender document is digitally signed and uploaded in the cpp portal along with the other documents.			
3	Whether Taxes and duties are shown separately in the quote. (Registration numbers for claiming the same to be strictly indicated and the copy of the certificates enclosed)			
4	Whether accepted to submit the purchase order acceptance within 15 days from the date of receipt of the purchase order?			
5	Whether submission of 5% of the contract value as Performance Security is acceptable?			
6	Whether submission of 10% of the supply value as Performance Bank Guarantee is acceptable?			
7	Whether quote is valid for 90 days from the date of tender opening or time specified in the tender document whichever is later?			
8	Whether payment terms of the tender is complied with?			
9	Whether INCOTERM DAP NIOT Chennai is complied with?			
10	Whether the tender is fully complying with tender specification/Adjustment if no, list out deviations very clearly along with the appropriate reason for the deviation?			
11	Whether item-wise price is quoted as per price bid and quoted price is realistic?			
12	Whether liquidated damage as specified in the NIT accepted unconditionally?			
13	Whether the delivery period is acceptable as per the tender.			
14	Whether the warranty period (minimum 12 months) is acceptable as per the tender.			
15	Bidder is responsible for all performance benchmarks and the quote should contain an undertaking certifying the same.			
16	Whether the freight cost is included if not included whether the freight cost is indicated separately?			
17	Whether Past track record of quality and service is enclosed?			
18	Whether list of deliverables attached and comply as per tender?			

Section II Technical Compliance Sheet (To be filled by bidder)

S. No.	Component Description	NIOT Requirement	Compliance (Yes/No)	Remarks
1.	Valves for Oxygen Cylinders	Valves (31 nos.) with Fitment to Aluminum Oxygen Cylinder (1 L) Bottles as per technical specification in Section 3.1		
2.	EMCS Panel and HMI	HMI/Display (2 nos.), Complete EMCS Panel Assembly (1 no.) with all accessories, Memory card (2 nos.), CPU module (1 no.), Communication module (1 no.) and Analog output (1 no.) as per technical specification in Section 3.2		
3.	Fire Sensors	Smoke Detector (4 nos.), Flame Detector (4 nos.) and Heat Detector (4 nos.) with bases & brackets as per technical specification in Section 3.3		
4.	Fittings	Mechanical Tube/Pipe Fittings (CTX, MMOB etc - assorted) compatible for Oxygen Supply System of Human Safety and Support System as per technical specification in Section 3.4		
5.	Miscellaneous Components	M-12 Cable HP/LP Sensor (10 nos.), Water Based Extinguisher Hoses (4 no.), Emergency Stop/Input JB (1 no.) as per technical specification in Section 3.5		
6.	Calibration and Programming	Calibration and Programming (Sensors, EMCS, HMI etc) as per technical specification in Section 3.6		

Section III Priced Bid format

S. No.	Item Description	Quantity
1.	Valves (31 nos.) with Fitment to Aluminum Oxygen Cylinder (1 L) Bottles	Lumpsum
2.	HMI/Display (2 nos.), Complete EMCS Panel Assembly (1 no.) with all accessories, Memory card (2 nos.), CPU module (1 no.), Communication module (1 no.) and Analog output (1 no.)	Lumpsum
3.	Smoke Detector (4 nos.), Flame Detector (4 nos.) and Heat Detector (4 nos.) with bases & brackets	Lumpsum
4.	Fittings (CTX, MMOB etc - assorted)	Lumpsum
5.	M-12 Cable HP/LP Sensor (10 nos.), Emergency Stop/input JB (1 no.), Water Based Extinguisher Hoses (4 no.),	Lumpsum
6.	Calibration and Programming (Sensors, EMCS, HMI etc)	Lumpsum
7.	packaging, Transportation & Insurance charges	Lumpsum
8.	GST in value	Value

Section IV SCOPE OF SUPPLY

- Supply of Valves (31 no's) with Fitment to Aluminium Oxygen Cylinder (1 L) Bottles.
- Supply of HMI/Display (2 nos.), Complete EMCS Panel Assembly (1 no.) with all accessories, Memory card (2 nos.), CPU module (1 no.), Communication module (1 no.) and Analog output (1 no.).
- Supply of Smoke Detector (4 nos.), Flame Detector (4 nos.) and Heat Detector (4 nos.) with bases & brackets.
- Supply of M-12 Cable HP/LP Sensor (10 nos.), Emergency Stop/Input Junction Box (1 no.), Water Based Extinguisher Hoses (4 no.).
- Supply of Mechanical Pipe/Tube Fittings (CTX, MMOB etc - assorted).
- Calibration and Programming (Sensors, EMCS, HMI etc).

Annexure I

Technical Specification for

Supply of Spares for Human Safety and Support System of Matsya 6000

1. Introduction

National Institute of Ocean Technology (NIOT) is an autonomous institute under Ministry of Earth Sciences (MoES), Government of India involved in development of reliable indigenous technologies to solve various engineering problems associated with exploration of living and non-living resources in Indian Ocean region. NIOT had demonstrated deep water work class ROV (ROSUB 6000) and In-situ soil tester for 6000 m operational capability and involved in development of integrated underwater mining system for Poly-metallic nodule mining from 6000 m water depth through its pool of trained manpower. Besides, NIOT-MoES is equipped with a fleet of vessels which include deep water vessels namely ORV Sagar Nidhi, ORV Sagar Manjusha as well as coastal research vessels.

As part of the program envisaged by Ministry of Earth Sciences, Government of India, NIOT is involved in developing 6000 m depth rated manned submersible, Matsya 6000. The Matsya 6000 will be used for Carrying-out exploration for Deep Ocean mineral and energy resources, Support scientific investigation and sampling from deep ocean basins, Provide engineering support for developmental projects in deep waters and Search & recovery operations. As subsystem of Matsya 6000, NIOT has completed design & manufacturing of the Human Safety and Support System (HSSS) for three personnel for the designed operational endurance of 12 hours and 96 hours of emergency support (in case of eventuality) as per the DNV rules for certification, through its supplier and is in advanced stage of installation and commissioning of the HSSS in Matsya 6000.

During the development of the Human Safety and Support System (HSSS), the requirement of spares for different subsystems were realized and therefore, NIOT is interested in procuring the spares which are compatible to the developed Human Safety and Support System and are as per the DNV rules for certification.

2. Scope of Supply

- Supply of Valves with Fitment to Aluminum Oxygen Cylinder (1 L) Bottles.

- Supply of HMI/Display (2 nos.), Complete EMCS Panel Assembly (1 no.) with all accessories, Memory card (2 nos.), CPU module (1 no.), Communication module (1 no.) and Analog output (1 no.).
- Supply of Smoke Detector (4 nos.), Flame Detector (4 nos.) and Heat Detector (4 nos.) with bases & brackets.
- Supply of M-12 Cable HP/LP Sensor (10 nos.), Emergency Stop/Input Junction Box (1 no.), Water Based Extinguisher Hoses (4 no.).
- Supply of Mechanical Pipe/Tube Fittings (CTX, MMOB etc - assorted).
- Calibration and Programming (Sensors, EMCS, HMI etc).

3. Technical Requirements

All instruments, valves, components and fittings should be DNV-GL compliant and compatible to the Human Safety and Support System of Matsya 6000. The detailed specifications are mentioned in the following sections.

3.1 Valves for Oxygen Cylinder (1 Liter)

The Cylinder Pillar Valves is for the flow of medical grade oxygen from 1 liter Capacity Oxygen Cylinders used in the Human Safety and Support System of Matsya 6000. The valves should be rated for maximum working pressure of 200 bar or more. These valves should be Oxygen cleaned for use of medical grade oxygen and fitted to Oxygen Cylinders (1 Liter). The Threads of the valves should be 17 E and compatible to Oxygen Cylinders (1 Liter) of Human Safety and Support System of Matsya 6000.

3.2 HMI and EMCS Panel with accessories

The Environment Monitoring and Control System (EMCS) panel receives the data from the sensors, transducers and detectors used for measuring O₂, CO₂, H₂ concentration, temperature, relative humidity, ambient pressure and pressure in oxygen supply system pressure. It also should receive data from the Fire Sensors (Smoke, Heat and Flame detectors) of the HSSS and process data to issue suitable display and alarms based on programmed logic. The EMCS panel design and operation should be compatible for use with the HSSS and comply with DNV certification requirements. The EMCS panel assembly should consist of all accessories like CPU module, Analog output. Communication module, Memory card etc. The EMCS panel assembly should be programmed and tested for performance as per requirement of the HSSS.

Complete EMCS Panel Assembly: 1 no.

Memory card: 2 nos.

CPU module: 1 no.

Communication module: 1 no.

Analog output: 1 no.

The Human Machine Interface (HMI) is for display of all measured data received and stored in the machine console. The HMI will display measured sensors values, display alarms, receive alarm settings, event logs (alarms/warnings with respect to date & time) and data logs (parameters with respect to date & time). The HMI should be compatible for use with the HSSS and comply with DNV certification requirements.

HMI Make: Siemens

Model: 6AV2124-0JC01-0AX0

Quantity: 2 nos.

3.3 Fire Sensors/Detectors

There are 3 types of fire sensors/detectors that are required to be supplied with bases and brackets as mentioned in the following sections.

3.3.1 Smoke Detector with base and bracket

The Optical detection Smoke Detector should detect both black and white smoke leading to any type of fire, should have improved sensitivity to black smoke, compensation for slow changes in sensitivity and should have extra confirmation of smoke before an alarm signal is given. The smoke detector should be supplied with base and brackets for installation within personnel sphere of Matsya 6000. The following are the required specification of the smoke detectors:

- Voltage: 8.5- 33VDC
- Material: Flame retardant
- Temperature: -40 to 70°C
- Humidity: 0% to 98% RH
- Quantity: 4 nos.

3.3.2 Heat Detector with base and bracket

The Heat Detector should be as per International Standard like European Standard EN 54-5. The detector should respond to rate-of-rise in heat. The Heat detectors will be used as a

backup for smoke detectors in locations where there is less chance for generation of smoldering smoke. The heat detector should be supplied with base and brackets for installation within personnel sphere of Matsya 6000. The following are the required specification of the heat detectors:

- Voltage: 8.5- 33VDC
- Material: Flame retardant
- Temperature: -40 to 70°C
- Humidity: 0% to 98% RH
- Quantity: 4 nos.

3.3.3 Flame Detector with base and bracket

Flame detectors are used to measure the emitted radiant energy at specific light wavelengths, allowing them to discriminate between real flames and false alarm sources. The flame detector should be sensitive to UV radiation emitted by flames during combustion in the range between 185 to 260 μm , covering the common flames including those invisible to the naked eye, e.g., hydrogen fires. The flame detector should be supplied with base and brackets for installation within personnel sphere of Matsya 6000. The following are the required specification of the heat detectors:

- Voltage: 17- 28VDC
- Field of view: 90 Deg Cone
- Range of view: 0.1 m^2 n-heptane at 25 m
- Spectral Response: UV 180 to 260 nm
- Material: Poly Carbonate
- Temperature: -40 to 85°C
- Humidity: 95 % non-Condensing
- Quantity: 4 nos.

3.4 Tube/Pipe Fittings for Oxygen Supply System

The mechanical tube/pipe fittings should be compatible with the Oxygen Injection System of Matsya 6000. The fittings should be compatible to medical grade oxygen service and cleaned for oxygen service.

Make: Parker or Equivalent

Material: Brass

Application: Compatible for Oxygen use

Maximum Pressure Rating: 200 bar or more

Type of Fittings:

- NPTF Pipe Nipples (FFB)
- NPTF Street Elbow (CDB)
- NPTF Pipe Elbow (BDB)
- NPTF Male Run Tee (MROB)
- NPTF Female Pipe Tee (MMOB)
- 37° Flair Sleeve (TX)
- 37° Flair Union (HTX)
- 37° Flair/NPTF Male Connector (FTX)
- 37° Flair/NPTF Female Connector (GTX)
- 37° Flair/NPTF Male Elbow (CTX)
- 37° Flair/NPTF Female Elbow (DTX) and Nut DTX

3.5 Miscellaneous Components

The following components need to be supplied as per technical specifications mentioned.

3.5.1 M-12 Cable with connectors

The M-12 Cable with the connectors is used to connect the HP/LP Sensor for data acquisition and display. The M-12 Cable with the connectors should be compatible with the HP/LP sensors and the other connecting units of the Human Safety and Support System of the Matsya 6000.

Quantity: 10 nos.

3.5.2 Emergency Stop

The EMCS panel assembly is provided with Emergency Stop/Input Junction Box to immediately terminate any operation in emergency situation. This Emergency Stop will be provided at Control Stand inside personnel sphere. The Emergency Stop/Input Junction Box should be compatible with the Human Safety and Support System of Matsya 6000.

Quantity: 1 no.

3.5.3 Fire Extinguisher Hose

The Water Based Fire Extinguishers are used in the Human Safety and Support System of the Matsya 6000. The supplied Hoses of Water Based Fire Extinguisher should be compatible with

the Water Based Fire Extinguisher so that they can be replaced after a prescribed duration as per operation and maintenance plan.

Quantity: 4 no.

3.6. Calibration, Programming and Testing of the Components/System(s)

The Components like EMCS panel and the HMI should be programmed & tested along with its interfaces for its readiness to integrate in the Human Safety and Support System of Matsya 6000. The sensors like smoke detectors, flame detectors, heat detectors etc should be calibrated for its accurate use in the Human Safety and Support System of Matsya 6000. The calibrated sensors need to be tested with its interfaces for its readiness to integrate in the Human Safety and Support System of Matsya 6000.

4. Deliverables

S. No.	Item Description	Quantity
1.	Valves (31 nos.) with Fitment to Aluminum Oxygen Cylinder (1 L) Bottles	Lumpsum
2.	HMI/Display (2 nos.), Complete EMCS Panel Assembly (1 no.) with all accessories, Memory card (2 nos.), CPU module (1 no.), Communication module (1 no.) and Analog output (1 no.)	Lumpsum
3.	Smoke Detector (4 nos.), Flame Detector (4 nos.) and Heat Detector (4 nos.) with bases & brackets	Lumpsum
4.	Fittings (CTX, MMOB etc - assorted)	Lumpsum
5.	M-12 Cable HP/LP Sensor (10 nos.), Emergency Stop/input JB (1 no.), Water Based Extinguisher Hoses (4 no.),	Lumpsum
6.	Calibration and Programming (Sensors, EMCS, HMI etc)	Lumpsum