



Bid Number/बोली क्रमांक (बिड संख्या):  
GEM/2023/B/3642463  
Dated/दिनांक : 03-07-2023

### Bid Document/ बिड दस्तावेज़

Bid Details/बिड विवरण	
Bid End Date/Time/बिड बंद होने की तारीख/समय	24-07-2023 18:00:00
Bid Opening Date/Time/बिड खुलने की तारीख/समय	24-07-2023 18:30:00
Bid Offer Validity (From End Date)/बिड पेशकश वैधता (बंद होने की तारीख से)	75 (Days)
Ministry/State Name/मंत्रालय/राज्य का नाम	Ministry Of Mines
Department Name/विभाग का नाम	Na
Organisation Name/संगठन का नाम	Jawaharlal Nehru Aluminium Research Development And Design Centre (jnarddc)
Office Name/कार्यालय का नाम	West
Total Quantity/कुल मात्रा	1
Item Category/मद केटेगरी	BILLET CASTING SYSTEM FOR WROUGHT ALUMINIUM ALLOYS (Q3)
Minimum Average Annual Turnover of the bidder (For 3 Years)/बिडर का न्यूनतम औसत वार्षिक टर्नओवर (3 वर्षों का)	20 Lakh (s)
OEM Average Turnover (Last 3 Years)/मूल उपकरण निर्माता का औसत टर्नओवर (गत 3 वर्षों का)	160 Lakh (s)
Years of Past Experience Required for same/similar service/उन्हीं/समान सेवाओं के लिए अपेक्षित विगत अनुभव के वर्ष	3 Year (s)
MSE Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से एमएसई छूट	No
Startup Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से स्टार्टअप छूट	No
Document required from seller/विक्रेता से मांगे गए दस्तावेज़	Experience Criteria,Past Performance,Bidder Turnover,Certificate (Requested in ATC),OEM Authorization Certificate,OEM Annual Turnover,Additional Doc 1 (Requested in ATC),Additional Doc 2 (Requested in ATC),Additional Doc 3 (Requested in ATC),Compliance of BoQ specification and supporting document *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer

<b>Bid Details/बिड विवरण</b>	
<b>Past Performance/विगत प्रदर्शन</b>	50 %
<b>Bid to RA enabled/बिड से रिवर्स नीलामी सक्रिय किया</b>	No
<b>Type of Bid/बिड का प्रकार</b>	Two Packet Bid
<b>Time allowed for Technical Clarifications during technical evaluation/तकनीकी मूल्यांकन के दौरान तकनीकी स्पष्टीकरण हेतु अनुमत समय</b>	3 Days
<b>Inspection Required (By Empanelled Inspection Authority / Agencies pre-registered with GeM)</b>	No
<b>Evaluation Method/मूल्यांकन पद्धति</b>	Total value wise evaluation
<b>Financial Document Required/वित्तीय दस्तावेज की आवश्यकता है।</b>	Yes

#### **EMD Detail/ईएमडी विवरण**

Advisory Bank/एडवाइजरी बैंक	IDBI Bank
EMD Amount/ईएमडी राशि	120000

#### **ePBG Detail/ईपीबीजी विवरण**

Advisory Bank/एडवाइजरी बैंक	IDBI Bank
ePBG Percentage(%) / ईपीबीजी प्रतिशत (%)	3.00
Duration of ePBG required (Months) / ईपीबीजी की अपेक्षित अवधि (महीने).	14

(a). EMD EXEMPTION: The bidder seeking EMD exemption, must submit the valid supporting document for the relevant category as per GeM GTC with the bid. Under MSE category, only manufacturers for goods and Service Providers for Services are eligible for exemption from EMD. Traders are excluded from the purview of this Policy./जेम की शर्तों के अनुसार ईएमडी छूट के इच्छुक बिडर को संबंधित कैटेगरी के लिए बिड के साथ वैध समर्थित दस्तावेज प्रस्तुत करने हैं। एमएसई कैटेगरी के अंतर्गत केवल वस्तुओं के लिए विनिर्माता तथा सेवाओं के लिए सेवा प्रदाता ईएमडी से छूट के पात्र हैं। व्यापारियों को इस नीति के दायरे से बाहर रखा गया है।

(b). EMD & Performance security should be in favour of Beneficiary, wherever it is applicable./ईएमडी और संपादन जमानत राशि, जहां यह लागू होती है, लाभार्थी के पक्ष में होनी चाहिए।

#### **Beneficiary/लाभार्थी :**

SENIOR ADMIN OFFICER

West, NA, Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC), Ministry of Mines (R Srinivasan)

#### **Splitting/विभाजन**

Bid splitting not applied/बोली विभाजन लागू नहीं किया गया.

### **MII Purchase Preference/एमआईआई खरीद वरीयता**

MII Purchase Preference/एमआईआई खरीद वरीयता	Yes
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### **MSE Purchase Preference/एमएसई खरीद वरीयता**

MSE Purchase Preference/एमएसई खरीद वरीयता	Yes
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1. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
2. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
3. OEM Turn Over Criteria: The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the OEM is less than 3 year old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
4. Preference to Make In India products (For bids < 200 Crore):Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class 1 local supplier is denoted in the bid document. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or a chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in -India) order 2017 dated 04.06.2020. Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 will be eligible to bid. Non - Local suppliers as per MII order dated 04.06.2020 are not eligible to participate. However, eligible micro and small enterprises will be allowed to participate .In case Buyer has selected Purchase preference to Micro and Small Enterprises clause in the bid, the same will get precedence over this clause.
5. Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service. If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1+ 15% (Selected by Buyer)of margin of purchase preference /price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 25%(selected by Buyer) percentage of total QUANTITY.
6. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 50% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant

contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.

## **BILLET CASTING SYSTEM FOR WROUGHT ALUMINIUM ALLOYS ( 1 set )**

**(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)**

### **Technical Specifications/तकनीकी विशिष्टियाँ**

Buyer Specification Document/क्रेता विशिष्टि दस्तावेज़	<a href="#">Download</a>
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### **Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा**

<b>S.No./क्र. सं.</b>	<b>Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी</b>	<b>Address/पता</b>	<b>Quantity/मात्रा</b>	<b>Delivery Days/डिलीवरी के दिन</b>
1	Lalit Mohan	440023,Opp Wadi Police Station Amarawati Road	1	60

### **Buyer Added Bid Specific Terms and Conditions/क्रेता द्वारा जोड़ी गई बिड की विशेष शर्तें**

#### **1. Generic**

OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

#### **2. Generic**

After award of contract – Successful Bidder shall have to get Detailed Design Drawings approved from buyer before starting fabrication. Successful Bidder shall submit Detailed Design Drawings for Buyer's approval, within 10 days of award of contract. Buyer shall, either approve the drawings or will provide complete list of modification required in the drawings within 7 days. Seller shall be required to ensure supply as per approved Drawings with modifications as communicated by Buyer. If there is delay from buyer side in approval of drawing- the delivery period shall be refixed without LD for the period of delay in approval of Drawing.

#### **3. Generic**

Actual delivery (and Installation & Commissioning (if covered in scope of supply)) is to be done at following address

JNARDDC

WADI  
AMRAVATI ROAD  
NAGPUR  
MAHARASHTRA

4. **Generic**

Bidders are advised to check applicable GST on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.

5. **Generic**

Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.

6. **Generic**

Experience Criteria: The Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for 3 years before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the year. In case of bunch bids, the primary product having highest value should meet this criterion.

7. **Generic**

Installation, Commissioning, Testing, Configuration, Training (if any - which ever is applicable as per scope of supply) is to be carried out by OEM / OEM Certified resource or OEM authorised Reseller.

8. **Generic**

**Manufacturer Authorization:**Wherever Authorised Distributors/service providers are submitting the bid, Authorisation Form /Certificate with OEM/Original Service Provider details such as name, designation, address, e-mail Id and Phone No. required to be furnished along with the bid

9. **Generic**

Scope of supply includes Training: Number of employees to be trained

3  
, Place for Training  
JNARDDC NAGPUR  
and Duration of training  
3  
days.

10. **Generic**

Without prejudice to Buyer's right to price adjustment by way of discount or any other right or remedy available to Buyer, Buyer may terminate the Contract or any part thereof by a written notice to the Seller, if:

- i) The Seller fails to comply with any material term of the Contract.
- ii) The Seller informs Buyer of its inability to deliver the Material(s) or any part thereof within the stipulated Delivery Period or such inability otherwise becomes apparent.
- iii) The Seller fails to deliver the Material(s) or any part thereof within the stipulated Delivery Period and/or to replace/rectify any rejected or defective Material(s) promptly.
- iv) The Seller becomes bankrupt or goes into liquidation.
- v) The Seller makes a general assignment for the benefit of creditors.
- vi) A receiver is appointed for any substantial property owned by the Seller.
- vii) The Seller has misrepresented to Buyer, acting on which misrepresentation Buyer has placed the Purchase Order on the Seller.

11. **Inspection**

**Nominated Inspection Agency:** On behalf of the Buyer organization, any one of the following Inspection Agency would be conducting inspection of stores before acceptance:  
Pre-dispatch Inspection at Seller Premises (applicable only if pre-dispatch inspection clause has been selected in ATC):

OPTIONAL

Post Receipt Inspection at consignee site before acceptance of stores:  
WILL BE DONE AT JNARDDC SITE , BEFORE ACCEPTANCE IN THE PRESENCE OF SUPPLIER

12. **Forms of EMD and PBG**

Bidders can also submit the EMD with Account Payee Demand Draft in favour of

JNARDDC  
payable at  
NAGPUR

. Bidder has to upload scanned copy / proof of the DD along with bid and has to ensure delivery of hardcopy to the Buyer within 5 days of Bid End date / Bid Opening date.

13. **Forms of EMD and PBG**

Bidders can also submit the EMD with Payment online through RTGS / internet banking in Beneficiary name

JNARDDC  
Account No.  
041104000192392  
IFSC Code  
IBKL0000041  
Bank Name  
IDBI  
Branch address  
CIVIL LINES NAGPUR

. Bidder to indicate bid number and name of bidding entity in the transaction details field at the time of on-line transfer. Bidder has to upload scanned copy / proof of the Online Payment Transfer along with bid.

14. **Forms of EMD and PBG**

Successful Bidder can submit the Performance Security in the form of Account Payee Demand Draft also (besides PBG which is allowed as per GeM GTC). DD should be made in favour of

JNARDDC  
payable at  
NAGPUR

. After award of contract, Successful Bidder can upload scanned copy of the DD in place of PBG and has to ensure delivery of hard copy to the original DD to the Buyer within 15 days of award of contract.

15. **Forms of EMD and PBG**

Successful Bidder can submit the Performance Security in the form of Payment online through RTGS / internet banking also (besides PBG which is allowed as per GeM GTC). On-line payment shall be in Beneficiary name

JNARDDC  
Account No.  
041104000192392  
IFSC Code  
IBKL0000041

Bank Name  
IDBI  
Branch address  
CIVIL LINES NAGPUR

. Successful Bidder to indicate Contract number and name of Seller entity in the transaction details field at the time of on-line transfer. Bidder has to upload scanned copy / proof of the Online Payment Transfer in place of PBG within 15 days of award of contract.

**16. Scope of Supply**

Scope of supply (Bid price to include all cost components) : Supply Installation Testing Commissioning of Goods and Training of operators and providing Statutory Clearances required (if any)

**17. Buyer Added Bid Specific ATC**

Buyer Added text based ATC clauses

1. Bidder have to quote the price as per our specification which includes all cost of all standard accessories with industry norms.
2. Cost should include , supply, installation, commissioning and training.
3. Total bidding price quoted in the price bid should be including GST, packing ,transportation. Buyer will not be responsible for any discrepancy in quoted price .
4. Bidder have to submitted technical compliance sheet as per our specification. Catalogue /brochure to be submit along with compliance sheet to verify the specification. if any deviation same to be mentioned in technical compliance sheet.

**18. Warranty**

Warranty period of the supplied products shall be 1 years from the date of final acceptance of goods or after completion of installation, commissioning & testing of goods (if included in the scope of supply), at consignee location. OEM Warranty certificates must be submitted by Successful Bidder at the time of delivery of Goods. The seller should guarantee the rectification of goods in case of any break down during the guarantee period. Seller should have well established Installation, Commissioning, Training, Troubleshooting and Maintenance Service group in INDIA for attending the after sales service. Details of Service Centres near consignee destinations are to be uploaded along with the bid.

**19. Warranty**

Successful bidder will have to ensure that adequate number of dedicated technical service personals / engineers are designated / deployed for attending to the Service Request in a time bound manner and for ensuring Timely Servicing / rectification of defects during warranty period, as per Service level agreement indicated in the relevant clause of the bid.

**20. Past Project Experience**

The Bidder / OEM {themselves or through reseller(s)}, should have executed project for supply and installation / commissioning of same or similar Category Products during preceding 3 financial years (i.e. current year and three previous financial years) as on opening of bid, as per following criteria:

- (i) Single order of at least 35% of estimated bid value; or
- (ii) Two orders of at least 20% each of estimated bid value; or
- (iii) Three orders of at least 15% each of estimated bid value.

Satisfactory Performance certificate issued by respective Buyer Organization for the above Orders should be uploaded with bid. In case of bunch bids, the Category related to primary product having highest bid value should meet this criterion

**Disclaimer/अस्वीकरण**

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization, whereby Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome, and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specifications and / or terms and conditions governing the bid. Any clause(s) incorporated by the Buyer regarding following shall be treated as null and void and would not be considered as part of bid:-

1. Definition of Class I and Class II suppliers in the bid not in line with the extant Order / Office Memorandum issued by DPIIT in this regard.
2. Seeking EMD submission from bidder(s), including via Additional Terms & Conditions, in contravention to exemption provided to such sellers under GeM GTC.
3. Publishing Custom / BOQ bids for items for which regular GeM categories are available without any Category item bunched with it.
4. Creating BoQ bid for single item.
5. Mentioning specific Brand or Make or Model or Manufacturer or Dealer name.
6. Mandating submission of documents in physical form as a pre-requisite to qualify bidders.
7. Floating / creation of work contracts as Custom Bids in Services.
8. Seeking sample with bid or approval of samples during bid evaluation process.
9. Mandating foreign / international certifications even in case of existence of Indian Standards without specifying equivalent Indian Certification / standards.
10. Seeking experience from specific organization / department / institute only or from foreign / export experience.
11. Creating bid for items from irrelevant categories.
12. Incorporating any clause against the MSME policy and Preference to Make in India Policy.
13. Reference of conditions published on any external site or reference to external documents/clauses.
14. Asking for any Tender fee / Bid Participation fee / Auction fee in case of Bids / Forward Auction, as the case may be.

Further, if any seller has any objection/grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

[This Bid is also governed by the General Terms and Conditions/ यह बिड सामान्य शर्तों के अंतर्गत भी शासित है](#)

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws./जेम की सामान्य शर्तों के खंड 26 के संदर्भ में भारत के साथ भूमि सीमा साझा करने वाले देश के बिडर से खरीद पर प्रतिबंध के संबंध में भारत के साथ भूमि सीमा साझा करने वाले देश का कोई भी बिडर इस निविदा में बिड देने के लिए तभी पात्र होगा जब वह बिड देने वाला सक्षम प्राधिकारी के पास पंजीकृत हो।बिड में भाग लेते समय बिडर को इसका अनुपालन करना होगा और कोई भी गलत घोषणा किए जाने व इसका अनुपालन न करने पर अनुबंध को तत्काल समाप्त करने और कानून के अनुसार आगे की कानूनी कार्यवाई का आधार होगा।

**---Thank You/धन्यवाद---**



# JAWAHARLAL NEHRU ALUMINIUM RESEARCH DEVELOPMENT AND DESIGN CENTRE, NAGPUR

## Specifications for Lab Scale Casting setup

Jawaharlal Nehru Aluminium Research Development and Design Centre is an autonomous body under ministry of mines, Govt. of India, which provides major financial support to the center for its research activities. JNARDDC, Nagpur is a "Centre of Excellence" set up in 1989 and is fully functional since 1996. To diversify activities into Aluminium Downstream activities, JNARDDC is inviting two bid tender enquiries (technical and commercial) for design, manufacture, supply, and installation of Laboratory scale casting setup for pilot production of Aluminium/Aluminium alloy billets.

### **Scope of supply**

To design, manufacture, supply, and installation of

- 1) Melting furnace with degassing unit as per technical specifications in Annexure-I
- 2) Complete mechanical, electrical, hydraulic, and vertical type casting system as per technical specifications in Annexure-II
- 3) Supply of Auxiliary Items- Annexure - III

Supply includes commissioning & installation services, demonstration & training, and proving the machine as per specifications.

Supplier may suggest optional accessories (if any) for increasing the performance of the system as a whole.

Diameter of Aluminium alloy Billet's to cast: 6-inch, 7 inch & 2.5 inches.

All units of this integrated aluminium alloy casting facility should be technically compatible to each other, and the system should be capable to handle

### **Technical Specifications for Melting/Holding Furnace: Annexure-I**

#### **1) Supply of Melting cum Holding furnace**

S. No	Details	Description
1.	Purpose	To melt and hold the aluminium and its alloys for the Billet Casting
2.	Melting Capacity of furnace	150-200 Kg
3.	Application Material	Ingots and Aluminium scrap
4.	Heating source	Fuel fired (supplier to mention the fuel)
5.	Temperature of working	800°C
6.	Maximum temperature	1200°C
7.	Tilting Capability of furnace	Tiltable to 90 degrees.
8.	Number of Burner (Burner and Burner with controller)	1 Set and type of the burner to be specified
9.	Melting Furnace Hydraulic Power Pack:	To be compatible with the supplied system Smooth and jerk less operation for 90 degrees
10.	Ignition Type	Automatic
11.	Blower Motor capacity	To be compatible with the supplied system

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12.	Gate Sliding Motor capacity	To be compatible with the supplied system
13.	Safety features	Furnace should be equipped with Oil leakage alarm, Overheating of Metal Alarm.
14.	Refractory	High Quality refractory lining for efficient insulation
15.	Degassing unit	<p>Separate unit which shall have the provision to accommodate 200kg melt and inject Ar or N<sub>2</sub> gas for efficient H<sub>2</sub> removal.</p> <ul style="list-style-type: none"> <li>• Arm rotation and speed: 180 degrees or better to be provided and adjustable speed.</li> <li>• Digital gas flow meter and pressure switch to be supplied.</li> <li>• Degassing time: Provision for display and time for degassing should be for 60 minutes or better.</li> <li>• Rotor Material: Inert to aluminium melt and additional sets to be provided with sleeve.</li> <li>• Modes: Auto and Manual to be provided.</li> </ul> <p>Equipment should</p> <ul style="list-style-type: none"> <li>• <b>work below 80db or better.</b></li> <li>• <b>Be ensured for its efficiency of at least 3 melts.</b></li> <li>• <b>Trouble free operation of at least 18 months.</b></li> </ul>
16.	Metal Tapping	Hydraulic Tilting via Furnace Launder
17.	Temperature indicator	The furnace should be equipped with temperature sensors. Temperature indicator and controller mounted inside a control panel will control the furnace in on/off mode
18.	Control panel	It should house necessary MCBs, Contactors, ammeters, Voltmeters, indicators, faults, alarms etc.
19.	Commissioning	<p>For commissioning and proving the capacity of furnace,</p> <ol style="list-style-type: none"> <li>1) Primary ingots melting to prepare alloys of soft medium and hard alloys.</li> <li>2) Primary ingots and scrap to prepare alloys of soft medium and hard alloys</li> </ol>

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## Technical Specifications for lab scale Casting System: Annexure-II

### 2) Supply of lab scale Hot Top Casting Machine for Aluminium/Aluminium Alloy Billets

S No	Details	Description
1)	For casting of Aluminium alloys	<p>Aluminium Alloys ranging from</p> <p>a) Low strength alloys 1xxx, 3xxx, 8xxx</p> <p>b) medium strength alloys-5xxx, 6xxx, 4xxx and</p> <p>c) high strength alloys of series-2xxxx, 7xxxx</p> <p>Performance and operational criteria should be specified by the manufacturer.</p> <p>The supplier has to demonstrate the working of a casting machine for a minimum of two grades of aluminium alloys mentioned above in the low medium and high strength alloys.</p> <p><b>Note:AA6082 alloy is a must in medium strength alloys</b></p> <p>This condition is mandatory and without which delivery cannot be accepted.</p>
2)	Hot top moulds:	The hot top moulds should be made of high-quality graphite to withstand the high temperatures and pressures during casting.
3)	Number of Moulds in Casting Table	<p>Total 4 moulds</p> <ul style="list-style-type: none"> <li>• 2 No's for 6 inch or 152mm,</li> <li>• 1 No's for 7 inch or 178 mm and</li> <li>• 1 No's for 2.5 inch or 63.5mm</li> </ul>
4)	Shoe Table Number of Moulds	<p>Total 4</p> <ul style="list-style-type: none"> <li>• 2 No's for 6 inch or 152mm,</li> <li>• 1 No's for 7 inch or 178 mm and</li> <li>• 1 No's for 2.5 inch or 63.5mm</li> </ul>
5)	Shoe table Sliding type	Sliding through Guide
6)	Shoe table Sliding movement	Hydraulic control movement
7)	Casting Tabletop steel plate thickness	25mm or better
8)	Casting Table bottom steel plate thickness	16mm or better
9)	Shoe Table plate thickness	16mm or better
10)	Casting Table Hydraulic Power pack	To be suitable with the supplied system

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11)	Hot top insulation:	The hot tops should be insulated with high-temperature insulation materials, such as ceramic fiber, to minimize heat loss during casting.
12)	Cooling water system:	A reliable and efficient cooling water system is required to cool the moulds and billets secondary cooling to maintain the desired casting temperature.
13)	Casting speed:	The casting speed should be optimized to produce billets with a uniform structure and crack/defect free. The casting speed should be variable and proved for wrought aluminium alloys mentioned in the scope for defect free casting.
14)	Commissioning requirements	Regular quality control checks should be performed to ensure that the billets meet the desired specifications. This includes monitoring the temperature, and flow rate during casting, as well as inspecting the billets for defects such as uniform grain size, cracks, porosity, and inclusions.
15)	Emergency Button/Switch	To be provided in case of power failure
16)	Casting speed Display unit	To be provided
17)	Laundry	Shall be used to transfer the molten metal from furnace to the Casting Machine. Detachable with cover and should have provision for <ol style="list-style-type: none"> <li>1. Heating</li> <li>2. Placing ceramic foam filter,</li> <li>3. Grain refiner addition and</li> <li>4. Degassing Unit</li> </ol>
18)	Laundry Length	Should ensure the temperature loss is minimum during the transfer of molten metal.
19)	Grain Refiner	5:1 TiBAl grain refiner in wire form should be supplied.
20)	Material for CFF	Material shall be able to withstand temperature up to 1200°C or better
21)	CFF pore size	<ul style="list-style-type: none"> <li>• 30 PPI for commercial casting</li> <li>• 40 PPI for critical castings</li> </ul>
22)	Straightness of the billet	1mm per meter
23)	Shell Zone	Shall be minimum of 200
24)	Grain Size	Maximum average grain size: 150 microns Single grain to be less than 200 microns
25)	Essential Auxiliaries	To be specified by manufacturer

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**Annexure-III: Supply of Auxiliary Items**

S.No	ITEM NAME	Weight/ Units
1.	Grain Refiner	10kgs
2.	Ceramic Foam Filter (No's)	2 rolls (1 roll of 100 meters)
3.	Mustard Oil for liner	5 litres
4.	Choke powder for cleaning moulds	40-50Kg
5.	Cover flux	3kgs
6.	MASTIC Resin	15kgs
7.	Chalk powder for launder repair	50kgs
8.	Silicon/Silicate liquid for repairing the mould	5 litres