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RFQ Number	NLM-KWT-25/003
Request for Quotation Date	17/02/2025
RFQ Closing Date	21/02/2025
RFQ Closing Time	10:00
Site Briefing not Compulsory	Not compulsory but if more information required can be arranged
Contact Person	Catherine Matima
Quotation Validity	90 Days from the closing date
Submission Details	RFQ Response must be sent to: catherine.matima@necsa.co.za
RFQ Description	Conduct practical training and on-the-job training on an operational Smelter Pilot Plant (Test Smelter Facility) holistically including operating and troubleshooting a 125kg coreless induction furnace to 7 Smelter Plant Operators for 7 working days.

Dear Service Provider

Kindly provide a quotation for goods and or services as outlined in section 2 of this document.

1. Introduction

The South African Nuclear Energy Corporation Limited (Necsa) is a state-owned public company (SOC), registered in terms of the Companies Act, (Act No. 61 of 1973), registration number 2000/003735/06.

The Necsa Group engages in commercial business mainly through its wholly-owned commercial subsidiaries: NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation-based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine-based products. Both subsidiaries, together with their subsidiaries, supply local and global markets, earning valuable foreign exchange for South Africa and are among the best in their field in their respective world markets.

Necsa's safety, health, environment and quality policies provides for top management commitment to compliance with regulatory requirements of ISO 14001, OHSAS 18001 and RD 0034 (Quality and Safety Management Requirements for Nuclear Installations), ISO 9001 and ISO 17025.

Necsa promotes the science, technology and engineering expertise of South Africa and improves the public understanding of these through regular communications at various forums and outreach programmes to the community. We are a proudly South African company continuously striving, and succeeding in many respects, to be at the edge of science, technology and engineering related to the safe use of nuclear knowledge to improve our world.

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For more information on Necsa, please visit: www.necsa.co.za

2. Scope of Work

This Scope of Work (SOW) describes the services to be provided by the Supplier to conduct practical training and on-the-job training on an operational Smelter Pilot Plant (Test Smelter Facility) holistically including operating and troubleshooting on a 125kg coreless induction furnace to smelter operators.

At the end of the practical training, the service provider shall certify all the trainees (Smelter Operators) with their qualification records. The Operators should be able to understand the metallurgical processes and how to efficiently and safely operate the smelting plants.

The service provider should be Merseta accredited.

No	Item Description	Location	Qty
1	Occupational Health & Safety: - Learn how to identify and address safety-related issues - Conducting hazard and risk assessment (HIRA) - PPE/PPC (The type of PPE/PPC to be used; Why is it used; How is it used; Why is it used; Who should use it; When it should be used; Taking care of PPE/PPC) , - All aspects of safety (physical; chemical; environmental; biological hazards) in a smelting environment including risks, - How to react to emergencies i.e. safety, health & environmental emergencies in the workplace - Prepare a portfolio for assessment	A26	1 day (12hours / day)
2	Plant Operation: - Learn how to operate a smelting furnace and related equipment - Identify furnace components - Preparing the furnace charge - Furnace charge loading - Preparing log sheets	A26	1 day (12hours / day)

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No	Item Description	Location	Qty
	- Sequence of starting the plant - Sequence of stopping the plant - Sintering of furnace lining - Casting/Tapping - Taking furnace dips (temperature measurements) - Taking samples and sample preparation - Operating the plant efficiently - Emergency start and stop - Working safely with tools and equipment - Working safely with electricity / hydraulics / compress air/ cooling water/ off-gas		
3	Control and Monitoring: - Describe safe operating techniques of induction melting - Identify and fix operational issues - Operate and monitor machinery - Perform quality checks - Prepare for work activities - Process settings - Operate the whole plant(all integrated sub-systems) - Shutting down the whole plant - Troubleshooting and maintain equipment - Perform pre-operational checks; operational checks; post-operational checks - Plant monitoring - Instrument, tools or devices to be used to measure, monitor, or perform a specific task and their applications - Prepare production reports - Production data analysis - Housekeeping	A26	5 days (12hours / day)
4	Furnace Refractory Lining: - Check the lining of the furnace for anomalies like hotspots, gaps, erosion and cracks (visual inspection) - How to take furnace lining measurements	A26	5 days (12hours /day)
5	Post Production: - Post-production activities - Apply quality standards on the final products - Product(s) identification - Stacking & handling procedures - Applying storing procedures	A26	5 days (12hours /day)

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No	Item Description	Location	Qty
6	Assessment: - Portfolio of evidence is to be compiled - Practical assessment at the end of the practical training is to be conducted and completed		

3. Pricing

- All price quoted to include all applicable taxes.
- Price must be fixed and firm
- Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable, disbursements etc.
- Quotation must be completed in full, incomplete quote could result in a quote being disqualified.
- Payment will be according to Necsa's General Conditions of Purchase.

4. Evaluation

4.1. Phase 1- Functionality Evaluation / Technical Evaluation

Where functional or technical evaluation criterion is applicable, assessment will be performed in terms of the criterion listed below and the criterion may include Technical, Performance, Quality and Risk.

If the Bidder's response to the Technical templates does not indicate that the Bidder can support an acceptable technical solution, the Bidder's response will be rejected and not evaluated further.

Together the Technical, Performance & Quality and Risk criteria make up the functionality criterion and a Bidder's Proposal will be evaluated for functionality out of a possible 100 points. Only RFQ responses achieving an evaluation score of greater than the set threshold points out of the possible 100 points and which score a number of points for functionality that is greater than or equal to the set threshold points of the number of points achieved by the highest scoring Bid for functionality will be selected to progress to the second stage.

4.2. Phase 2 - Evaluation In Terms Of Preferential Procurement Policy Framework Act, 2022

This bid will be evaluated and adjudicated according to the 80/20 point system, in terms of which a maximum of 80 points will be awarded for price and 20 points will be allocated based on the specific goals (B-BBE status level).

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	POINTS
PRICE	80
SPECIFIC GOALS (B-BBEE status level)	20
Total points for Price and SPECIFIC GOALS	100

Preference goal

B-BBEE status level contributor

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

5. Required Documentation

- Tax Clearance Certificate (Tax pin issued by SARS)
- Declaration of interest (SBD 4)
- BEE Certificate / Applicable Affidavit if classified as EME
- Letter of Good Standing (COID) only if Applicable due to the nature of work required
- Any other document or certification that might have been requested on this RFQ

6. Important

- 6.1. Quotation must be submitted on or before the RFQ closing date and time stated above.
- 6.2. Orders above R 30 000 will be evaluated according to the PPPFA 80/20-point system and a functionality scorecard where applicable and the ones above R 1 Million will be subjected to the tender process.
- 6.3. This RFQ is subjected to the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement

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Regulations, 2022, the General Conditions of Contract (GCC) and, if applicable, any other legislation or special conditions of contract

- 6.4. Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for specific goals are not claimed.
- 6.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to specific goals, in any manner required by the purchaser.
- 6.6. For a Bidder to obtain clarity on any matter arising from or referred to in this document, please refer queries, in writing, to the contact details provided above. Under no circumstances may any other employee within Necsa be approached for any information. Any such action might result in a disqualification of a response submitted in competition to this RFQ.
- 6.7. No goods and/or services should be delivered to Necsa without an official Necsa Purchase order.
- 6.8. Necsa reserves the right to; cancel or reject any quote and not to award the RFQ to the lowest Bidder or award parts of the RFQ to different Bidders, or not to award the RFQ at all.
- 6.9. The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any Necsa employee or its representatives. Such an act shall constitute a material breach of the Agreement and the Necsa shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights
- 6.10. By responding to this request, it shall be construed that: the bidder, hereby acknowledge to be fully conversant with the details and conditions set out in the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC), Technical Information and Specifications attached, and hereby agree to supply, render services or perform works in accordance therewith

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Title	Scope of Work (SOW) for Practical Training on Coreless Induction Furnace for Furnace Operators
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APPROVAL & DISTRIBUTION

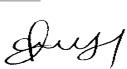
	NAME	SIGNATURE & DATE
PREPARED	T MUNYAI Head: Smelter Operations	 Signed by Thiathu Munyai, thiathu.munyai@necsa.co.za 06/02/2025 17:30:06(UTC+02:00) 
REVIEWED	LG MOGOTLHONG Project Manager: Operations	 Signed by Leonard Mogotlhong, leonard.mogotlhong@necsa.co.za 06/02/2025 20:57:22(UTC+02:00) 
ACCEPTED	TS MODISE Head Project Manager: Project Management	 Signed by Tankiso Modise, Tankiso.Modise@necsa.co.za 07/02/2025 06:04:11(UTC+02:00) 
APPROVED	W Ntho Manager: Decontamination Services	 Signed by William Ntho, william.ntho@necsa.co.za 07/02/2025 13:13:07(UTC+02:00) 
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REVISION HISTORY

This document has been revised in accordance with the following schedule:

Rev. No.	Date approved	Nature of Revision	Prepared
0.0	See title page	First issue.	T Munyai

1 INTRODUCTION

The Nuclear Energy Cooperation of South Africa (Necsa) main functions are to undertake and promote research and development in the field of nuclear energy; radiation science and technology; to process source material; special nuclear material and restricted material; to reprocess these as well as store nuclear material. Apart from its main operations at Pelindaba, Necsa also operates the Vaalputs radioactive waste disposal facility. Virtually all facilities which have been sites of nuclear activity will, at some point, become sources of radioactive scrap metal.

The waste produced at Necsa includes ferrous and non-ferrous uranium contaminated scrap metals which are currently stored on the Pelindaba site. Uranium contaminated scrap metal arises from different types of operation and the material composition, type, level, and chemical form of contaminant present will vary depending on its source. It is challenging to efficiently decontaminate these metals by conventional means and the scrap can neither be stored indefinitely on the Pelindaba site as they represent considerable storage volume.

The financial and environmental burden will continue to be a problem as quantities of contaminated waste increase and the space available for disposal continues to decrease unless an alternative solution is implemented. The high cost of disposal or storage can be reduced by compressing the volume of the waste material. One way of achieving this is by melting and casting the scrap into ingots of convenient shape hence Necsa has decided to build a smelter plant with an induction furnace for this purpose.

An acquisition of the Smelter Plant comprises of a Main Operational Smelter plant and a Pilot Smelter Plant (Test Smelter Plant). The main operational smelter plant comprises of two (2) 1000kW coreless induction furnaces and their auxiliaries and one (1) 100 kW coreless induction furnace. This Scope of Work outlines the objectives, requirements, and deliverables for conducting practical training and on-the-job training on an operational Smelter Pilot Plant (Test Smelter Facility) holistically including operating and troubleshooting a 125kg coreless induction furnace to 7 Smelter Plant Operators for 10 working days. The following sub-system and auxiliaries are part of the Test Smelter Plant.

2 OBJECTIVES

This Scope of Work outlines objectives, requirements, and deliverables for conducting practical training and on-the-job training on an operational Smelter Pilot Plant (Test Smelter Facility) holistically including operating and troubleshooting a 125kg/100kW coreless induction furnace. Seven (7) Smelter Plant Operators will attend this on-the-job practical training for 10 working days.

The following sub-system and auxiliaries forms part of the entire Smelter Pilot Plant (Test Smelter Facility):

- Power supply
- Furnace core
- Closed loop cooling water system
- Off-gas system
- Furnace lining
- Charge material preparation
- Casting including the 10 ton crane

The on-the-job training aims to enhance the technical competency of operators in handling furnace charge material and final product & by-product, smelter operation, furnace operation, maintenance of the smelter plant (where applicable), optimising the smelter operation, efficient operation of the smelter plant and troubleshooting coreless induction furnaces. In addition to the above requirements, the following objectives need to be taken into consideration at all times:

- To provide hands-on training and on-the-job training of the operation of coreless induction furnaces.
- To enhance understanding of all smelter sub-systems including the furnace components, working principles, and safety measures pre-start-up, during operation and post-operation.
- To develop skills in furnace start-up, shutdown, plant idling, emergency shutdown, and process control.
- To train operators in preventive maintenance and troubleshooting of the smelter plant.
- To ensure compliance with safety and operational standards of the Smelting facilities.

3 SCOPE OF ON-THE JOB TRAINING

The on-the-training will be conducted on-site at Necsa in Area 26 and will include practical sessions covering the following key areas:

3.1 Coreless Induction Furnace

- Overview of induction smelting principles (step-by-step).
- Key components and their functions.
- Application of the whole smelting process value chain
- What is metallurgy

3.2 Furnace Operation and Process Control

- Furnace feed/charge material selection and material loading into the furnace.
- Sintering of furnace lining.
- Furnace start-up, melting process, and temperature control.
- Casting techniques and slag management.

- Cooling water system operation and troubleshooting.
- Off-gas system and troubleshooting.
- Recording & reporting aspects of production and shutdown procedures and best practices.
- Developing log sheets and when & how to capture the data.
- Analysing the log sheet data.
- Check the lining for hotspots and cracks.
- Measuring the melts temperatures and how often is done.
- Describe safe operating techniques of induction melting.
- Identify and fix operational issues.
- Operate and monitor machinery.
- Perform quality checks.
- Prepare for work activities.
- Operational process settings.
- Operate the whole plant(all integrated sub-systems).
- Shutting down the whole plant.
- Troubleshooting and maintain equipment.
- Perform pre-operational checks; operational checks; post-operational checks.
- Plant monitoring.
- Instrument, tools or devices to be used to measure, monitor, or perform a specific task and their applications.
- Prepare production reports.
- Sequence of starting the plant.
- Sequence of stopping the plant.
- Sintering of furnace lining.
- Casting/Tapping.
- Taking furnace dips (temperature measurements).
- How to take furnace lining measurements.
- Taking samples and sample preparation.
- Operating the plant efficiently.
- Emergency start and stop.

- Working safely with tools and equipment.
- Working safely with electricity / compress air/ cooling water/ off-gas.
- Housekeeping.

3.3 **Safety Procedures and Compliances**

- Personal Protective Equipment (PPE) and PPC (Personal Protective Clothing) requirements.
- Handling of molten metal and emergency procedures.
- Electrical safety and arc flash prevention.
- Compliance with industry regulations and workplace safety standards.
- Conducting hazard and risk assessment (HIRA).
- All aspects of safety (physical; chemical; environmental; biological hazards) in a smelting environment including risks.
- How to react to emergencies i.e. safety, health & environmental emergencies in the workplace.

3.4 **Maintenance and Troubleshooting**

- Routine inspection and preventive maintenance.
- Identifying common operational issues and corrective actions.
- Coil failures, refractory wear, and leak detection.
- Cooling system maintenance and power supply troubleshooting.

4 **TRAINING METHODOLOGY**

- Hands-on, on-the job practical demonstrations on live equipment.
- Group discussions and problem-solving exercises.
- Competency assessment on all operators.
- The service provider to prepare a portfolio for assessment on operators.
- Issuing of competency certificate.

5 **TRAINING DURATION AND SCHEDULE**

- The training will be conducted over a period of 10 working days.
- Each session will last for 12 hours.
- A detailed training schedule and training plan must be provided before commencement by service provider.

6 PARTICIPANTS

- The training is designed for furnace operators.
- A maximum of 7 participants per session to ensure effective learning.

7 DELIVERABLES

- Training materials (manuals, plans, presentations, and handouts) to be submitted to Necsa.
- Practical demonstration and hands-on experience of Necsa operators.
- Assessment reports and feedback forms to be submitted to Necsa.
- Approved attendance certificates of the training for participants to be submitted to Necsa
- Approved competency certification to be submitted to Necsa

8 TRAINER QUALIFICATIONS

- Trainers should have extensive experience in Smelter Operations including induction furnace operations.
- Must have expertise in electrical, instrumentation and mechanical aspects of furnace maintenance.
- Certified professionals with industrial training experience preferred whom are registered with **Merseta**.

9 TRAINING EVALUATION AND FEEDBACK

- Participants will undergo an assessment to evaluate their competency.
- Feedback will be collected to improve future training sessions.
- A post-training report will be submitted by the service provider, summarizing key observations and recommendations.

10 RESPONSIBILITIES

- **Trainer:** Conduct training, provide training materials, and ensure safety compliance.
- **Client:** Provide access to plant, equipment, necessary safety gear, and facilitate participant availability.
- **Participants:** Actively engage in training and adhere to safety protocols.