QUALIFICATION FILE – Micro Credentials

Basics of Pot room transportation in Aluminium Industry

☒ Public ☐ Private

☒ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☒General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 4

Submitted By:

Indian Iron and Steel Sector Skill Council (IISSSC)

Karigari Bhawan, 5th Floor, Room No-509, Plot No-B/7,
Action Area-III, New Town, Rajarhat, Kolkata-700160

Table of Contents

Section 1: Basic Details

1.	**Micro Credential-Qualification Name**	Basics of Pot room transportation in Aluminium Industry
2.	**Sector/s**	Iron & Steel
3.	**National Qualification Register (NQR) Code & Version** *(Will be issued after NSQC approval.)*	NM-04-IS-03841-2025-V1-IISSSC **4. NCrF/NSQF Level:** 4
5.	**Brief Description of the Micro Credential**	This micro credential provides a comprehensive overview of Pot Room Operations, encompassing Fundamentals of Pot Room Operations, Material Handling and Transport Procedures, Traffic Management and Scheduling, Maintenance and Vehicle Upkeep, and Safety Procedures and Emergency Response. It equips learners with essential skills to manage pot room activities efficiently, ensuring safe and effective operations in industrial settings.
6.	**Eligibility Criteria for Entry for Students/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience**

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1.	12th grade Pass (In science)	6 Months of experience In relevant field
2.	11th Class (In science)	1.5 years of experience In relevant field
3.	10th Class	3 Years of experience in relevant field
4.	10th Class (2 years of NTC / NAC / CTS in Fitter, Machinist, Electrical)	
5.	Pursuing 2nd year of 3-year regular Diploma (after 10th) (in Metallurgy / Mechanical / Production / Electrical)	

		b. Age : 18	
7.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	1	**8. Common Cost Norm Category (I/II/III)** *(wherever applicable)***: I**
9.	**Any Licensing Requirements/ Pre-requisites for Undertaking Training** *(wherever applicable)*	No Licensing	
10.	**Expected Outcomes of the Micro Credential**	**Terminal learning outcomes are:** • Understand and explain the fundamental principles of electrolysis in aluminum smelting. • Describe the electrolytic reduction process for converting alumina into aluminum metal. • Define control parameters like amperage, voltage, and bath temperature. • Analyze the relationships between control parameters and factors like pot life, efficiency, and energy consumption. • Explain the importance of route adherence and speed limits. • Discuss hazards and containment methods for spills. • Understand the principles of preventive maintenance for Pot Room vehicles. • Identify components requiring regular checks and describe inspection procedures. • Explain lubrication procedures and reporting protocols for maintenance issues.	
11.	**Training Duration by Modes of Training Delivery** *(Specify **Total Duration** as per selected training delivery modes and as per requirement of the qualification)*	**☒ Offline Only ☐ Online Only ☐ Blended** **Training Delivery Mode** / **Theory (Hours)** / **Practical (Hours)** / **Total (Hours)** **Classroom (offline)** / 20 / 10 / 30 **Online** / 0 / 0 / 0 *(Refer Blended Learning Annexure for Details)*	

<table>
<tr><td>12.</td><td>Assessment Criteria</td><td colspan="2"><table><tr><th>Theory (Marks)</th><th>Practical (Marks)</th><th>Project (Marks)</th><th>Viva (Marks)</th><th>Total (Marks)</th><th>Passing %age</th></tr><tr><td>40</td><td>60</td><td>0</td><td>0</td><td>100</td><td>70</td></tr></table></td></tr>
<tr><td>13.</td><td>Is the Qualification Amenable to Persons with Disability</td><td colspan="2">☒ Yes ☐ No If “Yes”, specify applicable type of Disability: Partial hearing disability
Candidate should be able to communicate properly with/without aids.</td></tr>
<tr><td>14.</td><td>How participation of women will be encouraged?</td><td colspan="2">Equal employment opportunity is being given in the industry.</td></tr>
<tr><td>15.</td><td>Other Indian Languages in which the Micro Credential will be implemented.</td><td colspan="2">English only and Vernacular language</td></tr>
<tr><td>16.</td><td>Is similar Micro Credential Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>17.</td><td>Name and Contact Details Submitting / Awarding Body SPOC</td><td colspan="2">Name: Mr. Sushim Banerjee
Email: ceo@iisssc.org/ sushim_banerjee@yahoo.com Contact No.: 033-23247559
Website: https://www.iisssc.org/</td></tr>
<tr><td>18.</td><td>Final Approval Date by NSQC: 18.02.2025</td><td>19. Validity Duration: 3 Years</td><td>20. Next Review Date: 18.02.2028</td></tr>
</table>

Section 2: Training Related

1.	**Trainer’s Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	ITI (Mechanical/Metallurgical Engineering) in the relevant discipline with minimum 3 years of experience in their professional fields (including minimum 2 years of relevant industry experience) Or Diploma (Mechanical/Metallurgical Engineering) in the relevant discipline with minimum 2 years of experience in their professional fields (including minimum 2 years of relevant industry experience) Or BE/BTECH (Mechanical/Metallurgical Engineering) or higher with minimum 2 years of experience in their professional fields with 1 year of relevant industry experience

2.	**Master Trainer's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	B.Tech (Mechanical/Metallurgical Engineering) with 6 years of industry and 2 year of training experience in metal casting
3.	**Tools and Equipment Required for Training**	☒ **Yes** ☐ **No** (*If "Yes", details to be provided in Annexure)*

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	ITI (Mechanical/Metallurgical Engineering) in the relevant discipline with minimum 4 years of experience in their professional fields (including minimum 2 years of relevant industry experience) Or Diploma (Mechanical/Metallurgical Engineering) in the relevant discipline with minimum 3 years of experience in their professional fields with 2 years of relevant industry experience Or BE/BTECH (Mechanical/Metallurgical Engineering) or higher with minimum 3 years of experience in their professional fields with 1 year of relevant industry experience
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	B.Tech (Mechanical/Metallurgical Engineering) with 5 years of industry and 2 year of assessment experience in metal casting
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per requirement and NCVET guidelines)*	Diploma in the relevant discipline with a minimum of 10 years of experience in their professional fields with 3 years of relevant industry experience Or BE/BTECH or higher with minimum 7 years of experience in their professional fields with 5 year of relevant industry experience
4.	**Assessment Mode** *(Specify the assessment mode)*	**Mode: ☐ Online Only ☒ Offline Only ☐ Blended**
5.	**Tools and Equipment Required for Assessment**	☒ **Same as for training** ☐ **Yes** ☐ **No** *(details to be provided in Annexure-if it is different for Assessment)*

Section 4: Evidence of Need of the Micro Credential

As per the NCVET Guidelines for evidence of need, provide the required Annexure/Supporting documents.

1.	Government /Industry initiatives/ requirement (Yes/No): Yes
2.	Number of Industry validation provided: 5
3.	Estimated number of people to be trained: 500

Section 5: Annexure Check List

Specify Annexure Number and Name.

1.	**Annexure:** NCrF/NSQF level justification based on NCrF Level/NSQF descriptors *(Mandatory)*	Attached
2.	**Annexure:** Learning Outcomes and Assessment Criteria *(Mandatory)*	Attached
3.	**Annexure:** Assessment Strategy *(Mandatory)*	Attached
4.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory – Except in case of online course)*	Attached
5.	**Annexure:** Blended Learning *(Mandatory in case selected mode of delivery is "Blended Learning")*	Attached
6.	**Annexure:** Acronym and Glossary *(Optional)*	Attached

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	• Fundamental concepts of electrolysis in aluminum smelting. • Detailed knowledge of the electrolytic reduction process. • Secure transport methods and potential handling hazards. • Communication protocols and safety measures. • Identifying and mitigating hazards in the Pot Room. • Emergency response procedures and proper use of PPE.	At NSQF Level 4, Pot Room operators require professional theoretical knowledge and understanding of electrolysis principles in aluminum smelting, the role of electrolytic reduction, and key pot cell components. They must grasp control parameters (amperage, voltage, temperature) and their optimization, comprehend material handling and transport procedures, and adhere to stringent safety and emergency response protocols, ensuring efficient and safe operations in the Pot Room.	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	• Identify and describe the functions of key components in smelting pots: anode, cathode, and pot lining. • Analyze effects of control parameters on pot life, production efficiency, and energy consumption. • Recognize materials transported in the Pot Room. • Apply proper securing methods and adhere to route and speed regulations.	At NSQF Level 4, Professional and Technical Skills/Expertise/Professional Knowledge for Pot Room operators entail mastery in several areas. Operators must demonstrate advanced understanding and proficiency in electrolysis principles, material handling, traffic management, vehicle maintenance, and safety protocols. They need to possess in-depth knowledge of pot room operations, including control parameters optimization, emergency response procedures, and effective communication within the workplace. Additionally, they should be adept at utilizing advanced tools and techniques for efficient and safe aluminum production.	4
Employment Readiness & Entrepreneurship Skills & Mind-	• Develop strong technical knowledge of pot room operations and equipment. • Enhance problem-solving skills for efficient troubleshooting.	At NSQF Level 4, Employment Readiness & Entrepreneurship Skills & Mind-set for Pot Room operators encompass advanced competencies vital for career success and entrepreneurial	4

set/Professional Skill	• Encourage innovation and efficiency improvements in pot room processes. • Build leadership skills to potentially supervise and mentor junior operators. • Understand basic business principles to contribute to operational cost-saving initiatives and productivity enhancements.	ventures. This includes fostering leadership qualities, problem-solving skills, and adaptability to diverse work environments. Pot Room operators at this level are expected to demonstrate autonomy, initiative, and a proactive approach towards continuous improvement, aligning with NSQF Level 4's emphasis on advanced vocational skills and entrepreneurship readiness.	
Broad Learning Outcomes/Core Skill	• Grasp fundamental principles of electrolysis in aluminum smelting. • Explain the electrolytic reduction process converting alumina to aluminum. • Identify and describe key components of a smelting pot cell (anode, cathode, pot lining). • Monitor and adjust control parameters (amperage, voltage, temperature) for optimal operations.	At NSQF Level 4, Broad Learning Outcomes/Core Skills for Pot Room operators involve advanced competencies in aluminum smelting operations. Operators demonstrate proficiency in electrolysis principles, pot room equipment management, material handling, traffic management, and emergency response. They possess in-depth knowledge of control parameters, safety protocols, and maintenance practices, ensuring efficient and safe pot room operations at a supervisory or specialized level.	4
Responsibility	• Monitor and control the electrolysis process to ensure efficient aluminum production. • Adjust control parameters like amperage, voltage, and bath temperature. • Operate smelting pot cell equipment and perform routine maintenance. • Conduct pre- and post-shift inspections of Pot Room vehicles and machinery. • Manage traffic flow within the Pot Room to ensure safety and efficiency.	At NSQF Level 4, responsibility for Pot Room operators involves advanced competencies in aluminum smelting processes. Job outcomes entail mastery of electrolysis principles, control parameter optimization, material handling, traffic management, vehicle maintenance, and emergency response. Operators demonstrate proficiency in analyzing complex data, making informed decisions, and ensuring efficient and safe Pot Room operations, aligning with Level 4 descriptors for skilled tasks and problem-solving.	4

Annexure: Learning Outcomes and Assessment Criteria

Detailed learning outcomes and assessment criteria for the qualification are as follows:

S. No.	Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC 1.	Demonstrate proper containment procedures for different types of material spills.	1	6	0	0
PC 2.	Demonstrate the ability to check and ensure the proper functioning of all warning signals on Pot Room vehicles, including revolving lights, horns, beam lights, and curve lights	3	4	0	0
PC 3.	Simulate scenarios for spill prevention and containment using mock-ups or non- hazardous materials (e.g., sand) to practice appropriate techniques.	3	5	0	0
PC 4.	Participate in practical exercises to assess their ability to safely load, transport, and unload Pot Room materials following the learned theoretical knowledge and safety protocols.	3	4	0	0
PC 5.	Utilize pot room layout mockups to plan efficient delivery routes considering production schedules and minimizing wait times.	3	5	0	0
PC 6.	Demonstrate an understanding of the plant layout or area where material handling devices operate by accurately navigating the space and identifying key operational zones and potential hazards.	5	3	0	0
PC 7.	Practice using scheduling tools or communication systems to confirm delivery and pickup times with supervisors or other departments.	3	5	0	0
PC 8.	Practice using visual signals and radio communication protocols for safe interaction with other Pot Room personnel during simulated driving scenarios.	1	4	0	0
PC 9.	Demonstrate of pre- and post-shift inspection procedures for Pot Room vehicles, focusing on identifying key components and potential issues.	4	4	0	0
PC 10.	Perform basic lubrication tasks on Pot Room vehicles (e.g., greasing specific points) under the guidance of a qualified mechanic.	3	4	0	0
PC 11.	Role-play scenarios where drivers witness other operators engaging in unsafe maintenance practices and practice clear communication methods to address the situation.	3	5	0	0
PC 12.	Demonstrate the use of personal protective equipment (PPE) in emergency situations.	2	3	0	0
PC 13.	Role plays different emergency procedures for spills and leaks.	2	3	0	0
PC 14.	Demonstrate the proper selection and donning/doffing procedures for various PPE used in the Pot	2	3	0	0

	Room.				
PC 15.	Participate in emergency response drills, including fire extinguisher use (using appropriate training simulators), metal spill containment procedures (using simulated materials), and evacuation procedures.	2	2	0	0
Total Marks		**40**	**60**	**0**	**0**

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - Metal Casting the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts

- Questions are mapped with NOS and PC
- Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
- Assessor must be ToA certified & trainer must be ToT Certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

Annexure: Tools and Equipment

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1.	Trainer Guide	As per requirement	30
2.	Laptop	As per requirement	30
3.	Whiteboard	All	1
4.	Note book	As per requirement	30
5.	Tie-down straps	As per requirement	1
6.	Forklifts	As per requirement	5

7.	Spill kits	As per requirement	5
8.	Safety barriers	As per requirement	30
9.	cones	As per requirement	1
10.	Fire extinguishers	As per requirement	5
11.	Heat-resistant gloves	As per requirement	30
12.	Face Shields	As per requirement	30
13.	Protective Clothing	As per requirement	30
14.	Safety Goggles	As per requirement	30
15.	Respirators	As per requirement	5
16.	Ear Protection	As per requirement	30
17.	Brooms	As per requirement	5
18.	Pen	As per requirement	30
19.	Stop Signs	As per requirement	5
20.	Yield Signs	As per requirement	5
21.	Directional Arrows	As per requirement	10
22.	Pedestrian Crossings	As per requirement	10
23.	Barriers	As per requirement	10
24.	Hand-Held Flags	As per requirement	10
25.	Helmets	As per requirement	30
26.	Gloves	As per requirement	30
27.	Safety Vests	As per requirement	30
28.	Mirrors	As per requirement	10
29.	Checklists	As per requirement	10
30.	Flashlights	As per requirement	10
31.	Inspection mirrors	As per requirement	10
32.	Grease guns	As per requirement	10
33.	Lubricants	As per requirement	10
34.	Oil cans	As per requirement	10
35.	Wrenches	As per requirement	10
36.	Screwdrivers	As per requirement	10
37.	Pliers	As per requirement	10
38.	Hydraulic jack	As per requirement	10

39.	Filters	As per requirement	10
40.	Belts	As per requirement	10
41.	Hoses	As per requirement	10

Classroom Aids:

The aids required to conduct sessions in the classroom are:

1. Whiteboard and marker
2. Projector
3. Laptop
4. Internet

Annexure: Industry Validations Summary

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	Bokaro Steel Plant	B.K Singh	GM		8986871504	Basant.singh@sail.in	
2	Thinkway Industries Pvt Ltd.	Mrs. Swati Kumar	Director	Flat No. 33, Block-B, Pocket-C, Loknayak Puram, DDA Flat Nangloi, Delhi-110041	9999751120	operations.zita@gmail.com	
3	Bhalotia Auto Products Pvt. Ltd.	Kanchan Patra	AGM	H.0 Muneshwari Bhawan, Jamshedpur - 831001	9830019700		
4	Rourkela Steel Plant	H. Pati	GM	Rourkela - 769011	8895500593		
5	ESL Steel Limited	G L Karna	Head – L&D	Siyalijori, P.O – Jogidih, O.P – Bangaria, P.S – Chandankyari, Bokaro Pin – 828303	9004974233	Govindlal.karna@vadanta.co.in	

Annexure: Training Details

Training Projections:

Year	Estimated Training # of Total Candidates	Estimated training # of Women	Estimated training # of People with Disability
2024-25	500	200	50
2025-26	1000	400	100
2026-27	1500	600	150

Data to be provided year-wise for next 3 years.

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline: Online Ratio
1	☒ Theory/ Lectures - Imparting theoretical and conceptual knowledge	• Books/ e-books • Presentations • Reference Material • Audio / Video Modules	
2	☒ Imparting Soft Skills, Life Skills and Employability Skills /Mentorship to Learners	• Self-Learning Videos • Broadcasts • Mobile Learning • Curated Digital content	
3	☒ Showing Practical Demonstrations to the learners	• Video Content • E-Resource library • AR/VR/XR	
4	☒ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	• Training tools (tools list attached) • Video Play • Presentations	
5	☒ Tutorials/ Assignments/ Drill/ Practice	• Online Question Bank • Mobile Quick test app • MCQ based tests	

6	☒ Proctored Monitoring/ Assessment/ Evaluation/ Examinations	• Assessment engine for Essays • Up-loadable file examinations • Mock test sessions	
7	☒ On the Job Training (OJT)/ Project Work Internship	• Online tests • Offline assessments	

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training
CAD/CAM	Computer-aided design and computer-aided manufacturing
CAE	Computer-aided engineering

Glossary

Term	Description
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities based on their main economic function, product, service or technology.