QUALIFICATION FILE

Green Hydrogen Plant Junior Technician- Power Sources

☒ Short Term Training (STT)

☒ Future Skills

NCrF/NSQF Level: 3

Submitted By:

Skill Council for Green Jobs

Chief Executive Officer
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<tr><td>2.</td><td>Sector/s</td><td colspan="2">Environmental Science</td></tr>
<tr><td>3.</td><td>Type of Qualification: ☐ New</td><td>NQR Code & version of existing/previous qualification:</td><td>Qualification Name of existing/previous version:</td></tr>
<tr><td>4.</td><td>a. OEM Name
b. Qualification Name (Wherever applicable)</td><td colspan="2">Green Hydrogen Plant Junior Technician- Power Sources</td></tr>
<tr><td>5.</td><td>National Qualification Register (NQR) Code &Version</td><td>QG-03-ES-00764-2023-V1-SCGJ & version 1</td><td>6. NCrF/NSQF Level: 3</td></tr>
<tr><td>7.</td><td>Award (Certificate/Diploma/Advance Diploma/ Any Other</td><td colspan="2">Certificate</td></tr>
<tr><td>8.</td><td>Brief Description of the Qualification</td><td colspan="2">The job holder shall perform testing, installation and facility integration of various parts, repairs, troubleshooting, upkeep and maintenance of electrical control systems, protection systems, and other auxiliary equipment and associated tools in integrating power sources with electrolyser for production of Green Hydrogen. He/She will be responsible for the complete installation, maintenance, electric wiring for integrating power sources with electrolyser. This role works closely with the power supply project, testing, plant engineering, process operation, control & operation all types power sources integrating with electrolyser.</td></tr>
<tr><td>9.</td><td>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>1</td><td>9th Grade pass and pass and pursuing continuous schooling in regular school.</td><td>NA</td></tr>
<tr><td>2</td><td>Grade 8 pass with two year of (NTC/ NAC) after 8th Grade Pass with 2 years relevant experience.</td><td>NA</td></tr>
</table></td></tr>
</table>

		b. Age: 18 Years	3	Qualification of NSQF Level 2.5 with 1.5 years of relevant experience	NA	
			4	Previous relevant Qualification of NSQF Level 2 with 3 years of relevant experience	NA	

10	**Credits Assigned to this Qualification, Subject to Assessment** (as per National Credit Framework (NCrF))	12	**10. Common Cost Norm Category:** **I**
11	**Any Licensing requirements for Undertaking Training on This Qualification** (wherever applicable)	NA	
12	**Training Duration by Modes of Training Delivery** (Specify **Total Duration** as per selected training delivery modes and as per requirement of the qualification)	☒**Offline** ☐**Online** ☐**Blended**	
13	**Aligned to NCO/ISCO Code/s** (if no code is available mention the same)	NCO-2015/ 8131.2100 Ammonia Operator/Ammonia Plant Operator	
14	**Progression path after attaining the qualification** (Please show Professional and Academic progression)	Vertical Progression: Junior Technician Power Sources (Level 3.0)	
15	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	**Nil**	

Training Delivery Modes	**Theory (Hours)**	**Practical (Hours)**	**OJT Mandatory (Hours)**	**OJT Recommended (Hours)**	**Employability (Hours)**	**Total (Hours)**
Classroom (offline)	170	100		60	30	360
Online						

(Refer Blended Learning Annexure for details)

16	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	**☐ Yes ☒ No**	
17	**Is the Job Role Amenable to Persons with Disability**	**☒ Yes ☐ No** **If "Yes", specify applicable type of Disability:** **☒ Deaf ☒ Hard of Hearing ☒ Acid Attack Victims ☒ Dwarfism**	
18	**How Participation of Women will be Encouraged**	The programme would be proposed to be incorporated in women ITIs and diploma colleges to train women candidates on the job role. TPs shall be encouraged to onboard at least a certain number of female candidates in each batch	
19	**Are Greening/ Environment Sustainability Aspects Covered** (Specify the NOS/Module which covers it)	**☒ Yes ☐ No**	
20	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools ☒ Yes ☐ No Colleges ☒ Yes ☐ No**	
21	**Name and Contact Details of Submitting / Awarding Body SPOC** (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	**Name:** Dr. Praveen Saxena **Email:** ceo@sscgj.in **Contact No.:** 9871119101 **Website: https://sscgj.in/**	
22	**Final Approval Date by NSQC: 31.08.2023**	**23. Validity Duration:** 3 years	**24. Next Review Date: 30.08.2026**

Section 2: Module Summary

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-	Emp.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Basics of Green Hydrogen Production	SGJ/N4301 Version 1	Core	3	1	20	10	60		30	30	20			50	12
2.	Analyse Main Parts of green hydrogen production unit	SGJ/N4302 Version 1	Core	3	1	20	10			30	27	23			50	13
3.	Identify Renewable Energy sources for green hydrogen production	SGJ/N4303 Version 1	Core	3	1	20	10			30	32	18			50	13
4.	Perform integration of Power Sources with Electrolyser	SGJ/N4037 Version 1	Core	3	1	20	10			30	22	28			50	13
5.	Identify tools and tackles used for handling Power Sources.	SGJ/N4038 Version 1	Core	3	4	70	50			120	54	46			100	25
6.	Maintain Health & Safety at Electrolyzer of Green Hydrogen generation project site	SGJ/N4039 Version 1		3	1	20	10			30	25	25			50	12
7.	Employability Skills	DGT/VSQ/ N0101			1					30	20	30			50	12
8.	On the Job Training									60						
Duration (in Hours) / Total Marks						170	100	60	30	**360**	210	190			400	100

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

Th*.-Theory* ***Pr.****-Practical* ***OJT****-On the Job* ***Man.****-Mandatory Training* ***Rec.****-Recommended* ***Proj.****-Project*

Assessment - Minimum Qualifying Percentage

Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Graduate/Diploma(Technical) with Two years of experience in a petrochemical industries/Gasification processes/relevant experience Or Certified under relevant Craft Instructor Training Scheme (CITS) course
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Engineering Graduate with 5 years of Junior Technician integrating Power source
3.	**Tools and Equipment Required for Training**	☒Yes ☐No *(If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	Not Applicable

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate/Diploma(Technical) with Three years of experience in Junior Technician integrating Power source relevant experience Or Certified under relevant Craft Instructor Training Scheme (CITS) course
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Engineering Graduate with 6 years of experience in Junior Technician integrating Power source
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Engineering Graduate with 7 years of experience in Junior Technician integrating Power source
4.	**Assessment Mode** *(Specify the assessment mode)*	Online and offline both
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 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** Yes available at https://sscgj.in/wp-content/uploads/2022/03/Green-Jobs-Report-Jan27.pdf
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes following key documents are available in the public domain a. **https://sscgj.in/wp-content/uploads/2022/03/Green-Jobs-Report-Jan27.pdf** b. **https://jmkresearch.com/wp-content/uploads/2022/02/Photovoltaic-Manufacturing-Outlook-in-India_February-2022_JMK.pdf**
3.	**Government /Industry initiatives/ requirement (Yes/No):** The term integrating Power source largely refers to the production and assembly of the entire components of solar value chain with solar cells and modules being some key examples. Polysilicon is the building block for solar PV manufacturing from which ingots are cast. Wafers cut from ingots are then used to make solar cells, after which modules are assembled. Globally, the manufacturing of polysilicon, ingot and wafer is dominated by China but to ensure energy security and the viability of solar power

	projects in the country, Government of India has taken a range of steps for boosting domestic solar manufacturing. In order to boost demand for locally manufactured solar cell and modules, the government schemes including central public sector undertaking (CPSU) scheme, phase 2 of grid connected rooftop solar program and PM–KUSUM scheme mandate domestic content requirement for sourcing solar PV modules. The government has also issued amendments to ALMM order, 2019 clarifying that only the models and manufacturers enlisted under ALMM will be eligible for use in a range of Government supported solar projects. Government plans to create an additional domestic solar equipment manufacturing capacity of 25 GW each of solar cells and modules, and 10 GW of wafers in 2023. Considering the strategic importance of augmenting the capability for domestic manufacturing, the plan follows an additional allocation of Rs 19,500 crore[1] for the production-linked incentive (PLI) scheme for high-efficiency solar modules in the FY22-23 Union budget. This is in addition to the Rs 4,500 crore already allocated to the scheme for manufacturing solar photovoltaic modules. The manufacturing push comes as India's plan to impose a basic customs duty of 40% on modules and 25% on solar cell imports from 1 April 2022. The PLI scheme supported with a range of other measures will incentivize domestic and foreign manufacturers to build gigawatt scale, vertically integrated solar manufacturing facilities in India. The government aims at achieving 10 GW capacity of integrated solar PV manufacturing plants in India within two years through the PLI scheme which is expected to drive a direct investment of around INR14,000 crore and thereby creating many jobs in the sector. Rapid solar deployment is the backbone of India's climate ambitions and energy security and a thriving domestic manufacturing industry would also generate new jobs along with delivering on growth and sustainability. During the extensive industry interactions carried out with solar industry while creating occupational maps and prioritization of job roles for Qualifications development, manufacturing focussed job roles was indicated as a key requirement by the solar manufacturing industry. It is important to note that SCGJ already has a level 4 qualification on Solar Cell and Module Manufacturing and the concerned qualification which is also proposed to be introduced in schools for Vocationalisation, further complements those to ensure that skilled and certified candidates are readily available to meet the growing requirements of the solar manufacturing companies.
4.	**Number of Industry validation provided:** Up to 10 industry validations are expected to be received for the qualification.
5.	**Estimated nos. of persons to be trained and employed** A large number of workforce shall be employed primarily at Solar PV cells and module manufacturing sites as Indi embarks on boosting its domestic solar manufacturing capacity. There is a significant increase in manpower requirements which is driven by government policies and initiatives like "Make in India", FDI, production-linked incentive (PLI) scheme etc. It is estimated that domestic manufacturing of solar cells and modules will increase significantly and new jobs opportunities shall be created. Most of these will be created in the private sector but in some cases PSUs shall also set up/expand into solar manufacturing. With so much focus on promoting domestic manufacturing, Industry shall require trained and skilled manpower to perform a range of functions in

	solar manufacturing facilities. It is estimated that at least 10,000 trained junior technicians shall be required every year till 2025 and further doubling to 20,000 every year till 2030. This job role aims to introduce the basics of solar manufacturing in the school's curriculum to make this sector aspirational for the students.
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** Concurrence has been requested from the Ministry of New and Renewable Energy

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	Annexure: Evidence of Level
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	Annexure: Tools and Equipment (Lab Set-Up)
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	Annexure: Detailed Assessment Criteria (Mandatory)
4.	**Annexure:** Assessment Strategy *(Mandatory)*	Annexure: Assessment Strategy
5.	**Annexure:** Acronym and Glossary *(Optional)*	Annexure: Acronym and Glossary
6.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Attached
7.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	Annexure: Career progression and OM
8.	**Supporting Document:** Occupational Map *(Mandatory)*	Annexure: Career progression and OM
9.	**Supporting Document:** Assessment SOP *(Mandatory)*	Annexure: Assessment Strategy

Annexure: Evidence of Level

Title/Name of qualification/component: Green Hydrogen Plant Technician		Level: 3	
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
Professional Theoretical Knowledge/ Process	• The individual is expected to perform testing, installation and facility integration of Power sources unit with electrolyser and repairs, troubleshooting, upkeep and maintenance of electrical control systems, protection systems, and other auxiliary equipment and associated tools Green Hydrogen facilities. The job holder will be responsible for the continuous supply of renewable power and its interconnections with the electrolyser of Green Hydrogen.	The Junior Technician Power Sources would have a knowledge of the complete process in supplying power from available power Facilities. He needs to know various sub sections of the plant and interconnection their operations. He/She have to demonstrate technical skills required for performing and accomplishing installation of various critical components of the plant. He/She has to be multidisciplinary and have knowledge and skills of installation of equipment's required for integration with electrolyser of green hydrogen plant. The Job holder is expected to exhibit well developed skills with a limited choice of procedures in familiar context. He/she should understand technical features for various sub components. He will perform proper installation of equipment's used for interconnections. He/she has a capability of coordinating with Junior technician/Helper for integrating the power source with the green hydrogen plant. Thus, considering the scope of work the job holder can be placed at Level 4. The Junior Technician is expected to exhibit knowledge of facts such as properties of types of products, functioning of products, storage etc. He/she should have general concepts of electric power Project and how to safely handle the plant. S/he should possess the ability	3

Title/Name of qualification/component: Green Hydrogen Plant Technician		Level: 3	
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
		to speak, read and write in the local vernacular language and English which is always preferred. Thus considering the professional knowledge, s/he can be placed at level 4. The Job holder is expected to possess professional skills more than just factual knowledge about various components of electric power equipment's. but also knowledge of principles such as demonstration procedures, installation and maintenance procedures and general concepts such as tools and testing equipment used etc. Therefore s/he can't be placed at Level 4 Since the job holder doesn't require to exhibit factual & theoretical knowledge in contexts within Power sources Green Hydrogen Projects chain such as evolving technological trends in sub components only and their impact on Power sources Green Hydrogen Projects, etc. but knowledge specific to Power sources, the role can't be placed at level 5	
Professional and Technical Skills/ Expertise/ Professional Knowledge	The individual is expected to exhibit the basic knowledge of integrating power sources with electrolyser including operation and maintenance of various sub components. He/She needs to have skills to set up multiple components of Power sources connected to Electrolyser of Green Hydrogen.	The Job holder is expected to possess a range of practical and cognitive skills required to accomplish tasks and solve problems by selecting and applying basic methods and tools and install systems and provide post installation support. The job holder also has to ensure preparation of effective installation plan for setting up Power Sources connected to electrolyser of Green Hydrogen plant. Thus, considering the professional skills the job holder can be placed at Level 4. Since the Power source Technician green hydrogen is expected to exhibit cognitive skills along with practical skills required to accomplish the tasks and solve problems by identifying plant needs	3

Title/Name of qualification/component: Green Hydrogen Plant Technician		Level: 3	
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
		and preparing solutions, identifying problems in installations, etc. s/he can't be placed at Level 3. And as the job holder is not expected to possess practical and cognitive skills required to generate solutions for specific problems related to Power Sources connected to electrolyser of Green Hydrogen plant, but rather expected to generate solutions specific to Power Sources connected to electrolyser of Green Hydrogen plant ,s/he can't be placed at level 3	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	The individual is expected to plan & organize the schedule for all installations and related activities to be undertaken by self or by the team. Further s/he must be able to take decisions on a regular basis, manage relationship with colleagues and apply domain knowledge to perform tasks related to Power Sources connected to electrolyser of Green Hydrogen plant. S/he is also expected to critically evaluate information obtained from the manufacturer and teams to create relevant solutions.	The job holder is expected to represent and demonstrate practical skills, which are routine and repetitive in a narrow range of application such as checking the mechanical and electrical equipment's using standard protocols. Since all the above-mentioned professional skill are related to demonstrating practical skills, which are routine and repetitive in a narrow range and using appropriate rule and tool, the role qualifies for Level 3. The Job holder expected to possess professional skills more than just demonstrating practical skills, which are **routine and repetitive in a narrow range but also using appropriate rules & tools to identify and communicate to the Supervisor.** Example, S/he is expected to use practical skills and basic fundamental principles of Power Sources connected to electrolyser of Green Hydrogen plant. He should have knowledge pertaining to operate different tools and equipment required for continuity of Power connected to electrolyser of Green Hydrogen plant. Hence, the role can't be placed at Level 3.	3

Title/Name of qualification/component: Green Hydrogen Plant Technician		Level: 3	
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
Broad Learning Outcomes/ Core Skill	The individual is expected to exhibit fluent communications skills, networking skills with fellow Technician & is capable of understanding the need of fellow Technician.	The Job holder is expected to be possess the technical capabilities for preparing the installation plan and its execution for Power Sources connected to electrolyser of Green Hydrogen plant, etc., interact effectively with Technician, skill of collecting and organizing information for them, understanding requirements of the local site to prepare solutions, etc. and communication skill for so as to interact effectively with fellow technician. Thus, considering the core skills, s/he can be placed at Level 4. The Job holder is expected to exhibit core skills more than language to communicate with required clarity, basic algebraic and arithmetic skill and basic understanding of socio- political environment. For example, s/he is supposed to organize and collect information regarding the local energy usage practices through discussions, etc., And since the job holder requires only some skill of collecting and organizing information but doesn't need to be reasonably good and only the desired mathematical skill restricted to the production plant, s/he can't be placed at Level 5.	3
Responsibility	The individual is primarily responsible for installation of Power Sources connected to electrolyser of Green Hydrogen plant along with thorough monitoring of the plant performance and ensuring proper maintenance of plant equipment to ensure optimum service delivery.	The Junior Technician Power Sources is responsible for his/ her own work as s/he has to ensure installation of Power Sources connected to electrolyser of Green Hydrogen plant through identification of suitable skills. updating self with industry trends and skills and to an extent influence subordinate's works and learning as s/he is responsible for passing knowledge and skills to his/ her team of Junior technicians and helpers. Considering the responsibilities, the individual can be placed at level 4.	3

Title/Name of qualification/component: Green Hydrogen Plant Technician			Level: 3
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
		Since the Job holder responsibility is not limited till his/her own work & learning but also encompasses some responsibilities for others learnings as s/he is expected to ensure knowledge transfer to team members s/he can't be placed at 3. As the number of people reporting to him/her may be less and the individual may not have large teams working across multiple functions, s/he can't be placed at level 5.	

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size:

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1 .	Small size/demonstration of Production Units and solar power plant	Standard Make	
2	Personnel Protective Equipment, First aid kit, Material Safety Data Sheet, Gas leakage detector	Standard Make	
3	Tool kit, IR Thermometer ,Barometer, Double ended flat spanner, Double ended ring spanner, Wrenches, Combination pliers, Side cutting pliers, Nose pliers, Screw driver, Vanier caliper, hammer, Cutters,	Standard Make	

	Tweezers, Stripping & Crimping Tools, Safety helmet, electronic pressure gauge, clamp meter, multimeter, KOH concentration measuring tools, gas leakage detector, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Safety Gloves ,Chemical Mask, Leather gloves, flame proof aprons, Flame proof overalls buttoned to neck, Helmets/hard hats, Full body harness, Hand shields, , fire extinguishers, First aid equipment, Safety instruments		

Classroom Aids

The aids required to conduct sessions in the classroom are:

Marker, chart and visual aid, Pellet production flowchart, raw material supply chain flow chart, Schematics of Solar Domestic Product production plant;

Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1.	Bugalia International Pvt. Ltd.	Preeti	Director	47, Ashok Vihar, Jodhpur	9353000097	info@bugaliainternational.com	NA
2.	Danao Green Tech Private Limited	Dr. Sanjay Danao	Director	203, Sai Avenue, D-7, CIDCO Meghdoot, Butibori MIDC, Nagpur-441122	9545648496	danaogreentech@gmail.com	NA
3.	Gujaraj Institute of Solar Energy	Japen Gor	Project Director	620 Sharan Circle Hub, Opp. BRTS	7201922622	j.gor@gise.in	NA

				Bus Stop, Zundal, Gandhi Nagar-382421			
4.	Greenergy Solar Solutions	S. Kannan	Chief Executive Officer	No.234, 1st Floor, Lawspet Main Road, Pakkamudayanpet, Lawspet, Puducherry-605008	9943256109	greenergypdy@gmail.com	NA
5.	SolarTech Saarthi Pvt. Ltd.	Lucky Aggarwal	Managing Director	17, Amar Colony, Main Rohtak Road, Nangloi, Delhi-110041	9711851306	Lucky.solarsaarthi@gmail.com	NA
6.	Innodust Marketing Private Limited	Sunil Kumar Sahoo	Director	A/63/1, Sahidnagar, Bhubaneswar, Odisha	7894412585	Sunil.innodust@gmail.com	NA
7.	M/s Oriana Power Limited	Parveen Kumar	Director	C-103, 1st Floor, Sec-2, Noida, U.P-201301	+91-120-4114695	Parveen.jangra@orianapower.com	NA
8.	Saitech Energy Space Systems Pvt. Ltd.	Sanyam Indurkhya	Director	Hall No. 1A, Ground Floor, Chittod Complex, Zone 1, M.P Nagar, Bhopal - 462011	9685580822	Saitechsystem471@gmail.com	NA
9.	Shigoto International Pvt. Ltd.	Sunil Kumar	Director	6-B-12, Mahaveer Nagar 3, Kota, Rajasthan	9829707243	shigotointernational@gmail.com	NA
10.	OM Sai Solar Power System	Rajendra Singh	General Manager	Plot No. C 183, Noida, Sector -63, U.P- 201301	9999596127	Omsaisolarpowersystem12@gmail.com	NA

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	Colour code nomenclature chart of Solar Domestic Products, Solar Domestic Product Production unit, flowchart, Solar Domestic Product supply chain flow chart.	60:40
2	☒Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Small size/demonstration units of transformer, rectifier, and solar power plant, Visit to a Solar Domestic Product Production unit site; Tool kit, IR Thermometer ,Barometer, Double ended flat spanner, Double ended ring spanner, Wrenches, Combination pliers, Side cutting pliers, Nose pliers, Screw driver, Vanier calliper, hammer, Cutters, Tweezers, Stripping & Crimping Tools, Safety helmet, electronic pressure gauge, clampmeter, multimeter, KOH concentration measuring tools, gas leakage detector, Nose mask, Safety goggles, Ear plug, PVC hand glove, Cotton hand glove, Reflective jacket, Safety Gloves ,Chemical Mask, Leather gloves, flame proof aprons, Flame proof overalls buttoned to neck, Helmets/hard hats, Full body harness, Hand shields, , fire extinguishers, First aid equipment, Safety instruments	
3	☒Showing Practical Demonstrations to the learners		
4	☒Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☒Tutorials/ Assignments/ Drill/ Practice		
6	☒Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☒On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes			
	Theory	Practical	Project Marks	Viva Marks
Basics of Green Hydrogen Production	30	20		

Analyse Main Parts of green hydrogen production unit	27	23		
Identify Renewable Energy sources for green hydrogen production	32	18		
Perform integration of Power Sources with Electrolyser	22	28		
Identify tools and tackles used for handling Power Sources.	54	46		
Maintain Health & Safety at Electrolyzer of Green Hydrogen generation project site	25	25		
Employability Skills	20	30		
Grand Total	**210**	**190**		

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.

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/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.
- 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 are 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

- Center 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

On the Job:

OJT Monitoring Report

- As in Green Jobs Sector, reproducing the evidence for assessment is not feasible due to constraints like cost, confidentiality and controlled environment, every
- Apprentice is required to record the evidences performed during the OJT and the same gets authorized by his/her supervisor.
- The evidence recording is done in a structured monitoring report, termed as OJT Monitoring report.
- During the OJT, every trainee is required to fill the OJT monitoring report which is required to be signed by his/her supervisor.
- Towards the end of OJT period these reports are submitted with the HR department of company
- These duly submitted reports are then verified by an Industry nominated assessor for verification of evidence.

Theory, Practical & Viva:

- Scope – Is used to test the knowledge and understanding and skills acquired during the OJT as well as to conform the OJT monitoring report.
- Some personality traits and generic skills (such as – promptness, sharpness, communication skills, depth of knowledge, comprehension, presentation, patience
- etc) can also be tested, which is also required for the QP.
- Tools – The assessment's questions should be aligned with the Qualification Pack, covering the PCs. There will be summative assessment at the end of the OJT.
- Method – Direct questions open and close ended questions, situation-based questions, analytical questions, and decision-making based questions for Viva,
- MCQ for the theory and performing QP related operations for practical. Different questions in theory, practical and viva are included to test

relevant PCs from
- the QP
- Analysis – Assessor draws a spectrum of ready answers to be expected from trainee for Viva. This reduces effect of subjectivity of the assessor. Comparative
- Quality of trainees within a batch or different institutes can be gauged. The skill is gauged by observing the practical work.

Execution of OJT Assessment:
- HR department hands over the individual OJT monitoring report with Industry nominated assessor and schedules an assessment meeting for each trainee.
- Industry nominated assessor assesses each trainee based on OJT monitoring report, viva on each PC and also takes into account attendance of each trainee towards the end of the OJT period.
- The OJT marks are compiled for each NOS by the Industry nominated assessor and submitted with HR department of company.
- The OJT assessment results are then sent to SCGJ by HR department of company in a sealed envelope for compiling the assessment results in case of offline assessment.

Annexure: Acronym and Glossary

Acronym

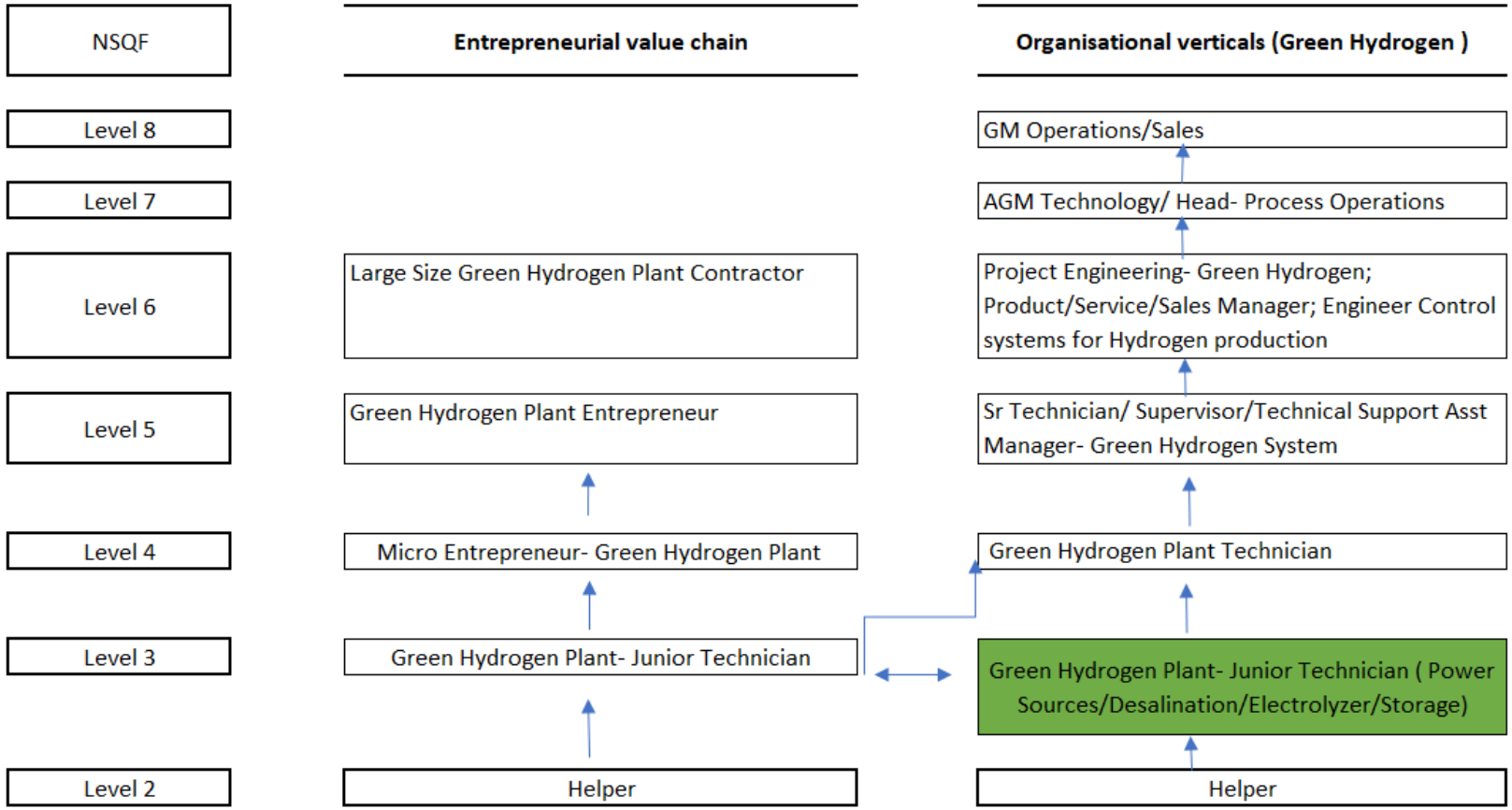
Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
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 on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf

Annexure: Annexure: Career Progression and OM


NSQF
Entrepreneurial value chain
Organisational verticals (Green Hydrogen)
Level 8
GM Operations/Sales
Level 7
AGM Technology/ Head- Process Operations
Level 6
Large Size Green Hydrogen Plant Contractor
Project Engineering- Green Hydrogen; Product/Service/Sales Manager; Engineer Control systems for Hydrogen production
Level 5
Green Hydrogen Plant Entrepreneur
Sr Technician/ Supervisor/Technical Support Asst Manager- Green Hydrogen System
Level 4
Micro Entrepreneur- Green Hydrogen Plant
Green Hydrogen Plant Technician
Level 3
Green Hydrogen Plant- Junior Technician
Green Hydrogen Plant- Junior Technician (Power Sources/Desalination/Electrolyzer/Storage)
Level 2
Helper
Helper