



QUALIFICATION FILE

Rooftop Solar Grid Junior Engineer

Short Term Training (STT) Long Term Training (LTT) Apprenticeship

Upskilling Dual/Flexi Qualification For ToT For ToA

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

NCrF/NSQF Level: 5

Submitted By:

Skill Council for Green Jobs

Chief Executive Officer

CBIP Building, Malcha Marg,

Chanakyapuri, New Delhi - 110021

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Section 1: Basic Details

1.	Qualification Name	Rooftop Solar Grid Junior Engineer														
2.	Sector/s	Environmental Science														
3.	Type of Qualification: <input type="checkbox"/> New <input checked="" type="checkbox"/> Revised <input type="checkbox"/> Has Electives/Options <input type="checkbox"/> OEM	NQR Code & version of existing/previous qualification: QG-05-ES-00517-2023-V1.1-SCGJ & Version 3.0	Qualification Name of existing/previous version: Rooftop Solar Grid Engineer													
4.	a. OEM Name b. Qualification Name (Wherever applicable)															
5.	National Qualification Register (NQR) Code &Version	QG-05-ES-02627-2024-V2-SCGJ	6. NCrF/NSQF Level: 5													
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other	Certificate														
8.	Brief Description of the Qualification	Rooftop Solar Grid Junior Engineer checks, inspects, interconnects and tests different components of the grid connected Solar rooftop PV Power Plant in compliance with all relevant codes, standards and safety requirements.														
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>UG Diploma in Electrical/Electronics or equivalent</td> <td>NA</td> </tr> <tr> <td></td> <td>12th (Academic) with 1 year of NTC/NAC in relevant trade</td> <td>1.5 years of relevant experience in Renewable energy/power sector</td> </tr> <tr> <td>2.</td> <td>10th grade pass + 3-year Diploma in Electrical/Civil/Mechanical Engineering</td> <td>1.5 years of relevant experience in Renewable energy/power sector</td> </tr> </tbody> </table>			S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	1.	UG Diploma in Electrical/Electronics or equivalent	NA		12th (Academic) with 1 year of NTC/NAC in relevant trade	1.5 years of relevant experience in Renewable energy/power sector	2.	10th grade pass + 3-year Diploma in Electrical/Civil/Mechanical Engineering	1.5 years of relevant experience in Renewable energy/power sector
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)														
1.	UG Diploma in Electrical/Electronics or equivalent	NA														
	12th (Academic) with 1 year of NTC/NAC in relevant trade	1.5 years of relevant experience in Renewable energy/power sector														
2.	10th grade pass + 3-year Diploma in Electrical/Civil/Mechanical Engineering	1.5 years of relevant experience in Renewable energy/power sector														

		b. Age: 19	3.	Previous relevant qualification of level 4.5	1.5 years of relevant experience in renewable energy/ power sector																			
			4.	Previous relevant qualification of level 4 (Solar PV Installer (Suryamitra))	3 years of relevant experience in renewable energy/ power sector																			
10	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	18	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)	<input checked="" type="checkbox"/> Offline <input type="checkbox"/> Online <input type="checkbox"/> Blended <table border="1"> <thead> <tr> <th>Training Delivery Modes</th> <th>Theory (Hours)</th> <th>Practical (Hours)</th> <th>OJT Mandatory (Hours)</th> <th>OJT Recommended (Hours)</th> <th>Total (Hours)</th> </tr> </thead> <tbody> <tr> <td>Classroom (offline)</td> <td>150</td> <td>210</td> <td>180</td> <td>0</td> <td>540</td> </tr> <tr> <td>Online</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> (Refer Blended Learning Annexure for details)					Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	150	210	180	0	540	Online					
Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)																			
Classroom (offline)	150	210	180	0	540																			
Online																								
13	Aligned to NCO/ISCO Code/s (if no code is available mention the same)	NCO-2015/2151.0100 Electrical Engineer, General																						
14	Progression path after attaining the qualification (Please show Professional and Academic progression)	Vertical Progression: Solar PV Plant Site In- Charge																						
15	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Nil																						
16	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																						

17	Is the Job Role Amenable to Persons with Disability	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If "Yes", specify applicable type of Disability: <input checked="" type="checkbox"/> Deaf <input checked="" type="checkbox"/> Hard of Hearing <input checked="" type="checkbox"/> Acid Attack Victims <input checked="" type="checkbox"/> Dwarfism	
18	How Participation of Women will be Encouraged	By reaching out to distribution utilities and various other institutions like NPTI for enrolling female candidates	
19	Are Greening/ Environment Sustainability Aspects Covered (Specify the NOS/Module which covers it)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
20	Is Qualification Suitable to be Offered in Schools/Colleges	Schools <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Colleges <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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@sscgi.in Contact No.: 9871119101 Website: https://sscgi.in/	
22	Final Approval Date by NSQC: 30/05/2024	23. Validity Duration: 3 years	24. Next Review Date: 29/05/2027

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-Man	OJT Recommended	Total	Th.	Pr.	P r o j.	Vi va	Total	Weightage (%) (if applicable)
1.	SGJ/N0118: Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant	SGJ/N0118 Version 4.0	Core	5	5	45:00	105:00			150	51	49			100	40
2.	SGJ/N0119: Post Commissioning Testing Of the Grid Connected Rooftop Solar PV Power Plant	SGJ/N0119 Version 4.0	Core	5	4	30:00	90:00			120	25	25			50	20
3.	SGJ/N0106: Maintain Personal Health & Safety at project site	SGJ/N0106 Version 5.0	Core	5	1	15:00	15:00			30	21	29			50	20
4.	Employability Skills (ES)	DGT/VSQ/N0102 Version 1.0	Non Core		2	60:00				60	20	30			50	20
5.	On the Job Training				6					180						
Duration (in Hours) / Total Marks						18	150	210	180	540	117	133			250	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)	Diploma Electrical, Electronics, Civil, Mechanical, Fitter, Instrumentation With Minimum 2 years of relevant industry experience for Diploma (Electrical, Electronics, Civil, Mechanical, Fitter, Instrumentation) Or B.Tech (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) Or MSc Physics with Minimum 1 years of relevant industry experience for B.Tech (Civil/Mechanical /Electrical/ Instrumentation/ Electronics /MSc Physics As per the Relevant Craft Instructor Training Scheme (CITS)
2.	Master Trainer’s Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Engineering Graduate with 5 years of experience in (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) post their ToT Certification
3.	Tools and Equipment Required for Training	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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)	Engineering Graduate with 10 years of experience in (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) Or Certified under relevant Craft Instructor Training Scheme (CITS) course. * The education qualification can be relaxed in case of extraordinary relevant field experience.
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Engineering Graduate with 3 years of experience in (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) Or Certified under relevant Craft Instructor Training Scheme (CITS) course. * The education qualification can be relaxed in case of extraordinary relevant field experience.
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Engineering Graduate with 10 years of experience in (Civil/Mechanical /Electrical/ Instrumentation / Electronics / Electrical and Electronics Eng.) post their ToA Certification Or Certified under relevant Craft Instructor Training Scheme (CITS) course. * The education qualification can be relaxed in case of extraordinary relevant field experience.
4.	Assessment Mode (Specify the assessment mode)	Online and offline both
5.	Tools and Equipment Required for Assessment	<input checked="" type="checkbox"/> Same as for training <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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 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://solarrooftop.gov.in/knowledge/file-44.pdf c. https://jmkresearch.com/wp-content/uploads/2022/02/Photovoltaic-Manufacturing-Outlook-in-India_February-2022_JMK.pdf
3.	Government /Industry initiatives/ requirement (Yes/No):
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: The employment generation potential of a robust domestic renewable energy market supported with conducive policy ecosystem is immense. To meet the solar rooftop installation target of 40 GW, along with meeting the demand from the growing rooftop market, it is estimated that minimum 50000 skilled workforce shall be required for this function by 2025 which is expected to further increase to at least 75,000 by 2030.
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 <i>(Mandatory)</i>	Annexure: Evidence of Level
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	Annexure: Tools and Equipment (Lab Set-Up)
3.	Annexure: Detailed Assessment Criteria <i>(Mandatory)</i>	Annexure: Detailed Assessment Criteria (Mandatory)
4.	Annexure: Assessment Strategy <i>(Mandatory)</i>	Annexure: Assessment Strategy
5.	Annexure: Acronym and Glossary <i>(Optional)</i>	Annexure: Acronym and Glossary
6.	Supporting Document: Model Curriculum <i>(Mandatory – Public view)</i>	Attached
7.	Supporting Document: Career Progression <i>(Mandatory - Public view)</i>	Annexure: Career progression and OM
8.	Supporting Document: Occupational Map <i>(Mandatory)</i>	Annexure: Career progression and OM
9.	Supporting Document: Assessment SOP <i>(Mandatory)</i>	Annexure: Assessment Strategy

Annexure: Evidence of Level

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
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 conduct the inspection and testing of the solar PV power plant using various tools and techniques. He/ She should be responsible for the commissioning of the solar plant and ensuring the zero error during the commissioning process while maintaining the safety of the individual and system. he/she identifies electrical faults and gets it rectified during the pre-inspection.	<p>The Job holder is expected to exhibit well developed skills with a clear choice of procedures in familiar context such as ensuring minimal or no risk post commissioning of the plant measuring and recording and monitoring all parameters like voltage, current, energy prior to commissioning, checking the modules through random selection, ensuring proper off-load of equipment at site, carrying out visual inspection of the plant and carrying out various tests post commissioning like performance ratio tests, thermography, ensuring the test values are as per industry norms.</p> <p>Thus considering the scope of work the job holder can be placed at Level 5</p> <p>The individual's work is not limited to working in familiar, routine & predictable environment but rather encompasses job that requires working in non-routine and fairly unpredictable environment. For instance, the job holder ensures that the erection and commissioning of rooftop solar power plant is carried out safely and as per schedule, inspects the plant equipment during and post installation through visual inspection and test and deciding on actions in case of deviations, and monitoring the plant performance during commissioning and post</p>	5

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relate to the NSQF level descriptors	NSQF Level
		<p>commissioning. Ensuring no case of fault occurrence, post commissioning of the plant is also a key attributes.</p> <p>And as the individual doesn't require to exhibit wide range of specialized developed skill and working around non-standard practices, it does not qualify as a level 6 role.</p>	
Professional and Technical Skills/ Expertise/ Professional Knowledge	The individual is expected to exhibit the knowledge of the typical specifications, functioning, operating principle of various solar PV plant components, testing and commissioning procedure .related performance metrics of solar PV power plant, as built electrical drawings, fault identification procedures, various types of tools, measuringequipment.	<p>The Job holder is expected to exhibit knowledge of facts such as typical specifications and types of solar PV plant components like solar PV modules, inverters, charge controllers, mounting structures, cables, junction boxes, transformer and other HT equipment's etc along with General concepts of in the field of solar PV such as knowledge of power generation, electrical concepts like voltage, current, power, etc . In addition, he/she shall fully understand site survey reports,project evaluation parameters, grid connection codes, relevant IEC/ IS standards, industry norms of test outputs like IV curve and performance ratio tests and have full knowledge of solar PV power generation system, operations procedure, testing principles and procedures, fault identification and rectification, etc.</p> <p>Thus, considering the scope of professional knowledge required, s/he can be placed at level 5</p> <p>The Job holder is expected to possess professional skills more than just factual knowledge about solar PV components but also knowledge of facts like solar PV</p>	5

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relate to the NSQF level descriptors	NSQF Level
		<p>power output and testing parameters like power, energy, power factor, earth resistance, performance ration, grid connectivity standards, random sampling standards, etc. therefore s/he can't be placed at Level 4</p> <p>And since the job holder doesn't require to exhibit factual & theoretical knowledge in broad contexts within solar PV such as evolving technological trends, the various socio-economic factors and their impact on solar PV etc., the individual can't be placed at Level 6</p>	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	<p>The individual is expected to plan & organize the schedule of plant inspection testing and commissioning. Further s/he must be able to take decisions related quality metrics of plant generation and co-ordinate with customers/site in charge and apply domain knowledge to perform tasks related to solar PV. S/he is also expected to critically evaluate information obtained from customers and teams to decide commissioning schedule of the plant.</p>	<p>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. For example, the individual has to visit the site for inspection to ensure the quality of solar PV plant is as per approved drawing. Ensure that the solar modules, inverter and other plant equipment installed at site are according to specifications, ensure the erection and commissioning of the plant happens according to schedule, carry out testing of the plant equipment through visual inspection and measurement and analysis of plant parameters like voltage, earth resistance, performance ratio, etc., ensuring all safety protocols are followed during the installation and commissioning of the solar PV power plant, monitor performance of solar PV plant during start-up and take corrective action if necessary.</p> <p>Thus, considering the professional skills required; the job holder can be placed at Level 5</p>	5

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relate to the NSQF level descriptors	NSQF Level
		<p>Since the Job holder is expected to exhibit cognitive skills along with practical skills required to accomplish the tasks and solve problems like, identifying faults by though visual inspection and by carrying out tests like IV curve and performance ratio tests, etc. s/he can't be placed at Level 4.</p> <p>And as the job holder is not expected to possess practical and cognitive skills required to generate solutions for specific problems related to solar PV as a whole, but rather expected to generate solutions specific to the solar PV power plant, s/he can't be placed at level 6</p>	
Broad Learning Outcomes/ Core Skill	The individual is expected to exhibit electrical installation skills, electrical testing skill with the help of using multiple tools and techniques.	<p>The Job holder is expected to be possess the desired electrical skills for analysing and comparing test parameters like conductivity tests, IV curve tests, energy readings, etc. have understanding of social /political environment like local cultures so as to communicate effectively with solar project helpers under him/her who primarily belong to the regions surrounding the solar PV power plant skill of collecting and organizing information about progress of plant erection and commissioning, recording and analysing information about plant operation and safety parameter.</p> <p>Thus considering the core skills, s/he can be placed at Level 5.</p>	5

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relate to the NSQF level descriptors	NSQF Level
		<p>The Job holder is also 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 compute complex plant performance metrics, compare them with norms and analyze and deviations in plant performance through the same, etc. S/he is also expected to carry out inspection at site ensure fault free installation of solar PV equipment. Hence, s/he can't be placed at Level 4.</p> <p>And since the job holder requires only skill of conducting inspection of installed plant but doesn't need to be final decision making and</p> <p>defining the plant parameter therefore s/he can't be placed at Level 6.</p>	
Responsibility	The individual is primarily responsible for successful commissioning of the solar rooftop projects. He/she should carries out visual inspection during the pre-commissioning of the solar plant and to conduct the various test pre and post commissioning of the solar projects.	The rooftop solar grid engineer is responsible for his/ her own work as s/he has to carries out inspection and to conduct various test in order to interconnect the plant with the grid while completing the commissioning process without any fault.	5

Title/Name of qualification/component: Rooftop Solar Grid Junior Engineer			Level:5
NSQF Domain	Outcomes of the Qualification/Component	How the outcomes relate to the NSQF level descriptors	NSQF Level
		<p>Considering the responsibilities, the individual can be placed at level 5.</p> <p>Since the Job holder's responsibility is not limited till his/her own work & learning but also encompasses some responsibilities for others learning as s/he is expected to ensure knowledge transfer to team members s/he can't be placed at 4.</p> <p>As the responsibilities are not so broad enough to be fully responsible for other's work and learning like conducting trainings, taking disciplinary actions in case of deviations from organisation conduct rules, etc. s/he can't be placed at level 6.</p>	

Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Double Ended Flat Spanner	Number	3
2	Double Ended Ring Spanner	Number	3
3	Combination Pliers	Number	3
4	Side Cutting Pliers	Number	3
5	Nose Pliers	Number	3
6	Wire Crimping, Stripping and Cutting Tool (s)	Number	3
7	Electrician Knife	Number	3
8	Hack Saw Frame with Blade	Number	3
9	Hand Crimping Tools	Number	3
10	Cable Cutter	Number	3
11	Screw Driver	Number	3
12	Water Level	Number	3
13	Measuring Tape	Number	3
14	Standard Wire Gauge	Number	3
15	Vernier Calliper	Number	3
16	Hand Drill M/C	Number	3
17	Sprit Level	Number	3
18	Flat File	Number	3
19	Round File	Number	3
20	Triangle File	Number	3
21	Clampmeter	Number	3
22	Multimeter	Number	5
23	Megger	Number	2

24	Earthing Rod	Number	1
25	Soldering Iron & Flux	Number	1
26	Phase Sequence Meter	Number	1
27	Pyranometer	Number	1
28	Controller	Number	1
29	1 KW Solar PV power system Accessories	set	1
30	First aid kit	set	1
31	Compass and Sun Pathfinder	Number	5
32	Safety goggles	Number	30
33	Rubber gloves	Number	30
34	Practical site	Number	

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 Compressed biogas waste to energy 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.	Ashlyn Solar Infra Private Limited	Arun Kumar	Director	C-44, Mansa Ram Park, Uttam Nagar, New Delhi - 110059	8130841685	arun@greenaffiliates.in	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.	M/s Oriana Power Limited	Parveen	CEO	C-103, 1 st Floor, Sec-2, Noida, U.P-201301	0120-4114695	Rupal.gupta@orianapower.com	NA
4.	PowerXP Consultants Private Limited	Puneet Sharma	GM	86, Marudhara Nagar, Bikaner, Rajasthan - 334003	7726884770	pxpsolar@gmail.com	NA
5.	Innodust Marketing Private Limited	Sunil Kumar Sahoo	Director	Plot No. A/63/1, Saheed Nagar, Bhubaneshwar, Odisha - 751007	7894412585	Sunil.innodust@gmail.com	NA
6.	Vacen Engineering and Solutions Private Limited	Vibhutinath Pandey	Director	H-72-A, Second Floor, Kh No. 80/14, Mahavir Enclave, Palam, New Delhi - 110045	7503208625	Vibhuti.vacen@gmail.com	NA
7.	Ayodhyawasi Corporation (OPC) Private Limited	Anurag Srivastava	CEO	D-2/101, Vibhuti Khand, Gomti	8887521559	ayodhyawasigroup@gmail.com	NA

				Nagar, Lucknow - 226010			
8.	Gujarat Institute of Solar Energy	Dipti Shah	Principal Director	620, Sharan Circle Business Hub, Opp. Zundal BRTS, Zundal Cross Road, Gandhinagar - 382421	9898167732	director@gise.in	NA
9.	GOREnewable Technology	Japen Gor	Managing Partner	214, Devpath Complex, B/H Lal Bungalow, Off C.G Road, Navrangpura, Ahmedabad-380009	9099064348	japen@gorennewtech.com	NA
10.	SolarTech Saarthi Pvt. Ltd.	Lucky Agarwal	Managing Director	A-6/49, Sector 17, Rohini, Delhi - 110089	9711851306	solarsaarthi@gmail.com	NA
11.	Global Sustainable Energy Solutions India Pvt. Ltd.	Dwipen Boruah	Managing Director	FIEE Complex, A-46, Upper Ground Floor, Okhla Industrial Area, Phase II, New Delhi - 110020	9560550075	Dwipen.boruah@gses.in	NA
12.	ASW Projects Pvt. Ltd.	Uzma Ali	Assistant Manager	38 A,1st Floor, Surya Kiran Complex, Opposite Khureji Petrol Pump, West Laxmi Market, Delhi - 110051.	7011485393	aswprojects@gmail.com	NA

13.	Friends Power Solution	Hiren Thakkar	Partner	25/c Mahakant Complex, Opp. v.s. hospital Ellisbridge, Ahmedabad	9825431155	Friendspowersolution1121@gmail.com	NA
14.	Grun Green Power Private Ltd	Ramesh Shivanna	Director	99, 2nd Cross, 2nd Main, MLA Layout, R T Nagar, Bangalore	9845010306	ramesh@prideworld.in	NA
15.	Heemsol Energy System Pvt Ltd	Dipti Shah	Director	620, Sharan Circle Hub, Near Zundal BRTS Bus Stand, Zundal, Gandhinagar-382421, Gujarat	9898167732	dipti@heemenergy.com	NA
16.	MS Enterprises	Nitin Verma	Director	248-A, Veer Sawarkar Nagar, Kota (Raj.) - 324005	9001860235	Rajsingh.necessary@gmail.com	NA
17.	OM SAI SOLAR POWER SYSTEM	Rajendra Singh	Director	Plot No. C-183, Noida, Sector 63	9999596127	Omsaisolarpowersystem12@gmail.com	NA
18.	SAURGURU GREEN ENERGY SOLUTIONS	Manisha Anand Barbind	Proprietor	Plot No. 03, Peshwe Nagar, Satara Parisar, Aurangabad (M.S)	9422108057	mabarbind@gmail.com	NA
19.	Shri Rang Aditya Solar Power EPC Pvt Ltd	Atul Jani	Director	A-413, Fourth Floor, Maradia Plaza, Near Panchvati 5 Cross Road, C. G. Road, Ahmedabad	76328 50466	rangadityaaspepc@gmail.com	NA

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2024-25	250		30		NIL	
2025-26	250		30			
2026-27	500		60			

Data to be provided year-wise for next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
1	2021-22	90	81	81									
	2022-23	47	38	38									
	2023-24	18	15	15									

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

1. NA

Content availability for previous versions of qualifications:

- Participant Handbook
 Facilitator Guide
 Digital Content
 Qualification Handbook
 Any Other:

Languages in which Content is available: Available in English

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	<input checked="" type="checkbox"/> Theory/ Lectures - Imparting theoretical and conceptual knowledge	Not Applicable	Not Applicable
2	<input checked="" type="checkbox"/> Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		
3	<input checked="" type="checkbox"/> Showing Practical Demonstrations to the learners		
4	<input checked="" type="checkbox"/> Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	<input checked="" type="checkbox"/> Tutorials/ Assignments/ Drill/ Practice		
6	<input checked="" type="checkbox"/> Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	<input checked="" type="checkbox"/> 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 Marks	Practical Marks	Project Marks	Viva Marks
SGJ/N0118: Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant	<i>Introduction to Solar PV Sector in India</i>	27	12	-	-
	PC1. discuss of rooftop solar sector in India	3	-	-	-
	PC2. discuss of Solar PV Technology	3	-	-	-
	PC3. discuss the various types of rooftop Solar PV Power Plants and their working principles	3	-	-	-
	PC4. discuss how to identify various system components, their functions and operating principles	3	-	-	-
	PC5. discuss key national and state specific policy and regulatory framework on grid interactive PV system	3	-	-	-
	PC6. discuss the importance of performing site survey in Roof top Solar PV Power plants	3	-	-	-
	PC7. discuss various features of Rooftop Solar Grid connected system with or without battery storage (Hybrid system).	3	-	-	-
	PC8. discuss how to identify Instrumentation requirements for inspection and testing of a solar PV power plant	3	-	-	-

	PC9. discuss how to acquire skills to work effectively with others while ensuring gender and disability concerns	3	-	-	-
	PC10. show how to metering arrangement for grid interactive Rooftop Solar	-	4	-	-
	PC11. show how to knowhow of instruments required for inspection and testing of a solar PV power plant	-	4	-	-
	PC12. show how to interpret signs, notices and/or cautions at project site	-	4	-	-
	Pre-Commissioning Inspection of the Grid Connected Rooftop Solar PV Power Plant	24	37	-	-
	PC13. discuss how to verify the capacity of the rooftop solar PV power plant as per the relevant policy/ regulation	3	-	-	-
	PC14. discuss how to identify the key regulatory parameters for interconnection and metering arrangement including power quality of the grid at the project site	3	-	-	-
	PC15. discuss how to identify and verify the documents required for plant interconnection	3	-	-	-
	PC16. discuss how to verify that the inverters, panels, protection devices, etc. are conforming to IEC standards or relevant Indian standards	3	-	-	-
	PC17. discuss how to cross verify the components as per the Bill of Quantity (BoQ) and the design Single Line Diagram (SLD)	3	-	-	-

	PC18. discuss how to verify and assess the safety of earthing and lightning protection of the plant	3	-	-	-
	PC19. discuss how to perform reporting on the inspection findings	3	-	-	-
	PC20. discuss how to identify processes where energy/electricity utilization can be optimized	3	-	-	-
	PC21. show how to interpret the verification of the components as per the Bill of Quantity (BoQ) and the design Single Line Diagram (SLD)	-	4	-	-
	PC22. show how to analyse the PV capacity of the rooftop solar PV power plant as per the relevant policy/ regulation	-	4	-	-
	PC23. show how to examine concerned regulations, guidelines & standards for grid interconnection	-	5	-	-
	PC24. show how to Pre-commissioning process for grid connected Solar PV System	-	5	-	-
	PC25. show how to verify the operation, safety and protections of Grid-Solar PV - Hybrid inverter and battery	-	5	-	-

	PC26. show how to examine that the single linediagram of solar PV power plant is as per the regulatory specifications	-	5	-	-
	PC27. show how to analyse the checklist for Pre commissioning inspection of Grid connected rooftop solar PV system with or without storage	-	4	-	-

	PC28. Illustrate responsible and disciplined behavior's and use of inclusive language that is gender, disability and culturally sensitive	-	5	-	-
NOS Total		51	49	-	-

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
SGJ/N0119 : Post Commissioning Testing of the Grid Connected Rooftop Solar PV Power Plant	<i>Post Commissioning Testing of the Grid Connected Rooftop Solar PV Power Plant</i>	25	25	-	-
	PC1. discuss how to verify the operation of the installed solar metering system including import and export of energy	3	-	-	-
	PC2. discuss and show how to test and verify the inverter operation including anti-islanding functionality, overload, etc.	4	5	-	-
	PC3. discuss how to verify the operation of the disconnect protections/isolation devices	3	-	-	-
	PC4. discuss how to test, record and verify the power quality of rooftop PV power plant at time of interconnection including harmonics, current, voltage etc.	3	-	-	-
	PC5. discuss and show how to test and verify the power factor	3	4	-	-
	PC6. discuss how to test and verify the grid connected rooftop solar PV power plant for any phase imbalance	3	-	-	-

	PC7. discuss how to test and verify the overall safety of the grid connected rooftop solar PV power plant	3	-	-	-
	PC8. discuss how to prepare and complete the relevant documentation	3	-	-	-
	PC9. show how to analyse the operation of the installed Solar metering system including import and export of energy	-	4	-	-
	PC10. show how to analyse the Test data, power quality of the solar plant	-	4	-	-
	PC11. show how to the operation of the disconnect protections/isolation devices.	-	4	-	-
	PC12. show how to the know how of test and measure the electrical data	-	4	-	-
NOS Total		25	25	-	-

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
SGJ/N0106: Maintain Personal Health & Safety at project site	<i>Adopt safe practices at workplace</i>	13	19	-	-
	PC1. explain the requirements for safe work area	2	-	-	-
	PC2. identify and report any hazards, risks or breaches in site safety to the appropriate authority	2	3	-	-

	PC3. follow recommended safe practices in handling physical, chemical, electrical and fire hazards and risk	1	2	-	-
	PC4. use appropriate Personal Protective Equipment (PPE) for head, eye, hand, ear, face, body and fall protection specific to work condition	2	4	-	-
	PC5. follow safe practices when working at height and in confined space	1	1	-	-
	PC6. handle all required tools, tackles, materials and equipment safely	1	2	-	-
	PC7. identify expiry dates, wear and tear issues of specified equipment and accordingly inform supervisor and undertake corrective measures	1	2	-	-
	PC8. apply ergonomic principles wherever required	1	2	-	-
	PC9. use safety signs, labels, charts and notices at workplace	1	1	-	-
	PC10. identify work safety procedures and instructions for handling heavy components	1	2	-	-
	<i>Follow emergencies, rescue and first aid procedures</i>	4	4	-	-
	PC11. follow emergency and evacuation procedures in case of accidents, fires and natural calamities	1	1	-	-
	PC12. use appropriate fire extinguishers for different types of fire	1	1	-	-

	PC13. administer first aid to victim in case of various medical emergencies including bleeding, burns, choking, electric shock, cardiac arrest, etc.	1	1	-	-
	PC14. use correct method to move injured person during an emergency	1	1	-	-
	<i>Follow good housekeeping practices and infection control guidelines</i>	4	6	-	-
	PC15. follow recommended personal hygiene, workplace hygiene and sanitation practices	1	1	-	-
	PC16. clean and disinfect all material, tools and supplies before and after use	1	1	-	-
	PC17. report immediately to concerned authorities regarding sign and symptoms of illness of self and other colleagues	1	2	-	-
	PC18. follow processes specified for disposal of hazardous waste	1	2	-	-
NOS Total		21	29	-	-

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
DGT/VSQ/N0102 :Employability Skills (60 Hours)	<i>Introduction to Employability Skills</i>	1	1	-	-
	PC1. identify employability skills required for jobs in various industries	-	-	-	-

	PC2. identify and explore learning and employability portals	-	-	-	-
	<i>Constitutional values – Citizenship</i>	1	1	-	-
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
	PC4. follow environmentally sustainable practices	-	-	-	-
	<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
	PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
	PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
	<i>Basic English Skills</i>	2	3	-	-
	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-

PC9. write short messages, notes, letters, e-mailsetc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and				

compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
Entrepreneurship	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-

	PC28. follow appropriate hygiene and grooming standards	-	-	-	-
	Getting ready for apprenticeship & Jobs	2	3	-	-
	PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
	PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
	PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
	PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total		20	30	-	-

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/SID or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SCGJ
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SCGJ 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 Level/Domain	Solar Photovoltaic Rooftop																
8	MD/Director																
6.5-7	Branch Manager		Solar PV BD Manager	Solar PV Designer				Solar PV Project Manager – E&C				Solar PV O&M Manager (Roof Top)					
5.5-6		Liaison Officer			Energy Modeller		Procurement Manager	Solar PV Site In-Charge									
4.5-5	Solar Proposal Evaluation Specialist		Market research analyst		Solar PV Site Surveyor	Solar PV Assistant Structural Design Engineer	Solar PV Assistant Electrical Design Engineer	Procurement Executive	Rooftop Solar Grid Junior Engineer	Solar PV Engineer			Solar Photovoltaic Entrepreneur/Solar Enterprise Assistant Manager	Solar PV O&M Supervisor			HSE Engineer
3.5-4					Solar PV Site Survey Assistant	CAD/Draughtsman (Mechanical)	CAD/Draughtsman (Electrical)		Solar Photovoltaic Technician	Solar PV Installer (Civil)	Solar PV Installer (Electrical)		Solar PV Installer (Surgamitra)	Solar PV Maintenance Technician (Electrical)	Solar PV Maintenance Technician (Civil/Mechanical)	Solar PV Maintenance Technician (Surgamitra)	
2.5-3																	
2					Solar PV Project Helper					Solar PV Project Helper	Solar PV Project Helper	Solar PV Project Helper		Solar PV Project Helper	Solar PV Installation Helper	Solar PV Project Helper	
1																	