NSQF QUALIFICATION FILE
Approved in 24th NSQC Meeting-NCVET-Dated 17th Nov,2022

NCVET Code
2022/ES/SCGJ/06459

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

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List of documents submitted in support of the Qualification File

1. Model Curriculum (Annexure-I)

SUMMARY

1	Qualification Title:	Junior Technician-Solar Cold Storage
2	Qualification Code, if any: -	SGJ/Q4002
3	NCO code and occupation: -	NCO2015/7127.0100 Mechanic, Refrigeration and Air Conditioning
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term):	**Nature:** This course aims to provide sound knowledge and skills to help the trainee check, inspect, test and install a photovoltaic system along with all other components of a modular solar powered cold storage system/cold room. **Purpose of the qualification:** Infrastructure facilities such as cold storage systems are paramount considering that about 5-16% horticulture produce in India deteriorates (depending on the type of produce) due to inadequate cold storage infrastructure[1]. Moreover, for small farmers, lack of aggregation facilities (as provided by solar cold rooms) limits their negotiation power at the Mandi as well as reach to farther and at times more lucrative markets. In order to mitigate the risk of post- harvest losses (and so to improve farmer's income), solar cold storage is one of the best and sustainable solutions across the post- harvest value chain. This qualification presents an opportunity for the certified technicians to work across installation and O&M aspects in solar cold storage space, to help the farmers mitigate the risks of post-harvest losses.
5	Body/bodies which will award the qualification:	Skill Council for Green Jobs
3	Body which will accredit providers to offer courses leading to the qualification:	Skill Council for Green Jobs
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	Yes
8	Occupation(s) to which the qualification gives access:	Technician
9	Job description of the occupation:	Junior Technician-Solar Cold Storage performs

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		installation along with operations and maintenance (O&M) of a solar cold storage/cold room solution while meeting the performance and reliability needs of customers by incorporating quality craftsmanship and complying with all applicable industry standards, quality and safety requirements.
10	Licensing requirements:	NA
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided):	-
12	Level of the qualification in the NSQF:	Level 3
13	Anticipated volume of training/learning required to complete the qualification:	330 Hours including 270 hours of mandatory NOS (with 30 hours of employability module) and 60 hours of On the Job (OJT) training
14	Indicative list of training tools required to deliver this qualification:	As per Model Curriculum attached
15	Entry requirements and/or recommendations and minimum age:	8th Class Pass + NTC (2 years) **OR** Class 10th Pass **OR** Previous relevant Qualification of NSQF Level 2 (e.g. Solar PV Project Helper) , with 1 year of relevant experience **16 years**
16	Progression from the qualification:	(Vertical) Solar Cold Storage Entrepreneur, Level 4
17	Arrangements for the Recognition of Prior learning (RPL):	SCGJ recognizes that there may be candidates who have prior learning experience in the Renewable energy industry/ Distributed renewable energy/Cold storage industry, and are desirous of being certified for working as a Junior technician with an enterprise/business in Solar Powered cold storage. •Propose to carry out RPL for candidates working with conventional HVAC system and for those who are working in clean energy industry. •Identify the candidates through training need analysis of the Solar cold storage demand for farmer.

		•Develop the RPL Training Delivery Plan and bridge course for bridging the skill gap
18	International comparability where known (research evidence to be provided):	ISCO-08/7127
19	Date of planned review of the qualification:	16.11.2025
20	Formal structure of the qualification Mandatory/Optional components	

	Title of component and identification code/NOSs/Learning outcomes	**Mandatory /Optional/Elective**	**Estimated size (learning hours)**	**Level**
	Common Module			
I	SGJ/N4006: Basics of Solar cold storage system installation and its operation	Mandatory	30	3
II	SGJ/N0702: Site Survey site and prerequisites for Solar Cold Storage system installation	Mandatory	30	3
III	SGJ/N3901: Elements of Solar Cold Storage system and their functions	Mandatory	60	3
IV	SGJ/N0623: Technical aspects for installation, usage, performing O&M and cost of solar cold storage system	Mandatory	60	3
V	SGJ/N1301: Availing low- cost financing and case studies showcasing best practices in system installation and operation of solar cold storage system		30	3
VI	DGT/VSQ/N0101: Employability Skills (30 hours)	Mandatory	30	3
VII	SGJ/N0801: Maintain Health and Safety at Solar cold storage project Site	Mandatory	30	3
	On the Job Training (OJT)		60	
	Grand Total 330 hours including 270 hours of mandatory NOS with 30 hours of Employability Skills and 60 hours of OJT		**330**	

SECTION 1
ASSESSMENT

21	**Body/Bodies which will carry out assessment:** Skill Council for Green Jobs through its affiliated and accredited Assessment Agency
22	**How will RPL assessment be managed and who will carry it out?** The RPL assessment will be carried out through pre-assessment, identifying the skills gaps, provide bridge training to cover the competency gap, where required, and then conduct final assessment of the candidates. Final assessment will be carried out by affiliated Assessment Agency of SCGJ, as per RPL Policy and Guidelines
23	**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.** 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

24. Assessment evidences

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Junior Technician-Solar Cold Storage

Qualification SGJ/Q4002 V.1

Sector Skill Council Green Jobs

Guidelines for Assessment

1. Criteria for assessment for each Qualification will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass the Qualification, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification.

Outcome, Please refer to the QP-NOS for the Assessment outcome

SECTION 2

25. EVIDENCE OF LEVEL

OPTION A

Title/Name of qualification/component: Junior Technician-Solar Cold Storage			**Level:3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
Process	The **Job holder** is responsible for the following processes: • Highlight key insights of solar cold storage system installation and operation • Explain how to analyse various parameters and survey site for installation of solar cold storage • Demonstrate the functions of all key components of the system • Discuss key parameters for solar cold storage system design, installation and O&M • Discuss in detail how to identify and incorporate best practices to manage the installation and operations of solar cold storage units. • Demonstrate Entrepreneurship and other Employability skills in Solar Cold Storage business. • Maintain Health & Work Safety at project	Junior Technician-Solar Cold Storage may carry out a job which may require limited range of activities routine and predictable. For instance, he/she performs the installation and O&M of solar cold storage units while ensuring industry best practices. Hence it is pegged at level 3	3

Title/Name of qualification/component: Junior Technician-Solar Cold Storage			**Level:3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
	site		
Professional knowledge	The job holder is able to perform: • Explain how to analyse various parameters and survey site for installation of solar cold storage • Explain key elements of solar cold storage system and demonstrate the key functions of the system • Discuss key parameters for solar cold storage system design, installation and O&M .	The individual is required to have a clear understanding of basic facts, process and principle applied in solar cold storage system installation and O&M. For instance, the job holder needs to have an operational understanding of how to use various tools during site survey and system installation & O&M, hence it is pegged at Level 3.	3
Professional skill	Recall and demonstrate practical skill, routine and repetitive in narrow range of application.	As the individual needs to continuously demonstrate practical skill in system installation, maintenance and monitoring which to a large extent are routine and repetitive, hence it is pegged at level 3.	3
Core skill	The job holder is expected to have effective communication (written and oral) , with minimum required clarity, skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment.	S/He routinely communicates with stakeholders from both demand and supply side and ensures that the system is working properly in accordance of the set/defined parameters, thus it is pegged at level 3.	3
Responsibility	Under close supervision. Some responsibility for own work within defined limit.	The job holder has some responsibility for own work within the scope of installation, system O&M and monitoring as per the defined parameters. He/she	3

Title/Name of qualification/component: Junior Technician-Solar Cold Storage			**Level:3**
NSQF Domain	**Outcomes of the Qualification/Component**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
		largely reports to the supervisor who may be an entrepreneur and so he needs to work under some supervision and hence it is pegged at level 3.	

SECTION 3
EVIDENCE OF NEED

26 **What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?**

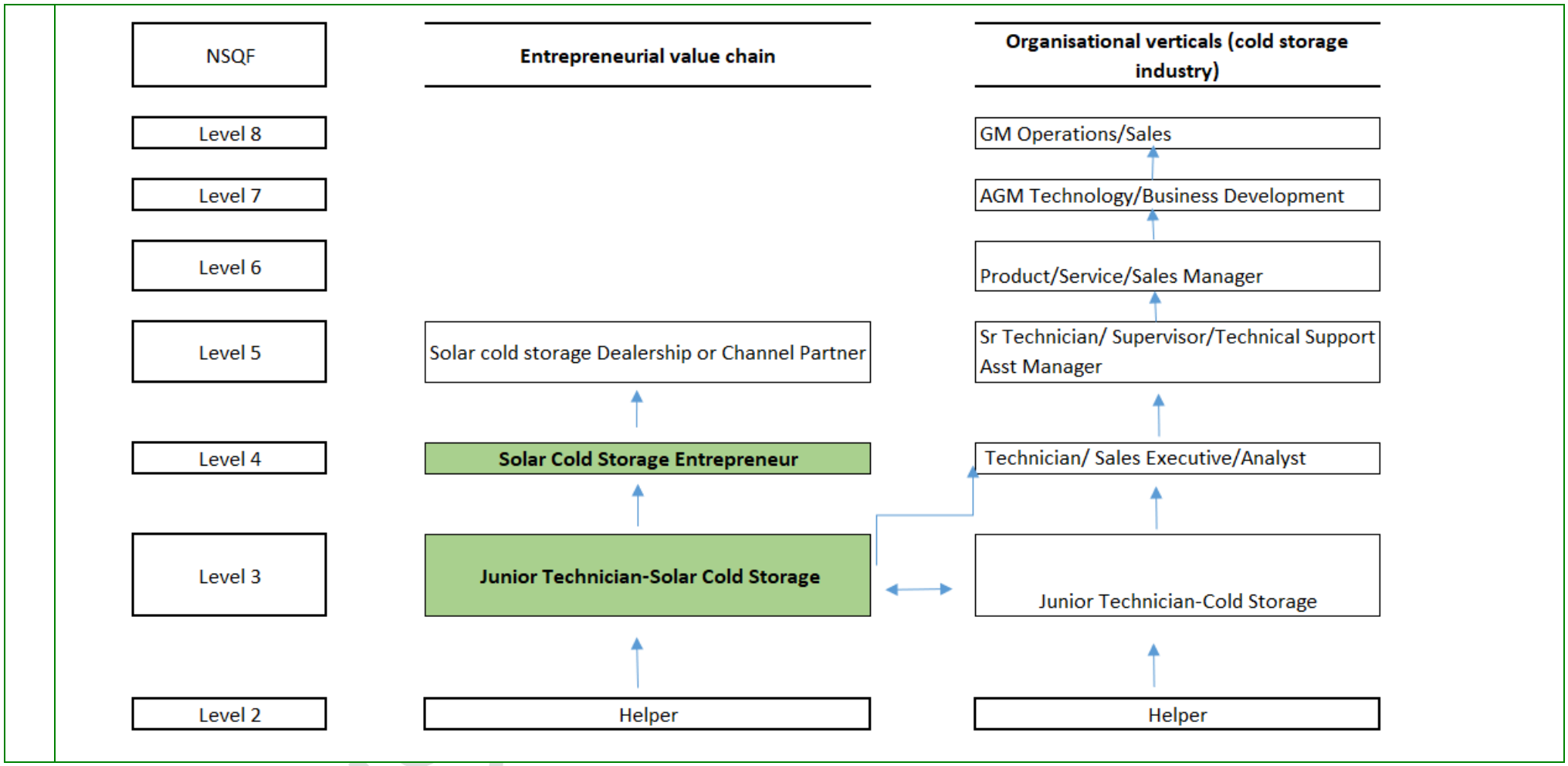
Basis	**In case of other Awarding Bodies (Institutes under Central Ministries and states departments)**
Need of the qualification	The solar cold rooms/cold storage solutions are modular units and can be customised as per requirement and the policy/financial or market support is available. Solar cold storage solution help in reduction of wastage and enable the farmer to time the market, thus increase farmer's income and supports in holistic development of the farming community. As per a 2019 report prepared by UNDP in partnership with Meghraj Capital Advisors Pvt Ltd, the business models for solar cold storage are evolving and financial feasibility is being demonstrated through various case studies across the country. Factors such as reduction in wastage, facility to aggregate the agricultural produce and access to better markets creates a substantial positive impact on farmers, who otherwise are forced to sell the produce under distress conditions, usually realizing lower prices. It has been estimated that annual value of harvest and post-harvest losses of major agricultural produce at the national level was Rs.92,651 Crore2 in 2014 (based on the production data for the period 2012-13 at wholesale prices). To address these issues, deployment of solar cold storage has to be accelerated at farm to mandi level across the country and so significant jobs are expected to be created for performing routine installation, troubleshooting/O&M and monitoring of system across states with significant high value farming practices.
Industry Relevance	This qualification is largely relevant to Green business Sector, Distributed Renewable energy and agriculture sector as the key importance of the solar cold storage system is to improve the shelf life of the agricultural/horticultural produce and thereby help farmers/entrepreneurs/other stakeholders etc improve their income.
Usage of the	Across creating new certified technicians in

[2] Source: Assessment of Quantitative Harvest and Post-Harvest Losses of Major Crops and Commodities in India, ICAR - Central Institute of Post-Harvest Engineering and Technology (CIPHET), 2015

	qualification	solar/DRE/cold storage and agricultural market space. This will also be used to undertake RPL trainings and further upskill/reskill various stakeholders from these thematic areas.	
	Estimated uptake	It is expected that 10,000 new jobs shall be created by 2025 and further 5000 every year till the next 5 years to meet the requirement for certified workforce in the niche but fast growing solar cold storage market in the country.	
27	Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences Concurrence from the Ministry of New and Renewable Energy (MNRE) shall be sought.		
28	**What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification** We have discussed the growth trajectory within each occupation after studying organisational charts of various industry players active in this market space. We have also explored various lateral career opportunities (organisational verticals) for the discussed qualification. We have also ensured that there is a clear role up in terms of performance criteria qualification experience and skill requirement from lower NSQF Level to higher levels in the hierarchy. Please refer to attached career path in section 4 'Evidence of progression' which clearly defines the career path. National Qualifications Register was searched to assess if there was any similar qualification and no overlap was found with the existing qualification.		
29	**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here** In the Qualification, review date is scheduled after 3 years and accordingly the consultation with Subject Matter Experts/Industry representatives shall be carried out then or earlier depending upon concerned development in the sector/market. The monitoring of evaluation of assessments and Employer(s) feedback will be sought post-placement, for review of the effectiveness of the Qualification.		

SECTION 4
EVIDENCE OF PROGRESSION

30	**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?** ***Show the career map here to reflect the clear progression***


NSQF
Entrepreneurial value chain
Organisational verticals (cold storage industry)
Level 8
GM Operations/Sales
Level 7
AGM Technology/Business Development
Level 6
Product/Service/Sales Manager
Level 5
Solar cold storage Dealership or Channel Partner
Sr Technician/ Supervisor/Technical Support Asst Manager
Level 4
Solar Cold Storage Entrepreneur
Technician/ Sales Executive/Analyst
Level 3
Junior Technician-Solar Cold Storage
Junior Technician-Cold Storage
Level 2
Helper
Helper