

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GREEN JOBS

What are Occupational Standards (OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the project site, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- Construction Technician (Electrical) - Wind Power Plant

SECTOR: GREEN JOBS

SUB-SECTOR: RENEWABLE ENERGY

OCCUPATION: INSTALLATION AND COMMISSIONING

REFERENCE ID: SGJ/Q1403

ALIGNED TO: NCO-2015/ NIL

Brief Job Description: Construction Technician (Electrical) -Wind Power Plant carries out installation, testing & commissioning of wind power plant including WTG, transformer, poles, O/H line, U/G cables, junction boxes, feeder pillars and other associated accessories like CMS with applicable codes, standards, and safety requirements

Personal Attributes: This job requires the individual to concentrate on the job at hand and complete it without any accidents so hence diligence and hardworking are desired attributes for individuals performing this role. S/he must also be medically fit to work on heights, demonstrate strong work ethics, an ability to communicate courteously with co-workers, and must be good with following instructions of the supervisor

Qualifications Pack For “Construction Technician (Electrical)
- Wind Power Plant”

Job Details	Qualifications Pack Code	SGJ/Q1403		
	Job Role	Construction Technician (Electrical) -Wind Power Plant [This job role is applicable in both national and international scenarios]		
	Credits (NSQF)	TBD	Version number	1.0
	Sector	Green Jobs	Drafted on	01 / 09 / 2016
	Sub-sector	Renewable Energy	Last reviewed on	24 / 11 / 2017
	Occupation	Installation and Commissioning	Next review date	30 / 09 / 2019
	NSQC Clearance on	NA		

Job Role	Construction Technician (Electrical) -Wind Power Plant
Role Description	Construction Technician (Electrical) -Wind Power Plant carries out installation, testing & commissioning of wind power plant including WTG, transformer, poles, O/H line, U/G cables, junction boxes, feeder pillars and other associated accessories like CMS with applicable codes, standards, and safety requirements.
NSQF level	4
Minimum Educational Qualifications Maximum Educational Qualifications	Class 12 th pass, preferably Not Applicable
Prerequisite License or Training	N/A
Minimum Job Entry Age	18 years
Experience	Not Required
Applicable National Occupational Standards (NOS)	Compulsory: <ol style="list-style-type: none"> 1. SGJ/N1404 Carry out installation of electrical components of wind power plant 2. SGJ/N1405 Perform testing and commissioning of electrical components of wind power plant 3. SGJ/N1201 Perform basic health and safety practices at Project Site (Ground and Height) 4. SGJ/N0120 Work effectively with others
Performance Criteria	As described in the relevant OS units.



Qualifications Pack For “Construction Technician (Electrical)
- Wind Power Plant”

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the project site, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OSs, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an ‘N’
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual need to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish

Qualifications Pack For “Construction Technician (Electrical)
- Wind Power Plant”

	specific designated responsibilities.
Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today’s world. These skills are typically needed in any work environment in today’s world. In the context of the OS, these include communication related skills that are applicable to most job roles.

Acronyms

Keywords/Terms	Description
SCGJ	Skill Council for Green Jobs
NOS	National Occupational Standards
NSQF	National Skills Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standards
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skills Council
WTG	Wind Turbine Generator
E&C	Erection and Commissioning
KW	Kilowatt
KWh	Kilowatt- hour

SGJ/N1404

Carry out installation of electrical components of wind power plant

National Occupational Standard



Overview

This unit is about installation of electrical components of wind power plant

SGJ/N1404 Carry out installation of electrical components of wind power plant

National Occupational Standard

Unit Code	SGJ /N1404
Unit Title (Task)	Carry out installation of electrical components of wind power plant
Description	This unit is about installation of electrical components of wind power plant
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • job specific safety • preparation for installation • laying of U/G cables and earth mat • installation of WTG components • installation of electronic components • installation of power transformers • installation of protection devices
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Job Specific safety	<p>To be competent, the user/individual on the job must be able to:-</p> <p>PC1. select the appropriate PPE (Personal Protective Equipment) to carry out the specific activity</p>
Preparation for installation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC2. analyze the single line diagram, technical drawings/wiring/circuit diagrams and schematic diagram</p> <p>PC3. analyze the related manuals, blueprints and schematic diagrams to determine the tasks, tools, equipment's and parts needed</p> <p>PC4. perform the planning and sourcing of construction power supply</p> <p>PC5. arrange all the tools, tackles and associated components needed</p> <p>PC6. perform the installation of allied components like lights, AHUs for control rooms, etc.</p> <p>PC7. perform the route survey for laying of O/H line or U/G cables</p>
Laying of U/G cables and earth mat	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. carry out the laying of U/G cables in trenches as per design</p> <p>PC9. carry out the laying of earth mat as per design drawings</p>
Installation of WTG components	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC10. ensure the cable connections of the generator terminal box are as per design</p> <p>PC11. carry out pre-installation tests like earthing resistance, coil resistance, etc.</p> <p>PC12. carry out the installation of WTG in the nacelle assembly</p> <p>PC13. ensure the alignment of WTG with gearbox</p> <p>PC14. carry out the cable termination of WTG with the control panel</p>
Installation of electronic components	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC15. carry out the installation of CMS measuring equipment and sensors as per design</p> <p>PC16. install wind turbine's electronics components such as I/O units, programmable logic controllers, etc.</p> <p>PC17. carry out the termination of I/O units with PLC as per design</p>
Installation of power transformers	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC18. carry out the installation of power transformers for WTGs</p> <p>PC19. ensure proper wiring and connection for the transformer control panels as per schematic drawings</p>

SGJ/N1404 Carry out installation of electrical components of wind power plant

	PC20. carry out the termination of power transformer’s primary and secondary as per drawings
Installation of protection devices	To be competent, the user/individual on the job must be able to: PC21. carry out the installation of switchgear panels in control room as per design PC22. carry out the installation of associated protection devices like over voltage relays, over current relays, etc. PC23. carry out the termination of switchgear power cables as per design PC24. carry out the termination control wiring as per design PC25. carry out the installation and termination of other protection devices like surge protection devices, lightning arrestors, etc.
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the work area KA3. relevant people and their responsibilities within the work area KA4. escalation matrix and procedures for reporting work and employment related issues
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. selection of appropriate PPE for a specific activity KB2. standard procedures how to deal with electric shocks and electrocutions to rescue and minimize damage and harm KB3. basic concepts of wind technology and wind power generation KB4. basic electrical concepts relation to wind power plant like PLC, protection relays, transformer primary and secondary, etc. KB5. basics functioning, specifications and operating principle of various components of a wind power plant KB6. the plant layout, technical drawings and manuals, blueprints, schematic drawing, technical specifications, operating principle and functioning of various electrical components in wind power plant KB7. tools, tackles and equipments required to carry out specific activities in a wind power plant relating to erection of mechanical components KB8. principles and practices of safety during the process of erection of mechanical components of wind power plant KB9. various type of wind turbine technology and its technical specification KB10. installation process of WTG, transformers, substations and other electrical systems KB11. ratings and specifications of transformer, cables, conductors, fuses, switches KB12. process of reporting problems in a timely manner
Skills	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. prepare documentation as per relevant industry standards
	Reading Skills
The user/individual on the job needs to know and understand how to: SA2. read vernacular/English language SA3. read and understand manuals, health and safety instructions, memos, other company documents	

SGJ/N1404 Carry out installation of electrical components of wind power plant

	<p>SA4. ability to read from different sources- books, screens in machines and signage</p> <p>SA5. understand the various colour codes, as per standard electrical, mechanical and civil nomenclature</p>
	<p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. express statements or information clearly so that others can hear and understand</p> <p>SA7. participate in and understand the main points of simple discussions</p> <p>SA8. respond appropriately to any queries</p> <p>SA9. communicate with supervisor</p>
<p>B. Professional Skills</p>	<p>Decision Making</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. follow organization rule-based decision making process</p> <p>SB2. take decision with systematic course of actions and/or response</p> <p>Plan and Organize</p> <p>The user/individual on the job needs to know and understand:</p> <p>SB3. plan and organize service work to meet deadlines</p> <p>SB4. plan to utilize time and equipment's effectively</p> <p>SB5. work constructively and collaboratively with others</p> <p>Customer Centricity</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. follow organisation code of conduct</p> <p>SB7. manage relationships with customers with intent on satisfying its requirements for service delivery</p> <p>Problem Solving</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. recognize problems and search for solutions</p> <p>SB9. choose best methods to complete assigned tasks</p> <p>SB10. approach relevant authority when required</p> <p>Analytical Thinking</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB11. apply domain knowledge, observations and data to select course of action to perform tasks related to wind power plants</p> <p>Critical Thinking</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. use reasoning skills to identify and resolve basic problems</p> <p>SB13. use intuition to detect any potential problems which could arise during operations</p> <p>SB14. use acquired knowledge of the process for identifying and handling issues</p>

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Carry out installation of electrical components of wind power plant

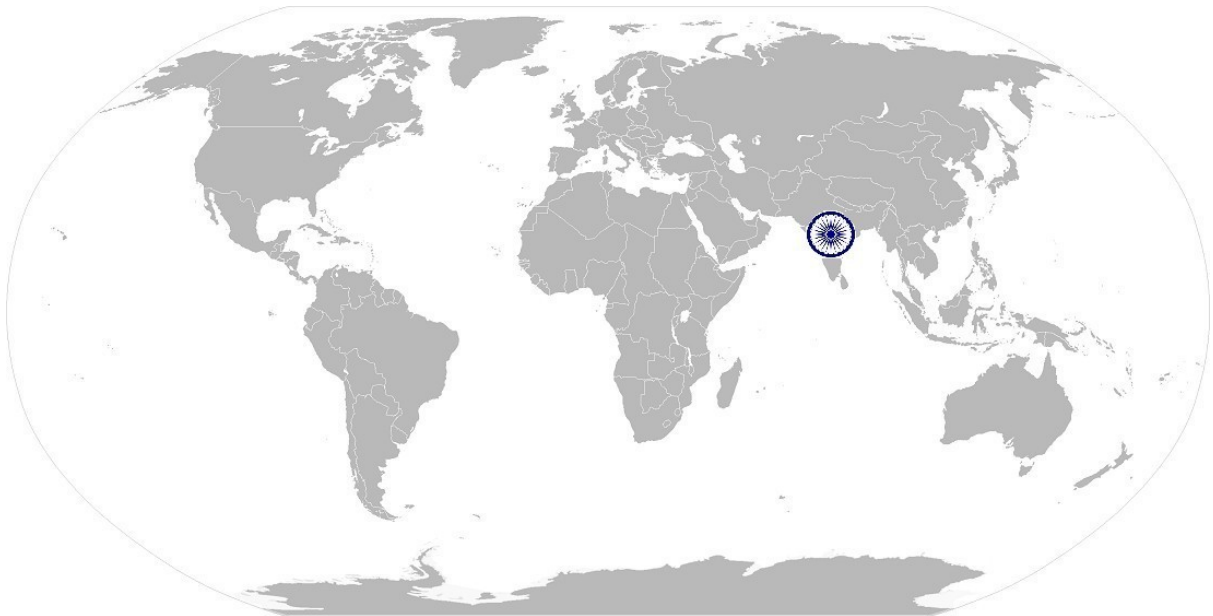
NOS Version Control

NOS Code	SGJ/N1404		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	24/11/2017
Occupation	Installation	Next review date	30/09/2019



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National Occupational Standard



Overview

This unit is about testing and commissioning of electrical components of wind power plant

SGJ/N1405

Perform testing and commissioning of electrical components of Wind Power Plant

National Occupational Standard

Unit Code	SGJ /N1405
Unit Title (Task)	Perform testing and commissioning of electrical components of wind power plant
Description	This unit is about testing and commissioning of electrical components of wind power plant
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • job specific safety • prepare for testing and commissioning • testing and commissioning of WTG and associated components
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Job Specific safety	To be competent, the user/individual on the job must be able to:- PC1. select the appropriate PPE (Personal Protective Equipment) to carry out the specific activity
Prepare for testing and commissioning	To be competent, the user/individual on the job must be able to: PC2. analyze the single line diagram, technical drawings/wiring/circuit diagrams and schematic diagram PC3. assess the work area and prepare for carrying out testing and commissioning PC4. ensure required approvals and permit to work (PTW) from the concerned authority are acquired PC5. arrange for the relevant tools for carrying out the testing and commissioning of WTG PC6. visually inspect the each of the electrical equipment
Testing and commissioning of WTG and associated components	To be competent, the user/individual on the job must be able to: PC7. carry out visual inspection of WTG and associated components to ensure absence of damage, defects or any signs of deterioration PC8. check and ensure all electrical connection of WTG, transformers, protection devices, etc. are as per design specifications PC9. carry out the electrical calibration of all relevant instrumentation devices as per design specifications and ensure their proper functioning PC10. carry out the testing of WTG as per standard operating procedures PC11. carry out the testing of transformers as per standard operating procedures PC12. carry out the testing of switchgears and other protection devices as per standard operating procedures PC13. assist in the testing of the condition monitoring system and associated control logic PC14. assist in the commissioning of WTG as per standard operating procedures PC15. record and document all readings as per relevant industry standards
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and	The user/individual on the job needs to know and understand: KA1. legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions KA2. reporting structure, inter-dependent functions, lines and procedures in the work area

SGJ/N1405

Perform testing and commissioning of electrical components of Wind Power Plant

its processes)	<p>KA3. relevant people and their responsibilities within the work area</p> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. basic concepts of wind technology and wind power generation</p> <p>KB2. technical specifications of mechanical components in wind turbine like tightness, greasing requirements, lubrication, torquing, calibration, etc.</p> <p>KB3. basic functioning, specifications and operating principle of various components of a wind power plant</p> <p>KB4. tools, tackles and equipment required to carry out specific activities in a wind power plant relating to testing and commissioning of electrical components</p> <p>KB5. various types of pre and post commissioning electrical tests/inspections to be conducted on the WTG, transformers, switchgears and associated protection devices, etc.</p> <p>KB6. testing procedure of WTG, Switchgear, transformer etc.</p> <p>KB7. various approvals required to carry out work on site</p>
Skills	
A. Core Skills/ Generic Skills	<p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. prepare documentation as per relevant industry standards</p> <p>Reading Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA2. read vernacular/English language</p> <p>SA3. read and understand manuals, health and safety instructions, memos, other company documents</p> <p>SA4. ability to read from different sources- books, screens in machines and signage</p> <p>SA5. understand the various colour codes, as per standard electrical, mechanical and civil nomenclature</p> <p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. express statements or information clearly so that others can hear and understand</p> <p>SA7. participate in and understand the main points of simple discussions</p> <p>SA8. respond appropriately to any queries</p> <p>SA9. communicate with peers, sub-ordinates and supervisor</p>
B. Professional Skills	<p>Decision Making</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. follow organization rule-based decision making process</p> <p>SB2. take decision with systematic course of actions and/or response</p> <p>Plan and Organize</p> <p>The user/individual on the job needs to know and understand:</p> <p>SB3. plan and organize service work to meet deadlines</p> <p>SB4. plan to utilize time and equipment's effectively</p> <p>SB5. work constructively and collaboratively with others</p>

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Perform testing and commissioning of electrical components of Wind Power Plant

	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB6. follow organisation code of conduct SB7. manage relationships with customers with intent on satisfying its requirements for service delivery
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB8. recognize problems and search for solutions SB9. choose best methods to complete assigned tasks SB10. approach relevant authority when required
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB11. apply domain knowledge, observations and data to select course of action to perform tasks related to wind power plant
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB12. use reasoning skills to identify and resolve basic problems SB13. use intuition to detect any potential problems which could arise during operations SB14. use acquired knowledge of the process for identifying and handling issues



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Perform testing and commissioning of electrical components of Wind Power Plant

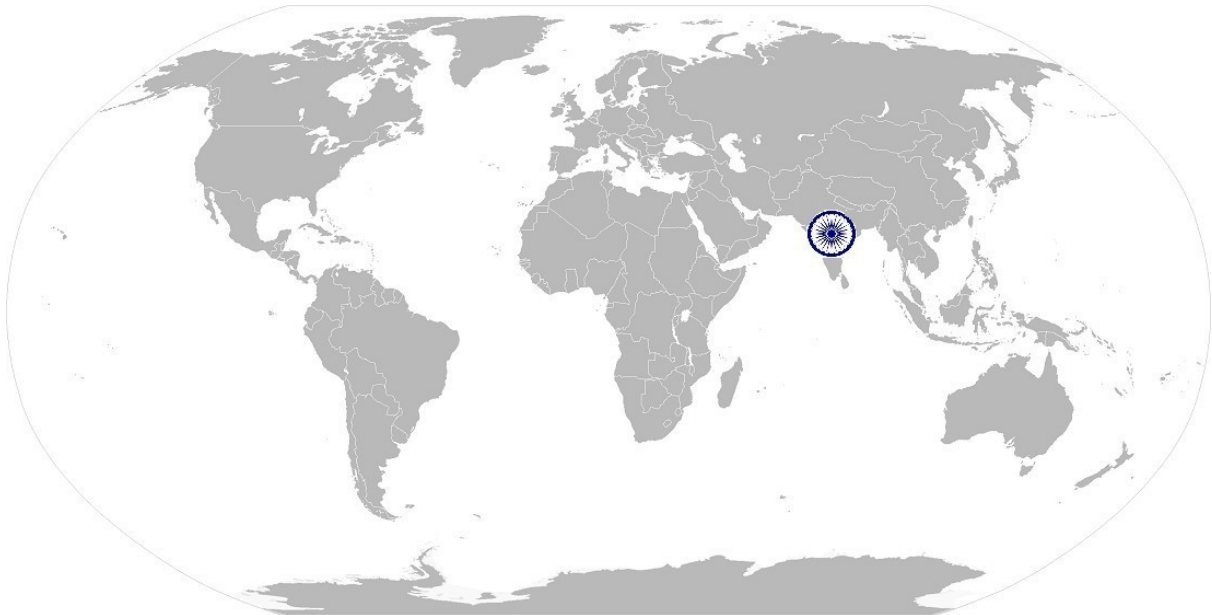
NOS Version Control

NOS Code	SGJ/N1405		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	24/11/2017
Occupation	Testing and Commissioning	Next review date	30/09/2019



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National Occupational Standard



Overview

This unit covers health and safety practices to be maintained at project site

SGJ/N1201 Perform basic health and safety practices at project site (Ground and Height)

National Occupational Standard

Unit Code	SGJ/N1101
Unit Title (Task)	Perform basic health and safety practices at Project Site (Ground and Height)
Description	This unit covers health and safety practices to be maintained at project site
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • adherence to safe working practices at project site • fire safety and tackling emergency situations
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Adherence to safe working practices at project site	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. select the relevant protective clothing/equipment for specific tasks and work</p> <p>PC2. state the name and location of relevant documents and people responsible for health and safety at the project site</p> <p>PC3. identify possible causes of risk at project site and their mitigation measures</p> <p>PC4. identify and follow warning signs on site</p> <p>PC5. establish safe working procedures at the project site</p> <p>PC6. ensure safe working practices when working at heights, confined areas and trenches</p> <p>PC7. identify methods of accident prevention in the work environment</p> <p>PC8. follow safe operating procedures for lifting, carrying and transporting heavy objects & tools</p> <p>PC9. inspect the project site on a regular basis for any signs of spillage</p> <p>PC10. ensure safe storage of flammable materials and machine lubricating oil</p> <p>PC11. apply good housekeeping practices at all times by removal/disposal of waste products</p> <p>PC12. inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly</p>
Fire safety and tackling emergency situations	<p>To be competent, the user/ individual must be able to:</p> <p>PC13. exhibit the use of various appropriate fire extinguishers on different types of fires correctly</p> <p>PC14. demonstrate rescue techniques applied during fire hazard</p> <p>PC15. administer appropriate first aid to victims were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.</p> <p>PC16. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</p> <p>PC17. participate in emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work</p> <p>PC18. report the accident to the relevant authority in the prescribed format</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:-</p> <p>KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a project site</p> <p>KA2. names and location of documents that refer to health and safety in the project site</p> <p>KA3. escalation matrix and procedures for reporting work and employment related issues</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. meaning of “hazards” and “risks”</p> <p>KB2. various types of safety signs and what they mean</p>

SGJ/N1201 Perform basic health and safety practices at project site (Ground and Height)

	<p>KB3. health and safety hazards commonly present in the work environment and related precautions</p> <p>KB4. possible causes of risk and accident and their mitigation measures</p> <p>KB5. safe working practices when working with tools and machines</p> <p>KB6. location of first-aid and safety equipment in the project site</p> <p>KB7. appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries</p> <p>KB8. standard safety procedures and equipments to be used to work at heights, trenches and confined places</p> <p>KB9. importance of using PPE and its selection as per the activity</p> <p>KB10. various causes of fires: heating of metal; spontaneous ignition; sparking; electrical heating; loose fires (smoking, welding, etc.); chemical fires; etc.</p> <p>KB11. precautionary activities taken to prevent fire accident or any other emergency situation</p> <p>KB12. different types of fire extinguishers and their usage and methods of extinguishing fire using various techniques</p> <p>KB13. emergency rescue techniques to be applied during a fire hazard or any other emergency situation</p>
Skills (S)	
A. Core Skills/ Generic Skills	Reading and writing skills
	The user/ individual on the job needs to know and understand: SA1. proper documentation as per relevant industry standards
	Reading skills The user/ individual on the job needs to know and understand: SA2. vernacular/English language SA3. manuals, health and safety instructions, memos, other company documents SA4. how to read and interpret data from different sources SA5. the various colour codes, as per standard electrical, mechanical and civil nomenclature
	Oral communication (listening and speaking skills) The user/ individual on the job needs to know and understand how to: SA6. express statements or information clearly so that others can hear and understand SA7. participate in and understand the main points of simple discussions SA8. respond appropriately to any queries SA9. communicate with peers, superiors and sub-ordinates
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. follow organization rule-based decision making process SB2. take decision with systematic course of actions and/or response
	Plan and Organize The user/individual on the job needs to know and understand how to: SB3. plan and organize work to meet deadlines SB4. plan to utilize time and equipment effectively SB5. work constructively and collaboratively with others
	Customer Centricity The user/individual on the job needs to know and understand how to: SB6. follow organisation code of conduct

SGJ/N1201 Perform basic health and safety practices at project site (Ground and Height)

	SB7. manage relationships with customers with intent on satisfying its requirements for service delivery
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB8. recognize problems and provide solutions using a range of cognitive and practical skills SB9. approach relevant authority when required
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB10. apply knowledge of facts, principles and processes to select the right course of action to perform tasks
	Critical Thinking
The user/individual on the job needs to know and understand how to: SB11. use reasoning skills to identify and resolve basic problems SB12. use intuition to detect any potential problems which could arise during operations SB13. use acquired knowledge of the process for identifying and handling issues	



SGJ/N1201 Perform basic health and safety practices at project site (Ground and Height)

NOS Version Control

NOS Code	SGJ/N1201		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
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Occupation	Health and Safety	Next review date	30/09/2019



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National Occupational Standard



Overview

This unit covers basic practices that improves the effectiveness of working with others in an organizational set-up

SGJ/N0120

Work effectively with others

National Occupational Standard

Unit Code	SGJ/ N0120
Unit Title (Task)	Work effectively with others
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the project site
Scope	This unit/task covers the following: <ul style="list-style-type: none"> working with others
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Working with others	<p>The user/individual on the job should be able to:</p> <p>PC1. accurately pass on information to the authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC2. assist others in performing tasks in a positive manner where required and possible</p> <p>PC3. consult and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC4. display appropriate communication etiquette while working</p> <p>PC5. display active listening skills while interacting with others at work</p> <p>PC6. demonstrate responsible and disciplined behaviors at the project site</p> <p>PC7. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict</p> <p>PC8. identify the need for common grounds with clients, team members, etc. and negotiate in an effective manner to achieve the same</p> <p>PC9. consider and respect the opinions, creativity, values, beliefs and perspectives of others</p> <p>PC10. ensure collaboration and group participation to achieve common goals</p> <p>PC11. promote a friendly, co-operative environment that is conducive to employee's sense of belonging</p> <p>PC12. facilitate an understanding and appreciation of the differences among team members</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. legislation, standards, policies, and procedures followed in the organization relevant to own employment and performance conditions</p> <p>KA2. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. relevant people and their responsibilities within the work area</p> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. various categories of people that one is required to communicate and co-ordinate with in the organization</p> <p>KB2. importance of effective communication in the project site</p>

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	<p>KB3. importance of teamwork in organizational and individual success</p> <p>KB4. various components of effective communication</p> <p>KB5. key elements of active listening</p> <p>KB6. value and importance of active listening and assertive communication</p> <p>KB7. barriers to effective communication</p> <p>KB8. importance of tone and pitch in effective communication</p> <p>KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles</p> <p>KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer</p> <p>KB11. key elements and importance of non-verbal communication</p> <p>KB12. importance of ethics for professional success</p> <p>KB13. importance of discipline for professional success</p> <p>KB14. what constitutes disciplined behavior for a working professional</p> <p>KB15. common reasons for interpersonal conflict</p> <p>KB16. importance of developing effective working relationships for professional success</p> <p>KB17. expressing and addressing grievances appropriately and effectively</p> <p>KB18. importance and ways of managing interpersonal conflict effectively</p> <p>KB19. importance of teamwork and collaboration</p>
Skills (S)	
<p>A. Core Skills/ Generic Skills</p>	<p>Writing Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. note the information communicated</p> <p>SA2. record the readings of various parameters in the prescribed format</p> <p>SA3. note down observations related to the activity</p> <p>SA4. write information documents to internal departments/ internal teams</p>
	<p>Reading Skills</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. read vernacular/English language</p> <p>SA6. read and understand equipment manuals, health and safety instructions, memos, other company documents</p> <p>SA7. read from different sources- books, screens in machines and signage</p> <p>SA8. read internal information documents sent by internal teams</p>
<p>B. Professional Skills</p>	<p>Oral Communication (Listening and Speaking skills)</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA9. express statements or information clearly so that others can hear and understand</p> <p>SA10. participate in and understand the main points of simple discussions</p> <p>SA11. respond appropriately to any queries</p> <p>SA12. communicate effectively with supervisor, peers and subordinates</p>
	<p>Decision Making</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. follow organization rule-based decision making process</p> <p>SB2. analyze critical points in day to day tasks and identify control measures to solve the issue</p> <p>SB3. handle issues in case the superior is not available (as per the authority matrix defined by the organisation)</p>

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	Plan and Organize
	The user/individual on the job needs to know and understand how to : SB4. planning and organization of work to meet deadlines SB5. work constructively and collaboratively with others SB6. support the superiors in scheduling tasks
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB7. follow organisation code of conduct SB8. manage relationships with customers with intent on satisfying its requirements for service delivery
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB9. recognize problems and search for solutions SB10. choose best methods to complete assigned tasks SB11. approach relevant authority when required
	Analytical Thinking
The user/individual on the job needs to know and understand how to: SB12. apply domain knowledge, observations and data to select course of action to perform tasks	
Critical Thinking	
The user/individual on the job needs to know and understand how to: SB13. critically evaluate information obtained from customers, supervisor and co-workers to perform day to day activities SB14. ask questions for better understanding	

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NOS Version Control

NOS Code	SGJ/N0120		
Credits (NSQF)	TBD	Version number	1.0
Industry	Green Jobs	Drafted on	01/09/2016
Industry Sub-sector	Renewable Energy	Last reviewed on	15/02/2017
Occupation	Team Management	Next review date	30/09/2019

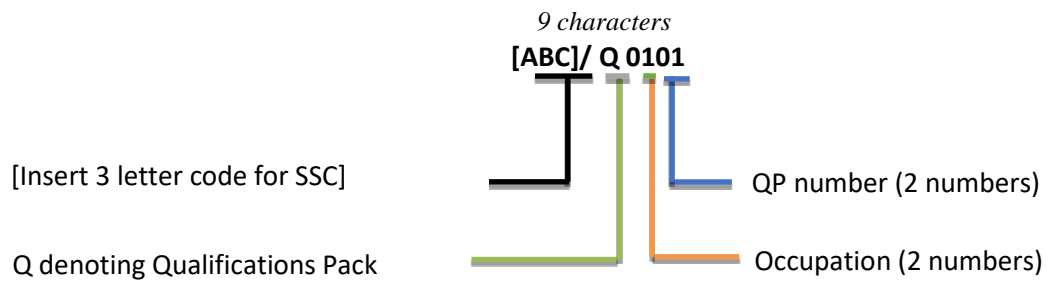


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Annexure

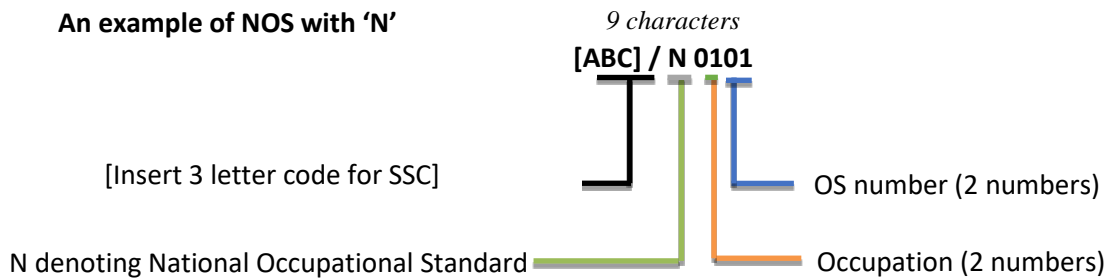
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'





SGJ/Q1403 Qualifications Pack For “Construction Technician (Electrical) - Wind Power Plant”

The following acronyms/codes have been used in the nomenclature above:

Sub-sector		Range of Occupation numbers
Renewable Energy (01-35)	Solar Photovoltaic	01-05
	Solar Thermal	06-10
	Wind	11-15
	Hydro	16-20
	Biomass	21-25
	Geothermal	26-30
	All Renewable Energy (Cross-cutting/ Enabling Activities)	31-35
Green Transportation (36 - 40)	Alternative Fuel Transportation	36-40
	Bio-fuels and Farming	40-45
	Other Green Transportation	46-50
Green Construction (51- 60)	Green Buildings	51-55
	Energy Efficiency	56-60
Waste Management (61- 65)	Waste Management	61-65
Water Management (66-70)	Water and Wastewater Management	66-70
Co-Generation (71 - 75)	Co-generation	71-75
Other Green Jobs (76- 99)	Carbon Sinks	76-80
	Environmental Compliance and Sustainability Planning	81-85
	Other Green Jobs	85-99

Sequence	Description	Example
Three letters	Industry name	SGJ
Slash	/	/
Next letter	Whether QP or NOS	Q or N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

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CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Construction Technician (Electrical) - Wind Power Plant

Qualification Pack SGJ/Q1403

Sector Skill Council Skill Council for Green Jobs

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack 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 Pack, 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 Pack.

Compulsory NOS				Marks Allocation	
Total Marks: 400				Theory	Skills Practical
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of		
SGJ /N1404 Carry out installation of electrical components of wind power plant	PC1. select the appropriate PPE to carry out the specific activity	100	4	1	3
	PC2. analyze the single line diagram, technical drawings/wiring/circuit diagrams and schematic diagram		4	2	2
	PC3. analyze the related manuals, blueprints and schematic diagrams to determine the tasks, tools, equipment's and parts needed		4	1	3
	PC4. perform the planning and sourcing of construction power supply		4	1	3
	PC5. arrange all the tools, tackles and associated equipments needed		4	1	3
	PC6. perform the installation of allied components like lights, AHUs for control rooms, etc.		4	1	3



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PC7. perform the route survey for laying of O/H line or U/G cables	4	1	3
PC8. carry out the laying of U/G cables in trenches as per design	4	1	3
PC9. carry out the laying of earth mat as per design drawings	5	2	3
PC10. ensure the cable connections of the generator terminal box are as per design	4	1	3
PC11. carry out pre-installation tests like earthing resistance, coil resistance, etc.	4	1	3
PC12. carry out the installation of WTG in the nacelle assembly	4	1	3
PC13. ensure the alignment of WTG with gearbox	4	1	3
PC14. carry out the cable termination of WTG with the control panel	4	1	3
PC15. carry out the installation of CMS measuring equipment and sensors as per design	5	1	4
PC16. install wind turbine's electronics components such as I/O units, programmable logic controllers, etc.	3	1	2
PC17. carry out the termination of I/O units with PLC as per design	3	1	2
PC18. carry out the installation of power transformers for WTGs	4	1	3
PC19. ensure proper wiring and connection for the transformer control panels as per schematic drawings	4	1	3
PC20. carry out the termination of power transformer's primary and secondary as per drawings	4	1	3
PC21. carry out the installation of switchgear panels in control room as per design	4	1	3
PC22. carry out the installation of associated protection devices like over voltage relays, over current relays, etc.	4	1	3



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	PC23. carry out the termination of switchgear power cables as per design		4	1	3
	PC24. carry out the termination control wiring as per design		4	1	3
	PC25. carry out the installation and termination of other protection devices like surge protection devices, lightning arrestors, etc.		4	1	3
		TOTAL	100	27	73
SGJ /N1405 Perform testing and commissioning of electrical components of wind power plant	PC1. select the appropriate PPE to carry out the specific activity		4	1	3
	PC2. analyze the single line diagram, technical drawings/wiring/circuit diagrams and schematic diagram		4	2	2
	PC3. assess the work area and prepare for carrying out testing and commissioning		6	2	4
	PC4. ensure required approvals and permit to work (PTW) from the concerned authority are acquired		4	1	3
	PC5. arrange for the relevant tools for carrying out the testing and commissioning of WTG		6	2	4
	PC6. visually inspect the each of the electrical equipment		10	3	7
	PC7. carry out visual inspection of WTG and associated components to ensure absence of damage, defects or any signs of deterioration		10	3	7
	PC8. check and ensure all electrical connection of WTG, transformers, protection devices, etc. are as per design specifications		8	2	6
	PC9. carry out the electrical calibration of all relevant instrumentation devices as per design specifications and ensure their proper functioning		8	2	6
	PC10. carry out the testing of WTG as per standard operating procedures		7	2	5
	PC11. carry out the testing of transformers as per		7	2	5



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	standard operating procedures				
	PC12. carry out the testing of switchgears and other protection devices as per standard operating procedures		7	2	5
	PC13. assist in the testing of the condition monitoring system and associated control logic		6	2	4
	PC14. assist in the commissioning of WTG as per standard operating procedures		6	2	4
	PC15. record and document all readings as per relevant industry standards		7	2	5
		TOTAL	100	30	70
SGJ/N1201 Perform basic health and safety practices at project site (Ground and Height)	PC1. select the relevant protective clothing/equipment for specific tasks and work	100	6	4	2
	PC2. state the name and location of relevant documents and people responsible for health and safety at the project site		6	4	2
	PC3. identify possible causes of risk at project site and their mitigation measures		6	2	4
	PC4. identify and follow warning signs on site		3	2	1
	PC5. establish safe working procedures at the project site		6	2	4
	PC6. ensure safe working practices when working at heights, confined areas and trenches		6	2	4
	PC7. identify methods of accident prevention in the work environment		6	2	4
	PC8. follow safe operating procedures for lifting, carrying and transporting heavy objects & tools		6	2	4
	PC9. inspect the project site on a regular basis for any signs of spillage		6	2	4
	PC10. ensure safe storage of flammable materials and machine lubricating oil		6	4	2
	PC11. apply good housekeeping practices at all times by		6	2	4



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	removal/disposal of waste products				
	PC12. inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly		6	2	4
	PC13. exhibit the use of various appropriate fire extinguishers on different types of fires correctly		6	4	2
	PC14. demonstrate rescue techniques applied during fire hazard		6	3	3
	PC15. administer appropriate first aid to victims were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		6	4	2
	PC16. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		6	2	4
	PC17. participate in emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work		3	1	2
	PC18. report the accident to the relevant authority in the prescribed format		4	2	2
		TOTAL	100	46	54
SGJ/N0120 Work effectively with others	PC1. accurately pass on information to the authorized persons who require it and within agreed timescale and confirm its receipt	100	10	2	8
	PC2. assist others in performing tasks in a positive manner where required and possible		6	1	5
	PC3. consult and assist others to maximize effectiveness and efficiency in carrying out tasks		8	2	6
	PC4. display appropriate communication etiquette while working		9	2	7



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PC5.	display active listening skills while interacting with others at work	8	2	6
PC6.	demonstrate responsible and disciplined behaviors at the project site	8	2	6
PC7.	escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict	9	2	7
PC8.	identify the need for common grounds with clients, team members, etc. and negotiate in an effective manner to achieve the same	9	2	7
PC9.	consider and respect the opinions, creativity, values, beliefs and perspectives of others	9	2	7
PC10.	ensure collaboration and group participation to achieve common goals	8	2	6
PC11.	promote a friendly, co-operative environment that is conducive to employee’s sense of belonging	8	2	6
PC12.	facilitate an understanding and appreciation of the differences among team members	8	2	6
TOTAL		100	23	77

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