



Model Curriculum

QP Name: SS (Stainless Steel) Tubing Technician

QP Code: HYC/Q6305

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Hydrocarbon Sector Skill Council
OIDB Bhawan 2nd Floor,
Tower C, Plot No. 2, Vikas Marg,
Sector – 73, Noida (U.P)

Table of Contents

Training Parameters.....	3
Program Overview	4
Training Outcomes.....	4
Compulsory Modules.....	4
Module Details.....	6
Module 1: Introduction to Hydrocarbon Sector and the job role of SS Tubing Technician	6
Module 2: Preparation for the installation of SS tube	7
Module 3: Carry out SS tube installation	8
Module 4: Effective working in a team	10
Module 5: Health, safety and security	11
Annexure.....	12
Trainer Requirements	12
Assessor Requirements.....	13
Assessment Strategy	14
References	16
Glossary.....	16
Acronyms and Abbreviations.....	18

Training Parameters

Sector	Hydrocarbon
Sub-Sector	Midstream
Occupation	Operations - Oil and Gas pipeline
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO/2015-7126
Minimum Educational Qualification and Experience	10th Grade pass with 2-years relevant experience OR 12th Grade Pass OR 8th Grade pass plus 2-years of NTC plus 1-year NAC OR 10th Grade Pass plus 2-year of National Trade Certificate (NTC) in relevant field OR Completed 2nd year of the 3-year Diploma (after 10th) in relevant field and pursuing regular Diploma
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	17-11-2022
Next Review Date	Three years from the date of NSQC approval
NSQC Approval Date	17-11-2022
QP Version	2.0
Model Curriculum Creation Date	17-11-2022
Model Curriculum Valid Up to Date	Three years from the date of NSQC approval
Model Curriculum Version	2.0
Minimum Duration of the Course	200 Hours
Maximum Duration of the Course	480 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Coordinate with the concerned department/authority
- Prepare the resources required for SS tube installation
- Check and prepare the equipment and accessories required for installation of SS tubes
- Carry out SS tube installation and joining
- Follow health, safety procedures in diving operation
- Work effectively with colleagues and other diving team members

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	Total Duration
Bridge Module	06:00	Nil	Nil	06:00
Module 1: Introduction to Hydrocarbon sector and the job role of SS Tubing Technician	06:00	Nil	Nil	06:00
HYC/N6308 – Prepare for SS tube installation NOS Version No. –2.0 NSQF Level – 4	30:00	90:00	30:00	150:00
Module 2: Preparation for the installation of SS tube	30:00	90:00	30:00	150:00
HYC/N6309 – Carryout SS tube installation and joining process NOS Version No. – 2.0 NSQF Level – 4	54:00	90:00	30:00	174:00
Module 3: Carry out SS tube installation	54:00	90:00	30:00	174:00
HYC/N9301 – Working effectively in a team NOS Version No. – 3.0 NSQF Level – 4	15:00	30:00	Nil	45:00
Module 4: Effective working in a team	15:00	30:00	Nil	45:00
HYC/N9302 –Maintain health, safety and securityprocedures NOS Version No. –3.0 NSQF Level – 4	15:00	30:00	Nil	45:00
Module 5: Health, safety and security	15:00	30:00	Nil	45:00
DGT/VSQ/N0102 - Employability Skills NOS Version No. – 1.0	-	-	-	60:00
Total Duration	120:00	240:00	60:00	480:00

Module Details

Module 1: Introduction to Hydrocarbon Sector and the job role of SS Tubing Technician

Bridge Module

Terminal Outcomes:

- Introduction to Hydrocarbon Sector
- Roles and responsibility of SS Tubing Technician

Duration:<06:00>	Duration:<00:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the oil and natural gas sector and its subsectors. • Explain the use of SS tube in oil and gas facility such as refinery, CNG station etc. • Define roles and responsibilities of SS tube installation technician. 	
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
NA	

Module 2: Preparation for the installation of SS tube

Mapped to HYC/N6308 v 2.0

Terminal Outcomes:

- Identification of the department / authority for receiving work permit, raw material, tools & equipment
- Prepare Workplace for SS Tube Installation

Duration:<30:00>	Duration:<90:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain how to obtain work permit from department/authority. • Explain the importance of reading ss tube layout before installation. • List the raw material, consumable and tools required to perform SS tube installation. • Describe the effects for improper handling of tube. • Explain the importance of workplace readiness. • Explain the hazards associated with contamination of raw material with dirt and foreign object. • Describe the importance of documentation while collecting raw material and tools. 	<ul style="list-style-type: none"> • Demonstrate the preparation a checklist of the steps involved in obtaining approved fitting layout from supervisor • Demonstrate how to read the fitting layout • Demonstrate the ways to handle SS tube and required equipment, tools for installation operation. • Show how to measure the length of tube for marking and cutting using measuring instruments. • Prepare a checklist to inspect the workplace readiness for SS tube installation. • Demonstrate the methods to check calibration of measuring instrument • Demonstrate how to check the raw material quality
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • SS Tubes • Pipe wrench, pipe cutter, grinder, measuring tape, tube cleaner • Calibration instrument 	

Module 3: Carry out SS tube installation

Mapped to HYC/N6309 v 2.0

Terminal Outcomes:

- Perform SS tube installation and joining
- Demonstrate how to test the alignment of SS tube
- Demonstrate how to undertake maintenance of SS tube

Duration:<54:00>	Duration:<90:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the principle of tube line fabrication • Describe List equipment required for SS tube installation operation • Describe the rules for positioning tube in bender at different angles • Explain the causes for imperfect bend and cutting of SS tube • Describe the procedure of cutting and threading of SS tubes • Explain the importance of leak proof joints • Explain tack welding procedure • Explain the importance of optimal usage of material and water during installation • Describe the importance of reusable and recyclable material • Describe the different methods and instruments used for testing installation defects • Explain leak proofing techniques • Describe the procedure for reporting defects to appropriate authority • Explain the parameters of an inspection maintenance checklist • Explain the importance of using genuine parts 	<ul style="list-style-type: none"> • Measure and mark the tube as per given requirements. • Demonstrate how to bend SS tube accurately in different angle as per the installation requirement • Demonstrate how to check the bend angle • Demonstrate the method of cutting and threading of SS tube • Demonstrate how to clean and deburr the tube • Perform tube joining fitting and installation as per the sample layout • Demonstrate how to seal the tube joints • Demonstrate how to check the alignment and straightness of tubes after tack welding • Show how to find tube installation defects via visual inspection and use of testing instruments. • Demonstrate how to rectify the cutting and welding defect • Demonstrate the methods to perform hydrostatic and pneumatic testing • Demonstrate how to check the structural integrity of tube joints • Perform inspection as per maintenance checklist • Demonstrate how to check if the parts are genuine
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • SS tube marker • Measuring tape 	

- SS Tube cutter or hacksaw
- Tube fitting tools i.e., wrench
- Inspection gauge and gap gauge
- Tube cleaner
- Calibration instrument
- Hydrostatic and pneumatic testing tools

Module 4: Effective working in a team

Mapped to HYC/N9301 v 3.0

Terminal Outcomes:

- Describe how to interact with others effectively and appropriately.
- Demonstrate how to deal with colleagues at workplace

Duration:<15:00>	Duration:<30:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe methods to communicate clearly with the supervisor and reporting authorities. • Explain how to share information in line with organisational requirements. • Explain the organisation’s policies and procedures. • Explain how to identify causes of interpersonal conflict at workplace. • Describe ways/methods to resolve interpersonal conflict. • Explain the importance of gender equality. • Explain the importance of supporting and respecting colleagues and other members of the organisation without any bias based on gender, culture, disability etc. • Explain the importance of gender-neutral behaviour while interacting with others. 	<ul style="list-style-type: none"> • Demonstrate ways to handle interpersonal conflict at the workplace. • Demonstrate the ways of developing suitable rapport with another technician in a team. • Demonstrate role of tubing technician during emergencies. • Demonstrate how to communicate in a manner that is respectful of gender, culture and disability.
<ul style="list-style-type: none"> • Classroom Aids: 	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • Dummy team 	

Module 5: Health, safety and security

Mapped to HYC/N9302 v 3.0

Terminal Outcomes:

- Identify the possible cause of accident and hazards
- Explain how to maintain safety and healthy environment
- Demonstrate how to use PPE kit at workplace

Duration:<15:00>	Duration:<30:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain importance of using PPE like face mask, hand gloves, goggle, protective clothing/equipment, etc. at workplace • Explain how to monitor the health and safety of self and other team members • Explain the hazard and risk associated with mishandling various tools and equipment • Discuss safe work practices as per the company’s guidelines and procedures • Explain the good housekeeping practices to prevent any hazard • Explain how to record and report all incidents, damages or injury • Explain material safety data sheet (MSDS) • Explain importance of personal and workplace hygiene 	<ul style="list-style-type: none"> • Demonstrate how to appropriately wear and discard PPE kit • Demonstrate how to respond promptly and appropriately to an accident • Demonstrate how to administer first aid • Demonstrate various rescue techniques • Demonstrate how to use fire extinguishers • Show the correct way to lift heavy objects.
Classroom Aids:	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
Tools, Equipment and Other Requirements	
<ul style="list-style-type: none"> • First aid kit • Dummy for first aid treatment • Housekeeping kit • Personal Protective Equipment (PPE) 	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma	Mechanical	02 years	Welding/Fitting and joining	1	Fitting and joining	-

Trainer Certification	
Domain Certification	Platform Certification
Certified for the Job Role: “SS (Stainless Steel) Tubing Technician”, mapped to QP: “HYC/Q6305, v1.0”. Minimum accepted score is 80%	Certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601,v1.0”. Minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma	Mechanical	02 years	Welding/Fitting and joining	1	Fitting and joining	-

Assessor Certification	
Domain Certification	Platform Certification
Certified for the Job Role: “SS (Stainless Steel) Tubing Technician”, mapped to QP: “HYC/Q6305, v1.0”. Minimum accepted score is 80%	Certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2701,v1.0”. Minimum accepted score as per MEPC guidelines is 80%.

Assessment Strategy

The assessment of candidates/trainees will be on the basis on assessment outcome/assessment criteria of the Qualification. In the assessment criteria for each NOS marks have been defined for theoretical and practical skills, on which the candidate will be assessed. The emphasis is on 'learning-by-doing' and performance criteria is based on the practical demonstration of skills and knowledge.

Theory/Knowledge test- This section will test the trainee on his/her knowledge on the subject/trade. The test will be carried out online/offline with a set of random Question paper.that include multiple choice questions in multilingual, True/False Statement, audio-video question etc.

The Question Bank will be developed by Subject Matter Experts (SME) of the hydrocarbon sector and these questions again be vetted by the Industry Experts, each performance criteria have its marks for theory based on the level of question i.e. easy, medium and difficult.

Practical/Demonstration Test- This stage involves the face to face interaction between Assessor and each trainee. The practical knowledge will be tested through trade test which demonstrates the skill required for the job, by which assessor would be able to evaluate the trainee for his/her practical knowledge on respective Qualification.

To ensure the maximum possible consistency in the assessment by different assessors at different locations, orientation of the assessors is also required about the stages involved in the assessment and the assessor role in the assessment process. The assessor must have knowledge of the following concepts before assessment:

- Qualification Pack Structure
- Guidance for the assessor to conduct theory and practical assessments
- Guidance for trainees to be given by assessor before the start of the assessments.
- Guidance on assessments process, practical brief with steps of operations practical observation checklist
- Practical/Demonstration Test guidance for uniformity and consistency.
- Guidance on assessment evidence collection (signed attendance copy, verification of the authenticity of the candidate by checking the photo ID card, Photographs-while assessment undergoing etc.)

The empanelled assessment agencies will be instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments. The assessment agencies are instructed to ideally have assessor with sufficient amount of relevant industry experience related to Qualification. The assessors will also have scrutinized and have to undergo orientation of assessment framework, competency-based assessments etc.

Recognition of Prior Learning (RPL)

Under the Recognition of Prior Learning (RPL), the candidates enrolled and the assessment will be carried out as per the assessment criteria and assessment outcome of the full Qualification and the process of assessment will be carry out by the body/bodies empanelled by Hydrocarbon Sector Skill Council

In RPL, the candidate already has the skills and knowledge while working on the job from long, the learners only requires to undergo a brief orientation training and the subsequent assessment process and certification is awarded to those candidates who successfully clears the assessment. The tentative process of RPL would include the following stages:

- 1 Cluster Mapping and Mobilisation of the candidates
- 2 Counselling & Pre-Screening
- 4 Candidate registration, batch creation and enrolment
- 5 conduction of an orientation program for candidates before assessment
- 7 Assessment by HSSC
- 8 Evaluation of Assessment Result
- 9 Issuance of the Certificate to successful candidates

Assessment Strategy:

- For each Qualification Pack assessment criteria has been developed, which describe the weightage for each NOS/Performance criteria (PC) and assigned marks based on each NOS separately for theoretical and practical skills
- The question bank will be developed by the subject matter experts to assess the theoretical and practical knowledge.
- The accredited assessment agency will carry out the assessment process on the date proposed after completion of the training. The assessment will be carried out on the basis of the two parameters i.e., Theoretical test and Practical test.
- The result of the assessment will be shared by assessment body to the HSSC for review and compliance, after that result will be processed and certificates will be generated
- Assessments shall be conducted in the regional languages in case of any specific requirement from the concerned Training Provider.
- For ensuring the impartial assessment it will be ensured that the Assessment Bodies (AB) are not involved in any type of training delivery with respect to this project.

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the 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 the 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 these criteria.
6. To pass the Qualification Pack assessment, 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.

Recommended Pass % aggregate for QP: 70%

References

Glossary

Term	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 workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria(PC)	Performance Criteria (PC) 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 OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
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(KU)	Knowledge and Understanding (KU) are statements that together specify the technical, generic, professional and organisational specific knowledge that an individual need in order 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 specific designated responsibilities.
Core Skills/Generic Skills(GS)	Core skills or Generic Skills (GS) 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. These skills are typically needed in any work environment. In the context of the OS, these include communication-related skills that are applicable to most job roles.

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 atleast 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.

Acronyms and Abbreviations

Term	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
OS	Occupational Standard(s)
QP	Qualifications Pack
KU	Knowledge and understanding
GS	Generic Skills