



Model Curriculum

QP Name: Pipe Fitter - Oil & Gas/City Gas Distribution

QP Code: HYC/Q 6103

QP Version: 3.0

NSQF Level: 4

Model Curriculum Version: 3.0

Hydrocarbon Sector Skill Council
OIDB Bhawan, Block G+3, 2nd Floor, Plot No.2, Vikas Marg,
Sector – 73, Noida, Uttar Pradesh -201301

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Training Parameters

Sector	Hydrocarbon
Sub-Sector	Midstream
Occupation	Pipe Fitter - Oil & Gas/City Gas Distribution
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7126.0301
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	3 years from date of last review
NSQC Approval Date	17-11-2022
QP Version	3.0
Model Curriculum Creation Date	
Model Curriculum Valid Up to Date	
Model Curriculum Version	3.0
Minimum Duration of the Course	-
Maximum Duration of the Course	600 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.

- Carry Out pipe fitting activity
- Carry out pipe laying and jointing activity
- Carry out team work
- Maintain Health & Hygiene Habits

Elective and Compulsory Modules

The table lists the modules and their duration corresponding to the Elective and Compulsory NOS of the Qualification Pack.

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	06:00	Nil	Nil	06:00
<i>Elective 1 (OIL & GAS)</i>				
HYC/N6109 Perform Pipe Fitting activity NOS Version – 3.0 NSQF Level - 4	60:00	120:00	30:00	210:00
Module 2: Perform Pipe Fitting activity	60:00	120:00	30:00	210:00
HYC/N 6110 Perform Pipe laying and joining activity NOS Version No. – 3.0 NSQF Level – 4	54:00	90:00	30:00	174:00
Module 3: Jointing and pipe laying activity	54:00	90:00	30:00	174:00
<i>Elective 2 (CITY GAS DISTRIBUTION)</i>				
HYC/N 6105 Perform Fitting, Welding Basics and Joining Process of Materials NOS Version No. –3.0 NSQF Level – 4	60:00	120:00	30:00	210:00
Module 4: Fitting, Welding Basics and Joining Process of Materials	60:00	120:00	30:00	210:00
HYC/N 6106 Perform Electrofusion Welding NOS Version No. – 3.0 NSQF Level – 4	54:00	90:00	30:00	174:00
Module 5: Electrofusion welding performance	54:00	90:00	30:00	174:00
<i>COMPULSARY (NON-CORE) NOS</i>				
HYC/N 9301 – Work effectively in a team	30:00	45:00	Nil	75:00

NOS Version No. – 3.0 NSQF Level – 4				
Module 6: Effective working in a team	30:00	45:00	Nil	75:00
HYC/N 9302 – Maintain Health Safety and Security procedures NOS Version No. – 3.0 NSQF Level – 4	30:00	45:00	Nil	75:00
Module 7: Health, safety and security	30:00	45:00	Nil	75:00
DGT/VSQ/N0102 - Employability Skills NOS Version No. – 1.0	-	-	-	60:00
Total Duration	180:00	300:00	60:00	600:00

Module Details

Module 1: Introduction to Hydrocarbon Sector and the job role of Pipe Fitter – Oil & Gas / City Gas Distribution

Bridge Module

Terminal Outcomes:

- Discuss the Hydrocarbon Sector
- Discuss the job of a Pipe Fitter - Oil & Gas/ City Gas Distribution

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 importance of a Pipe Fitter – (Oil & Gas / City Gas Distribution) • Explain the roles and responsibilities of Pipe Fitter – (Oil & Gas / City Gas Distribution). 	
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"> • PPE Kit, pipe dies, power threading and cutting machines, hammers, chisels, wrenches 	

ELECTIVE 1 (OIL & GAS)

Module 2: Perform Pipe Fitting activity

Mapped to HYC/ N6109 v 3.0

Terminal Outcomes:

- Understand the pipe line layout drawings
- Mathematical skills with respect to plumbing
- Knowledge on different types of materials used in plumbing
- Identify the tools and tackles that are required to carry out the assigned job
- Pipe fitting operation

Duration: 60:00	Duration: 120:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basics of engineering drawing. • Explain the pipe chart, technical details etc. • Explain standard symbols used in pipe fitting and also different piping lines and valves used • Explain calculation of area, volume, angles, length and diameter of the pipe system using the metric system as well as English system. • Explain the property of different pipe material • Describe different packing materials, adhesives, gaskets, ropes etc. 	<ul style="list-style-type: none"> • Demonstrate the basics of engineering drawing • Illustrate pipe line system • Prepare bill of materials for doing the pipe line fabrication • Demonstrate how to Interpret hangers and support drawing • Calculate dimensions of the bend required in plumbing • Identify different materials/ equipment's used in pipe fitting in city gas distribution • Demonstrate how to identify different bends, elbows, shapes, joints etc. used to fabricate the pipes • Perform installation and checking the functions of different types of valves, gauges and other related accessories • Demonstrate how to use different hand tools and power tools in pipe fitting • Demonstrate how to repair and maintain high and low-pressure pipe systems used in manufacturing plants, oil refineries, chemical plants, breweries, power plants, food processing plants, paper mills, ships and factories • Demonstrate how to use the appropriate equipment, parts and accessories for the pipe fitting or assembling operation as per the standards. • Perform checking of the calibration date of all measuring equipment • Demonstrate how to prepare suitable datum to start the marking • Demonstrate how to apply application of

	<p>marking medium to enhance clarity of the marking and proper visibility</p> <ul style="list-style-type: none"> • Show appropriate method of marking out methods viz. direct marking using tapes and markers, set-outs of pipework using templates, producing set wires, set-outs of pipework onto floor • Demonstrate how to use a range of marking out equipment (e.g. rules, squares, scribes, Vernier instruments) Marking tools: rules/tapes, dividers/trammels, scribes, punches, scribing blocks, squares, protractor, permanent markers • Demonstrate how to mark out range of feature, datum lines, cutting guidelines, square and rectangular profiles, circular and radial profiles, angles, holes linearly positioned, boxed and on pitch circles • Demonstrate how to plan the pipe fitting activities before starting as per the drawing • Demonstrate how to cut the pipes to the appropriate lengths making allowances for bending using appropriate cutting operations and techniques • Demonstrate how to produce pipework bends using the appropriate tools and equipment for the types and sizes of pipe • Demonstrate how to assemble and secure the pipework as per job specifications using appropriate pipe assembly methods and techniques • Demonstrate how to produce pipework assemblies which combine a range of different pipe fittings viz straight couplings, elbows, tee pieces, flanges, reduction pieces, drain/bleeding devices and unions • Demonstrate how to dismantle pipework assemblies without damage to components and/or subassemblies Methods to dismantle: procedure for isolation and locking off a device/system; sequence of operations used to dismantle a device/system; proof marking, correct storage procedures for removed parts; release of pressure/force; extraction • Demonstrate how to deal promptly and effectively with problems within their control and seek help and guidance from the relevant people if they have problems that they cannot resolve
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	<ul style="list-style-type: none"> • Demonstrate how to keep the work area in a safe and tidy condition during completion of the manufacturing activities • Demonstrate how to return all tools and equipment to the correct location on completion of the fitting activities • Perform the necessary checks for correct pipework assembly and dimensional accuracy • Demonstrate how to use the appropriate measuring equipment for checking activities
<p>Classroom Aids:</p>	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
<p>Tools, Equipment and Other Requirements</p>	
<ul style="list-style-type: none"> • Wrought iron, case iron, galvanized, copper, brass and other types of pipes of various sizes. • Pipe hangers and braces, Grinds and checks valves • Pipe dies, power threading and cutting machines, reamers, • Tapping machines, hammers, • Chisel, wrenches, Saws, Caulking tools, • Acetylene torches, and other tools and equipment involved in the installation, repair and removal of pipes, pipe fittings and valves. 	

Module 3: Jointing and pipe laying activity

Mapped to HYC/N6110 v 3.0

Terminal Outcomes:

- Understand the pipe joining
- line layout for petroleum product distribution
- Oil and products
- Knowledge on different types of joining in plumbing
- Pipe line laying
- Physical requirement

Duration: 54:00	Duration: 90:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the different procedures involved in planning of pipe line laying Natural Gas transmission system • Describe the materials to be transported in pipeline • Describe the specific regulations covering pipe line operation and that could affect the populated area, drinking water sources and ecological sensitive area. • Explain the refining and crude oil conversion process into useable products. • Explain the property of petroleum products and Liquefied Natural Gas (LNG) • Explain the different methods of pipe joining • Describe the different welding methods use us pipe laying and joining • Explain the importance of joints and different types of joint • Describe the fundamentals of manual metal arc welding • Explain the AWS codification of electrodes • Describe safety standards in pipe fitting activity in Oil & Gas • Explain the importance of the pipe layout process 	<ul style="list-style-type: none"> • Demonstrate how to plan procedure for long distance pipe line • Demonstrate how to start and execute the pipe line work • Demonstrate how to prepare pipe for welding and other required material • Demonstrate how to Identify • Demonstrate how to correctly angle the electrode • Demonstrate how to classify the material with respect to dimensional and Physical characteristics as per types. • Perform reading and interpretation of routine information on written job instructions and welding procedure • Choose the correct welding mechanic and follow factors • Demonstrate how to strike and maintain a stable arc • Perform rectification of the welding defects • Check the weld joints and their condition • Perform pipe welding in vertical down weld with basic technique and highlight the automatic pipe welding to compare with other methods • Select the right tube for the job and able to recommend different types of tubes as per applications • Classify different design and installation data • Perform different joining methods. • Differentiate solders and fluxes used for joining • Perform different filling operations

	<ul style="list-style-type: none"> • Conduct brazing with correct filler material, flux, heating and assembly. • Demonstrate how to create a flared joint, roll groove joint, Press connect joint and Push connect joint • Determine pipeline diameter is on the basis of the main operational parameters for the pipeline system
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"> • Pipe hangers and braces, Grinds and checks valves, pipe dies, power threading and cutting machines, reamers, tapping machines, Hammers, chisels, wrenches, Saws, Caulking tools, acetylene torches, and other, Installation, repair and removal of pipe tools, pipe fittings and valves 	

ELECTIVE 2 (CITY GAS DISTRIBUTION)

Module 4: Fitting, Welding Basics and Joining Process of Materials

Mapped to HYC/ N6105 v 3.0

Terminal Outcomes:

- Understand the pipe line layout drawings
- Mathematical skills with respect to plumbing
- Knowledge on different types of materials used in plumbing
- Identify the tools and tackles that are required to carry out the assigned job
- Pipe fitting operation

Duration: 60:00	Duration: 120:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basics of engineering drawing. • Explain the pipe chart, technical details etc. • Explain standard symbols used in pipe fitting and also different piping lines and valves used • Explain calculation of area, volume, angles, length and diameter of the pipe system using the metric system as well as English system. • Explain the property of different pipe material • Describe different packing materials, adhesives, gaskets, ropes etc. 	<ul style="list-style-type: none"> • Demonstrate the basics of engineering drawing • Illustrate pipe line system • Prepare bill of materials for doing the pipe line fabrication • Demonstrate how to Interpret hangers and support drawing • Calculate dimensions of the bend required in plumbing • Identify different materials/ equipment's used in pipe fitting in city gas distribution • Demonstrate how to identify different bends, elbows, shapes, joints etc. used to fabricate the pipes • Perform installation and checking the functions of different types of valves, gauges and other related accessories • Demonstrate how to use different hand tools and power tools in pipe fitting • Demonstrate how to repair and maintain high and low-pressure pipe systems used in manufacturing plants, oil refineries, chemical plants, breweries, power plants, food processing plants, paper mills, ships and factories • Demonstrate how to use the appropriate equipment, parts and accessories for the pipe fitting or assembling operation as per the standards. • Perform checking of the calibration date of all measuring equipment

	<ul style="list-style-type: none"> • Demonstrate how to prepare suitable datum to start the marking • Demonstrate how to apply application of marking medium to enhance clarity of the marking and proper visibility • Show appropriate method of marking out methods viz. direct marking using tapes and markers, set-outs of pipework using templates, producing set wires, set-outs of pipework onto floor • Demonstrate how to use a range of marking out equipment (e.g., rules, squares, scribes, Vernier instruments) Marking tools: rules/tapes, dividers/trammels, scribes, punches, scribing blocks, squares, protractor, permanent markers • Demonstrate how to mark out range of feature, datum lines, cutting guidelines, square and rectangular profiles, circular and radial profiles, angles, holes linearly positioned, boxed and on pitch circles • Demonstrate how to plan the pipe fitting activities before starting as per the drawing • Demonstrate how to cut the pipes to the appropriate lengths making allowances for bending using appropriate cutting operations and techniques • Demonstrate how to produce pipework bends using the appropriate tools and equipment for the types and sizes of pipe • Demonstrate how to assemble and secure the pipework as per job specifications using appropriate pipe assembly methods and techniques • Demonstrate how to produce pipework assemblies which combine a range of different pipe fittings viz straight couplings, elbows, tee pieces, flanges, reduction pieces, drain/bleeding devices and unions • Demonstrate how to dismantle pipework assemblies without damage to components and/or subassemblies Methods to dismantle: procedure for isolation and locking off a device/system; sequence of operations
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	<p>used to dismantle a device/system; proof marking, correct storage procedures for removed parts; release of pressure/force; extraction</p> <ul style="list-style-type: none"> • Demonstrate how to deal promptly and effectively with problems within their control and seek help and guidance from the relevant people if they have problems that they cannot resolve • Demonstrate how to keep the work area in a safe and tidy condition during completion of the manufacturing activities • Demonstrate how to return all tools and equipment to the correct location on completion of the fitting activities • Perform the necessary checks for correct pipework assembly and dimensional accuracy • Demonstrate how to use the appropriate measuring equipment for checking activities
<p>Classroom Aids:</p>	
<ul style="list-style-type: none"> • White / Black board and Projector • Digital Presentation • Computer/Laptop • Public Addressing System 	
<p>Tools, Equipment and Other Requirements</p>	
<ul style="list-style-type: none"> • Wrought iron, case iron, galvanized, copper, brass and other types of pipe of various sizes. • Pipe hangers and braces, Grinds and checks valves • Pipe dies, power threading and cutting machines, reamers, • Tapping machines, hammers, • Chisel, wrenches, Saws, Caulking tools, • Acetylene torches, and other tools and equipment involved in the installation, repair and removal of pipes, pipe fittings and valves. 	

Module 5: Electrofusion welding performance

Mapped to HYC/N6106 v 3.0

Terminal Outcomes:

- Procedures & Techniques for PE Pipeline Installations
- Electrofusion Principles
- Preparing the pipe
- Manual Welding Procedure
- Electrofusion Principles
- Physical properties

Duration: 54:00	Duration: 90:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain mole ploughing and fusion technology • describe the importance of heat distribution uniform over the length of the hot zone • explain the importance of protecting coils from damage prior to, during and after fusion • Define Electrofusion Control Units • Describe the method of tightening the pipe clamps to grip and re-round the pipes • Describe the maximum permitted outsider diameter mismatch for different pipe sizes and procedure to realign and re-trim. • Describe the importance of heat distribution which has to be uniform over the length of the hot zone • Describe the importance of cutting the pipe square and remove burrs • Explain that the joint must be left in the clamps for the cooling time specified on the fitting • Describe the importance of Standard dimensional ratio • Explain the effect of expansion and contraction 	<ul style="list-style-type: none"> • Conduct electrofusion welding • Perform wire position is accurately controlled during manufacture and during the subsequent fusion process • Demonstrate how to check the pipe for any abrasions or impact damage that may provide a detrimental effect to the performance of the coupler. • Demonstrate how to check that the pipe end is cut square • Perform marking of pipe end for the coupler’s insertion depth • Perform removal of scrap from surface of pipe. • Demonstrate how to use hand scraper to create a chamfer on the leading edge of the pipe and remove all swarf from the pipe. • Perform marking of the pipe end for the coupler’s insertion depth • Demonstrate how to check the scraper blade for its good condition • Demonstrate how to scrape off any remaining line markings using hand scrapper • Demonstrate how to place the pipes in the clamps with the ends against the trimming tool and with the pipe markings aligned • Demonstrate how to switch on the trimming tool and close the clamps slowly so that the pipe ends are moved against the trimming tool until continuous shavings are cut from each surface • Demonstrate how to keep trimming tool turning whilst opening the clamps to avoid steps on the trimmed surfaces.

	<ul style="list-style-type: none"> • Demonstrate how to remove the trimming tool taking care not to touch the trimmed ends • Perform removal of loose shavings from the machine and component ends • Check both the surfaces are completely planed, if not, repeat the trimming process • Demonstrate how to open and then close the clamps and note the drag pressure needed to move the pipes together using the hydraulic system • Demonstrate how to control wire position accurately during manufacture and subsequent fusion process • Demonstrate how to protect coils from damage prior to, during and post fusion activity • Perform wiping of loose dirt from pipe ends • Demonstrate how to place the centre of the electrofusion fitting alongside the pipe end and mark the pipe around the circumference • Demonstrate how to use the pipe end preparation tool, remove the entire surface of the pipe over the marked area • Demonstrate how to remove the fitting from its packaging and check that the bore of the fitting is clean and dry • Perform insertion of pipe ends into the fitting so that they are in contact with the centre stop • Demonstrate how to use of socket electrofusion fittings (couplers, reducers, elbows and tees) clamps • Perform removal of terminal protection caps from the terminal shrouds • Connect the output leads to the fitting terminals • Check the availability of sufficient fuel in the generator to complete the joint • Operate as per the instructions, which should have been thoroughly read and understood prior to any welding operations.
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Classroom Aids:

- White / Black board and Projector
- Digital Presentation

- Computer/Laptop
- Public Addressing System

Tools, Equipment and Other Requirements

GI Pipe Cutter, Copper pipe deburring tools, Pipe expander set, Pipe bending fixtures, Flaring set, Threading tools, Ratchet spanner, Valve fix, Bits and drive socket set, Pipe pliers, Chaim pipe vice, Spirit level, Steel rule, Try square, Plastic pipe cutter, Ratchet copper cutter, Pipe chamfering kit, Cartridge soldering torch, Drain cleaning spiral, Cast iron screw clamp\Flat chisel, Chisels with hand grip, Crow bar, Shovel, Lever bar, Scraper iron, Pick axe, Shop floor broom, Expander, Flaring tools, Portable power bender, Combination plier, Regular plier, Water pump plier, Pipe wrench, Adjustable wrench, Hammer type screw driver, Flat tip screw driver, C clamp, Double open-ended spanner, Ring spanner, Tubular box spanner, Socket set, Universal socket joint set, Claw hammer, Ball peen hammer, Soft mallet hammer, Hacksaw and frames, Different types of blades (HCS, HSS and Bi-metal), PTFE tape, Silicon paste, Saws, Portable drilling machine, Impact drill, Rotary hammer, Pullers, Portable tri-stand vice, Bench yoke vice, Thread cutting dies, Die stock, Ratchet Die, Pipe Wrench, Pipe Vice, Copper Pipe Cutter, Bending Machine, Consumables such as Flux, Teflon Tape, Solder Wire, Wire Jute, etc., Pipe restraint equipment, Fusion equipment

Module 6: Effective working in a team

Mapped to HYC/N6103 v 3.0

Terminal Outcomes:

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

Duration: 30:00	Duration: 45:00
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 other team members. • Demonstrate how to respond 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 7: Health, safety and security

Mapped to HYC/N6104 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: 30:00	Duration: 45:00
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 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 in Mechanical Engineering/ Petroleum Engineering	-	5		2	-	Experience in relevant Field

Trainer Certification	
Domain Certification	Platform Certification
Certified for the Job Role: “Pipe Fitter – (Oil & Gas / City Gas Distribution)”, mapped to QP: “HYC/Q 6103, v4.0”. 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 in Mechanical Engineering/ Petroleum Engineering	-	5	-	2	-	Experience in relevant Field

Assessor Certification	
Domain Certification	Platform Certification
Certified for the Job Role: “Pipe Fitter – (Oil & Gas / City Gas Distribution)”, mapped to QP: “HYC/Q 6103, v4.0”. 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 MEPSC 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 empaneled 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 empaneled 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 require 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 Mobilization of the candidates
- 2 Counselling & Pre-Screening
- 4 Candidate registration, batch creation and enrolment
- 5 Conductions 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 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 organization.
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 organizational specific knowledge that an individual need in order to perform to the required standard.
Organizational Context	Organizational context includes the way the organization 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. 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 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.

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
CGD	City Gas Distribution
FAQ	Frequently Asked Questions
BP	Business Partner
KYC	Know Your Consumer
FAB	Feature Advantage Benefit