Qualification Specification

ProQual Level 2 Award in Understanding the Fundamentals of Flow Measurement in Oil & Gas and Associated Industries

Contents

Introduction

The **Level 2 Award in Understanding the Fundamentals of Flow Measurement in Oil & Gas and Associated Industries** is an introductory award aimed at those working in the oil, gas and associated industries.

The Regulated Qualifications Framework (RQF) is the single framework for regulated qualifications, the regulatory body for this qualification is the Office of Qualifications and Examinations Regulation (Ofqual). This qualification is accredited onto the RQF.

Entry Requirements

There are no formal entry requirements for this qualification. Centres should carry out an **initial assessment** of candidate skills and knowledge to identify any gaps and help plan the assessment.

Qualification Profile

Qualification title	**ProQual Level 2 Award in Understanding the Fundamentals of Flow Measurement in Oil & Gas and Associated Industries**
Ofqual qualification number	610/1047/9
Level	2
Total Qualification Time	50 hours (50 GLH)
Assessment	Pass or fail Internally assessed and verified by centre staff External quality assurance by ProQual verifiers
Qualification start date	20/6/2022
Qualification end date	

Qualification Structure

Candidates must complete 1 Mandatory unit:

F/650/2916 Understanding the Fundamentals of Flow Measurement in Oil & Gas and Associated Industries

Centre Requirements

Centres must be approved to offer this qualification. If your centre is not approved please complete and submit form **ProQual Additional Qualification Approval Application**.

Staff
Staff delivering this qualification must be appropriately qualified and occupationally competent.

Assessors/Internal Quality Assurance
For each competence-based unit centres must be able to provide at least one assessor and one internal quality assurance verifier who are suitably qualified for the specific occupational area. Assessors and internal quality assurance verifiers for competence-based units or qualifications will normally need to hold appropriate assessor or quality assurance verifier qualifications, such as:

- ProQual Level 3 Certificate in Teaching, Training and Assessing
- Award in Assessing Competence in the Work Environment
- Award in Assessing Vocationally Related Achievement
- Certificate in Assessing Vocational Achievement
- Award in the Internal Quality Assurance of Assessment Processes and Practices
- Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practices

Support for Candidates

Materials produced by centres to support candidates should:

- enable them to track their achievements as they progress through the learning outcomes and assessment criteria;
- provide information on where ProQual's policies and procedures can be viewed;
- provide a means of enabling Internal and External Quality Assurance staff to authenticate evidence

Assessment

Candidates must demonstrate the level of knowledge and competence described in the unit. Assessment is the process of measuring a candidate's knowledge and understanding against the standards set in the qualification.

Each candidate is required to produce evidence which demonstrates their achievement of all of the learning outcomes and assessment criteria for each unit.

Evidence can include:
- assignments/projects/reports
- worksheets
- portfolio of evidence
- record of oral and/or written questioning

Learning outcomes set out what a candidate is expected to know, understand or be able to do.

Assessment criteria specify the standard a candidate must meet to show the learning outcome has been achieved.

Learning outcomes and assessment criteria for this qualification can be found from page 7 onwards.

Internal Quality Assurance

An internal quality assurance verifier confirms that assessment decisions made in centres are made by competent and qualified assessors, that they are the result of sound and fair assessment practice and that they are recorded accurately and appropriately.

Adjustments to Assessment

Adjustments to standard assessment arrangements are made on the individual needs of candidates. ProQual's Reasonable Adjustments Policy and Special Consideration Policy sets out the steps to follow when implementing reasonable adjustments and special considerations and the service that ProQual provides for some of these arrangements.

Centres should contact ProQual for further information or queries about the contents of the policy.

Results Enquiries and Appeals

All enquiries relating to assessment or other decisions should be dealt with by centres, with reference to ProQual's Enquiries and Appeals Procedures.

Certification

Candidates who demonstrate achievement of the qualification will be awarded a certificate giving the full qualification title -

> **ProQual Level 2 Award in Understanding the Fundamentals of Flow Measurement in Oil & Gas and Associated Industries**

Claiming certificates

Centres may claim certificates for candidates who have been registered with ProQual and who have successfully achieved the required number of credits for a qualification. All certificates will be issued to the centre for successful candidates.

Replacement certificates

If a replacement certificate is required a request must be made to ProQual in writing. Replacement certificates are labelled as such and are only provided when the claim has been authenticated. Refer to the Fee Schedule for details of charges for replacement certificates.

Learning Outcomes and Assessment Criteria

Unit F/650/2916
Understanding the fundamentals of Flow Measurement in Oil & Gas and Associated Industries

Learning Outcome: The learner will:	Assessment Criterion: The Learner can:
1 Understand fluid properties and the basics of fluid flow.	1.1 Explain the following properties of fluids • Density • Viscosity • Temperature • Surface tension • Capillarity
	1.2 Differentiate between density and relative density (specific gravity) of fluids.
	1.3 Differentiate between the thermodynamic properties and the physical properties of fluids
	1.4 Describe the effect of temperature and pressure on fluid viscosity for Oil and Gases
	1.5 Explain volumetric flow rate and how flow rate is calculated from volume and time
	1.6 Explain the differences between laminar and turbulent flow
	1.7 State the differences between static head, friction head, and the velocity head of fluids.
	1.8 Explain the effects of pipe size, pipe friction, and fluid viscosity on the measurement of fluid flow.
2 Understand the requirements for the selection of flowmeters	2.1 Explain the process, performance requirement and configuration requirements for custody transfer and process operations in flow metering end uses
	2.2 Describe the effects of the following factors on flowmeter selection: • Flowmeter categories and Types • Performance • End Use • Power Requirement • Safety • Rangeability • Materials of construction • Maintainability • Ease of Installation and Application • Associated costs of installation, operation and maintenance.
	2.3 Describe the different types of flowmeters and the specific fluid property requirement for their efficient service.
	2.4 Highlight key data requirement for flow meter selection
	2.5 Explain the performance metrics requirement for the specification and utilization of flowmeter

3	Know primary measuring devices for flow measurement	3.1	Explain the importance of the measurement of fluid flow rate
		3.2	Describe the methods for direct and indirect flow measurement
		3.3	Explain differential pressure and its importance to flow measurement
		3.4	List common primary measurement devices for fluid flow rate
		3.5	Describe orifice plates, their significant features and their benefits.
		3.6	State the factors that determine pipe dimensions of different primary flowmeters
4	Know secondary measuring devices for flow measurement	4.1	List common secondary measurement devices for fluid flow rate
		4.2	Explain the importance of the requirement for accuracy and precision in secondary measuring devices
		4.3	Highlight the differences between an inclined manometer and a U-tube manometer.
		4.4	Describe the calibration procedure for wet and dry manometers
5	Understand the operation of Variable-Area Instruments.	5.1	Describe the similarities and differences between rotameters and orifice instruments
		5.2	Explain how calibration, relative density, viscosity, and temperature affect rotameter readings
		5.3	Explain the effect of the following factors on the accuracy of flow rate measurement taken using a rotameter. • Temperature changes • Pressure changes • Relative density of gases
		5.4	Describe the operation of piston and vane-type flowmeters.
		5.5	Explain the usage of armored rotameters and orifice-plug flowmeters
6	Understand the operation of Positive-Displacement Meters.	6.1	Describe the principle of operation of Positive-Displacement Meters
		6.2	State the advantages and disadvantages of positive displacement meters.
		6.3	Describe the operation of reciprocating piston and the oscillating piston meters
		6.4	Identify the basic components of lobed impeller, oval and helical flowmeters.
		6.5	Describe the calibration process for positive-displacement meters
		6.6	Describe the common problems that affect flowmeters during use
7	Understand the operation of other flowmeters in summary	7.1	Describe the principle of operation and uniqueness of • Coriolis flowmeters • Ultrasonic flowmeters • Turbine flowmeters • Magnetic flowmeters

8	Know the installation and maintenance requirements for flow instruments.	8.1	State the general guidelines for a correct installation of flow measurement instruments
		8.2	Highlight procedures for a safe and thorough flow measurement instrument maintenance
		8.3	Explain the importance of accurate equipment calibration
		8.4	State the basic safety considerations for instrument servicing.

Assessment

There must be valid, authentic and sufficient for all the assessment criteria. However, one piece of evidence may be used to meet the requirements of more than one learning outcome or assessment criterion.

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