Qualification Specification for:

OCN NI Level 2 Award in Hydrogen Applications and Technologies

- **Qualification No: 610/1938/0**

Qualification Regulation Information

OCN NI Level 2 Award in Hydrogen Applications and Technologies

Qualification Number: 610/1938/0

Operational start date: 15 January 2023
Operational end date: 14 January 2028
Certification end date: 14 January 2030

Qualification operational start and end dates indicate the lifecycle of a regulated qualification. The operational end date is the last date by which learners can be registered on a qualification and the certification end date is the last date by which learners can claim their certificate.

All OCN NI regulated qualifications are published to the Register of Regulated Qualifications (**http://register.ofqual.gov.uk/**). This site shows the qualifications and awarding organisations regulated by CCEA Regulation and Ofqual.

OCN NI Contact Details

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Foreword

This document explains OCN NI's requirements for the delivery and assessment of the following regulated qualification:

→ **OCN NI Level 2 Award in Hydrogen Applications and Technologies**

This specification sets out:

- Qualification features
- Centre requirements for delivering and assessing the qualification
- The structure and content of the qualification
- Unit details
- Assessment requirements for the qualification
- OCN NI's quality assurance arrangements for the qualification
- Administration

OCN NI will notify centres in writing of any major changes to this specification. We will also publish changes on our website at **www.ocnni.org.uk**

This specification is provided online, so the version available on our website is the most up to date publication. It is important to note that copies of the specification that have been downloaded and printed may be different from this authoritative online version.

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About Regulation

OCN NI

Open College Network Northern Ireland (OCN NI) is a regulated Awarding Organisation based in Northern Ireland. OCN NI is regulated by CCEA Regulation to develop and award professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is regulated by Ofqual to award similar qualification types in England.

The Regulated Qualifications Framework: an overview

The Regulated Qualifications Framework (RQF) was introduced on 1st October 2015: the RQF provides a single framework for all regulated qualifications.

Qualification Level
The level indicates the difficulty and complexity of the knowledge and skills associated with any qualification. There are eight levels (Levels 1-8) supported by three 'entry' levels (Entry 1-3).

Qualification Size
Size refers to the estimated total amount of time it could typically take to study and be assessed for a qualification. Size is expressed in terms of Total Qualification Time (TQT), and the part of that time typically spent being taught or supervised, rather than studying alone, is known as Guided Learning Hours (GLH).

Qualification Features

Sector Subject Area

5.2 Building and construction

This qualification related to the following National Occupational Standards:

NOS - Hydrogen Technologies

Qualification Aim

The OCN NI Level 2 Award in Hydrogen Applications and Technologies qualification will provide the learner with the basic skills and knowledge related to hydrogen and energy generation, storage and distribution.

Qualification Objectives

The objectives of the OCN NI Level 2 Award in Hydrogen Applications and Technologies are to enable the learner to develop a basic understanding of the following:

- operating principles of hydrogen
- how to use hydrogen safely
- hydrogen fuel cells in transportation
- hydrogen generation, storage and distribution

Grading

Grading for this qualification is pass/fail.

Qualification Target Group

This qualification is targeted at learners who currently work or wish to work in the motor vehicle sector, plumbing sector and/or green energy sector.

Progression Opportunities

The OCN NI Level 2 Award in Hydrogen Applications and Technologies will allow learners to progress to other level 3 qualifications in hydrogen technology related areas and/or into employment in the motor vehicle sector, plumbing sector and/or green energy sector.

Entry Requirements

There are no specific entry requirements for this qualification however learners must be at least 16 years of age.

Qualification Support

A Qualification Support pack is available for OCN NI centres within the login area of the OCN NI website (https://www.ocnni.org.uk/my-account/), which includes additional support for teachers, eg planning and assessment templates, guides to best practice, etc.

Delivery Languages

This qualification is available in English only at this time. If you wish to offer this qualification in Welsh or Irish (Gaeilge) then please contact OCN NI who will review demand and provide as appropriate.

Centre Requirements for Delivering the Qualification

Centre Recognition and Qualification Approval

New and existing OCN NI recognised centres must apply for and be granted approval to deliver the qualification prior to the commencement of delivery.

Centre Staffing

Centres are required to have the following roles in place as a minimum, although a member of staff may hold more than one role*:

- Centre contact
- Programme Co-ordinator
- Tutor
- Assessor
- Internal Verifier

*Note: A person cannot be an internal verifier for their own assessments.

Tutors

Tutors delivering the qualification should be occupationally competent and qualified to at least one level higher than the qualification and have a minimum of one year's relevant experience.

Assessors

The qualification is assessed within the centre and is subject to OCN NI's quality assurance processes. Units are achieved through internally set, internally assessed, and internally verified evidence.

Assessors must:

- be occupationally competent to at least one level higher than the qualification
- have a minimum of one year's experience in the area they are assessing
- have direct or related relevant experience in assessment
- assess all assessment tasks and activities

Internal Verification

OCN NI qualifications must be scrutinised through the centre's internal quality assurance processes as part of the recognised centre agreement with OCN NI. The centre must appoint an experienced and trained centre internal verifier whose responsibility is to act as the internal quality monitor for the verification of the delivery and assessment of the qualifications.

The centre must agree a working model for internal verification with OCN NI prior to delivery of the qualifications.

Internal Verifiers must:

- have at least one year's occupational experience in the areas they are internally verifying
- attend OCN NI's internal verifier training if not already completed

Internal verifiers are required to:

- support tutors and assessors
- sample assessments according to the centre's sampling strategy
- ensure tasks are appropriate to the level being assessed
- maintain up-to-date records supporting the verification of assessment and learner achievement

Structure and Content

OCN NI Level 2 Award in Hydrogen Applications and Technologies

To achieve the qualification learners must complete 3 credits - both mandatory units plus one of the optional units.

Total Qualification Time (TQT) for this qualification: 30 hours
Guided Learning Hours (GLH) for this qualification: 24 hours

Unit Reference Number	OCN NI Unit Code	Unit Title	Credit Value	GLH	Level
Mandatory units					
T/650/4910	CBG140	Hydrogen Fundamentals	1	8	Two
Y/650/4911	CBG141	Using Hydrogen Safely	1	8	Two
Optional units					
A/650/4912	CBG142	Fuel Cells	1	8	Two
D/650/4913	CBG143	Applications of Hydrogen	1	8	Two

Unit details

Title	Hydrogen Fundamentals
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	8
OCN NI Unit Code	CBG140
Unit Reference No	T/650/4910
Unit purpose and aim(s): This unit will enable the learner to understand the fundamentals of hydrogen including its physical and chemical properties. The learner will be able to apply the characteristics of hydrogen to its use as a fuel source.	

Learning Outcomes	Assessment Criteria
1. Understand the physical and chemical properties of hydrogen and its uses as a fuel source.	1.1. Describe the physical and chemical properties of hydrogen and the potential benefits of using it as a fuel. 1.2. Summarise the current uses of hydrogen as a fuel source and potential barriers for its use.
2. Understand how and why the discovery of hydrogen was important and its uses throughout history.	2.1. Summarise how and why the discovery of hydrogen was important. 2.2. Describe using examples the use of hydrogen throughout history in both industry and research environments. 2.3. Describe some of the reactions which occur in industry when utilising hydrogen.
3. Know the technology for hydrogen generation.	3.1. Describe some of the generation methods of hydrogen. 3.2. Compare the benefits of renewable versus non-renewable hydrogen generation.
4. Recognise the behaviour and characteristics of hydrogen as a fuel source.	4.1. Summarise hydrogen's use as an energy vector. 4.2. Compare the use of hydrogen versus crude oil as a fuel source.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
E-assessment	The use of information technology to assess learners' work	Electronic portfolio E-tests

Title	Using Hydrogen Safely
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	8
OCN NI Unit Code	CBG141
Unit Reference No	Y/650/4911

Unit purpose and aim(s): This unit will enable the learner to understand the safety considerations when working with hydrogen including appropriate regulations and standards for handling hydrogen. The learner will also understand the logistics of transporting hydrogen and safety considerations when storing hydrogen.

Learning Outcomes	Assessment Criteria
1. Understand safety considerations when working with hydrogen.	1.1. Describe the importance of health and safety for hydrogen technologies. 1.2. Illustrate the health and safety steps required in a workshop when working with hydrogen including associated risks.
2. Be aware of the safe use and practices of handling gas cylinders.	2.1. Outline the purpose and use of a pressure cylinder. 2.2. Describe safe practices when using a gas cylinder including the risks associated with pressurised hydrogen. 2.3. Apply safe storage methods for gas cylinders.
3. Recognise the role and importance of standard practices in hydrogen technology development.	3.1. Identify safety risks and relevant warning signs. 3.2. List safety signs applicable to hydrogen. 3.3. Describe the role of standards, their importance and how they are applied in the workplace.
4. Understand the different stages of the hydrogen transport cycle.	4.1. Describe the components of the hydrogen transport cycle including its limitations and challenges. 4.2. Compare pipeline and truck methods of hydrogen transport.
5. Be aware of obstacles and challenges involved with hydrogen storage.	5.1. Identify risks associated with hydrogen storage. 5.2. Summarise challenges associated with hydrogen storage in vehicles. 5.3. Describe the process of underground hydrogen storage.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
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Title	Fuel Cells
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	8
OCN NI Unit Code	CBG142
Unit Reference No	A/650/4912
Unit purpose and aim(s): This unit will enable the learner to understand the background and history of fuel cells, the basic types of fuel cell, applications of fuel cells and fuel cell systems.	
Learning Outcomes	**Assessment Criteria**
1. Understand fuel cells and how hydrogen technology has emerged through history.	1.1. Define key terminology of fuel cells. 1.2. Illustrate how a fuel cell works. 1.3. Illustrate how hydrogen fuel works. 1.4. Describe how hydrogen technology has emerged through history.
2. Recognise different fuel cell technologies available for hydrogen generation.	2.1. Describe the composition of industrial fuels cells. 2.2. Compare the operational conditions of low temperature and high temperature fuel cells. 2.3. Compare the advantages and disadvantages of each industrial fuel cell type.
3. Understand the applications of fuel cell technology.	3.1. Classify the applications used by different fuel cells, based on the technology used. 3.2. Assess the considerations to be made when choosing a suitable fuel cell for a specific application. 3.3. Compare and contrast the applications of different types of fuel cells.
4. Understand how a fuel cell system operates.	4.1. Summarise how a fuel cell system is required to reduce carbon emissions. 4.2. Describe how and why manufacturers make hydrogen buses. 4.3. Assess the benefits of using fuel cell systems in more technologies both at home and in industry.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
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Title	Applications of Hydrogen
Level	Two
Credit Value	1
Guided Learning Hours (GLH)	8
OCN NI Unit Code	CBG143
Unit Reference No	D/650/4913
Unit purpose and aim(s): This unit will enable the learner to understand the current uses of hydrogen and applications of hydrogen for energy as an alternative fuel and high energy source.	

Learning Outcomes	Assessment Criteria
1. Understand the uses of hydrogen.	1.1. Describe current uses of hydrogen and how it may be used in the future. 1.2. Describe why hydrogen may be chosen as an energy source.
2. Know current applications of hydrogen.	2.1. Describe common applications of hydrogen. 2.2. Compare the advantages and disadvantages of hydrogen energy. 2.3. Summarise the use of a Combined Heat and Power (CHP) system.
3. Understand hydrogen as a fuel alternative.	3.1. Define what a fuel is. 3.2. Compare the use of current fuels with batteries and hydrogen. 3.3. Describe why energy diversification is necessary. 3.4. Describe the use of hydrogen as an energy vector.
4. Know how hydrogen can be used as a high energy source.	4.1. Describe the intermittent power generation of renewable energy sources. 4.2. Assess the use of hydrogen to support renewable systems. 4.3. Describe the fluctuation of power requirement. 4.4. Compare different hydrogen technologies for peak power generation.

Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

Assessment Method	Definition	Possible Content
Portfolio of evidence	A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes OR A collection of documents containing work that shows the learner's progression through the course	Learner notes/written work Learner log/diary Peer notes Record of observation Record of discussion
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Quality Assurance of Centre Performance

External Verification

All OCN NI recognised centres are subject to External Verification. External verification visits and monitoring activities will be conducted annually to confirm continued compliance with the conditions of recognition, review the centre's risk rating for the qualifications and to assure OCN NI of the maintenance of the integrity of the qualifications.

The External Verifier will review the delivery and assessment of the qualifications. This will include the review of a sample of assessment evidence and evidence of the internal verification of assessment and assessment decisions. This will form the basis of the EV report and will inform OCN NI's annual assessment of centre compliance and risk. The External Verifier is appointed by OCN NI.

Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and internal verification

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant assessor and internal verifier documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

Administration

Registration

A centre must register learners within 20 working days of commencement of a qualification.

Certification

Certificates will be issued to centres within 20 working days of receipt of correctly completed results marksheets. It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

Charges

OCN NI publishes all up to date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

Equality, Fairness and Inclusion

OCN NI has considered the requirements of equalities legislation in developing the specification for these qualifications. For further information and guidance relating to access to fair assessment and the OCN NI Reasonable Adjustments and Special Considerations policies, centres should refer to the OCN NI website.

Retention of Evidence

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

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