

REGULATED QUALIFICATION FRAMEWORK (RQF)

QUALIFICATION SPECIFICATION

- **LCL Awards Level 3 Award in Oxy-Fuel brazing within the RACHP sector. (BRZ)**

1. Area and scope of competence:

The qualification allows learners to continue to learn, develop and practise the skills required for employment within the RACHP sector, helping to reduce direct greenhouse gas emissions by limiting the release of fluorinated and other greenhouse gases and thereby reducing the indirect greenhouse gas emissions and improving the energy efficiency of stationary refrigeration equipment.

- The aim of this qualification is to provide the learner with the knowledge and skills to install, commission, de-commission, the pipework associated with RACHP equipment that contains refrigerants classified as fluorinated Greenhouse Gases as required by Regulation (EU) 2015/2067 and includes the safe use of all A1, CO2 high pressure systems, flammable refrigerants A2L, A2, A3 and is designed to meet the legal requirements of learners who work or intend to work with fluorinated gases.
- The safe use of “Oxy-Fuel” brazing equipment used for the installation, replacement or de-commissioning of RACHP equipment and components.

2. Qualification Framework:

The qualification comprises of 1 mandatory Units;

Unit Title	Unit Reference Number	Type of Unit	Level	Credit Rating
Understand and carry out “Oxy fuel” brazing techniques for RACHP systems	LCL-F3004	Knowledge & Practical	3	1
“Oxy fuel” Practical	LCL-F3004 Practical		-	-

Qualification Structure:

- **LCL Awards Level 3 Award in Oxy-Fuel brazing within the RACHP sector**
- **QAN - 603/4118/X**
- **QW - C00/3962/4**
- The Guided Learning Hours (GLH) are **6 hours**
- The Total Qualification Time (TQT) is **10 hours**
- The total credit required to achieve the qualification is **1**

3. Unit Grading Structure:

The grading for this qualification is **PASS** or **FAIL**

4. Unit specification:

Unit LCL-F3004 Understand and carry out “Oxy fuel” brazing techniques for RACHP systems

Learning Outcome 01: The learner will understand the working principles of RACHP Oxy-Fuel brazing processes.

The learner can:

1.1 Identify the working principles of all the following items of Oxy-Fuel brazing equipment:

- oxyfuel, compressed inert gas cylinders
- single and two stage regulators
- flashback arresters
- non-return valves
- brazing torches
- brazing nozzles
- oxyfuel hoses.

Learning Outcome 02: The learner will understand the legislative and organisational procedures related to RACHP Oxy-Fuel brazing processes.

The learner can:

2.1 Interpret and apply appropriate sources of health, safety information, regulations, codes of practice, industry recommendations and brazing specifications as it relates to:

- oxyfuel, compressed inert gases
- brazing equipment
- brazing processes
- materials handling

2.2 State appropriate persons whom it may be necessary to advise before undertaking brazing processes.

2.3 Define the actions that should be taken upon completion of brazing processes in terms of:

- quality control, check for leaks
- appropriate documentation

2.4 Explain how to perform a safe shut down of brazing equipment after completion of work operations.

Learning Outcome 03: The learner will understand how to complete preparation work for RACHP Oxy-Fuel brazing activities.

The learner can:

3.1 Explain how to complete a suitable risk assessment for the completion of brazing in the work location.

3.2 Specify the content of a method statement for the completion of brazing processes.

3.3 Identify the personal protective equipment appropriate to the work activity being carried out.

3.4 State the preparation requirements for:

- joining pipework by brazing
- identify and test for faults on brazed pipework sections

- commissioning method for brazed pipework sections
 - decommissioning method for brazed pipework sections
- 3.5 Identify pipework materials and fittings required to complete brazing processes and check them for defects.
- 3.6 Identify suitable tools and equipment required to carry out brazing processes.
- 3.7 State the procedures for checking and maintaining brazing tools and equipment.

Learning Outcome 04: The learner will be able to complete preparation work for RACHP Oxy-Fuel brazing activities.

The learner can:

- 4.1 Carry out a suitable risk assessment for the completion of brazing processes in the work location.
- 4.2 Understand and apply a method statement for brazing to ascertain requirements for:
- storage of materials and finished products
 - availability of service supplies
 - informing appropriate people at key stages in the brazing process
 - reporting problems
 - joining procedures
 - job instructions
 - permit to work
- 4.3 Select personal protective equipment appropriate to the work activity being carried out as per the risk assessment and method statement
- 4.4 Select pipe and materials for brazing processes and confirm that they are appropriate for the work activity
- 4.5 Select equipment for the completion of brazing processes and confirm that is appropriate for the work activity
- 4.6 Confirm that preparations have been completed in line with organisational procedures and method statement.

Learning Outcome 05: The learner will understand how to connect RACHP pipework with Oxy-Fuel brazing.

The learner can:

- 5.1 Identify and interpret engineering drawings and brazing specifications for the completion of brazing procedures.
- 5.2 State the methods for setting up and using brazing equipment, including:
- oxyfuel, compressed inert gas cylinders
 - single and two stage regulators
 - flashback arresters
 - non-return valves
 - brazing torches
 - brazing nozzles
 - oxy-fuel hoses.
- 5.3 Describe the basic principles for inspecting, testing and maintaining Oxy-Fuel brazing equipment.
- 5.4 Identify procedures for brazing the following refrigeration grade materials in accordance with industry standards:
- copper pipe, steel pipe
 - bends and elbows

- tees
- copper, brass and steel couplings
- In line components including capillary fittings
- manually formed sockets up to 7/8" OD pre-annealed copper pipe

5.5 Define the procedures for:

- checking brazed joints for compliance
- testing for defects.

Learning Outcome 06: The learner will be able to connect RACHP pipework by Oxy-Fuel brazing.
The learner can:

6.1 Complete checks to establish that:

- joint preparation
- brazing equipment
- Consumables and materials
- Confirm that the system complies with specifications and is fit for purpose

6.2 Select tools and equipment required to carry out RACHP Oxy-fuel brazing of pipework and confirm they are fit for purpose.

6.3 Set up brazing equipment in accordance with industry standards and regulations.

6.4 Braze the following pipework materials to conform with assessment specifications:

- copper pipe, steel pipe
- bends and elbows
- tees
- copper, brass and steel couplings
- In line components including capillary fittings
- manually formed sockets on pre-annealed copper pipe

6.5 Confirm that equipment has been safely isolated upon completion of brazing activities.

6.6 Conduct industry approved checks and tests on brazed joints to:

- confirm compliance with assessment specification
- identify any defects
- identify any corrective actions

6.7 Complete relevant documentation including brazed joint test reports.

5. National Occupational Standards

British Refrigeration Association specification.

6. RQF Descriptor Level 3.

Knowledge descriptor: *(the holder can)*

- *Has factual, procedural and theoretical knowledge and understanding of a subject or field of work to complete tasks and address problems that while well-defined, may be complex and non-routine.*
- *Can interpret and evaluate relevant information and ideas.*
- *Is aware of the nature of the area of study or work.*
- *Is aware of different perspectives or approaches within the area of study or work.*

Skills Descriptor *(the holder can)*

- *Identify, select and use appropriate cognitive and practical skills, methods and procedures to address problems that while well defined, may be complex and non-routine.*
- *Use appropriate investigation to inform actions.*
- *Review how effective methods and actions have been.*

7. Prior knowledge, skills or understanding which the learner is required to have before taking the qualification. (Pre-requisites)

None

8. Units which a learner must have completed before the qualification will be awarded and any optional routes.

Learners must complete the 1 mandatory unit before the qualification will be awarded. See Section 4.0 above.

9. Other requirements which a learner must have satisfied before the learner will be assessed or before the qualification will be awarded.

See Section 8.0 above.

10. The design and delivery of the examination associated with these units are based on the following documents:

BRA Jointing of copper pipework for refrigeration systems.

11. The criteria against which learners' level of attainment will be measured.

The Learning Outcomes and Assessment Criteria against which learners' level of attainment will be measured are detailed in Section 4 of this specification.

12. Planned exemptions

None.

13. Specimen assessment materials.

F-Gas workbook 517/2014. (ISBN 978-0-9927604-2-7)

14. Specified levels of attainment

The grading for this qualification is PASS or FAIL

15. Other information

SSAs: 4.1 Engineering

Review Date Dec 26