

# Refrigerant Containment

e-learning from  
REAL Zero



## An e-learning package

Students will gain access to supporting material, four interactive e-learning modules, four assessments and an IOR CPD Certificate for successful candidates. The course content includes:

- Good leak testing practice
- Identifying most common leaks
- Design standards and practices
- Service and maintenance contractor's responsibilities
- Equipment owner's responsibilities
- Carbon Emissions Cost Calculations
- F-Gas Records Analysis

## IOR CPD Certificate

Provided by the Institute of Refrigeration in UK, the leading professional association and learned body for individuals and a registered charity. The course has been independently verified by the Construction CPD Service



## Fee

Free until 1.9.11 (standard fee 100 € after 2.9.11)

## Register now at:

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## Minimising Leakage - Good Practices for Design, Installation and Commissioning



### By the end of this module you will understand:

- What aspects of system design effect refrigerant leak potential;
- The importance of good installation practices to minimising leakage;
- Why commissioning is a key part of the process.



### ... and be capable of:

- Specify systems which have minimum leak potential;
- Use standards to aid the design process;
- Design pipe work with minimum leak potential;
- Specify installation procedures w
- Specify commissioning procedur



### Prerequisites

- EN 378 (part 1 & 2)



### Study hours

5 to 10 hours

Sample screens from the four e-learning modules

Track progress, view illustration and check reference material on line

### Joints (1/2)

A German study has shown that 96% of leaks are from field assembled joints. To minimise this leakage joints should be brazed wherever possible.

Mechanical joints are appropriate for some connections, for example for filter driers in smaller systems which cannot easily be changed if they are brazed in and the inlet to thermostatic expansion valves. In these cases flare solder adaptors should be used (see photos which are of Danfoss components).

These provide the ease of component change of a flared connection, with the reliability of a brazed joint.



### Pipe design

On line assessments test your knowledge

### (RSE\_02) Real Skills Europe - Module 2

You are logged in as miniam rodway (Logout)

INET Learning > RSE\_02 > SCORM/AICCS > Reducing leakage through appropriate maintenance and service

Exit activity

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Heated diode

#### Reducing leakage through appropriate maintenance and service

##### Getting the best from an electronic leak detector (3/4)

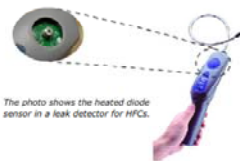
**Heated diode leak detectors** use a heated ceramic diode. The diode generates an electrical current when it comes into contact with halogenated gas (HFC and HCFC refrigerant) which the electronics convert into an alarm.

The heated diode sensor is affected by contamination, especially from moisture or oil and will need replacement after approximately 100 hours of operation.

This type of detector is much less likely to give false alarms.

The more expensive models have their own built in sensitivity check mode to ensure the sensing head is actually working.

##### Direct leak testing methods



The photo shows the heated diode sensor in a leak detector for HFCs.

Study when and where you want in your own time

### Also available:

#### Real Skills Europe Guidance Notes

GN1: Guide to good leak testing

GN2: Illustrated guide to 13 common leaks

GN3: Designing out leaks: design standards and practices

GN4: Leakage matters: the service and maintenance contractor's responsibility

GN5: Leakage matters: the equipment owner's responsibility

GN6: F-Gas Logs and Emissions Calculator

TMG – Training module guide: e-learning'

#### Software Tools

Carbon Emissions/Cost Calculator and F-Gas Logging Tool

Download free at:

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