

Automated Permanent Refrigerant Leak Detection Systems

Date added to ETL 2001 (Revised 2009).

1. Definition of Technology

Automated permanent refrigerant leak detection systems are products that are specifically designed to continuously monitor the atmosphere in the vicinity of refrigeration equipment and, in the event of detection of refrigerant, give an alarm.

2. Technology Description

An automated permanent refrigerant leak detection system continuously monitors the atmosphere in the vicinity of refrigeration equipment, and other components or pipework that contains refrigerant. The detection system must be permanently fixed in place at the site of the refrigeration equipment.

The ECA Scheme aims to encourage the purchase of products that give an early warning of refrigerant leaks, to allow their early repair, and thus improve the energy efficiency of the refrigeration system and reduce carbon emissions.

Investments in automated permanent refrigerant leak detectors can only qualify for Enhanced Capital Allowances if the specific product is named on the Energy Technology Product List. To be eligible for inclusion on the Energy Technology Product List, products must meet the eligibility criteria as set out below.

3. Eligibility Criteria

To be eligible, products must:

- Continuously monitor the refrigeration system for refrigerant leakage.
- Detect the presence of one or more refrigerants (which must be clearly named in the information supporting the application) and raise an audible alarm when a pre-set level of refrigerant is reached.
- Have fittings to allow permanent fixing to the wall or floor.
- Be able to operate in conditions of between 0 to 50oC and humidities of up to 90%.
- Meet the minimum level of performance set out in the performance criteria below.
- Be CE marked.

Automated permanent refrigerant leak detectors must be calibrated for each refrigerant named in the application. The product must be capable of detecting at least one of the following types of refrigerant: CFC, HCFC, HFC, HC or Carbon Dioxide (CO₂).

Automated permanent leak detection systems dedicated to ammonia detection are not eligible.

Performance criteria

To be eligible, products must:

- Generate an alarm signal when the level of refrigerant in the atmosphere exceeds the relevant threshold set out in Table 1 below, which varies with refrigerant type.
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- Have a measurement accuracy of +/- 20 ppm and be able to detect the presence of 10ppm of refrigerant in the atmosphere.

Table 1 - Performance thresholds for automated permanent refrigerant leak detection systems

Refrigerant	Alarm signal threshold (parts per million, ppm)
CFC, HCFC, HFC or HC	>=100
CO ₂	>=1,500

">=" means "greater than or equal to"

Required test procedures

The performance of the equipment must be tested at the concentrations stated in the performance criteria using calibration gases produced using methods that are traceable to national standards.

A calibration report must be supplied that demonstrates the product's sensitivity, accuracy and alarm setting using test gases.

The following test procedures can be used to demonstrate product performance:

- BS EN 14624:2005 "Performances of mobile leak detectors and of room controllers of halogenated refrigerants". (Section 11.2 - Efficiency tests of room controller).
- Gas Detector Selection and Calibration Guide, SIRA, 2005, ISBN 10: 1856092976 ISBN 13: 9781856092975

4. Scope of Claim

Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and some of the direct costs of installation. Clarity on the eligibility of direct costs is available from [HMRC](#).