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**COUNCIL DIRECTIVE**

**of 13 February 1978**

**on the performance of heat generators for space heating and the production of hot water in new or existing non-industrial buildings and on the insulation of heat and domestic hot-water distribution in new non-industrial buildings**

(78/170/EEC)

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**COUNCIL DIRECTIVE**  
**of 13 February 1978**

**on the performance of heat generators for space heating and the production of hot water in new or existing non-industrial buildings and on the insulation of heat and domestic hot-water distribution in new non-industrial buildings**

(78/170/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 103 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Whereas, in its resolution of 17 September 1974 concerning a new energy policy strategy for the Community <sup>(3)</sup>, the Council adopted the objective of a reduction of the rate of growth of internal consumption by measures for using energy rationally and economically without jeopardizing social and economic growth objectives;

Whereas, in its resolution of 17 December 1974 on a Community action programme on the rational utilization of energy <sup>(4)</sup>, the Council noted that, in its communications to the Council entitled 'Rational utilization of energy', the Commission had drawn up a Community action programme in this field;

Whereas any improvement in the rational use of energy is generally beneficial to the environment;

Whereas the sector concerned with heating systems in buildings lends itself to such measures;

Whereas recommendation 76/493/EEC <sup>(5)</sup>, related to the heating systems of existing buildings;

Whereas in the case of new heating systems it is necessary to achieve energy savings as soon as possible which will have an influence on total energy consumption as and when the systems are installed;

Whereas, to this end, a Directive should be adopted to provide a general framework within which the Member States would jointly explore energy saving methods designed to lessen the impact of the supply difficulties referred to in Article 103 (4) of the Treaty;

Whereas heat generators for space heating and the production of domestic hot water in new or existing non-industrial buildings should be inspected at the stage of manufacture or at the time of installation;

Whereas it should be made compulsory in new non-industrial buildings to provide, in economically justifiable conditions, thermal insulation both for generators and for the system whereby the heated fluids are distributed;

Whereas the Commission should receive regular information on the implementing measures adopted and the results obtained or anticipated;

Whereas the implementing measures adopted for this Directive should incorporate the measures adopted for the approximation of the laws of the Member States in the fields concerned by this Directive and should be directed towards facilitating the harmonization and standardization

<sup>(1)</sup> OJ No C 266, 7. 11. 1977, p. 55.

<sup>(2)</sup> OJ No C 287, 30. 11. 1977, p. 9.

<sup>(3)</sup> OJ No C 153, 9. 7. 1975, p. 1.

<sup>(4)</sup> OJ No C 153, 9. 7. 1975, p. 5.

<sup>(5)</sup> OJ No L 140, 28. 5. 1976, p. 12.

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work in progress or to be undertaken in these fields both at Community and international level,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. Member States shall take all necessary measures to ensure that all new heat generators for space heating and/or the production of hot water in new or existing non-industrial buildings comply with ►**M1** economically justifiable ◀ minimum performance requirements.

In the case of generators capable of using various forms of energy, the minimum performance requirements must relate to each form of energy used.

The term heat generator shall, in particular, mean hotwater boilers, steam boilers, air heaters, including components and especially the associated firing equipment appropriate to the type of fossil fuel used. Combined electricity/heat generators used in buildings shall also be regarded as heat generators; for these, the minimum performance requirements must relate to the full energy output.

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Electric heat generators with resistances, heatpumps and connections to a remote heating network shall be excluded.

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2. Member States shall ensure that compliance with the minimum performance requirements is assured by an inspection carried out either at the stage of manufacture of the generator or at the time of installation.

3. Heat generators subject to inspection at the time of manufacture cannot be offered for sale unless they comply with the minimum performance requirements; compliance with the relevant rules shall be certified by means of a data plate giving the following minimum details:

- manufacturer's identity,
- type of heat generator and its year of manufacture,
- heat rating in kW for every type of energy foreseen,
- type and characteristics of the energy or energies used,
- maximum temperature of the heating fluid,
- confirmation of inspection and identification of the body which carried it out,
- consumption of each heat generator when working to rated capacity.

The term 'heat rating' refers to the highest output that can be continuously supplied by the heat generator.

When a heat generator of a type subject to inspection at the time of manufacture is installed, the user shall be provided with written operating and maintenance instructions to enable him to obtain optimum efficiency. These instructions must have been inspected in the same way as the generator and include the main details of the findings of the inspection.

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3a. Heat generators subject to inspection at the time of installation which do not comply with minimum performance requirements shall be the subject of a decision by the competent administrative authority, which may even order that a generator be taken out of service; compliance with these requirements shall be certified by means of a data plate giving at least the details provided for in paragraph 3, with the exception of the last indent regarding the consumption of the generator when working to rated capacity.

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Indication of the maximum temperature of the heating fluid provided for in the fifth indent may be omitted if the temperature is specified in another document.

The inspecting body shall be required to provide the user with an inspection report in a form laid down by the Member State; this report must state, in particular, the details which must be given on the data plate provided for in the first subparagraph; It (SIC! it) may replace the plate.

When an inspection report states that a heat generator fails to comply with the minimum performance requirements, the inspecting body shall forward a copy of the report to the competent administrative authority. In the case of any heat generator coming from another Member State the competent administrative authority of the place where the inspection is carried out shall, with the owner's consent, provide the supplier, at the latter's request, with a copy of the inspection report.

3b. The inspection of heat generators at the time of installation shall be carried out in compliance with the code of practice annexed to this Directive. The provisions of the code shall constitute a minimum common basis for the inspection procedure throughout the Community. They may be supplemented, but not cancelled or contradicted, by provisions decided upon by the Member States. The provisions of the code shall not apply to solid-fuel fired heat generators or to condensing boilers.

4. In the case of heat generators subject to inspection at the time of installation, Member States may fix, instead of minimum performance requirements, maximum levels of energy loss in accordance with point 3.1 of the code of practice.

In such case, the provisions of paragraphs 3a and 3b shall apply.

**▼B***Article 2*

Member States shall take all necessary measures to ensure that economically justifiable insulation of the distribution and storage system is made compulsory in new non-industrial buildings, both as regards heating fluid and domestic hot water.

These provisions shall also apply to systems connected to a remote-heating network.

They shall also apply to new heat generators, including electric systems for heating water, in all new or existing non-industrial buildings.

*Article 3*

The date from which a heat generator may no longer be installed, unless it complies with the minimum performance requirements in accordance with Article 1, shall be 1 January 1981.

The measures referred to in Article 2 shall apply from 1 July 1980.

*Article 4*

The Member States shall duly inform the Commission of measures taken within the scope of this Directive and of the results obtained or anticipated from such measures.

*Article 5*

This Directive shall in no way prejudice measures based on Article 100 of the Treaty.

*Article 6*

This Directive is addressed to the Member States.

▼ **M1***ANNEX I***CODE OF PRACTICE FOR TESTING THE PERFORMANCE AT THE TIME OF INSTALLATION OF A LIQUID OR GASEOUS-FUEL FIRED HEAT GENERATOR USED IN A NON-INDUSTRIAL BUILDING FOR SPACE HEATING AND/OR THE PRODUCTION OF DOMESTIC HOT WATER****TEST PROCEDURE AND DETERMINATION OF LOSSES****1. GENERAL**

- 1.1. In the case of a heat generator capable of using various types of fuel (liquid or gaseous), the test shall be carried out with a fuel of each type which is in conformity with the manufacturer's specifications and available at the time of the test.
- 1.2. The exit for the flue-gases shall be provided with an aperture for the insertion of measuring probes and for smoke sampling.
- 1.3. The accuracy of each measurement must be such as to enable the overall accuracy of results specified by the Member States to be obtained.
- 1.4. The test will be carried out within a reasonable period of time and preferably at the nominal calorific output of the generator. Where this is impossible, the next-closest load should be used. If the generator is designed to operate at two or at several loads, a reduced load test may also be carried out at the request of the Member States. The loads used shall be assessed by a reliable method.
- 1.5. Performance, whether determined by the direct or indirect method, shall be expressed as a percentage on the basis of the net or gross calorific value of the fuel injected into the burner at the load assessed as indicated in 1.4.

**2. TEST CONDITIONS****2.1. Preparation of the generator**

- 2.1.1. It shall be the responsibility of the user, with the possible help of the manufacturer and/or the installer, to carry out before the test any cleaning, regulation and preparation of the generator which he considers necessary. The competent administrative authorities may make such cleaning compulsory.
- 2.1.2. The leak tightness of the generator and of its connection with the flue shall be checked.

**2.2. Identification of the generator**

- 2.2.1. Prior to the test, the inspecting body (hereinafter called 'the body') shall record all necessary data for identification of the generator, and at least the generator's features or specifications as stated for example on the data plate and/or in the instructions for assembly and operation given to the user with regard to manufacturer, make, year of manufacture and heat rating.
- 2.2.2. The body shall check that the necessary conditions are fulfilled for ensuring that no disturbance occurs during the test which is likely to adversely affect its validity. To this end it shall in particular require the user to produce the certificates - or provide any other means of proof - establishing that the safety checks laid down for the boiler-room and boiler-room premises have been carried out. This condition may be deemed to have been fulfilled in Member States where heat generators cannot be installed or put into operation without prior safety checks. If no such checks are required by national law, the body is entitled to reasonable assurance of safe working conditions before it carries out the check.

Should it fail to obtain satisfaction on the above points, the body may refuse to carry out the check; in that event it shall draw up an *ad hoc* report.

**2.3. Preliminary running**

- 2.3.1. Prior to the test, preliminary running may be carried out by the body in order to check and pre-set the functioning of the measuring equipment installed for checking purposes. The body shall ensure that all measurements are to the required degree of accuracy. More specifically, if the body decides to use certain measuring instruments forming part of the installation's normal equipment, it must check that these meet the desired conditions as regards standards of accuracy and reliability.
- 2.3.2. It shall be the responsibility of the user, assisted by the manufacturer and/or the installer, with the permission of the generator's owner, to carry out any final adjustments to the generator which may be necessary and to

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provide any additional explanations of the various instructions so as to create optimum test conditions.

2.4. **The test**

- 2.4.1. Testing operations shall be the responsibility of the body alone.
- 2.4.2. The test shall be carried out under steady-state conditions, with the fuel and combustion-air flow rates kept constant.
- 2.4.3. During the test the body shall take the compulsory measurements provided for under 3 and, if appropriate, the optional measurements provided for under 4. It shall draw up a report as provided in 5.

## 3. DETERMINATION OF LOSSES VIA FLUE GASES

## 3.1. Measurement of sensible-heat losses

Where performance is determined by the indirect method, the body shall be entitled to measure the percentage by volume by either carbon dioxide or oxygen in the flue gases.

It shall then apply a formula which in addition to the temperature difference between flue gases and combustion air incorporates adequate constants. The formula and constants must have been published by the Member State under whose jurisdiction the inspecting body comes or be laid down in a standard.

In the absence of official regulations or a standard, sensible-heat losses may be calculated from the characteristics of the fuel, its calorific value and the volume of excess air by using tables giving the specific heat of combustion gases such as those established by the 12th World Gas Congress (IGU/E/17/73).

The above procedure shall not apply to condensing boilers.

3.2. ► **C1** Measurement of flue-gas opacity ◀

The body shall carry out this measurement where the generator uses a liquid fuel or a liquefied petroleum gas (LPG) injected in liquid form; measurement shall be by means of an adequate instrument; the result shall be expressed as a conventional smoke number (0 to 9).

## 4. OTHER CHECKS (OPTIONAL)

4.1. **Traces of carbon monoxide**

The body may be empowered to check that generator flue-gases do not contain carbon monoxide in such quantities as to cast doubts on the results of measurements made in accordance with 3.1.

4.2. **Losses through the heat generator casing**

In those Member States where there are neither regulations nor technical rules or other provisions on the subject, the body may be authorized to assess casing losses from data provided by the manufacturer and/or from surface temperatures observed during the test.

## 5. TEST REPORT

After the test the body shall draw up a report in the form laid down by the Member State, giving the generator's main features, the measurements taken, the formula used to calculate losses and the heat generator's performance.