

# EL266. Industrial Gas Boilers

[EL266-2008/1/2008-137]



## 1. Scope

These criteria shall apply to industrial and building gas boilers using liquefied petroleum gas (LPG) and liquefied natural gas (LNG) as a fuel, and, particularly, to steam boilers with a maximum allowable working pressure of 0.98 MPa or below 0.98 MPa, ratings of 20 ton/h or below 20 ton/h and hot water boilers with 1162.79 kW or below 1162.79 kW.

## 2. Definitions

### 2.1

“Steam boiler” refers to boilers used for heating and boiling through generating and using vapor by heating water in the heat exchanger with gas combustion heat.

### 2.2

“Hot water boiler” refers to a boiler used for heating and boiling using warm water in the heat exchanger, heated by gas combustion heat.

### 2.3

“Thermal efficiency” shall be expressed as a proportion of the total heating value used for generating hot water and vapor, in relation to the total heating value provided by the fuel per hour, with 80% or above 80% of rated output power and rated voltage during operation.

### 2.4

“Consecutive noise” refers to the noise made when gas is burned, (soft noise, nozzle sound, resonant sound, etc), and to various kinds of noise generated by machinery, (rotation sound, sound generated by wind and water, etc).

### 2.5

“Condensate water” refers to water that loses thermal energy during the course wherein steam generated in the heat exchanger passes through plumbing or use facilities, and then, returns to water supply pipes.

2.6.

“Exhaust heat recovery equipment” refers to apparatus for recycling exhaust heat by recovering waste gas heat or condensate water, and heating water or preheating air for combustion.

### 3. Certification Criteria

#### 3.1 Environmental Criteria

3.1.1

At the time of use, with respect to energy consumption, the thermal efficiency of the product shall satisfy the following criteria.

Section	Steam boiler	Hot water boiler
Exhaust heat recovery equipment assembled	≥86%	≥84% (heating)
Exhaust heat recovery equipment not assembled	≥90%	≥88% (heating)

3.1.2

With respect to releasing pollutants during use, the product shall meet the following requirements:

3.1.2.1. The density of nitrogen oxide and carbon monoxide emitted by the product shall satisfy the following requirements:

NOx (ppm)	CO (ppm)	Corrected to O <sub>2</sub> (%)
≤40	≤40	4

3.1.2.2. The product with a structure executing waste gas condensation shall contain apparatus that recovers and neutralizes condensate water, where the condensate water of the final outlet shall range from pH 5.8 or above pH 5.8 to 8.6 or below pH 8.6.

3.1.3

With respect to noise reduction when the product is in use, the consecutive noise levels shall adhere to the following criteria:

Section		Noise [dB]
Steam boiler	Main body	≤80
	Air blower of 3 ton/h or below 3 ton/h	
	Air blower exceeding 3 ton/h	≤90
Hot water boiler	Main body	≤80

	Air blower	
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3.1.4

A post-service system for replaceable part supply and after-use services shall be established in preparation for any breakdown of, or damage to, the product.

**3.2 Quality Criteria**

The product quality should satisfy the certification criteria of the “Regulations regarding the Promotion of High-efficiency Energy Equipment Distribution” in accordance with the Energy Use Rationalization Act.

**3.3 Information for Consumers**

The reasons for certification, (energy reduction, air pollutant reduction, noise reduction), shall be exhibited on the product during use.

**4. Test Methods**

Certification criteria		Test method and verification method	
Environmental Criteria	3.1.1	Test reports of authorized institutions pursuant to the test method defined in “provisions concerning supply promotion of high efficiency energy equipment” in accordance with [Energy Use Rationalization Act] or equivalent certificates	
	3.1.2	3.1.2.1	submitted documents or Test reports of authorized institutions pursuant to the inspection methods for certifying low NOx burners of a ‘clean air campaign with small- and medium-sized businesses’
		3.1.2.2	Verification of submitted documents and Test reports of authorized institutions pursuant to KS M 0011 (measurement method for the determination of the pH of aqueous solutions)
	3.1.3	Test reports conducted by an accredited testing laboratory in accordance with 4.1 and 4.2	
	3.1.4	Verification of submitted documents	
Quality Criteria		Test reports of authorized institutions pursuant to the test methods defined in “inspection and inspection	

	exemption criterion of heat-using equipment” of the [Energy Use Rationalization Act] and the “facility criterion and technology criterion of gas supplies manufacturing business” of the [Safety Control and Business Regulation of Liquefied Petroleum Gas Act]
Consumer Information	Verification of submitted documents

## 4.1 General Matters

### 4.1.1

Make it a principle to take one test sample per product under application.

### 4.1.2

Environmental labeling certification institutions shall conduct random sampling of test samples among the products commercially available or kept in production locations. However, where it is impossible to collect the samples at random, a sample provided by a manufacturer may be used as a test sample.

### 4.1.3

Test result shall be numerically set according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

## 4.2. Noise (sound pressure level) measuring method

### 4.2.1.

In regard to noise tests, noise shall be measured with the following requirements according to KS I ISO 1996-1 (Acoustics - Description, measurement and assessment of acoustics - Description, measurement and assessment of environment noise - Part 1: Basic quantities and assessment procedures). Sound level meters defined in KS C 1502 (sound level meters) shall be used and measurements shall be based on weighting network A characteristics.

### 4.2.2.

Products shall be established according to a general establishment condition and measurements shall be executed in safe conditions with an operating level of 80% or above 80% in terms of rating and rated pressure.

#### 4.2.3.

The noise of the main body of a boiler shall be measured three times with an indication sound level meter at a height of 1.2 m from the bottom surface of a position from a distance of 1.5 m, from both sides of the product and the central portion of the rear surface of the product. However, the surface on which an air blower exists shall not be measured.

#### 4.2.4.

The noises of the air blower shall be measured three times with an indication sound level meter at a position 1.5 m away from the front side of the air blower.

#### 4.2.5.

The noise measured at each position shall be indicated by the value of the greatest direction of noise from the average of the measured values. However, where, due to extreme changes in noise levels, a single value cannot be easily obtained, equivalent noise may be used. In order to measure the equivalent noise, if required, operating time may be changed within a range that does not change the characteristics of the products.

### **5. Reasons for Certification:**

“Energy- Saving, Less air pollutants, Less noise”

## **Common Criteria, Notice No. 2012-36, the Ministry of Environment**

1. Eco-label products must follow the following provisions with regard to the proper treatment of environmental pollution substances, such as air and water wastes and noxious chemical substances emitted in the process of manufacturing or service operation.

A. When first applying for certification, the product manufacturer should observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located for a period of one year prior to the date of application. Any case of violation of the penalty clause will be verified by confirming documents involved during a period of one year to the date of application. Regarding any violation not related to the penalty clause, confirmation will be made on the completion of appropriate measures.

B. A person who has received a certification of eco-labeling shall observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located during the period of certification. However, regarding any violation besides a penalty, confirmation will be made on the completion of appropriate measures.

2. As a general rule, information for consumers shall be indicated on the surface of the product in such a way not to be easily erased. However, in case that indication on the surface of the product is impossible or undesirable, it can be indicated on the appropriate part such as product packaging, product guidebook and user's manual that consumers can recognize. However, the service information should be indicated inside and outside of the place of service operation. In case that indication inside and outside of the place of service operation is impossible or undesirable, it can be indicated on the appropriate part such as an agreement, letter of delivery, letter of guarantee, and PR materials that consumers can recognize.

3. In order to establish fair trade and to protect consumer, the applicant for eco-label and the holder of eco-label license shall observe the Act on the Fairness of

Indication and Advertisement with respect to the environmental aspects of the product.

4. For Various standards referred in the certification criteria by target product, the latest revised edition applies at the date of application, if not specified otherwise.

5. In applying the quality related criteria for each target product, if no standard is available that can be applied as the quality criteria, the president of Korea Environmental Industry & Technology Institute (KEITI) (hereafter referred to as "president of KEITI") may establish and operate the quality criteria for the product involved after review by a competent committee.