

EL263. Heat Recovery Ventilators

[EL263-2004/2/2009-72]



1. Scope

The criteria shall apply the heat recovery ventilator with heat exchanger and fan inside of the product for preventing heat loss when ventilating, and the product with less than 600V of the rated voltage and 2,000 m^3/h of the rated air flow.

2. Definitions

2.1

“Heat recovery ventilator” refers to the ventilator that is maintaining the room temperature by recovering heat which moves outside during ventilating.

2.2

“Heat exchanger” refers to the machine that delivers heat of indoor air which is ventilated outside by recovering and storing to the intake outdoor air. It can be divided into rotor type, plate type, heat pipe type, capillary fan type, etc., by its way of heat exchange.

2.3

“Dust collecting rate” refers to the rate of dust density for both inflow and outflow against the outflow dust density which is obtained when the machine is worked at the rated air volume.

2.4

“Dust maintenance volume” refers to the total mass of dust per rated wind volume collected by heat recovery ventilator until the dust collecting rate is reduced by 85% of the maximum dust collecting rate.

3. Certification criteria

3.1 Environmental criteria

3.1.1

With respect to the quality of indoor air in use, the product shall satisfy following criteria.

3.1.1.1

Dust collecting rate shall be more than 70%.

3.1.1.2

Dust maintenance volume shall be more than $0.1\text{g}\cdot\text{h}/\text{m}^3$.

3.1.1.3

The structure of the product shall be easy to clean the heat exchange material and replace the filter.

3.1.2

With respect to the energy consumption and noise generation in use, the product shall satisfy following criteria.

3.1.2.1

The product efficiency shall satisfy the 「High efficiency energy technology equipment standards」 in accordance with the provision 13 of the 「Energy use rationalizing law」.

3.1.2.2

The product noise shall satisfy the following.

Air Volume [m^3/h]	≤ 500	> 500
Noise level [dB(A)]	≤ 40	≤ 50

3.1.3

With respect to extending product life expectancy, breakage, and trouble, the part supply and after service system shall be built to replace the part easily.

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 Consumer Information

3.3.1

Indication on the items that the product contributes to the reasons for certification (energy saving, less noise, indoor dust elimination) in its consumption stage

3.3.2

Particulars about heat exchanger, cleansing and replace cycle according to filter’s material

4. Test Methods

Certification Criteria			Test and Verification Methods
Environmental Criteria	3.1.1	3.1.1.1	Test report by an accredited testing laboratory in accordance with Test Methods 4.1 and 4.2.
		3.1.1.2	Test report by an accredited testing laboratory in accordance with Test Methods 4.1 and 4.3.
		3.1.1.3	Verification of submitted documents
	3.1.2	3.1.2.1	Test report by an accredited testing laboratory in accordance with the 「High efficiency energy technology equipment standards」 or certificate of equivalent
		3.1.2.2	Test report by an accredited testing laboratory in accordance with KS B 6879 (Waste heat recovery ventilator)
	3.1.3	Verification of submitted documents	
Quality Criteria			Test report by an accredited testing laboratory in accordance with the safety standards for electric appliances or KS B 6879 (Waste heat recovery ventilator)
Information for Customers			Verification of submitted documents

4.1 General Matters

4.1.1

One test sample shall be required for each applied product.

4.1.2

Test samples shall be collected at random by a certification institute from products in market or those in storage at the production site.

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 Measuring Method of the Dust Collecting Rate

4.2.1

The dust collecting rate shall be represented by the twice of test result on an average.

4.2.2

Nearly attach the test channel in the air inlet and outlet of the heat recovery ventilator, and follow next steps.

4.2.3

Let the heat recovery ventilator work with rated voltage, and have the rated wind volume of air flow with the supplementary fan.

4.2.4

Provide dust density $1.5 \pm 0.5 \text{ mg/m}^3$ of the class 11 powder defined in KS A 0090 (Powder and particle for test) into the test channel of the air inlet with the test powder supply machine.

4.2.5

Aspirate the air inside of test channel through the filter paper holder connected with the sucker installed in the test channel for both inlet and outlet, according to the following conditions.

4.2.5.1

Attach the sucker over 1/2 of the test channel length away from the air inlet and outlet of the heat recovery ventilator, in the center of the channel in parallel with the air flow.

4.2.5.2

Aspirating speed shall take the range of $\pm 30\%$ against the passing wind speed of the air inlet and outlet test channel at the sucker attached spot.

4.2.5.3

Aspiration shall be conducted at the air inlet and outlet part. However, when it is necessary to moderate the aspirating time of the air inlet part, for the filter paper intensity to be in the range defined in 4.2.6, continuously aspirate within the aspirating time of the air outlet part.

4.2.6

The filter paper that is used for holder shall be the same to the class 5 A defined in KS M 7602 [Filter paper (for chemical analysis)] or the one with performance surpassing the previous product, and calculate the intensity of the filter paper as followings.

4.2.6.1

With respect to the intensity, make permeating volume of the filter paper shortly before the aspiration to 'I₀', and permeating volume of the light shortly after the termination to 'I'.

$$\text{Intensity} = \log_{10} \left(\frac{I_0}{I} \right)$$

4.2.6.2

The measured intensity shall be the range of 0.05 ~ 0.2.

4.2.7

The dust collecting rate shall be calculated with following formula.

$$\eta = \left[1 - \frac{D_2/q_2}{D_1/q_1} \right] \times 100$$

Here, η : dust collecting rate [%]

D_1 : filter paper intensity of the air inlet part

D_2 : filter paper intensity of the air outlet part

q_1 : sum of aspiration of the air inlet part

q_2 : sum of aspiration of the air outlet part

4.3 Measuring Method of the Dust Maintenance Volume

4.3.1

Continuously provide the class 15 powder in KS A 0090 with the density of $100 \pm 10 \text{ mg/m}^3$ at the rated air volume by using dust collecting rate measuring equipment in 4.2.

4.3.2

Measure the collected dust volume until the air volume of the collecting part becomes 80% of the rated air volume, or until the dust collecting rate becomes less than 85% of the maximum dust collecting rate, and calculate as following formula.

4.3.3

The dust maintenance volume shall be calculated with following formula.

$$W = W_2 - W_1$$

Herein, W : dust maintenance volume [g]

W_1 : weight of dust collecting part before the test [g]

W_2 : weight of dust collecting part after the test [g]

5. Reasons for Certification

“Energy-saving, Low noise, Indoor dust removal”

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.