

**NB: Unofficial translation, legally binding only in Finnish and Swedish**

**4/13**

**Ministry of the Environment degree**

**on improving the energy performance of buildings undergoing renovation or alternation**

Issued in Helsinki on 27 february 2013

In accordance with the decision of the Ministry of the Environment, it shall be decreed according to the Land Use and Building Act (132/1999) section 117 g:

Section 1

*Scope of application*

This Decree applies to buildings in which energy is used for lighting, for heating of spaces and ventilation, or for cooling to maintain the appropriate indoor climate conditions, and in which a building or action permit is required for renovation or alteration under the Land Use and Building Act (132/1999), or whose intended use is changed.

The buildings and the categories of buildings specified in section 117 g(2) of the Land Use and Building Act to which the obligation to improve energy performance does not apply are:

- 1) buildings to the extent to which they are protected, and where observing the provisions would change the protected parts in a way that cannot be considered acceptable;
- 2) industrial buildings in which the amount of thermal energy generated by the production process is so high that no or only a minor amount of other heating energy is required to achieve the desired room temperature, or industrial buildings in which a high amount of thermal insulation would cause a harmful increase in the room temperature outside the heating season or essentially increase the energy consumption for cooling;
- 3) buildings with a maximum area of 50 m<sup>2</sup>;
- 4) non-residential agricultural buildings with low energy consumption;
- 5) greenhouses, emergency shelters or other buildings, whose use for their original intended use would become unreasonably difficult if the requirements on the improvement of energy performance laid down in this Decree were applied ;
- 6) holiday homes for which no heating system intended for year-round use has been planned;
- 7) movable buildings, intended to remain in the same location for a limited time, whose intended use is not essentially changed in connection with relocation;
- 8) buildings that are intended for worship and religious activities.

## Section 2

### *Planning the improvement of energy performance*

The Ministry of the Environment Decree on the Energy Performance of Buildings (“Ympäristöministeriön asetus rakennusten energiatehokkuudesta”, National Building Code of Finland 2/11) is applied to the energy calculation related to renovation or alteration work or to a change in the intended use of a building, in the selection of the calculation tool and to the presentation of results.

If the intended use of the building is not changed, the calculation of room temperature in summer may be omitted if it can be otherwise ensured that the building properties are not impaired as a result of the renovation or alteration.

The party engaging in the renovation or alteration project must, in connection with the planning required for the appropriate permit, present the measures intended to improve the energy performance of the building by building element, system or for the entire building in accordance with the extent of the project and the selected option.

If the properties connected to the intended use of the building are improved, the energy consumption in the building may increase by an amount calculated from the improvement in the properties.

## Section 3

### *Calculation principles*

If measures that improve the energy performance of a building and that concern building elements or technical systems are fully or partially omitted, this can be compensated for by carrying out other planned measures so that the required level is exceeded.

Renewable energy jointly produced and used by buildings in close proximity to each other can be counted as a gain to the extent the energy is used in the buildings participating in the energy production.

The main heating system of the building must be designed at least to the calculated maximum heating load. It is not necessary to include the amount of domestic hot water in the heating load.

The adoption of passive means to prevent overheating in summer can be counted as a gain when improvements in the energy performance of the building are planned.

## Section 4

### *Requirements for specific building elements*

When the improvement in the energy performance of a building is planned and carried out by means of the building element, the following requirements must be observed:

- 1) External walls: The original U-value x 0.5, but not higher than 0.17 W/(m<sup>2</sup> K). If the intended use of the building is changed, the original U-value x 0.5, however 0.60 W/(m<sup>2</sup> K) or better.
- 2) Roofs: The original U-value x 0.5, but not higher than 0.09 W/(m<sup>2</sup> K). If the intended use of the building is changed, the original U-value x 0.5, however 0.60 W/(m<sup>2</sup> K) or better.
- 3) Floors: The energy performance is improved as far as possible.
- 4) The U-value of new windows and external doors must be 1.0 W/(m<sup>2</sup> K) or better. If old windows and external doors are repaired, the thermal resistance must be improved where possible.

## Section 5

### *Requirements for technical systems*

When the technical systems of a building are renovated, modernised or replaced, the following requirements must be complied with;

- 1) The quantity of heat that must be recovered from the exhaust ventilation system of the building must correspond to at least 45% of the quantity of heat required for the heating of the ventilation, i.e. the minimum annual efficiency of heat recovery must be at least 45%.
- 2) The maximum specific fan power of a mechanical supply and exhaust air system is 2.0 kW/(m<sup>3</sup>/s).
- 3) The maximum specific fan power of a mechanical exhaust air system is 1.0 kW/(m<sup>3</sup>/s).
- 4) The maximum specific fan power of an air-conditioning system is 2.5 kW/(m<sup>3</sup>/s).
- 5) The efficiency of heating systems must be improved where possible when the related equipment and systems are renewed.
- 6) The provisions on new buildings apply to the renewal of water and/or sewage systems.

## Section 6

### *Energy use requirements by building category*

When the improvement in the energy performance of a building is planned and carried out by reducing the energy consumption based on a typical use of the building, the following requirements for energy consumption specified by building category must be complied with:

- 1) Single-family houses and terraced and other attached houses  $\leq 180$  kWh/m<sup>2</sup>
- 2) Blocks of flats  $\leq 130$  kWh/m<sup>2</sup>
- 3) Office buildings  $\leq 145$  kWh/m<sup>2</sup>
- 4) Educational buildings  $\leq 150$  kWh/m<sup>2</sup>
- 5) Day-care centres  $\leq 150$  kWh/m<sup>2</sup>
- 6) Commercial buildings  $\leq 180$  kWh/m<sup>2</sup>
- 7) Buildings for tourist accommodation  $\leq 180$  kWh/m<sup>2</sup>
- 8) Sports halls other than ice rinks and swimming pools  $\leq 170$  kWh/m<sup>2</sup>
- 9) Hospitals  $\leq 370$  kWh/m<sup>2</sup>

## Section 7

### *E-value requirement by building category*

When the improvement in the energy performance of a building is planned and carried out by reducing the energy consumption based on a typical use of the building (E-value, kWh/m<sup>2</sup>), the specific energy consumption of the building by building category must be calculated in accordance with the following equations:

- 1) Single-family houses and terraced and other attached houses: E required  $\leq 0.8 \times E$  calculated
- 2) Blocks of flats: E required  $\leq 0.85 \times E$  calculated
- 3) Office buildings: E required  $\leq 0.7 \times E$  calculated
- 4) Educational buildings: E required  $\leq 0.8 \times E$  calculated
- 5) Day-care centres: E required  $\leq 0.8 \times E$  calculated
- 6) Commercial buildings: E required  $\leq 0.7 \times E$  calculated
- 7) Buildings for tourist accommodation: E required  $\leq 0.7 \times E$  calculated

8) Sports halls other than ice rinks and swimming pools: E required  $\leq 0.8 \times E$  calculated

9) Hospitals: E required  $\leq 0.8 \times E$  calculated

## Section 8

### *Options for improving the energy performance*

A party engaging in a building project subject to a permit must select one of the following options for improving the energy performance of the building elements or of the building:

- 1) with regard to the renovation, modernisation and replacement of building elements, the building meets the requirements for specific building elements laid down in section 4;
- 2) the energy consumption of the building meets the requirements laid down in section 6;
- 3) the overall energy consumption of the building meets the requirements laid down in section 7.

The requirements laid down in section 5 are applied in the renovation, modernisation and replacement of the technical systems of the building regardless of the option selected for a building element or building referred to in subsection 1.

## Section 9

### *Improving energy performance as a combined effect of multiple renovations*

If the party engaging in the building project has selected the option referred to in Section 8(1)(2) or (3), a plan to improve the energy performance of the building as a combined effect of multiple renovations must be prepared. The plan must be submitted to the building supervision authority in connection with the permit application. The planned measures can be implemented in stages in several separate renovation projects. The plan can be amended at later stages as necessary.

The party engaging in the building project must demonstrate the total impact of the measures for improving the energy performance of the building in connection with the planning of the renovations that will have a combined effect on the improvement in energy performance.

A separate assessment of the total impact is not needed if the requirements for specific building elements laid down in section 4 and the requirements for technical systems laid down in section 5 are explicitly followed in the building project, or if the impact of the improvements in the energy performance of the building, carried out in connection with renovation work subject to a permit, is low or negligible.

If the owner of the building improves the energy performance of the building in connection with a planned service, renovation or maintenance procedure that is not subject to a permit, the impact of such measures can be taken into account in connection with a permit application for a project to be carried out later.

## Section 10

### *Building envelope and technical systems*

In connection with measures to improve the energy performance of the building envelope, the party engaging in the building project must ensure that the building envelope and the joints between all windows or external doors and the surrounding structures are sealed so that the thermal insulation layers are protected from the detrimental effects of air flow on the thermal insulation properties.

When planning or implementing a renovation or replacement project concerning the building envelope or technical systems, the measures must be selected so as to ensure the correct functioning of the thermal and acoustic insulation, moisture barriers and fire insulation of the structures.

## Section 11

### *Ventilation*

The Ministry of the Environment Decree on the indoor climate and ventilation of buildings (National Building Code of Finland 1/11) is applied to the planning of the ventilation system.

When calculating the energy consumption or overall energy consumption in residential buildings, the minimum ventilation rate to be used in the calculation is 0.5 l/h, if the designed rate is not higher. In the calculations for other than residential buildings, the ventilation rate specified for new buildings must be used, if the designed rate is not higher.

In the plans concerning the measures to improve the energy performance of the building, the party engaging in the building project must, where appropriate, demonstrate how the correct operation of the ventilation system and a sufficient supply of supply air are ensured, if the building is equipped with a mechanical exhaust air system or natural ventilation system.

If the energy performance of the building is improved by adopting apartment-specific, mechanical supply and exhaust air systems equipped with heat recovery, the systems must be designed and installed so that air intake or exhaust at an external wall does not cause adverse health effects in other apartments. Otherwise, the provisions laid down in section 10 of this Decree are applied.

## Section 12

### *Ensuring the operation of technical systems*

The party engaging in the building project must ensure, in a verifiable manner, the correct and energy-efficient operation of the heating and ventilation system and take the necessary measures to balance and adjust the technical building systems in connection with the adding of insulation or improvement of air tightness concerning the building envelope or a significant part thereof, or in connection with the replacement of windows or improvement of their energy performance, or after carrying out measures that improve ventilation.

Proof that the measures have been taken must be presented to the building supervision authority during the final inspection of the work that is subject to a permit.

## Section 13

### *Proof of improvement in energy performance Adjustments for technical systems*

The improvement in the energy performance of windows, external doors and the building envelope can be shown by thermal transmittance that complies with, or is lower than, that specified in section 4. The improvement in the energy performance of technical systems can be shown by compliance with the requirements laid down in section 5 or by making the systems more energy efficient.

The plan concerning the total impact of the alteration measures is used to show that the measures to improve the energy performance that are taken in connection with alterations and renovations, when viewed as a whole, improve the energy performance of the building based on a typical use so that it complies, at minimum, with the performance requirements laid down in section 6 or 7.

If the party engaging in the building project wants to have some previously carried out voluntary measures that comply with the provisions laid down in section 9 and that improve the energy performance of the building based on a typical use to be considered as a gain, the party must submit the necessary proof of the measures taken to the building supervision authority in connection with the permit application.

Section 14

those occupied by the public authorities only from 1  
September 2013. \_\_\_\_\_

*Entry into force*

This Decree enters into force on 1 June 2013.  
However, it shall be applied to buildings other than

In Helsinki, 27 february 2013

Minister of Housing and Communications *Krista Kiuru*

Senior Engineer Jyrki Kauppinen