

## MINISTRY OF CONSTRUCTION AND SPATIAL PLANNING

On the basis of Article 17, Paragraph 2 and Article 20, Paragraph 3 of the Law on Construction (Official Gazette", no. 153/13, 20/17), the Minister of construction and spatial planning is bringing the

### **TECHNICAL REGULATION ON AMENDMENTS TO THE TECHNICAL REGULATIONS ON THE RATIONAL USE OF ENERGY AND THERMAL PROTECTION IN BUILDINGS**

#### Article 1

Throughout the text of Technical Regulations on the rational use of energy and thermal protection in buildings ("Official Gazette", no. 128/15), the words "Surface of the useful area of the building, Ak (m<sup>2</sup>)" shall be replaced by the words "Surface of the useful area of the heated part of the building, Ak" ( M<sup>2</sup>) in the appropriate case.

#### Article 2

In Article 4, Paragraph 1, Point 13 is amended and reads:

„13. *Delivered energy* is energy, which is expressed by the proprietor of the energy, which is brought to the technical system in the building through the border of the system to meet the observed need for heating, cooling, ventilation and air conditioning, consumable hot water and lighting according to table 8a. "

After Point 15, a new Point 16 is added which reads:

„16. *The methodology of conducting the energy inspection of the building* (hereinafter: Methodology) is a set of actions and procedures for conducting an energy inspection of a building which contains the algorithm for calculating the energy characteristics of the building in standard terms of use and shall be published on the official website of the Ministry; "

Previous Points 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, become Points 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35. , 36, 37, 38, 39.

In previous Point 39, which becomes Point 40, the words “category of the respective building” is replaced with the words “type of respective building”.

Previous Points 40, 41, 42, 43, 44, 45, 46, 47, become Points 41, 42, 43, 44, 45, 46, 47, 48.

The previous Point 48 which becomes Point 49 is amended and reads:

„49. *A building of almost zero energy* is a building that has very high energy characteristics. This almost a zero or very low amount of energy should, very significantly, be covered by energy from renewable sources, including energy from renewable sources which is produced in the building or in its vicinity, and for which the requirements are established by this Regulation. "

Previous Points 49 and 50 become Points 50 and 51

### Article 3

In Article 5, Paragraph 1, Point 2 is amended and reads:

„2. Annex B, which lists the maximum allowed values of the heat transfer coefficient  $U$  [ $W / (m^2 K)$ ], the building parts of the building to be fulfilled when designing new and designing the reconstruction of existing buildings, the established values of the technical characteristics of some construction products with which the calculations can be carried out which are required by this regulation and the prescribed maximum permissible values of the annual heat energy required for heating per unit of useful area of the heated part of the building,  $Q''_{H,nd}$  [ $kWh/(m^2 \cdot a)$ ], the maximum permissible values of the annual primary energy per unit of area of useful area of the heated part of the building  $E_{prim}$  [ $kWh/(m^2 \cdot a)$ ], for new buildings heated and/or cooled at a temperature of 18 °C or more, for existing buildings with reconstruction being performed in a way prescribed by Article 45, Paragraph 7 of this regulation and buildings of almost zero energy”.

### Article 4

In Article 7, Paragraph 1, Point 2 is deleted, and previous Points 3, 4, 5, 6, 7, 8, 9, 10, 11 become Points 2, 3, 4, 5, 6, 7, 8, 9, 10.

In previous Point 12 which becomes Point 11, the word “greatest allowed” is deleted.

Previous Point 13 becomes Point 12.

In previous Point 14 which becomes Point 13, the word “primary” is replaced with the word “delivered”.

### Article 5

In Article 8, Paragraph 1 is amended and reads:

"(1) The technical requirement for the rational use of energy and thermal protection of the building is determined by the maximum allowed annual heating energy requirement per unit of useful area of the heated part of the building  $Q''_{H,nd}$  [ $kWh/(m^2 \cdot a)$ ] and the maximum allowed annual primary energy per unit of useful surface area of the heated part of the building  $E_{prim}$  [ $kWh/(m^2 \cdot a)$ ] based on cost-optimal levels. "

### Article 6

Article 9 is amended and reads:

"(1) A residential building (multi-residential building or family house) and a non-residential building, depending on the type, must be designed and constructed in such a way that:

- the annual heat energy required per unit of useful area of the heated part of the building,  $Q''_H$ ,  $Q''_{H,nd}$  [ $kWh/(m^2 \cdot a)$ ], is not greater than the allowed values set out in Table 8 of Annex B to this Regulation;

- the annual primary energy per unit of useful surface area of the heated part of the building  $E_{prim}$  [ $kWh/(m^2 \cdot a)$ ], which includes the energy listed in Table 8.a and not higher than the values set out in Table 8 of Annex B to this Regulation for new buildings.

(2) A residential building and non-residential building of almost zero energy is a building in which:

- the annual heat energy required per unit of useful area of the heated part of the building,  $Q''_{H,nd}$  [kWh/(m<sup>2</sup>·a)], is not greater than the allowed values set out in Table 8 of Annex B to this Regulation;

- the annual primary energy per unit of useful surface area of the heated part of the building  $E_{prim}$  [kWh/(m<sup>2</sup>·a)], which includes the energy listed in Table 8.a and not higher than the values set out in Table 8 of Annex B to this Regulation for buildings of almost zero energy.

(3) Exceptionally, for a self-contained residential building and a non-residential building whose useful surface area of the heated part of the building ( $A_k$ ) amounts to less than or equal to 50m<sup>2</sup> shall be considered as meeting the requirements laid down in the provisions of this Article if the conditions in Table 1 of Annex B of this regulation are met.

(4) The main design of buildings, other than buildings used by public authorities as owners which are subject to issuing a building permit, shall be made in accordance with the provisions of Paragraph 2 of this Article if the request for issuing the building permit has been submitted after December 31 2019.

(5) The main design of buildings used by public authorities as owners, which are subject to issuing a building permit, shall be made in accordance with the provisions of Paragraph 2 of this Article if the request for issuing the building permit has been submitted after December 31 2017.

(6) The primary energy referred to in Paragraphs 1 and 2 of this Article shall be calculated in accordance with the Algorithm for calculating the energy characteristics of a building, which is an integral part of the Methodology for conducting energy inspections of buildings (hereinafter: Algorithm), except for parts defined in this Regulation

(7) If the calculated annual value of primary energy per unit of surface area of a heated part of a building  $E_{prim}$  [kWh/(m<sup>2</sup>·a)] for a building is lower by at least 20% of the maximum allowed values in Table 8 of Annex B, it shall be considered that the terms are met for the necessary annual thermal energy for heating per unit of useful surface of the heated part of a building,  $Q''_{H,nd}$  [kWh/(m<sup>2</sup>·a)] and for the annual need for thermal energy for cooling per unit of useful surface of the heated part of a building  $Q''_{C,nd}$  [kWh/(m<sup>2</sup>·a)] defined by this Regulation”

#### Article 7

In Article 12, Paragraph 2, the word “parts” is replaced by the words “independent usable units”.

#### Article 8

In Article 16, Paragraph 1, Sub-paragraph 5, behind the word “residential”, the words “and non-residential” are added.

In Article 1, Sub-Paragraph 6 is amended and reads:

"- internal thermal gains,  $Q_{int,}$ , are calculated with a value of 6 W/m<sup>2</sup> of usable area of the heated part of a non-residential building, and 5 W/m<sup>2</sup> of usable area of the heated part of a residential building, relating to thermal gains from persons, lighting, household and office devices;"

In Paragraph 1, Sub-Paragraph 8, behind the word "mobile" the words “or fixed” are added.

In Paragraph 4, the words "Sub-Paragraph 8" shall be replaced by the words "Sub-Paragraph 9."

#### Article 9

In Article 17, Paragraph 2, Point 1 is deleted.

In previous point 2, which becomes Point 1, the words “< 21 °C and” are deleted.

Previous Point 3 becomes Point 2.

#### Article 10

In Article 18, the words “from Article 18” are replaced with the words “from Article 17”.

#### Article 11

In Article 25, Paragraph 2, behind the words “is defined”, the words “project or” are added.

In Article 5, Paragraph 1 is amended and reads:

„1.  $V_{W,f,day}$  – daily consumption of consumable hot water per unit at a temperature of  $\theta_{W,det}$  (litres/unit/day) (according to the Algorithm, Chapter 6)”.

#### Article 12

In Article 27, Paragraph 2 is amended and reads:

“(2) For non-residential buildings, the number of internal air exchanges with external air shall be determined in accordance with the Algorithm if the Regulation brought in accordance with the law which regulates construction of that area does not prescribe otherwise.”

#### Article 13

In Article 30, Paragraph 1 and 2 are amended and reads:

“(1) The fulfillment of the air permeability requirements in the provisions of Article 26 of this Regulation shall be verified by testing on a newly built or reconstructed existing building according to HRN EN ISO 9972: 2015, method of determination A, before the technical inspection of the building.

(2) During inspection from Paragraph 1 of this Article, unlike the difference of pressure between the internal and external air of 50 Pa, the measured air flow, reduced to the volume of the internal air, cannot be greater than the value of  $n_{50} = 3,0 \text{ h}^{-1}$  with buildings or certain thermal zones of a building without a mechanical device for ventilation, or  $n_{50} = 1,5 \text{ h}^{-1}$  with buildings or certain thermal zones of a building with a mechanical device for ventilation.”

#### Article 14

In Article 42, Paragraph 2, Sub-Paragraph 1 and 2 are amended and read:

“- at least 20% of the total of delivered energy for the operation of the system in the building has energy from renewable sources of energy, or

– the share of renewable energy in the total energy that is included for the operation of the thermal-technical system is at least:

- 1.25% from solar radiation or,
- 2.30% from gaseous biomass or,
- 3.50% from solid biomass, or,
- 4.70% from geothermal energy, or,

5.50% from the environmental heat or,  
6.50% from a cogeneration plant with high efficiency in accordance with a special regulation, or "

In Paragraph 6 the word "primary" is replaced by the word "delivered".

In Paragraph 7, the words "energy needs of the building" shall be replaced by the words "total of delivered energy for the operation of the system in the building".

## Article 15

Article 45 is amended and reads:

"(1) In the case of a larger reconstruction of an existing building, the heat transfer coefficient  $U$  [ $W/(m^2 \cdot K)$ ], all constructional parts where the construction work has been carried out shall not exceed the value specified in Table 1 of Annex B to this Regulation .

(2) In the reconstruction of an existing building which subsequently incorporates, renovates or replaces only parts of the heated part of the building on a surface greater than 25%, the heat transfer coefficient,  $U$  [ $W/(m^2 \cdot K)$ ], of the whole construction part on which the construction procedure was conducted cannot be greater than the values defined in Table 1 of Annex B of this Regulation.

(3) With external walls and transparent facade elements, the provision referred to in paragraph 2 of this Article shall apply individually to each geographical orientation of that construction part (ie, for example, the total surface of all openings of an orientation or, for example, the total surface of the wall of one orientation).

(4) With the reconstruction of an existing building that is being renovated, partly or completely replaced windows, balcony doors, roof windows, or transparent facade elements, in addition to requirements referred to in Paragraph 2 of this Article, they must also meet with the requirements of Articles 17, 18, 21 and Article 26, Paragraph 2.

(5) With the reconstruction of an existing building whereby an existing building is being adapted and/or upgraded with an area of useful surface of the heated part of the building,  $A_K$ , for more than or equal to  $50m^2$  heated to a temperature higher than  $12^\circ C$ , the requests of this regulation that refer to new buildings shall apply to the adapted and/or upgraded building.  
With the reconstruction of an existing building whereby an unheated building or an unheated part of a building is adapted to an area of useful surface of a heated building,  $A_K$ , for more than or equal to  $50m^2$  heated to a temperature higher than  $12^\circ C$ , the requests of this regulation that refer to new buildings shall apply to the adapted and/or upgraded building.

(6) When reconstructing an existing building whereby an existing building is being adapted and/or upgraded, so that the surface area of the heated part of the building,  $A_K$ , which is heated at a temperature higher than  $12^\circ C$  increases by less than  $50m^2$ , the heat transfer coefficient,  $U$  [ $W/(m^2 \cdot K)$ ], of individual building parts of an adapted and/or upgraded part of an existing building may not exceed the values specified in Table 1 of Annex B to this Regulation.

(2) When reconstructing an existing building whereby an unheated building or unheated part of a building is adapted to a surface area of the heated part of the building,  $A_K$ , less than  $50m^2$ , which is heated at a temperature higher than  $12^\circ C$ , the heat transfer coefficient,  $U$  [ $W/(m^2 \cdot K)$ ], of individual building parts of a reconstructed part of a building may not exceed the values specified in Table 1 of Annex B to this Regulation.

(7) Reconstruction of an existing building which will renew, partially or completely replace parts of the heated part of the building and, if these works cover at least 75% of the heated part of the building, apart from fulfilling the requirements referred to in Paragraph 1 of this Article, must be designed and implemented, depending on the type of building, in such a way that:

- the annual heat energy required per unit of useful area of the heated part of the building,  $Q''_{H,nd}$  [kWh/(m<sup>2</sup>·a)], is not greater than the allowed values set out in Table 9 of Annex B to this Regulation;

- the specific annual primary energy  $E_{prim}$ , which includes the energy listed in Table 8.a and is not higher than the allowed values set out in Table 9 of Annex B to this Regulation.

(8) If the calculated annual value of primary energy per unit of surface area of a heated part of a building  $E_{prim}$  [kWh/(m<sup>2</sup>·a)] for the reconstruction of an existing building from Paragraph 7 of this Article is lower by at least 20% of the greatest allowed value from Table 9 of Annex B, it shall be considered that the terms are met for the necessary annual thermal energy for heating per unit of useful surface of the heated part of a building,  $Q''_{H,nd}$  [kWh/(m<sup>2</sup>·a)] and for the annual need for thermal energy for cooling per unit of useful surface of the heated part of a building  $Q''_{C,nd}$  [kWh/(m<sup>2</sup>·a)] defined by this Regulation”

(9) Exceptionally when reconstructing an existing building referred to in Paragraphs 5 and 7 of this Article, it is not necessary to meet the minimum energy performance requirements set out in Tables 8 and 9 of Annex B provided that the fulfillment of these is not economically viable or technically or functionally feasible which is proven by the budget and the cost - optimal analysis. If you prove that the same is not technically feasible, or cost-optimal, the minimum requirements laid down in the above mentioned tables must be met to the fullest extent possible, and the heat transfer coefficient, the  $U$  [W/(m<sup>2</sup>·K)] of all building parts on which construction was implemented must not be higher than the values laid down in Table 1. set out in Annex B to this regulation.

(10) When replacing and modernizing a technical system (such as replacement of a heat generator, replacement of an energy source, replacement of a central ventilation unit, replacement of a lighting system, etc.), and the adaptation of the same, applied will be the requests of this regulation which refer to technical systems or their parts which are installed in new buildings.

(11) In the case of a larger reconstruction of existing buildings, it is necessary to apply highly efficient alternative systems and to introduce intelligent measurement systems to the extent where it is technically, functionally and economically feasible, as evidenced by budgeting and cost - optimal analysis.

(12) The primary energy in Paragraph 7 shall be calculated in accordance with the Algorithm, except for the parts defined by this Regulation. "

#### Article 16

In Article 53, the words useful areas of net floor areas” shall be replaced by the words "net floor area".

#### Article 17

Article 62 is amended and reads:

"For the purpose of achieving the requirements of the energy characteristics of a building, the content of the main building project, which refers to the rational use of energy and thermal protection, includes the technical solution of the building, proof of meeting the energy

characteristics of the building and the conditions for its construction and maintenance in architectural or construction projects, as well as in projects of the engineering profession and/or electro-technical professions”.

#### Article 18

In Article 63, Paragraph 1, the words "contains the energy characteristics certificate of the building, are deleted.

In Article 1, Paragraph 2, Line 3 is amended and reads:

"- calculations of the annual heat energy required for the heating and cooling of the building for actual or referential available climatic data and data required for the energy characteristic Certificate of the building."

In Paragraph 2, the words “Paragraph 1 of this Article” are replaced with the words “Article 71”.

In Paragraph 6 behind the word “construction”, the comma is deleted and the word “that is” is replaced by the word “or”.

#### Article 19

In Article 64, Paragraph 1, Point 2, Line 9 is amended and reads:

"- calculation of delivered and primary energy for thermal-technical systems according to Table 8a of Annex B and data required for the energy characteristics certificate of the building.”

Behind Line 9, Line 10 is added which reads:

"- the balance of the installed heating and cooling capacity and installed electrical power for all thermal-technical systems.”.

Paragraph 2 is amended and reads:

"(2) A main engineering project is obligatory for all new heated and/or cooled buildings and have the anticipated preparation of consumable hot water and mechanical ventilation and air conditioning."

After Paragraph 2 a new Paragraph 3 is added which reads:

"(3) A main engineering project is obligatory for the reconstruction of thermal-technical systems of existing buildings with a nominal power greater than 30 kW."

#### Article 20

In Article 65, Paragraph 1, Point 2 behind Line 7, a new Line 8 is added which reads:

"- calculation of delivered and primary energy for lighting systems, depending on the type of building, according to Table 8.a of Annex B and data required for the energy characteristics certificate of the building.”

#### Article 21

Article 71 is amended and reads:

"(1) The energy characteristic certificate of the building is a separate document to be attached to the main project of rational use of energy and thermal protection.

(2) The special energy characteristic certificate of the building shall be made for a certain part of the building when separate calculations are carried out according to Article 48, Paragraph 1 of this Regulation.

(3) The designer of the main project of the building, which refers to the rational use of energy and thermal protection and the main designer, and for Form 1, Certificates and other designers according to the responsibility for da, sign the Certificate from Paragraph 1 of this Article and confirms it with his stamp.

(4) the certificate of the energy characteristics of the building is not necessary to make for buildings with a useful area of the heated part of the building  $A_K$  less than 50 m<sup>2</sup>, cold storage buildings, parts of buildings where cold storage and reconstruction of the existing building is in accordance with regulations of Articles 44, 45 and 46, except for buildings in Article 45, Paragraph 7, 8 and 9."

#### Article 22

In Annex A, A.2 Technical Standard "HRN EN 13829: 2002 Thermal characteristics of buildings - Determination of air permeability in buildings - Pressure difference method (ISO 9972: 1996, revised, EN 13829: 2000)" is replaced by a new technical standard "HR EN ISO 9972: 2015 en pr Thermal characteristics of buildings - Determination of air permeability in buildings - Pressure difference method (ISO 9972: 2015; EN ISO 9972: 2015)

Table 8. Annex B shall be replaced by the new Table 8 of Annex B, which forms an integral part of this regulation.

In Annex B behind Table 8 a new Table 8.a is added – Defined technical systems for the calculation of delivered and primary energy.

Table 9. Annex B shall be replaced by the new Table 9 of Annex B, which forms an integral part of this regulation.

Forms of the certificates of the energy characteristics of a building heated at a temperature of 18 °C or more and certificates of the energy characteristics of a building heated at a temperature of 12 °C to 18 °C given in Annex C are replaced with new forms given in Annex C which are an integral part of this regulation.

#### Article 23

This Regulation shall enter into force on the first day of its publication in the Official Gazette.

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Zagreb, 20 July 2018.

Minister  
Predrag Štromar





Table 8. -Maximum permitted values for new buildings and buildings of almost zero energy heated and/or cooled to a temperature of 18 °C or greater

REQUIREMENTS FOR NEW BUILDINGS AND GOEZ	$Q''_{H,nd}$ [kWh/(m <sup>2</sup> ·a)]						$E_{prim}$ [kWh/(m <sup>2</sup> ·a)]			
	NEW BUILDING and GOEZ						NEW		GOEZ	
TYPE OF BUILDING	continent, $\theta_{mm} \leq 3$ °C			coast, $\theta_{mm} > 3$ °C			cont $\theta_{mm} \leq 3$ °C	coast $\theta_{mm} > 3$ °C	cont $\theta_{mm} \leq 3$ °C	coast $\theta_{mm} > 3$ °C
	$f_0 \leq 0,20$	$0,20 < f_0 < 1,05$	$f_0 \geq 1,05$	$f_0 \leq 0,20$	$0,20 < f_0 < 1,05$	$f_0 \geq 1,05$				
Multi-residential	40,50	$32,39 + 40,58 \cdot f_0$	75,00	24,84	$19,86 + 24,89 \cdot f_0$	45,99	120	90	80	50
Family house	40,50	$32,39 + 40,58 \cdot f_0$	75,00	24,84	$17,16 + 38,42 \cdot f_0$	57,50	115	70	45	35
Office	16,94	$8,82 + 40,58 \cdot f_0$	51,43	16,19	$11,21 + 24,89 \cdot f_0$	37,34	70	70	35	25
Educational	11,98	$3,86 + 40,58 \cdot f_0$	46,48	9,95	$4,97 + 24,91 \cdot f_0$	31,13	65	60	55	55
Hospital	18,72	$10,61 + 40,58 \cdot f_0$	53,21	46,44	$41,46 + 24,89 \cdot f_0$	67,60	300	300	250	250
Hotel and restaurant	35,48	$27,37 + 40,58 \cdot f_0$	69,98	11,50	$6,52 + 24,89 \cdot f_0$	32,65	130	80	90	70
Sports Hall	96,39	$88,28 + 40,58 \cdot f_0$	130,89	37,64	$32,66 + 24,91 \cdot f_0$	58,82	400	170	210	150
Store	48,91	$40,79 + 40,58 \cdot f_0$	83,40	13,90	$8,92 + 24,91 \cdot f_0$	35,08	450	280	170	150
Other non-residential	40,50	$32,39 + 40,58 \cdot f_0$	75,00	24,84	$19,86 + 24,89 \cdot f_0$	45,99	150	100	/	/

With buildings or building zones with a floor height of more than 4,2 m, a calculation statement  $A_{\kappa}$  'can be made as a computational value for checking the fulfillment of the conditions in Tables 8 and 9 of this Annex to the Regulations in such a way that the building or part of a building

*with a higher floor than 4.2 m is divided to horizontal section heights of 4.2 m and for the number of sections with a height of 4,2 the real  $A_K$  of that part of the building is multiplied.*

Table 8.a – Defined technical systems\* for the calculation of delivered and primary energy.

	Type of building	HEATING SYSTEM	COOLING SYSTEM	SYSTEM FOR PTV PREPARATION	SYSTEM OF MECH. VENTILATION AND AIR CONDITIONING	LIGHTING SYSTEM
1	Family houses	YES	NO	YES	Taken into account if exists	NO
2	Multi-residential buildings	YES	NO	YES		NO
3	Office buildings	YES	YES	NO		YES
4	Buildings for education	YES	NO	NO		YES
5	Hospitals	YES	YES	YES		YES
6	Hotels and restaurants	YES	YES	YES		YES
7	Sports halls	YES	YES	YES		YES
8	Commercial buildings	YES	YES	NO		YES
9	Other non-residential	YES	NO	NO		YES

\* For the calculation of the share of renewable energy in the total energy supplied, the supplied energy of all the technical systems installed in the building can be used.

Table 9. -Maximum permitted values for existing buildings heated and/or cooled to a temperature of 18 °C or greater during reconstruction according to Article 45, Paragraph 7.

REQUIREMENTS - RECONSTRUCTION	$Q''_{H,nd}$ [kWh/(m <sup>2</sup> ·a)]						$E_{prim}$ [kWh/(m <sup>2</sup> ·a)]	
	continent, $\theta_{mm} \leq 3$ °C			coast, $\theta_{mm} > 3$ °C			continent, $\theta_{mm} \leq 3$ °C	coast, $\theta_{mm}$ > 3 °C
	$f_0 \leq 0,20$	$0,20 < f_0 < 1,05$	$f_0 \geq 1,05$	$f_0 \leq 0,20$	$0,20 < f_0 < 1,05$	$f_0 \geq 1,05$		
TYPE OF BUILDING								
Multi-residential	50,63	$40,49 + 50,73 \cdot f_0$	93,75	27,00	$21,59 + 27,06 \cdot f_0$	50,00	180	130
Family house	50,63	$40,49 + 50,73 \cdot f_0$	93,75	27,00	$19,24 + 38,82 \cdot f_0$	60,00	135	80
Office	21,18	$11,03 + 50,73 \cdot f_0$	64,29	17,60	$12,19 + 27,06 \cdot f_0$	40,60	75	75
Educational	14,98	$4,84 + 50,73 \cdot f_0$	58,10	10,81	$5,40 + 27,06 \cdot f_0$	33,83	90	75
Hospital	23,40	$13,26 + 50,73 \cdot f_0$	66,51	50,48	$45,06 + 27,06 \cdot f_0$	73,48	340	330
Hotel and restaurant	44,35	$34,21 + 50,73 \cdot f_0$	87,48	12,50	$7,09 + 27,06 \cdot f_0$	35,50	145	115
Sports Hall	120,49	$110,35 + 50,73 \cdot f_0$	163,61	40,91	$35,50 + 27,06 \cdot f_0$	63,93	420	215
Store	61,14	$50,99 + 50,73 \cdot f_0$	104,25	15,11	$9,71 + 27,06 \cdot f_0$	38,13	475	300
Other non-residential	50,63	$40,49 + 50,73 \cdot f_0$	93,75	27,00	$21,59 + 27,06 \cdot f_0$	50,00	180	130

## ANNEX C

Form 1, sheet 1/5

### CERTIFICATE OF THE ENERGY CHARACTERISTICS OF A BUILDING

According to chapter VI. Technical regulations on the rational use of energy and thermal protection in buildings, for a building heated to a temperature of 18 °C or higher

<b>1. INVESTOR</b>	
<b>2. PROJECT LABEL</b>	
<b>3. BUILDING DESCRIPTION</b>	
The name of the building or part of a building	
Type of building	
Purpose of the building	
cadastre plot no. / cadastre municipality	
Address/location of the building (street and house number, postal code, location, altitude)	
Month and year of project production	
The surface of the heated part of the building $A$ (m <sup>2</sup> )	
The volume of the heated part of the building $V_e$ (m <sup>3</sup> )	
Shape factor of the building $f_o$ (m <sup>-1</sup> )	
Useful area of the part of the heated part of the building $A_K$ (m <sup>2</sup> )	
Heating mode (local, floor, central, mixed)	
The average internal project heating temperature °C	
The average internal project cooling temperature °C	
Meteorological station with altitude	
Average monthly temperature of the outside of the coldest month at the building site, $\Theta_{e,mj,min}$ (°C)	
Average monthly temperature of the outside of the warmest month at the building site, $\Theta_{e,mj,max}$ (°C)	

<b>4. REQUIRED THERMAL ENERGY FOR HEATING AND COOLING BUILDINGS</b>		
The annual need of thermal energy for heating $Q_{H,nd}$ [kWh/a]		
The necessary annual thermal energy for heating per unit of useful area of the heated part of the building $Q''_{H,nd}$ [kWh/(m <sup>2</sup> ·a)]	<i>maximum allowed</i>	<i>calculated</i>
Annual need of thermal energy for cooling $Q_{C,nd}$ [kWh/a]		
The necessary annual thermal energy for cooling per unit of useful area of the heated part of the building $Q''_{C,nd}$ [kWh/(m <sup>2</sup> ·a)]	<i>maximum allowed</i>	<i>calculated</i>
The thermal transmission loss coefficient per unit of area of the heated part of the building $H'_{tr,adj}$ [W/(m <sup>2</sup> K)]	<i>maximum allowed</i>	<i>calculated</i>
The designer of the part of the main project of the building which refers to the rational use of energy and thermal protection (signature and stamp) in terms of the characteristics of the building parts - <i>for data referred to in Chapter 4</i>		

<b>5. ELECTRICAL ENERGY</b>	
The annual need of electrical energy for lighting $E_L$ [kWh/a]	
Annual electrical energy produced from OIE at the location of the building $E_L$ [kWh/a]	
The designer of the part of the main project of the building which refers to the rational use of energy and thermal protection (signature and stamp) in terms of the characteristics of the electrical energy system - <i>for data referred to in Chapter 5.</i>	

<b>6. ENERGY FOR THERMAL-TECHNICAL SYSTEMS</b>		
Annual delivered energy for heating and PTV $E_{HW,del}$ [kWh/a]		
Annual delivered energy for cooling $E_{C,del}$ [kWh/a]		
Annual auxiliary energy for the operation of the thermal-technical system $W$ [kWh/a]		
Annual primary energy for the operation of the thermal-technical system [kWh/a]		
<b>7. RENEWABLE ENERGY SOURCES</b>		
NECESSARY FOR THE FULFILMENT OF CONDITIONS	ACHIEVED %	FULFILLED (YES/NO)
At least 20% of the total of delivered energy for the operation of the system in the building is met with energy from renewable sources of energy		
The share of renewable energy in the total delivered energy for the operation of the thermal-technical system	At least 25% from solar radiation	
	At least 30% from gaseous biomass	
	At least 50% from solid biomass	
	At least 70% from geothermal energy	
	At least 50% from environmental heat	
	At least 50% from a cogeneration plant with high efficiency	
At least 50% of the energy needs of the building is met from district heating under Article 42, Paragraph 2.		
The necessary annual thermal energy at least 20% lower than the allowed annual necessary energy for heating per unit of useful area of the heated part of the building $Q'_{H,nd}$		
At least 4 m <sup>2</sup> of built-in sun collectors (valid exceptionally for family houses)		
The designer of the part of the main project of the building which refers to the rational use of energy and thermal protection (signature and stamp) in terms of the characteristics of thermal-technical systems - for data from Chapter 6 and 7.		



8. ENERGY CHARACTERISTICS OF THE BUILDING		
Annual delivered energy $E_{del}$ [kWh/a]		
Annual primary energy $E_{prim}$ [kWh/a]		
The annual primary energy per unit of useful area of the heated part of the building $E_{prim}$ [kWh/(m <sup>2</sup> ·a)]	<i>maximum allowed</i>	<i>calculated</i>
Enter " <b>nZEB</b> " if the energy characteristics of the building ( $E_{prim}$ ) and the share of renewable energy meets the requirements for almost zero-energy buildings		
The designer of the part of the main project of the building which refers to the rational use of energy and thermal protection (signature and stamp) - <i>for data from Chapter 1, 2, 3 and 8</i>		
Chief Designer of the building (signature and stamp)		
Date and place		

**CERTIFICATE OF THE ENERGY CHARACTERISTICS OF A BUILDING**

according to Chapter VI of the Technical Regulations on the rational use of energy and thermal protection in buildings, for a building heated to a temperature higher than 12 °C and less than 18 °C

<b>1. INVESTOR</b>		
<b>2. PROJECT LABEL</b>		
<b>3. BUILDING DESCRIPTION</b>		
The name of the building or part of a building		
Type of building		
Purpose of the building		
cadastre plot no. / cadastre municipality		
Address/location of the building (street and house number, postal code, location, altitude)		
Month and year of project production		
The surface of the heated part of the building A (m <sup>2</sup> )		
The volume of the heated part of the building V <sub>e</sub> (m <sup>3</sup> )		
Shape factor of the building f <sub>o</sub> (m <sup>-1</sup> )		
Useful area of the part of the heated part of the building A <sub>K</sub> (m <sup>2</sup> )		
Meteorological station with altitude		
Average monthly temperature of the outside air of the coldest month at the site of the building, $\Theta_{e,mj,min}$		
Average monthly temperature of the outside air of the warmest month at the site of the building, $\Theta_{e,mj,max}$		
<b>4. TRANSMISSIONAL THERMAL LOSSES OF THE BUILDING</b>		
The thermal transmission loss coefficient per unit of area of the heated part of the building H' <sub>tr,adj</sub> [W/(m <sup>2</sup> K)]	<i>maximum allowed</i>	<i>calculated</i>
The transmission coefficient of thermal loss H <sub>tr,adj</sub> [W/K]		

<b>5. RESPONSIBILITY FOR THE DATA</b>	
The designer of the part of the main project of the building which refers to the rational use of energy and thermal protection (signature and stamp)	
Chief Designer of the building (signature and stamp)	
Date and place	