

Protocol for the Energy Performance Certificate

Purpose of the certificate processing

New building	Building used by public authorities
Sale of the building or its part	Lease of the building or its part
Larger change of the completed building	
Another purpose:	

Basic information about the evaluated building

Building identification data	
Building address (place, street, street number, ZIP code):	
Cadastral area:	
Parcel number:	
Date of building commissioning (or expected date of commissioning):	
Owner or builder:	
Address:	
Company identification number:	
Tel./e-mail:	

Building type		
Family house	Residential house	Building for accommod. and catering
Administrative building	Building for health service	Building for education service
Building for sport activities	Building for business purposes	Building for culture activities
Another building type:		

Geometric characteristics of the building

Parameter	units	value
Volume of the building V (volume of building zones with conditioned internal environment defined by the outer surfaces of building envelope constructions)	[m ³]	1555,5
Total area of the building envelope A (the sum of areas of external building constructions surrounding the volume of the building V)	[m ²]	658,7
Shape factor A/V	[m ² /m ³]	0,42
Total energy reference area of the building A _c	[m ²]	482,7

Types of energy (energy carriers) used in the building

Lignite	Coal
Oil	Propan-butan/LPG
Wood (logs), wood chips	Wood pellets
Natural gas	Electricity
System of thermal energy supply (district heating): <i>RES rate:</i> to 50 % including, over 50 to 80 %, over 80 %	
Energy of surrounding environment (e.g. solar energy): <i>purpose:</i> for heating, for hot water preparing, for the electricity production	
Other fuels or other types of energy supply:	

Types of energy delivered outside of the building

Electricity	Heat	None
-------------	------	------

Information about building components and technical systems

A) building components and constructions

a.1) requirements for thermal transmittance

Building envelope constructions	Area	Thermal transmittance			Temper. reduction factor	Heat transfer coeff. by transmission
	A_j	Calculated value U_j	Reference value $U_{N,rc,j}$	Fulfilled	b_j	$H_{T,j}$
	[m ²]	[W/(m ² .K)]	[W/(m ² .K)]	[yes/no]	[-]	[W/K]
	28,32	0,216			0,86	5,2
	42,45	0,200			1,00	8,5
	32,79	0,200			1,00	6,6
	9,90	0,200			1,00	2,0
	207,50	0,200			1,00	41,5
	33,76	0,200			1,00	6,8
	41,04	0,200			1,00	8,2
	77,85	1,000			1,00	77,9
	30,55	1,000			1,00	30,6
	15,83	1,000			1,00	15,8
	16,00	1,000			1,00	16,0
	122,73	0,205			0,76	19,1
						65,9
Total	658,7	x	x	x	x	303,9

Note: The evaluation of the fulfillment of requirements is required only for larger changes of the building and for other than larger changes of the completed building in the case of evaluation of energy performance in accordance with § 6, paragraph 2, point. c).

a.2) requirements for mean thermal transmittance

Zone	Prevailing design internal temperature	Zone volume	Reference value of the mean thermal transmittance of the zone	Product
	$\Theta_{im,j}$	V_j	$U_{em,R,j}$	$V_j \cdot U_{em,R,j}$
	[°C]	[m ³]	[W/(m ² .K)]	[W.m/K]
Family house	20,0	1 555,5	0,46	715,53
Total	x	1 555,5	x	715,53

Building	Mean thermal transmittance of the building		
	Calculated value U_{em} ($U_{em} = H_T/A$)	Reference value $U_{em,R}$ ($U_{em,R} = \sum(V_j \cdot U_{em,R,j})/V$)	Fulfilled
	[W/(m ² K)]	[W/(m ² K)]	[yes/no]
	0,46	0,46	ano

Note: The evaluation of the fulfillment of requirements is required for a new building, a building with almost zero energy consumption and for larger changes of the completed building in the case of evaluation of energy performance in accordance with § 6, paragraph 2, point. a) and point b).

B) technical systems

b.1.a) heating

Assessed building/zone	Source type	Energy carriers	Coverage of partial energy needs for heating	Energy output	Efficiency of heat source ²⁾		Efficiency of energy distribution $\eta_{H,dis}$	Efficiency of energy emission $\eta_{H,em}$
	[-]	[-]	[%]	[kW]	$\eta_{H,gen}$	COP		
Reference building	x ¹⁾	x	x	x	80	--	85	80
Assessed building/zone:								
Family house		zemní plyn			94		89	88

Note: ¹⁾ x symbol means that there is no required reference value
²⁾ it is not filled-in in the case of thermal energy supply system

b.1.b) requirements for the efficiency of the heating system

Assessed building/zone	Source type	Efficiency of heat source energy production $\eta_{H,gen}$ nebo $COP_{H,gen}$	Efficiency of reference heat source energy production $\eta_{H,gen,rq}$ or $COP_{H,gen}$	Fulfilled
	[-]	[%]	[%]	[yes/no]

Note: The evaluation of the fulfillment of requirements is required only for larger changes of the building and for other than larger changes of the completed building in the case of evaluation of energy performance in accordance with § 6, paragraph 2, point. c).

B) technical systems

b.3) ventilation

Assessed building/zone	Type of ventilation system	Energy carriers	Heating energy output	Cooling energy output	Coverage of partial energy needs for ventilation	Nominal electricity input of ventilation system	Nominal volume flow of ventilation air	Specific input of fans for forced ventilation SFP _{ahu}
	[-]	[-]	[kW]	[kW]	[%]	[kW]	[m ³ /hour]	[W.s/m ³]
Reference building	x	x	x	x	x	x	x	1750
Assessed building/zone:								
Family house		elektrina ze site						500

B) technical systems

b.5.a) hot water preparation

Assessed building/zone	Type of hot water preparation in the building	Energy carriers	Coverage of partial energy needs for hot water preparation	Energy input for hot water preparation	Hot water tank volume	Efficiency of heat source for hot water preparation ¹⁾		Specific heat loss of hot water tank $Q_{W,st}$	Specific heat loss of hot water distribution $Q_{W,dis}$
						$\eta_{W,gen}$	COP		
	[-]	[-]	[%]	[kW]	[liters]	[%]	[-]	[Wh/l.d]	[Wh/m.d]
Reference building	x	x	x	x	x	85	--	7,0	150,0
Assessed building/zone:									
Family house		Slunce			50			19,0	10,0
Family house		zemní plyn			200	94		7,9	26,8

Note: ¹⁾ not filled in case of thermal energy supply

b.5.b) requirements for the efficiency of the hot water preparation system

Assessed building/zone	Type of hot water preparation system	Efficiency of heat source for hot water preparation $\eta_{W,gen}$ nebo $COP_{W,gen}$	Efficiency of reference heat source for hot water preparation $\eta_{W,gen,rq}$ nebo $COP_{W,gen}$	Fulfilled
	[-]	[%]	[%]	[yes/no]

Note: The evaluation of the fulfillment of requirements is required only for larger changes of the building and for other than larger changes of the completed building in the case of evaluation of energy performance in accordance with § 6, paragraph 2, point. c).

B) technical systems**b.6) lighting**

Assessed building/area	Type of lighting system	Coverage of partial lighting energy needs	Total electricity input for lighting of the building	Mean specific input for lighting related to the illumination zone $P_{L,lx}$
	[-]	[%]	[kW]	[W/(m ² .lx)]
Reference building	x	x	x	0,05
Assessed building/area:				
Family house				0,04

Energy performance of assessed building

a) list of considered zones and partial delivered energies in the building

Assessed building/zone	Heating EP _H	Cooling EP _C	Mechanical ventilation EP _F		Hot water preparation EP _W	Lighting EP _L	Energy production from renewable energy source or cogeneration	
			Without humid. adjustment	With humidity adjustment			For the building	For the building and external delivery
Family house								

b) partial delivered energies

r.			Heating		Cooling		Ventilation		Air humidity adjustment		Hot water preparation		Lighting	
			Ref. building	Ass. building	Ref. building	Ass. building	Ref. building	Ass. building	Ref. building	Ass. building	Ref. building	Ass. building	Ref. building	Ass. building
(1)	Energy need	[MWh/year]	12,577	10,368			x	x			3,814	3,814	x	x
(2)	Calculated energy use	[MWh/year]	23,120	14,083			0,795	0,227			6,377	4,699	2,717	1,942
(3)	Auxiliary energy use	[MWh/year]	0,024	0,031							0,025	0,255		
(4)	Partial delivered energy (r.4)=(r.2)+(r.3)	[MWh/year]	23,143	14,114			0,795	0,227			6,402	4,954	2,717	1,942
(5)	Specific partial delivered energy related to total energy reference surface (r.4) / m ²	[kWh/(m ² .year)]	48	29			2	0			13	10	6	4

c) energy production facility located in the building, on the building or on attached auxiliary objects

Production type	Utilization of produced energy	Produced energy	Total primary energy factor	Non-renewable primary energy factor	Total primary energy	Non-renewable primary energy
units		[MWh/year]	[-]	[-]	[MWh/year]	[MWh/year]
Cogeneration unit EP _{CHP} - heat	Building					
	Delivery out of the building					
Cogeneration unit EP _{CHP} - electricity	Building					
	Delivery out of the building					
Photovoltaic panels EP _{PV} - electricity	Building					
	Delivery out of the building	3,282	-3,2	-3,0	-10,502	-9,846
Solar thermal systems Q _{H,sc,sys} - heat	Building	2,819	1,0	0,0	2,819	0,000
	Delivery out of the building					
Others	Building					
	Delivery out of the building					

d) distribution of partial delivered energies, of the total primary energy and of the non-renewable primary energy according to energy carriers

Energy carriers	Partial calculated energy use/ Auxiliary energy use	Total primary energy factor	Non-renewable primary energy factor	Total primary energy	Non-renewable primary energy
	[MWh/year]	[-]	[-]	[MWh/year]	[MWh/year]
elektrina ze site	2,451	3,2	3,0	7,842	7,352
zemni plyn	15,963	1,1	1,1	17,560	17,560
Slunce a jina energie prostredi	2,819	1,0	0,0	2,819	0,000
elektrina (v nevyt. prostorech)	0,003	3,2	3,0	0,011	0,010
elektrina z FV exportovana		-3,2	-3,0	-10,502	-9,846
Total	21,236	x	x	17,730	15,077

e) requirement for total delivered energy

(6)	Reference building	[MWh/year]	33,056	Fulfilled (yes/no)	ano
(7)	Assessed building		21,236		
(8)	Reference building	[kWh/m ² .year]	68		
(9)	Assessed building		44		

f) requirement for non-renewable primary energy

(10)	Reference building	[MWh/year]	38,814	Fulfilled (yes/no)	ano
(11)	Assessed building		15,077		
(12)	Reference building (r.10 / m ²)	[kWh/m ² .year]	80		
(13)	Assessed building (r.11 / m ²)		31		

g) primary energy of the assessed building

(14)	Total primary energy	[MWh/year]	17,730
(15)	Renewable primary energy (r.14 - r.11)	[MWh/year]	2,653
(16)	The use of renewable energy sources from the point of view of primary energy (r.15 / r.14 x 100)	[%]	15,0

h) values for the derivation of energy classes levels

Values corresponding to the upper limit of Class C:	Total delivered energy	[MWh/year]	33,056
	Non-renewable primary energy	[MWh/year]	43,126
	Mean thermal transmittance of the building	[W/m ² .K]	0,46
	Partial delivered energy: heating	[MWh/year]	23,143
		cooling	[MWh/year]
	ventilation	[MWh/year]	0,795
	air humidity adjustment	[MWh/year]	
	hot water preparation	[MWh/year]	6,402
	lighting	[MWh/year]	2,717

Table h) contains values used for the derivation of energy classes levels according to Annex No. 2.

Analysis of the technical, economical and environmental suitability of alternative energy supply systems for new buildings and larger changes of completed buildings

Alternative systems	Feasibility assessment			
	Decentralized energy supply systems based on renewable energy sources	Cogeneration	System of the thermal energy supply	Heat pump
Technical suitability				
Economical suitability				
Ecological suitability				
Recommendations for implementation and justification				
Date of analysis completion				
Author of analysis				
Energy assessment	Obligation of the energy assessment preparation			
	Energy assessment is a part of the analysis			
	Date of the energy assessment preparation			
	Author of energy assessment			

Vygenerováno výhradně pro nekomerční použití ve školství programem Energie 2013 EDU.

Energy specialist's final evaluation

New building or building with almost zero energy consumption	
• Building meets the requirement according to § 6 paragraph 1	
• Building energy performance class for the total delivered energy	B
Larger change of completed building or other change of the building	
• Building meets the requirement according to § 6 paragraph 2 point a)	
• Building meets the requirement according to § 6 paragraph 2 point b)	
• Building meets the requirement according to § 6 paragraph 2 point c)	
• Fulfillment of requirements on the building energy performance is not required	
• Building energy performance class for the total delivered energy	
Building used by public authorities	
• Building energy performance class for the total delivered energy	
Sale or lease of the building or its part	
• Building energy performance class for the total delivered energy	
Another purpose of certificate processing	
• Building energy performance class for the total delivered energy	

Identification data of energy specialist who created the certificate

Name and surname	
Authorization No. of Ministry of Industry and Trade	
Energy specialist's signature	

Date of certificate creation

Date of certificate creation	
------------------------------	--

ENERGY PERFORMANCE CERTIFICATE

issued according to Act No. 406/2000 Coll., about energy management,
and Directive No. 78/2013 Coll., about building energy performance

Street, number:

ZIP code, place:

Building type:

Building envelope area:

658,7 m²

Shape factor A/V:

0,42 m²/m³

Total energy reference area:

482,7 m²

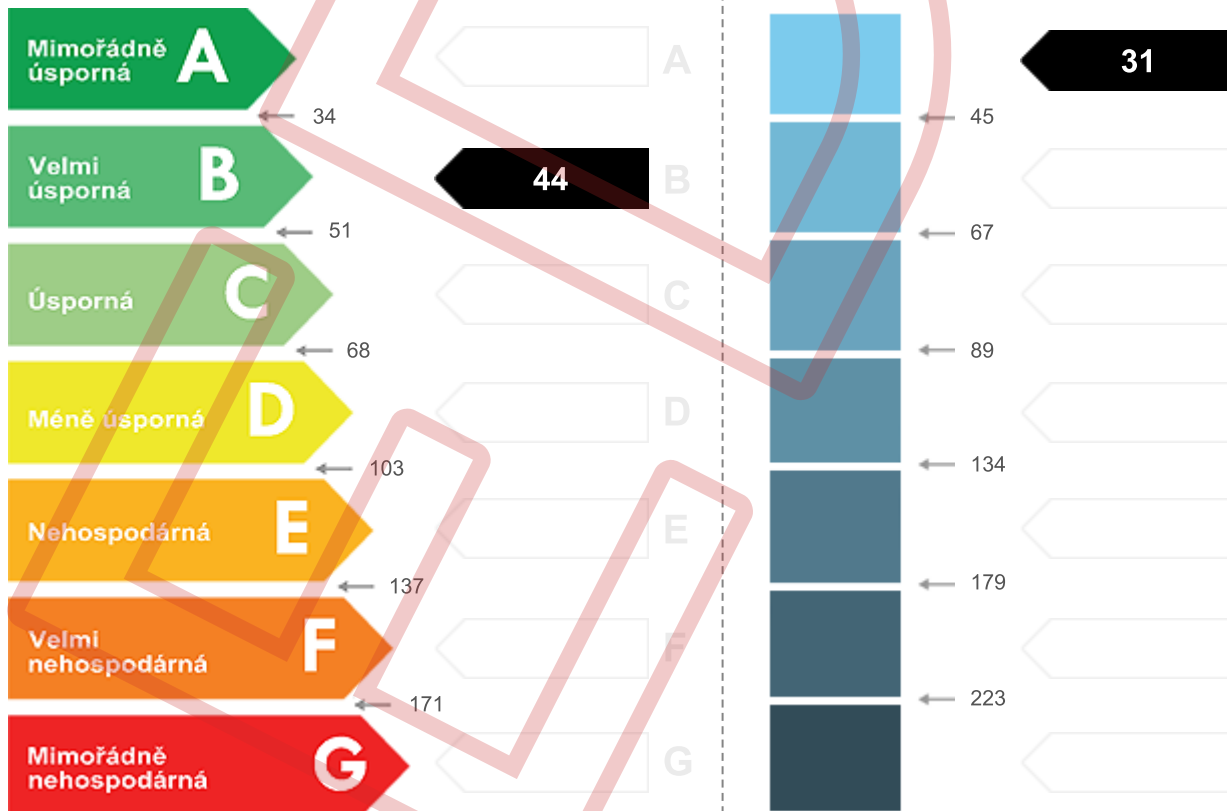


ENERGY PERFORMANCE OF THE BUILDING

Total delivered energy
(Energy input to the building)

Non-renewable primary energy
(Impact of the building on the environment)

Specific values kWh/(m²·year)



Values for the whole building
MWh/year

21,236

15,077

RECOMMENDED MEASURES

Measure for	Defined
Outdoor walls:	
Windows and doors:	
Roof:	
Floor:	
Heating:	
Cooling:	
Ventilation:	
Hot water prepar.:	
Lighting:	
Others:	

Description of measures can be found in protocol and their impact on energy performance is shown by an arrow.

Doporučení

DELIVERED ENERGY DISTRIBUTION TO ENERGY CARRIERS

Values for the whole building
MWh/year



- Elektrina ze sítě: 2,5
- Zemní plyn: 16
- Slunce a energie prostředí: 2,8

BUILDING ENERGY PERFORMANCE INDICATORS

	The building envelope	Heating	Cooling	Ventilation	Humidity adjustment	Hot water	Lighting
	U_{em} W/(m ² ·K)	Partial delivered energy		Specific values	kWh/(m ² ·year)		
Mimořádně úsporná	A			0			
	B	29					4
	C					10	
	D						
	E						
	F						
	G						
Mimořádně neúsporná							
Values for the whole building	0,46	14,11		0,23		4,95	1,94
MWh/year							

Author:
Contact:

Certificate No.:
Prepared on:
Signature: