

Protocol of energy label of building

Identification data

Type of building	University Residential Centre
Address	Brno, Czech Republic
Cadastral territory and cadastral number	Brno, Ponava, 465/20
Investor	Vysoké učení technické v Brně
Future owner	Vysoké učení technické v Brně
Address	Brno, Czech Republic
Telephone number/email address	- / -

Building characteristic

Volume of building V – outer volume of the heated zone, does not include balcony, cornices, attics and foundations	19 325,96 m³
Total area A – sum of inner surfaces of cooled structures	6 547,91 m²
Area/Volume factor of building	0,34
Prevailing inside temperature during heating season	20 °C
Outside design temperature in winter period	-15 °C

Characteristics of energy-relevant data of cooled structures

Cooled structure	Area A _i (m ²)	Coefficient of heat transfer U _i (W.m ⁻² .K ⁻¹)	Required (Recommended) coefficient of heat transfer U _n U _i (W.m ⁻² .K ⁻¹)	Temperature reduction factor b _i (-)	Heat transfer specific loss HT _i = A _i .U _i .b _i (W.K ⁻¹)	HT _i = A _i .U _i .b _i (W.K ⁻¹) for reference building
F1 (ground)	1317,890	0,232	0,45 (0,30)	0,43	130,957	254,165
F1 (inst. corr.)	238,610	0,232	0,60 (0,40)	0,29	15,807	40,905
F2 (ground)	183,060	0,240	0,45 (0,30)	0,43	18,833	35,304
R1	1727,898	0,163	0,24 (0,16)	1,00	282,482	414,696
R2	28,010	0,210	0,24 (0,16)	1,00	5,885	6,722
W1	1077,464	0,133	0,30 (0,25)	1,00	143,068	323,239
W2	1010,896	0,145	0,30 (0,25)	1,00	146,504	303,269
W5	595,753	0,983	1,18 (1,00)	1,00	585,373	704,447
W3	36,356	0,229	0,30 (0,25)	1,00	8,335	10,907
Windows	304,000	0,783	1,50 (1,20)	1,00	238,162	456,000
Doors	15,714	1,200	1,70 (1,20)	1,00	18,857	26,715
Doors (glass)	12,255	0,983	1,70 (1,20)	1,00	12,041	20,834
Thermal bridges between structures	(ΣA_i)	(Σψ_i . l + Σχ_i)/A_i		A . ΔU_{tbn} =	130,958	
Total	6547,906	0,020		Q_{Ti} =	60 804	

Construction meet the requirements for heat transfer coefficient according to CSN 73 0540-2.

Determination of heat envelope

Heat transfer specific loss H_T	$W.K^{-1}$	1737,262
Heat transfer for reference building $H_{T,em}$	$W.K^{-1}$	2728,159
Average coefficient of heat transfer U_{em}	$W . m^{-2}.K^{-1}$	0,265
Coefficient of heat transfer for reference building $U_{em,N,20}$	$W . m^{-2}.K^{-1}$	0,417

Heat transfer classification classes of envelope of rated building

Classification classes	Index CI for limits of classification classes	$U_{em} (W . m^{-2}.K^{-1})$ for limits of classification classes	
		Generally	For rated building
A - B	0,50	0,50 $U_{em,N,20}$	0,208
B - C	0,75	0,75 $U_{em,N,20}$	0,312
C - D	1,00	1,00 $U_{em,N,20}$	0,417
D - E	1,50	1,50 $U_{em,N,20}$	0,623
E - F	2,00	2,00 $U_{em,N,20}$	0,834
F - G	2,50	2,50 $U_{em,N,20}$	1,043

Classification: **B – Efficient building**

Date of issue of energy label: 14.1.2014

Processor of energy label: Bc. Petr Dvořák
 Address of processor: Okružní 588, Kaplice
 IČO: -

Signature:

This protocol and energy label corresponds with directive of European Parliament and Council No. 2002/91/EC and EN the 15217. The protocol and the energy label has been prepared in accordance with CSN 73 0540 and the project the project construction documentation supplied by the customer.

ENERGY LABEL OF BUILDING							
Type of building, local designation: Address of building:						Evaluation of building envelope	
Total floor area $A_c = 1\,776,12\text{ m}^2$						Current	Recom.
<div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="margin-bottom: 5px;">CI Very efficient</div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #2e8b57, #38a84d); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">A</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #00ff00, #00b050); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">B</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #90ee90, #70e090); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">C</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #ffff00, #ffcc00); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">D</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #ffcc00, #ff9900); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">E</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #ff9900, #ff6600); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">F</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 100px; height: 20px; background: linear-gradient(to right, #ff0000, #cc0000); border: 1px solid black; margin-right: 10px;"></div> <div style="font-size: 24px; font-weight: bold; color: white;">G</div> </div> <div style="margin-top: 10px;">Extremely inefficient</div> </div>						<div style="font-size: 48px; font-weight: bold; background-color: black; color: white; padding: 10px; width: 40px; margin: 0 auto;">B</div>	
Average coefficient of heat transfer $U_{em} (W \cdot m^{-2} \cdot K^{-1})$						0,265	
Recommended coefficient of heat transfer $U_{em,N,20} (W \cdot m^{-2} \cdot K^{-1})$						0,417	
Classification indexes CI and corresponding value of $U_{em,N}$							
CI	0,5	0,75	1,0	1,5	2	2,5	
U_{em}	0,208	0,312	0,417	0,623	0,834	1,043	
Validity of label:				Date:			
Prepared by:				Signature:			