

BEST PRACTICE IN CZECH REPUBLIC – ENERGY EFFICIENT CITIES

BASIC INFORMATION

Title of the Best Practice

Thermal renovation and installation of air recuperation in Secondary medical school Kromeriz

Energy efficiency measures implemented in the building:

Reducing heating demand: improving the heat insulation, and installation of air recuperation in the whole school

Location:

City: Kromeriz

Region: Zlín Region

Country: Czech Republic

<https://goo.gl/maps/HqdZWihgboN2>

Partners involved:

Owner and Operator

Secondary medical school Kromeriz
Albertova 4261/25a, 767 01 Kroměříž
577 002 250
sekretariat@szskm.cz
www.szskm.cz

Planner and Architect

KB projekt, s. r. o.
Lešetín I/659, 760 01 Zlín
Česká republika
tel.: +420 577 431 400
kbprojekt@kbprojekt.cz

Building technology planning

Tespora profi s.r.o.
Na Příkopě 814
755 01 Vsetín

Implementation year: 2018

Photos:





Source: Energy Agency of the Zlín Region

SYSTEM CHARACTERISTICS

Brief Description:

With the support from the Energy Agency of the Zlín Region the municipality submitted the application for funding to the national Operational Programme Environment 2014-2020. The application succeeded and the project was approved for funding. The final share of the subsidy was almost 30 % from the overall investment costs.

The outer walls were improved by 14 cm of EPS with $\lambda = 0,039 \text{ W/(mK)}$ (U-value were reduced to $0,186 \text{ W/(m}^2\text{K)}$). The roof were insulated with 300 mm mineral wool with $\lambda = 0,037 \text{ W/(mK)}$. The existing windows with an average U-value of $2,7 \text{ W/(m}^2\text{K)}$ were replaced by new plastic windows with a U-value of $0,9 \text{ W/(m}^2\text{K)}$. The doors were improved with $U = 1,2 \text{ W/(m}^2\text{K)}$.

Because of the inadequate indoor environment air recuperation for whole school was projected with the overall power of $35\,900 \text{ m}^3/\text{h}$.

One of the most important part of the project was the improving the light to the LED technology. This means reducing the energy consumption by 42 GJ per year.

Nowadays, the heating demand of the building is $102 \text{ kWh/(m}^2\text{.a)}$, which means A-class for this type of building.

Thermal reconstruction of the building envelope

The outer walls were improved by 14 cm of EPS with $\lambda = 0,039 \text{ W/(m.K)}$ (U-value were reduced to $0,186 \text{ W/(m}^2\text{K)}$). The roof were insulated with 300 mm mineral wool with $\lambda = 0,037 \text{ W/(mK)}$.

Windows and doors

The existing windows with an average U-value of $2,7 \text{ W/(m}^2\text{K)}$ were replaced by new plastic windows with a U-value of $0,9 \text{ W/(m}^2\text{K)}$. The doors were improved with $U = 1,2 \text{ W/(m}^2\text{K)}$.

Building technology

Cooling: no requirement for cooling.

Ventilation system: There are several units installed with overall power 35 900 m³/h (8500 m³/h for the sport hall, 7000 m³/h for the auditorium, 4500 and 4500 m³/h for dressing room and several 350-650 m³/h for class rooms)

Use of energy: saving lighting system powered by LED technology

Energy management has been implemented on this building for ten year and EM is carried out by the Energy Agency of the Zlín Region.

FINANCIAL SOURCES AND FINANCING DETAILS

Total investment value:

2 373 680 €

Sources of financing:

This project was co-financed by the Operational Programme Environment of the Czech Republic with subsidy € 703 900; and by Zlín region.

Electricity savings (MWh/year):

0; because of the additional ventilation system

Or fuel savings (kg or m3 or kWh or GJ):

Reduction of natural gas from 1544 GJ before project implementation to nowadays 903 GJ which means 102 kWh/(m².a) for the heating after the reconstruction.

Cost savings (EUR/year):

10 720 € per year; +/- 0 electricity costs, because of the additional ventilation system.

PROJECT IMPLEMENTATION BENEFITS

Overall reconstruction of the school significantly reduced consumption of the natural gas and improved the indoor environment as well as the outer design of the building.

The reduction of the energy consumption and operational costs has the positive effect on a sustainable operation of the school for the next 40 years.

Mechanical ventilation is necessary for the suitable indoor climate. The visible benefit is also the comfortable place for the teachers and students.

ADDITIONAL INFORMATION

Energy Agency of the Zlín Region is continuously monitoring the consumption of the natural gas, electricity and water consumption of the buildings related to this project.

Spotřeba zemního plynu [m³]

Kategorie - školy. Podkategorie - střední školy/učiliště.

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rok	leden	únor	březen	duben	květen	červen	červenec	srpen	září	říjen	listopad	prosinec	celkem rok
2008	0	0	6 066	3 656	1 195	252	0	0	788	3 649	5 929	7 378	28 913
2009	11 073	7 982	6 727	580	41	0	0	0	220	4 738	5 021	7 271	43 653
2010	10 116	7 490	5 611	2 900	603	123	0	0	412	2 950	4 966	8 598	43 739
2011	9 514	8 178	5 351	552	346	120	0	0	85	4 039	7 541	6 216	41 942
2012	9 723	10 205	3 623	1 858	478	151	0	0	85	2 905	5 583	8 541	43 152
2013	10 400	8 116	8 004	3 179	54	104	0	0	211	2 895	6 574	7 801	47 338
2014	8 790	6 924	4 362	1 172	95	0	0	0	137	1 439	4 542	5 474	32 935
2015	9 543	7 185	4 557	1 755	220	54	0	0	217	2 615	5 829	5 752	37 727
2016	8 662	5 731	5 312	1 665	130	126	0	0	0	1 596	4 969	6 633	34 824
2017	8 494	5 462	3 376	2 246	419	322	9	58	608	2 148	4 057	6 245	33 444
2018	6 347	6 504	7 007	2 027	765	504	0	0	372	3 288	3 553	5 078	35 445
2019	5 452	4 120	3 379										12 951

