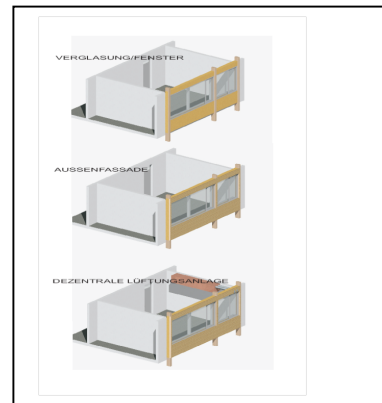


Evaluation ENERBUILD-Tool – planning/building phase

Secondary School Weißkirchen



1 Basic information about the building

Name of the building	Hauptschule Weißkirchen, Secondary School
Address of the building	Kärntnerstraße 20, A-8741 Weißkirchen
Owner/investor	Gemeinde Weißkirchen, municipality Weißkirchen
Year of construction	Construction 1967, extensive reconstruction 2012
Building type	School
Building method	Lightweight reconstruction on concrete massive construction
Number of buildings	2 : Main building, gym wing
Number of levels above earth	3
Number of levels underground	0
Kind of the public use	Education
Effective area for public use in m ² (net)	1999 (BGF 2352)
Additional private uses	no
Effective area for private use in m ² (net)	0
Total effective area in m ²	1999 (BGF 2352)
Source of energy for heating	Industrial waste heat (District Heating)
Heating system	District Heating Connection, Radiators
Water heating system	Decentral Electric Water Heating
Date of the building evaluation	01.12.2011

2 Execution of the building evaluation with the ENERBUILD tool

Responsible Organisation: Energieagentur Obersteiermark

Contact person: Josef Bärnthaler

Telephone: +43 3577 26664

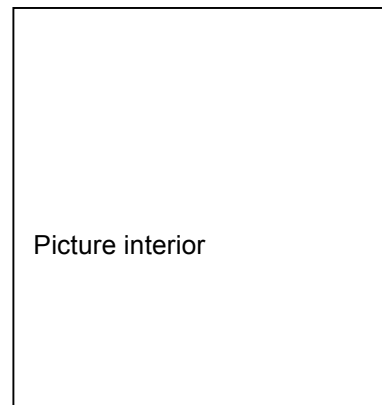
Email: office@eao.st

Temperature for thermal comfort in summertime: 26°C

Local limits for heating demand: 65 kWh/m²(at the year of construction)

3 Results

Nr.		Title	Must criteria (M)	max. points	evaluated points
A		Quality of location and facilities		max. 100	86
A	1	Access to public transport network		50	36
A	2	Ecological quality of site		50	50
B		Process and planning quality		max. 200	180
B	1	Decision making and determination of goals		25	25
B	2	Formulation of verifiable objectives for energetic and ecological measures	M	20	20
B	3	Standardized calculation of the economic efficiency	M	40	0
B	4	Product-management - Use of low-emission products		60	50
B	5	Planning support for energetic optimization		60	60
B	6	Information for users		25	25
C		Energy & Utilities (Passive house)		max. 350	316
C	1	Specific heating demand (PHPP)	M	100	100
C	2	Specific cooling demand (PHPP)	M	100	64
C	3	Primary energy demand (PHPP)	M	125	125
C	4	CO ₂ -emissions (PHPP)		50	27
D		Health and Comfort		max. 250	250
D	1	Thermal comfort in summer		150	150
D	2	Ventilation - non energetic aspects		50	50
D	3	Daylight optimized (+ lightening optimized)		50	50
E		Building materials and construction		max. 200	164
E	1	OI _{3-TGH-ic} ecological index of the thermal building envelope (respectively OI ₃ of the total mass of the building)		200	164
Sum				max. 1000	996



4 Conclusions from the building evaluation with the ENERBUILD-Tool

a) Generally

The project aims for a passive house standard in a building that is already due for reconstruction to even keep the secondary modern school operational. The innovative character of the project lies in the application of a prefabricated façade-module made of wood and wooden building material developed in the region in cooperation of the Holzinnovationszentrum, HIZ (Wood Innovation Centre). The module includes thermal insulated façade-, window- and ventilation elements. It is applied in vertical lines up to a height of 12 meters, which leads to a significantly shorter implementation timeframe.

b) About the planning process

In the beginning, there was the choice between two variants of reconstruction. However, the accumulated energy costs and investment costs combined, even the current situation, with 30 % of all windows mechanically defect, would be more favourable from that point of view than the conventional reconstruction. The higher investment in passive house technology would pay itself off by energy savings of 90% of the original energy costs.

c) About the building itself

The secondary modern school of Weißkirchen is an L-shaped, 3-floor building from the seventies. The existent building stock corresponds to the usual standard from then, thus featuring significant bad energy values. With an energy consumption of 154 kWh/m²/year, the building hits the energy class E. A conventional reconstruction that would only cover the parts that require immediate repair would leave the school building at energy class D. The municipality plan to create a real best practice model.

d) About the evaluation process

The high-value reconstruction includes a ventilation system with heat recovery and daylight management. Additionally, a PV installation is integrated in the façade that adds to the goal of energy self-sufficiency of the building. The ENERBUILD-Tool has proved itself in the evaluation of these features.

5 Suggestions for improvement of the ENERBUILD-Tool

In the project, it has been paid special attention to the use of regional resources and implementing companies from within the region. Short transport ways ensure to minimize the CO₂-output during the reconstruction and the grey energy of the rebuilding. A full life-cycle analysis incorporated in the ENERBUILD-Tool would enable us to integrate this effort in the project.