Evaluation ENERBUILD-Tool – existing buildings

EWZ Zermatt

[Pictures from Lauber IWISA AG]

1 Basic information about the building

Name of the building	Verwaltungsgebäude EWZ Zermatt
Address of the building	Metzggasse 44, CH-3920 Zermatt
Owner/investor	Elektrizitätswerk Zermatt AG (Electric Power Company)
Year of construction	2004-2005
Building type	New administration building with school/ class rooms at 1‘631m a.s.l.
Building method	Massive construction with wooden cladding
Number of buildings	1
Number of levels above earth	5
Number of levels underground	-
Kind of the public use	Administrative and school building
Effective area for public use in m ² (net)	1’852 m^2
Additional private uses	-
Effective area for private use in m ² (net)	-
Total effective area in m ²	1’852 m^2
Source of energy for heating	Electrical heat pump with air ventilation recovery system with additional solar collectors
Heating system	As before; additional PV elements contribute to the coverage of the power consumption
Water heating system	
Date of the building evaluation	2010/2011

2 Execution of the building evaluation with the ENERBBUILD tool

Responsible Organisation: Lucerne University of Applied Sciences and Arts – Lucerne School of Engineering and Architecture – Competence Center Topology & Foresight Planning in Architecture, Technikumstrasse 21, CH-6048 Horw Contact person: C.Lars Schuchert

Telephone: +41 41 349 34 96 Email: lars.schuchert@hslu.ch

Temperature for thermal comfort in summertime: 25°C

Local limits for heating demand: in Switzerland, the local limit for the heating demand is determined by the building's location (mean annual temperature), the building surface-to-heated floor area ratio, and its use. Also the limit differs according to the energy standard. Since the treaded floor area is calculated differently and the basic data is also taken into account differently, the values cannot be directly compared to the values of the calculation via PHPP. (The calculation according to Minergie(-P) standard usually achieve lower values (refer to: Zentrum für Energie und Nachhaltigkeit im Bauwesen. Minergie und Passivhaus: Zwei Gebäudestandards im Vergleich – Schlussbericht. 2002. Page 6)
The limits for this administration building are:
New building, administration: 60 kWh/m^{2}a (according to SIA 380/1:2001,converted from 217 MJ/m^2)

3 Results

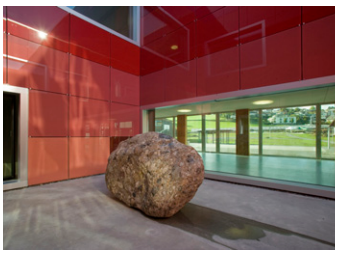
Nr.		Title	Must criteria (M)	max. points	evaluated points
A		Quality of location and facilities		max. 100	**62**
A	1	Access to public transport network		50	**12**
A	2	Ecological quality of site		50	**50**
B		Process and planning quality		max. 200	**106**
B	1	Decision making and determination of goals		25	**16**
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	**0**
B	5	Planning support for energetic optimization		60	**50**
B	6	Information for users		25	**20**
C		Energy & Utilities (Passive house)		max. 350	**350**
C	1	Specific heating demand (PHPP)	M	100	**76**
C	2	Specific cooling demand (PHPP)	M	100	**100**
C	3	Primary energy demand (PHPP)	M	125	**125**
C	4	CO2-emissions (PHPP)		50	**50**
D		Health and Comfort		max. 250	**65**
D	1	Thermal comfort in summer		150	**65**
D	2	Ventilation - non energetic aspects		50	**n/a**
D	3	Daylight optimized (+ lighting optimized)		50	**n/a**
E		Building materials and construction		max. 200	**0**
E	1	$OI3_{TGH-lc}$ ecological index of the thermal building envelope (respectively OI3 of the total mass of the building)		200	**0**
Sum				max. 1000	**583**

Evaluation ENERBUILD-Tool – existing buildings

School building (with gym) Eichmatt

[Hannes Henz]

[Hannes Henz]



[Peter Regli]

1 Basic information about the building

Name of the building	Schulhaus Eichmatt
Address of the building	Eichmattstrasse 11
Owner/investor	6333 Hünenberg See
Year of construction	2009
Building type	New school building with gym at 400m a.s.l.
Building method	Wood and massive construction
Number of buildings	1
Number of levels above earth	3 (the lowest levels is partially underground, ca. 25%)
Number of levels underground	-
Kind of the public use	School
Effective area for public use in m ² (net)	ca. 6'500 m^2
Additional private uses	1 apartment
Effective area for private use in m ² (net)	ca. 160 m^2
Total effective area in m ²	ca. 6'560 m^2
Source of energy for heating	Thermal ground probe with electrical heat pump, mechanical ventilation with heat recovery; additional photovoltaic elements
Heating system	Thermal ground probe with heat pump
Water heating system	
Date of the building evaluation	2010/2011

2 Execution of the building evaluation with the ENERBBUILD tool

Responsible Organisation: Lucerne University of Applied Sciences and Arts – Lucerne School of Engineering and Architecture – Competence Center Topology & Foresight Planning in Architecture, Technikumstrasse 21, CH-6048 Horw; Contact person: C.Lars Schuchert

Telephone: +41 41 349 34 96 Email: lars.schuchert@hslu.ch

Temperature for thermal comfort in summertime: 26°C

Local limits for heating demand: in Switzerland, the local limit for the heating demand is determined by the building's location (mean annual temperature), the building surface-to-heated floor area ratio, and its use. Also the limit differs according to the energy standard. Since the treaded floor area is calculated differently and the basic data is also taken into account differently, the values cannot be directly compared to the values of the calculation via PHPP. (The calculation according to Minergie(-P) standard usually achieve lower values (refer to: Zentrum für Energie und Nachhaltigkeit im Bauwesen. Minergie und Passivhaus: Zwei Gebäudestandards im Vergleich – Schlussbericht. 2002. Page 6)
The limits for this school building are:
New building, school: 45 kWh/m^{2}a (according to SIA 380/1:2001, converted from 161 MJ/m^2)

3 Results

Nr.		Title	Must criteria (M)	max. points	evaluated points
A		Quality of location and facilities		max. 100	**76**
A	1	Access to public transport network		50	**36**
A	2	Ecological quality of site		50	**40**
B		Process and planning quality		max. 200	**163**
B	1	Decision making and determination of goals		25	**25**
B	2	Formulation of verifiable objectives for energetic and ecological measures	M	20	**18**
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	**55**
B	6	Information for users		25	**15**
C		Energy & Utilities (Passive house)		max. 350	**350**
C	1	Specific heating demand (PHPP)	M	100	**100**
C	2	Specific cooling demand (PHPP)	M	100	**100**
C	3	Primary energy demand (PHPP)	M	125	**125**
C	4	CO2-emissions (PHPP)		50	**50**
D		Health and Comfort		max. 250	**65**
D	1	Thermal comfort in summer		150	**65**
D	2	Ventilation - non energetic aspects		50	**n/a**
D	3	Daylight optimized (+ lighting optimized)		50	**n/a**
E		Building materials and construction		max. 200	**123**
E	1	$OI3_{TGH-Ic}$ ecological index of the thermal building envelope (resp. OI3 of the total mass of the building)		200	**123**
Sum				max. 1000	**777**

Evaluation ENERBUILD-Tool – Building in planning phase

Annex Wing Triemli Hospital Zürich

[Pictures from Stadt Zürich – Amt für Hochbauten]

1 Basic information about the building

Name of the building	Stadtspital Triemli – Neubau Bettenhaus
Address of the building	Birmensdorfer Strasse 497, CH-8063 Zürich
Owner/investor	Stadt Zürich, Amt für Hochbauten
Year of construction	2008-2015
Building type	New hospital building at 460m a.s.l.
Building method	Massive construction
Number of buildings	1 (annex wing to existing building)
Number of levels above earth	15
Number of levels underground	2
Kind of the public use	City hospital
Effective area for public use in m ² (net)	ca. 900 m^2 restaurant/ guest areas ca. 29'000 m^2 patient stations
Additional private uses	-
Effective area for medical use in m ² (net)	ca. 19'400 m^2 medical stations and facilities
Total effective area in m ²	ca. 49'300 m^2
Source of energy for heating	Thermal ground probe with heat pump and biomass (wood) boiler; emergency backup with gas/ oil (biomass, gas/oil backup are also supplying steam for hygienic applications)
Heating system	Thermal ground probe with heat pump (80%, also used for cooling) and biomass (wood) boiler (20%)
Water heating system	Heat pump (100%)
Date of the building evaluation	2010/2011

2 Execution of the building evaluation with the ENERBBUILD tool

Responsible Organisation: Lucerne University of Applied Sciences and Arts – Lucerne School of Engineering and Architecture – Competence Center Topology & Foresight Planning in Architecture, Technikumstrasse 21, CH-6048 Horw, Contact person: C.Lars Schuchert

Telephone: +41 41 349 34 96 Email: lars.schuchert@hslu.ch

Temperature for thermal comfort in summertime: 25°C, the standard room temperature is adjusted to 22°C for hospital buildings according to Swiss SIA 380/1:2009, 3.5.1.2.

Local limits for heating demand: in Switzerland, the local limit for the heating demand is determined by the building's location (mean annual temperature), the building surface-to-heated floor area ratio, and its use. Also the limit differs according to the energy standard. Since the treaded floor area is calculated differently and the basic data is also taken into account differently, the values cannot be directly compared to the values of the calculation via PHPP. (The calculation according to Minergie(-P) standard usually achieve lower values (refer to: Zentrum für Energie und Nachhaltigkeit im Bauwesen. Minergie und Passivhaus: Zwei Gebäudestandards im Vergleich – Schlussbericht. 2002. Page 6)
The limits for this hospital building are:
New building, hospital: 38 kWh/m^{2}a (according to SIA 380/1:2007, converted from 136 MJ/m^2))

3 Results

Nr.		Title	Must criteria (M)	max. points	**evaluated points**
A		Quality of location and facilities		max. 100	**100**
A	1	Access to public transport network		50	**50**
A	2	Ecological quality of site		50	**50**
B		Process and planning quality		max. 200	**200**
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	**40**
B	4	Product-management - Use of low-emission products		60	**55**
B	5	Planning support for energetic optimization		60	**55**
B	6	Information for users		25	**25**
C		Energy & Utilities (Passive house)		max. 350	**350**
C	1	Specific heating demand (PHPP)	M	100	**85**
C	2	Specific cooling demand (PHPP)	M	100	**91**
C	3	Primary energy demand (PHPP)	M	125	**125**
C	4	CO2-emissions (PHPP)		50	**50**
D		Health and Comfort		max. 250	**225**
D	1	Thermal comfort in summer		150	**n/a (150)**
D	2	Ventilation - non energetic aspects		50	**25**
D	3	Daylight optimized (+ lighting optimized)		50	**50**
E		Building materials and construction		max. 200	**15**
E	1	$OI3_{TGH-Ic}$ ecological index of the thermal building envelope (respectively OI3 of the total mass of the building)		200	**15**
Sum				max. 1000	**890**