

D.T3.5.1 TRANSNATIONAL PEER REVIEW

Meeting minutes | Ostrava 2018-11-14

Version 2
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1. Date

14.11.2018

2. Location

ENVIROS office

Regus Ostrava City Centre, IQ Ostrava
28. října 3346/91
702 00 Ostrava

School

Komenského 668/13
708 00 Ostrava-Poruba

3. Participants

Partner	Name
ENVIROS	Jana Adamiecova
ENVIROS	Marta Kovalovska
ENVIROS	Aurelien Deves
PRO-AKADEMIA	Katarzyna Korczak
PRO-AKADEMIA	Maksymilian Kochoński

4. Summary of main outputs of the meeting

4.1. Welcome speech and presentation of the meeting agenda

Representatives of ENVIROS opened the meeting and presented the agenda. In particular, the profile of ENVIROS and its core activity was discussed.

4.2. Presentation of the work methodology

ENVIROS presented the national methodology of the audit conducting. The scope of the report is in line with the international standard EN ISO 16247. More specific requirements are included in national regulations, which need to be followed when doing the energy audit. The most important documents are Decree no. 480/2012 and Decree no. 78/2013.

The decree 480/2012 specifies the scope of the energy audit and energy assessment and the content of the energy audit report. The report is split into three parts:

- 1) description of the initial state of a building,
- 2) assessment of the initial state of a building (building, energy consumption, technology and energy management)



- 3) two energy saving options which consist of the recommended energy savings measures; one option is recommended taking into account the economic, technical (lifetime of the measure) and environmental conditions.

The decree 78/2013 is a document which implements the EU Directives (2010/31 of the European Parliament and of the Council from the 19th of May 2010 on the energy performance of buildings and Commission Regulation (EU) No. 244/2012 from the 16th of January 2012 supplementing Directive 2010/31 / EU of the European Parliament and of the Council on the energy performance of buildings). It describes in particular:

- the energy performance indicators of building,
- calculation of the total and primary energy demand,
- requirements for the energy performance of the building (at cost optimal level),
- technical, economic and environmental assessment,
- feasibility of alternative energy systems,
- recommended energy saving measures,
- content of the energy performance certificate of the building,
- other provisions.

The overall approach is that the assessed building is compared to the reference building. The reference values are given by the Decree 78/2013. Globally, the energy performance certificate shows the energy demand of the building and meeting the requirements for the energy performance.

4.3. Presentation of nZEB definition in CZ and PL; state of nZEB deployment in CZ and PL

4.3.1. Czech Republic

As of November 2018, a nearly zero-energy standard has applied to certain buildings over one year. In the Czech environment, specific technical parameters for such buildings have been known for 4 years. And for over six years, the Directive on energy performance of buildings has been in force, imposing the obligation upon the EU member states to introduce this standard.

The nZEB in Czech Republic is defined by two specific requirements, introduced by the Decree 78/2013:

- **average heat transfer coefficient** needs to be 30% lower than in the reference building, regardless of the building type (Table 1),
- **non-renewable primary energy** needs to be 10-25% lower than in the reference building, depending on the building type (Table 2).

Table 1 Reduction factors for average heat transfer coefficient

Parameter	Reference value (reference building)		
	Completed building and its reconstruction	New building	Building with nearly zero energy consumption
Reduction factor f_R	1,0	0,8	0,7



Table 2 Reduction factors for non-renewable primary energy demand

Parameter	Type of building	Reference value		
		Completed building and its reconstruction after 1.1.2015	New building after 1.1.2015	Building with nearly zero energy consumption
Reduction factor Δe_p in %	Family house	3	10	25
	Block of flats	3	10	20
	Other buildings	3	8	10

4.3.2. Poland

Polish „National Plan for Increasing the Number of nZEB buildings” was adopted in 2015. The plan focuses on a legislation adjustment and does not propose any action regarding technical improvements in the building stock neither new investments. As a result, the ”nZEB” term is used very rarely. Professionals and granting institutions usually use terms such as “deep renovation” or “passive standard” to describe a building with a low energy demand.

The plan proposes a Polish nZEB definition, although it was never formally adopted. As a consequence, there is no bidding nZEB definition in Poland. The proposed definition states that nZEB should be understood as a building that meets the requirements related to energy saving and thermal insulation included in the technical and construction regulations effective from 1 January 2021. This means that the building shall meet several separate requirements, in particular regarding the following aspects:

- primary energy demand for space heating and domestic hot water (*Table 3*),
- primary energy demand for lighting (*Table 3*),
- primary energy demand for cooling (*Table 3*),
- maximum values of heat transfer coefficient for various construction elements.



Table 3 NZEB requirements for public buildings regarding the primary energy demand

Factor	Max. value						
EP_{H+W} [kWh/m ² a] Primary energy demand for heating and hot water	45 (190-hospitals)						
ΔEP_c [kWh/m ² a] Primary energy demand for cooling	$25 \cdot A_{f,c} / A_f$ $A_{f,c}$ - total cooled surface [m ²] A_f - total heated surface [m ²]						
ΔEP_L [kWh/m ² a] Primary energy demand for lightning	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">for $t_0 < 2500$</td> <td style="width: 50%; border: none;">for $t_0 \geq 2500$</td> </tr> <tr> <td style="border: none;">$\Delta EP_L = 25$</td> <td style="border: none;">$\Delta EP_L = 50$</td> </tr> <tr> <td colspan="2" style="border: none;">t_0 - time of lightning use [h/a]</td> </tr> </table>	for $t_0 < 2500$	for $t_0 \geq 2500$	$\Delta EP_L = 25$	$\Delta EP_L = 50$	t_0 - time of lightning use [h/a]	
for $t_0 < 2500$	for $t_0 \geq 2500$						
$\Delta EP_L = 25$	$\Delta EP_L = 50$						
t_0 - time of lightning use [h/a]							

4.4. Presentation of the audited building

ENVIROS presented the Elementary school Ostrava Poruba (*Figure 1*). The school uses electricity and district heating. The building's energy performance certificate was issued several years ago. During the visit it is necessary to collect additional information regarding mainly the available building plans, energy invoices, and condition of building technical systems.

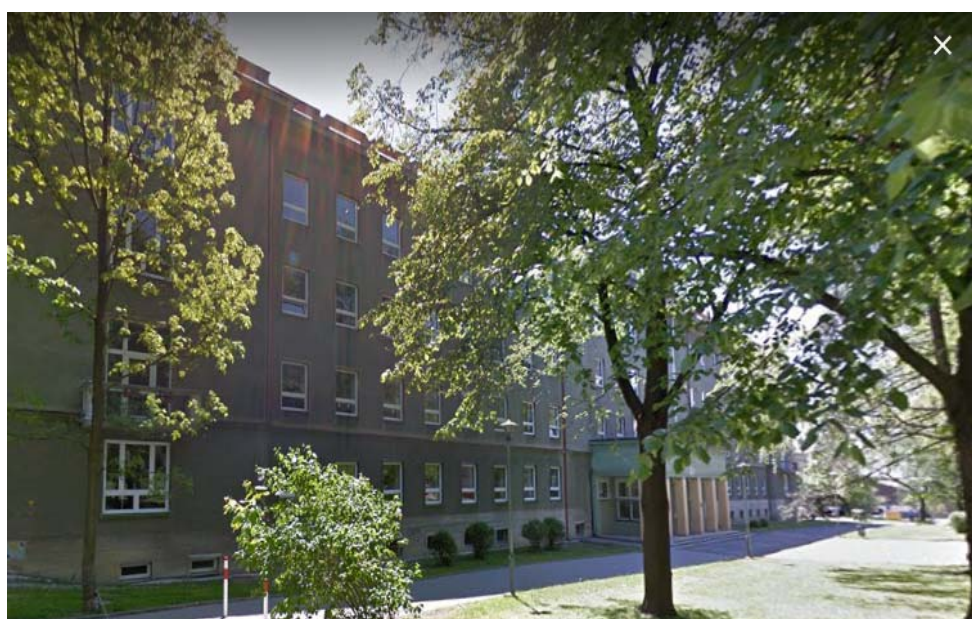


Figure 1 Elementary school Ostrava Poruba



4.5. Joint on-site visit to the school

The on-site visit was composed of two main parts:

1. **Meeting with the school principal, school economic manager and the technical staff.** Schools and ENVIROS' representatives discussed about the building history, already finished modernisations, available documentation, energy consumption invoices etc. Representatives of PRO-AKADEMIA observed the discussion.
2. **Building inspection.** The aim of this part of the audit was to collect additional information on the technical condition of the building and installations. The inspection was done in particular in the following parts of the building:
 - Kitchen and cooking equipment (*Figure 2*),
 - District heating exchange substation and heat distribution system (*Figure 3, Figure 5*),
 - Windows in sport halls (*Figure 4*),
 - Cooling station (*Figure 6*).



Figure 2 Inspection of the kitchen



Figure 3 Inspection of a heat exchange substation



Figure 4 Inspection of windows





Figure 5 Inspection of radiators



Figure 6 Inspection of a cooling station

4.6. Summary of the work done & experience sharing

Representatives of ENVIROS and PRO-AKADEMIA summarised the meeting and discussed about the Czech and Polish approaches to energy audits. The discussion resulted in the following conclusions:

Similarities	Differences
<ul style="list-style-type: none"> ▪ Both countries use similar approach to audits (visit in school, discussion with a technical staff first and then a building inspection, calculation methodology provided by the state). ▪ Buildings in both countries have similar construction and technical solutions applied: <ul style="list-style-type: none"> ○ District heating is the most popular heating source in public buildings located in cities; second the most popular fuel is natural gas; ○ A building construction is made of prefabricated reinforce concrete elements, ○ A flat roof is covered by bituminous materials, ○ In old buildings, sometimes there are glass bricks (Cz: “luxfery”) used instead of windows. 	<ul style="list-style-type: none"> ▪ RES is not popular in schools buildings in CZ, while in PL solar collectors can be found on many schools; ▪ Small energy producers in CZ have to pay for energy which exceeds their needs and is sent back to the national grid; the cost depends on the amount of electricity which it cannot be consumed within the building and it is sent back to the national grid, the average price is approx. 500 CZK/MWh (~19 EUR/MWh). In Poland, the excess energy, if not balanced within the 6-months period, is considered as sold to the grid and the producer gets 70% of the market price. ▪ Czech schools rather do not outsource the meal preparation, while in Poland it is quite popular. In Czech Republic several kindergartens (4-6) sometimes share a common kitchen due to economic reasons, but this does not apply to schools.



Next steps:

- 1) exchange of examples of previous audit reports in Poland and in Czech Republic (Partner in charge: PRO-AKADEMIA; ENVIROS)
- 2) preparation of the audit report (Partner in charge: ENVIROS)
- 3) peer review of the audit report (Partner in charge: PRO-AKADEMIA)
- 4) invitation for a peer review visit of energy audits in schools in Warsaw for ENVIROS experts (Partner in charge: PRO-AKADEMIA)