NZEB PILOT ACTION 2
Budapest, Hungary

eCentral project

Energy Efficient Public Building
in Central Europe

May 2018

Vackor Kindergarten, Budapest

BEFORE RENOVATION

GENERAL INFORMATION	
Use of the building	Kindergarten
Owner	Budapest 18th District
Built in (year)	1980
Under protection as cultural heritage	No
GPS	47°23'55.9"N 19°11'28.0"E

CLIMATE DESCRIPTION	
HDD 20 (www.degreedays.net)	3.438
CDD 26 (www.degreedays.net)	78

ENERGY PERFORMANCE	
Availability of energy performance certificate	available
Energy Performance Classification	BB - AA++

RENOVATION COSTS	
Costs of renovation (€)	228.652 €
Costs per m² GFA (€/m²)	317,57 €/m²
BUISNESS MODEL - ESCO	
Public Budget	125.759 €
Private Budget	102.893 €
ENERGY PERFORMANCE DATA OF RENOVATION	
Heated gross floor area (GFA)	720 m²
Heated net floor area (NFA)	670 m²
Heated gross volume	2.100 m³
Heated net volume	1.953,5 m³
S/V	0,343
NZEB TARGET REQUIREMENTS - HUNGARY	
Primary energy (heating, cooling and electricity)	2,6 kWh/m² year
RES (minimum % of primary energy consumption generated from renewables)	129,6 %

1. GENERAL DESCRIPTION

The Vackor kindergarten is located in the 18th District of Budapest. The kindergarten has been built between 1978-1982 using lightweight construction DVM 12/18, PERMISOL panels as outer walls. Currently the energy performance class achieved by the building is the lower one. The goal of the renovation is to reach nZEB target following a cost effective way in accordance with the EPBD. It is one-storeyed building with an inner courtyard surrounded by garden and with flat roof.

2. ENERGY RENOVATION STRATEGY

The Vackor kindergarten will be renovated as part of the nZEB pilot project. In accordance with the preliminary assessment the following renovation is planned to achieve the nZEB target, increasing the energy efficiency performance and indoor quality. Several renovation scenarios were analised, and it has been decided to implement these renovation measures:

- Insulation of the building envelope: walls and roof
- Replacement of windows with triple glazing technology and doors
- Replacement of condensation combi gas boiler
- Installation of wood gasification boiler
- Use of RES, through solar panels installation
- Monitoring and verification of thermal flows

3. FINANCIAL MODEL

The building will be renovated using carefully defined demands towards the private partner (nZEB compliance, innovation, minimum whole life cycle cost compliance, sustainability standards, public access energy demonstration centre). Green procurement criteria and state of the art technology (RES and RUE equipment), including monitoring and verification tools (smart metering) will be requested in order to bring innovation and latest technical achievements to practical use.

There are two models of ESCO financing, Shared Savings (SS) and Guaranteed Savings (GS). The difference is the investments and savings distributions between the client (currently Budapest 18th District) and the ESCO-provider. Projects using the Shared Savings model is based on full financing from the ESCO-provider, who in return get a share of the savings. In contrast, projects using the Guaranteed Savings model are typically financed by the client, where payments include money for the ESCO-provider to implement and operate solutions, as well as guaranteeing the client a certain level of energy savings over a longer period.

The Guaranteed Savings model is predominant, so after carefully examining possibilities it was decided to implement this model in the Vackor kindergarten pilot. ESCOs historically focused on the so-called MUSH market: universities, schools and hospitals. In fact, the above mentioned buildings usually have a single, long-term owner that lowers the service company's risk.

We believe after we work out the solution for this pilot and create a cost effective best practice, it can be transferred to other public buildings, so our project can be a pioneer. However, there are two challenging weak points. One is that ESCO financing is not common in Hungary and the other is no public building has been renovated this way yet.