


BUILDING GOOD PRACTICE

Strovolos Municipal Library – Strovolos, Cyprus

Name of the public building renovation:		Strovolos Municipal Library
Index of Building Good Practice (kWh/m²)		
Sub-group		Offices
Description	Photo	
	Address	80 Archiepiskopou Kyprinou Str, 2059 Strovolos, Cyprus
	Public sector contractor	Panayiotides Contractors
	Architects	Christos Panayiotides & Associates
	Engineering consulting firms	ZENITH Mechanical and Electrical Consultants
	Date of construction	1915
	Legal aspects (e.g.: protected property)	Protected Structure
	Date of renovation	2011-2012 (Finished in October 2012)
	Nature of the work (short description)	The building was abandoned for many years. The major works are related with wall and roof insulation, installation of energy efficient heating system (geothermal heat pumps), lighting and glazing.
	Budget and financing source	European funds 40% & Own Recourses 60%

AVAILABLE RESULTS	
What were the big problems (in terms of energy efficiency) to tackle?	<p>The Strovolos Municipality Library was contrasted in 1915. At the beginning the building was operated as a school, then was transformed to slaughterhouse and finally has been used until 1993 as the Municipal Town Hall.</p> <p>The library was abandoned for many years until the decision of Municipal council to renovate it.</p> <p>The construction materials of the old building before renovation were limestones in both internal and external walls and in the internal interval, clay was used, for insulation. This clay was removed and replaced by polyurethane foam.</p> <p>Before the renovation no heating system was installed (individual heating apparatus probably electrical or diesel heaters).</p> <p>No roof insulation was used in the old building.</p>
Has this building been already analysed and certified?	Not certified yet. The engineer consulting firm will propose the issuing of Energy Performance Certificate according to national requirement of EPBD.
What are the key innovative energy efficiency measures undertaken through the renovation?	<p>Insulation</p> <p>5cm rockwool for the roof.</p> <p>Double glazing.</p> <p>Replacement of the existing insulation material (clay) with polyurethane foam.</p> <p>Heating</p> <p>Installation of geothermal heat pumps for the full coverage of the energy demand for heating and cooling.</p> <p>Lighting</p> <p>Energy efficient compact florescent lamps will be used</p>
What are the measurable improvements in terms of energy efficiency (kWh saved)?	N/A
What is the project Payback period (Years)	About 4 years

ENERGY EFFICIENT MEASURES	
Energy efficient measures of the building envelope	Existing building: <ul style="list-style-type: none"> • 5cm rockwool on the insulated roof • Double glazing on north and east sides with u-value 1.1 W/mK • Laminated glazing on west side with u-value 3.8 W/mK • The wall will remain indoor and outdoor limestones, but the internal wall insulation will be polyurethane foam
Energy efficient measures of the heating system	Heating/Cooling by geothermal heat pumps (GHP). 22 drillings X 150m/each depth Installed capacity GHP: 2units X 80kW = 160 kW
Energy efficient measures of monitoring energy	EMS (Energy Management System) will be installed for energy consumption monitoring
Energy efficient measures regarding behaviour	As the building was abandoned no staff has been using the building however there is a plan to increase staff awareness on energy saving by the contractor.
Others?	

SUSTAINABILITY OF THE RENOVATION	
Design and choice of sustainable materials?	Given the complex nature of the building and the fact that the building is a protected structure no alterations were made to the building envelope.
Sustainable building site management? (sorting waste, water...)	N/A
Application of a valuation method (BREAM? HQE? Others?)	N/A

BUILDING MAINTENANCE: life of the building after the renovation	
Is the building object of an energy monitoring? Is there a responsible	The building will be maintained by the Technical Services of Strovolos Municipality, the Contractor and theZENITH Mechanical and Electrical Consultants.

manager?	
Who is in charge of the maintenance of the heating system of the building?	The Technical Services of Strovolos Municipality will appoint the maintenance group after October 2012.
Who is in charge of the day-to-day energy management?	Technical Services of Strovolos Municipality
Are there some specific measures to raise energy awareness and to implicate users in energy efficiency?	There will be a procedure for raising awareness of users related to the energy savings.

FUNDING	
What financing plan?	Overall cost of energy efficiency measures is 290.000€
Innovative or specific aspects in the method of financing (European funds or loan, energy performance contract,...)	European Funds 40% Own resources 60%
What is the balanced budget for each stakeholder <ul style="list-style-type: none"> • Energy costs for tenant before /after • Increase in the rent 	N/A
Is there any specific economical indicators (payback time on investment, global cost, ...)	The payback 4 years.

TRANSFERABILITY	
Transferable aspects according to the partner in charge of this example of good practice	The energy renovation works would be directly transferable to a building of a similar construction type and age. However protected buildings should be examined individually.
	The procurement process undertaken was in line with national procurement rules.
	Rules and procedures would be directly transferable.
Transferable aspects according to the partner in charge of this example of	The other partners will analyse and validate these good practices. During the process of validation the partners will take on the role of auditors because they will assess and improve the effectiveness and transferability of good practices in

good practice	their context
	The validation process will promote a systemic approach in local competent public administrations. Moreover, this process of selection and validation is a peer review and entails the mutual role of experts and auditors depending on typology of buildings and partner's expertise.

SOURCES	
Publications	Press Releases
	Media
Web Site	www.strovolos.org.cy
Interviews/ Meetings	Mr. Kyriakos Tsiftes – ZENITH Mechanical and Electrical Consultants
	Mr. Christos Panayides - Christos Panayiotides & Associates