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COMBINES PROJECT
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ANNEX 1 BEST PRACTICE EXAMPLES COMPREHENSIVE RENOVATION OF BUILDINGS

Task 6.3.1: Transnational Report for WP6 & Master Report

COMPREHENSIVE RENOVATION OF BUILDINGS: COMBINING EPC WITH SUBSIDIES

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DEFINITIONS AND GLOSSARY

Term	Definition
CombinES Comprehensive Renovation	a special case of Comprehensive Renovation, where the renovation of building envelope is subsidised while the renovation of the technology system is implemented with the intervention of an energy service company (ESCO) through the Energy Performance Contracting model (EPC)
Comprehensive Renovation	co-ordinated implementation of both building envelope measures (including insulation and window/door replacement) and technology measures (including interventions on heating, ventilating, and air conditioning (HVAC) systems)
CPR Regulation 1303/2013	Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013, laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006
energy efficiency (EE)*	means the ratio of output of performance, service, goods or energy, to input of energy
Energy Efficiency Directive (EED)	Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC
energy efficiency improvement*	means increase in energy efficiency as a result of technological, behavioural and/or economic changes
energy management system*	means a set of interrelated or interacting elements of a plan which sets an energy efficiency objective and a strategy to achieve that objective
energy performance contracting* (EPC)	means a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance

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criterion, such as financial savings

energy savings*

means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption

energy service* (ES)

the physical benefit, utility or good derived from a combination of energy with energy-efficient technology or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to result in verifiable and measurable or estimable energy efficiency improvement or primary energy savings

energy service provider* /energy service company (ESCO)

means a natural or legal person who delivers energy services or other energy efficiency improvement measures in a final customer's facility or premises

energy*

means all forms of energy products, combustible fuels, heat, renewable energy, electricity, or any other form of energy, as defined in Article 2(d) of Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics

EPC provider

means an energy service provider who delivers energy services in the form of Energy Performance Contracting

ESI Funds

European Structural and Investment Funds

PPP

Public - Private Partnership

The International Performance Measurement and Verification Protocol (IPMVP)

is the widely referenced framework for "measuring" energy or water savings and is available at www.evo-world.org

Notes:

*Definitions according to the Energy Efficiency Directive

BEST PRACTICE EXAMPLES OF COMBINES COMPREHENSIVE RENOVATION

1. COMBINES COMPREHENSIVE RENOVATION IN JOSEF GOČÁR SECONDARY CIVIL ENGINEERING TECHNICAL SCHOOL IN PRAGUE

Facility	Josef Gočár Secondary Civil Engineering Technical School
Country	Czech Republic
Region	Prague
Customer	Municipal Prague City Council
Type of building	Campus of the secondary school

Project in short

A CombinES Comprehensive Renovation project has been prepared for the Josef Gočár Secondary Civil Engineering Technical School in Prague 4. The project consisted of energy saving measures in all modern school buildings with use area of 5,283 m².

In the second half of 2009, thermal insulation of the building, supported by a subsidy from Operational Programme Environment commenced. The insulation measures were completed during the spring of 2010.

In 2010, an EPC project was launched. The EPC project has led to renovation of the boiler house, installation of new air conditioning system and heat pumps and new regulation system. In total these technology measures estimated to save 16.7 GWh of heat and 2.7 GWh of electricity during the whole lifetime of 15 years. Savings guaranteed in the contract were about 0.1 million EUR/year.

Overview

Implemented via	I. EPC	II. Subsidies
Type of measures	technology measures	thermal envelope measures
Start date for the procurement procedure	December 2008	May 2009
Date of contract signature	July 2009	September 2009
Year of installation measures	2009 -2010	2009-2010
Contract duration	8 years	7 months
Period of provided guarantees for energy savings	8 years	8 years
Investment volume	EUR 0.4 million	EUR 1.3 million

I. Technology measures implemented by EPC

EPC provider	MVV Energie CZ a.s.
Implemented measures	Within the EPC project a gas boiler plant, engine room of heating and hot water and air-conditioning were reconstructed, as well as 2 heating pumps (air-water) and modernised measurement and regulation have been installed. Interventions on the building (wall insulation and replacement of windows and doors) were implemented one year prior to implementation of the EPC project.
Financing	The investment costs of energy saving measures within the EPC project were in the amount of EUR 0.4 million. The client's own funds invested in the project amounted to about 20% and the

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	rest of the investment is being repaid from energy savings achieved.
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II. Thermal envelope measures co-financed by subsidy

Supplier of subsidized measures	Vltavín Holding, stavební podnik, Ltd. (construction company based in Prague)
Implemented measures	Insulation of building thermal envelope
Type and source of financing	The client received a subsidy from Operational Programme Environment (OPE) for insulating the building thermal envelope amounting to EUR 1 million i.e. 74% of the total investment costs).

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2. COMBINES COMPREHENSIVE RENOVATION IN SECONDARY TECHNICAL SCHOOL NOVOVYSOCANSKA

Facility	Secondary Technical School Novovysocanska
Country	Czech Republic
Region	Prague
Customer	Secondary Technical School Novovysocanska
Type of building	Campus of the secondary school

Overview

In 2009 the Secondary Technical School Novovysocanska in Prague implemented CombinES Comprehensive Renovation.

Firstly, the Schools's heating system was renovated by replacement of gas boilers and a rather extensive refurbishment of the heating system. Measures pertaining to heat consumption were supplemented by saving measures aimed at reduction of electricity and water consumption. For the preparation of the project the school received a subsidy from the Programme EFEKT in the amount of EUR 4,000.

Moreover, in the second half of 2009 the school carried out complete insulation of the building envelope, including replacement of the original windows with plastic ones. The project was financially supported by the State Environmental Fund of the Czech Republic within the Operational Programme Environment (OPE). Seventy five percent of the investment in the technological components will be repaid by the energy savings. As the savings are guaranteed by the EPC contract, the client does not take the financial risk of the repayment for this part.

Implemented via	I. EPC	II. Subsidies
Type of measures	technology measures	thermal envelope measures
Start date for the procurement procedure	July 2008	May 2009
Date of contract signature	November 2008	September 2009
Year of installation measures	2009	2009-2010
Contract duration	8 years	4 months
Period of provided guarantees for energy savings	8 years	8 years
Investment volume	EUR 0.3 million	EUR 0.6 million

I. Technology measures implemented by EPC

EPC provider	ENESA a.s.
Implemented measures	Heating system was renovated by replacement of gas boilers and a rather extensive refurbishment of the heating system. In rooms, there was implemented IRC system. In addition measures aimed at reduction of electricity and water consumption have been implemented.
Financing	Costs of measures in the amount of CZK 8 million are partly repaid from the energy savings in the amount of CZK 6 million. Thus the client's own funds invested in the project amounted to 25% (CZK 2 million).

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II. Thermal envelope measures co-financed by subsidy

Supplier of subsidized measures	3V&H, Ltd. (based in Uherský Brod)
Implemented measures	Insulation of the building (skin and replacement of windows and doors) was implemented at the same time.
Type and source of financing	For the insulation of building the client received a subsidy from OPE for thermal insulation in the amount of EUR 0.4 million (i.e. 64% from the total investment costs of insulation in the amount of EUR 0.6 million).

3. COMBINES COMPREHENSIVE RENOVATION IN PRAGUE SCHOOL BUILDINGS

Facility	Schools in district Prague 13
Country	Czech Republic
Region	Prague
Customer	District Prague 13
Type of building	EPC implemented in 31 school buildings (primary schools and nursery schools) from which 15 school buildings were insulated

Project in short

The most extensive project using CombinES Comprehensive Renovation was prepared in 2010 for the Prague 13 district. The local council received a subsidy from the Operational Programme Environment (OPE) to thermally insulate 15 school buildings and the project was implemented in the same year. In 2009, an EPC provider was selected in a tender, and in 2010 the EPC provider implemented the EPC project in the respective school buildings.

The investment costs of energy saving measures (EPC + thermal envelope measures) were EUR 15 million. Measures implemented within the EPC project amounted to EUR 4.4 million and are being repaid from the savings achieved on energy costs. The subsidy from OPE for thermal envelope measures covered 69% of the investment costs of thermal insulation.

Overview

Implemented via	I. EPC	II. Subsidies
Type of measures	technology measures	thermal envelope measures
Start date for the procurement procedure	February 2009	September 2009
Date of contract signature	September 2009	February 2010
Year of installation measures	2009-2011	2010
Contract duration	10 years	6 months
Period of provided guarantees for energy savings	10 years	10 years
Investment	EUR 4.4 million	EUR 10.8 million

I. Technology measures implemented by EPC

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EPC provider	ENESA a.s., EVČ, s.r.o. (consortium)
Implemented measures	The project was implemented in two phases – 18 school buildings in the first one and 13 nursery schools in the second one. Within the EPC project, the interventions included disconnection from district heating, installation of new boilers, installation of IRC and implementation of M&R. Further saving measures were implemented in water and electricity consumption.
Financing	Measures implemented within the EPC project amounted to EUR 4.4 million and are being repaid from energy cost savings achieved.

II. Thermal envelope measures co-financed by subsidy

Supplier of subsidized measures	4 construction companies: Podzimek a synové, Ltd., Vltavín Holding, stavební podnik, Ltd., Prominecon Group, Swietelsky stavební Ltd.
Implemented measures	Thermal insulation of 15 buildings (envelope, partial insulation, replacement of windows and doors) was implemented.
Type and source of financing	The subsidy from OPE for thermal envelope measures of EUR 7.5 million covered 69% of the thermal insulation investment costs (total of EUR 10.8 million in 15 buildings).

BEST PRACTICE EXAMPLES OF COMPREHENSIVE RENOVATION

4. COMPREHENSIVE RENOVATION IN BUILDINGS OF FEDERAL POLICE ST. AUGUSTIN

Facility	Facilities owned by Federal Police St. Augustin
Country	Germany
Region	St. Augustin
Customer	Direct contracting entity is the BImA (Bundesanstalt für Immobilienaufgaben) and indirectly the Federal Police
Type of building	84 buildings with a main floor space of 127,000 m ²

Project in short

The St. Augustin project provides an example of combining the technology measures implemented through EPC with the thermal envelope measures financed by the client.

The Bundespolizei (Federal Police Authority, FPA) commissioned Cofely to energetically optimize its facilities in Sankt Augustin, near Germany’s former capital Bonn. The BPA in St. Augustin is one of 9 regional FPAs in Germany, with about 3,500 police and administrative staff, and is responsible for all federal police assignments in the State of Northrhine-Westfalia. The site comprises 84 buildings with a main floor space of 127,000 m². Cofely guarantees an energy cost reduction of 55 % during the contract term of 10 years and will reduce local CO₂ emissions by 5,200 tons per year. Direct contracting entity is the BImA (Bundesanstalt für Immobilienaufgaben) and indirectly the Federal Police, whose high security standards have to be observed. The contract is based on an energy performance contract bid issued by dena, the German Energy Agency. Main requirements of the contract: 50% of the heat are to be supplied carbon-neutral; energetic refurbishment of one building; reduction of energy consumption. Cofely developed a package of tailor-made measures for the optimization of heat and power supply, lighting systems, domestic hot water, building automation and metering technology as well as building reconstruction. To our best knowledge, this is one of the most comprehensive energy performance projects in Europe to date, with a high degree of technical complexity, an above-average energy savings guarantee of 55 %, the integration of renewable energy sources and above all, the refurbishment of the building shell.

Cofely was awarded with the European Energy Service Award 2014 with reference to this project.

Overview

Implemented via	Comprehensive EPC	Financed by the client
Type of measures	technology measures	Thermal envelope measures
Year of installation measures	2013 - 2025	
Contract duration	10 years	
Period of provided guarantees for energy savings	10 years	
Investment volume	EUR 6.3 million	

COMPREHENSIVE RENOVATION OF BUILDINGS: COMBINING EPC WITH SUBSIDIES

I. Technology measures implemented by EPC

EPC provider	Cofely Deutschland GmbH
Implemented measures	<ul style="list-style-type: none"> ➤ Refurbishment of the building shell ➤ New heating supply with wood chips and gas boilers ➤ Cogeneration plant ➤ New building control system ➤ About 3.000 new luminaries, partly LED ➤ Hydraulic optimization ➤ Optimization of existing HVAC systems
Financing	<ul style="list-style-type: none"> ➤ Funding source: Forfaiting i.e. the ESCO sells the future ESCO rates from client to the bank, which is providing the project financing. ➤ Investment volume: EUR 6.3 million

II. Thermal envelope measures financed by the client

Implemented measures	Refurbishment of the building shell
Type and source of financing	100% of the costs of thermal envelope measures have been financed by the client

5. COMPREHENSIVE RENOVATION IN PUBLIC BUILDINGS IN THE PROVINCE OF MILAN

Facility	Public buildings owned by members of Covenant of Mayors in Milan Province
Country	Italy
Region	Lombardy
Customer	Municipalities in the Milan Province
Type of building	Schools and other public buildings

Project in short

In the framework of IEE-ELENA Facility, the European Investment Bank (EIB) has supported the Province of Milan in a 3-years project entitled Energy Efficiency Milan Covenant of Mayors. The investments mainly concern the energy refurbishment of existing public buildings (mostly schools) located in selected small municipalities in the Province of Milan and the Municipality of Milan, all of which have joined the Covenant of Mayors. The obtained funding from ELENA facility is about EUR 1.8 million, corresponding to ca. 90% of assistance costs. The expected investment of EUR 90 million has been articulated in three calls for tender, two of which have been awarded: the first one including 98 buildings in 16 municipalities, the second one addressing 38 buildings in the Municipality of Milan.

Although facing different difficulties, especially of contractual and financial nature (see below), this project has pushed forward the diffusion and recognition of EPC models in Italy, providing inspiration and support also to other public administrations involved in other ESCO projects (e.g. Provinces of Modena, Padova and Rovigo, Trento).

COMPREHENSIVE RENOVATION OF BUILDINGS: COMBINING EPC WITH SUBSIDIES

Overview

Implemented via	EPC + ELENA funds from EIB
Type of measures	Building envelope insulation, fitting of thermal and electric plants, installation of renewable energy sources and energy management & control systems; actions on the urban transport sector and the local infrastructure
Date of contract signature	2013 and 2014
Year of installation measures	2014-ongoing
Contract duration	15 years
Period of provided guarantees for energy savings	15 years
Investment volume	at present date about EUR 18 million

Measures implemented by the combination of EPC and subsidies

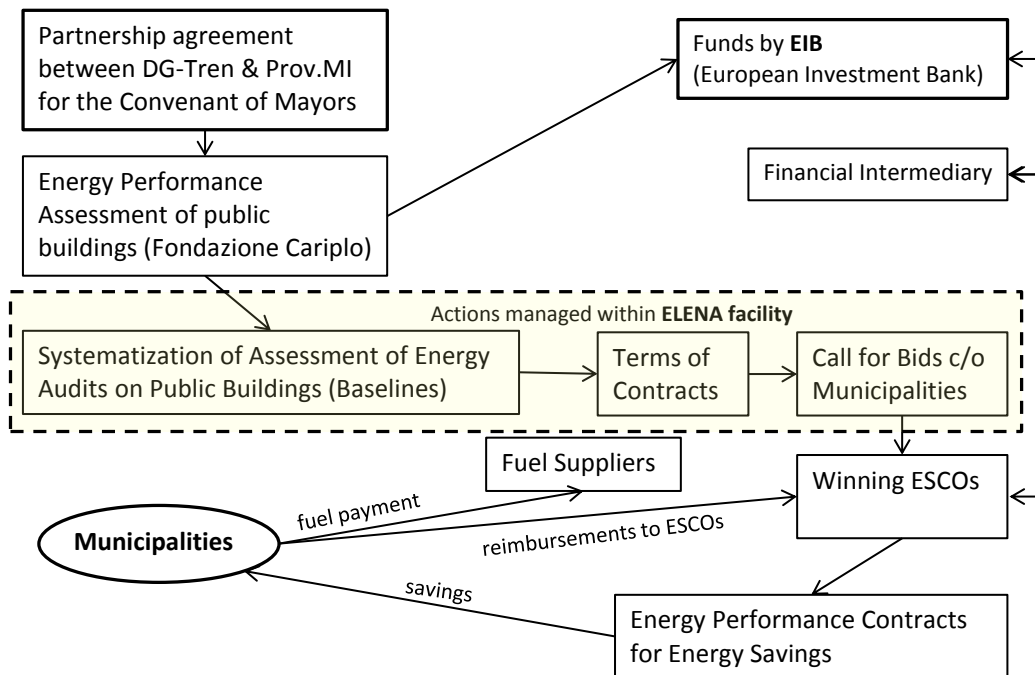
Supplier of subsidized measures	European Investment Bank, IEE-ELENA Facility
Type and source of financing	<p>The initial provision approved by EIB consisted in EUR 65 million, while EUR 25 million were expected to be financed via the ESCOs awarding the EPC. The actual total investments amount so far to about EUR 18 million, part of which have benefitted from the credit line provided by EIB.</p> <p>The ELENA assistance activities consists in assessing the final saving requirements, drawing all the tender documentation, organizing and coordinating all the procedures for the award of public work contracts, public supply and public services contracts, then follow and supervise the work and finally monitoring and auditing the results and disseminate the acquired experience.</p>
Implemented measures	<p>The project aims at the energy requalification of public buildings (mostly schools) in municipalities of the Province of Milan, by insulating the building envelope, fitting the existing thermal and electric plants (including condensing boilers, micro CHP plants, pumps and lights), installing RES and adopting reliable energy management & control systems.</p> <p>Within the first tender, interventions have included: 25 interventions on the building envelope, 31 on the roof insulation, 72 condensing boilers, 17 heat recovery systems, thermostatic valves in 78 buildings, 17 variable-flow circuits, 34 thermal solar systems, 73 micro-CHP plants, 16 heat pumps, 12 radiant systems in gyms, 56 interventions on presence sensors, 81 interventions on thermoregulation with zone valves and tele-control. The investments foreseen amount to EUR 13 million. The minimum energy savings guaranteed to the Municipalities is 35%, while a shared-saving model has been applied (5% of savings guaranteed to the Municipalities).</p> <p>A tenders went void twice (in 2013 and 2014) for different financial and contractual issues, such as (i) the boycotting of major ESCOs, that hesitate to adopt EPCs with guaranteed results and a transparent separation of energy savings and fuel supply, (ii) the difficulty for small ESCOs to access bank loans and hold long and complex contracts, (iii) the resistance of banks, that generally refuse to consider the cash</p>

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flows generated by energy savings as main collateral.

A third tender for the Municipality of Milano was awarded in August 2014, involving 38 schools. The proposed interventions include natural gas conversion of all oil plants, PV installations and a few solar thermal plants, insulation of building fabric and roof, window replacements, interventions on the lighting system and the introduction of BEMS. The guaranteed savings accounted for 35,4% of the baseline, 15% of it directly in the form of shared saving for the municipality.

Technical-Financing Scheme for Public Buildings Energy Refurbishment in the Province of Milan



6. MODERNIZATION OF THERMO-TECHNICAL EQUIPMENT AND BUILDINGS, LAUNDRY AND DRINKING WATER SOURCE IN PSYCHIATRIC WARD OF SAMUEL BLUM IN PLEŠIVEC

Facility (project title)	Psychiatric ward of Samuel Blum in Plešivec
Country	Slovakia
Region	Košice
Customer	Psychiatric ward of Samuel Blum in Plešivec
Type of building	Hospital

Project in short

Psychiatric ward of Samuel Blum in Plešivec is one of the oldest institutions of this type in Slovakia. Majority of the ward’ campus has been built since end of 19th century until middle of 20th century. Only limited refurbishments were done within recent decades and thus also the heating system of the ward suffered from obsolete state and high energy consumption. Previous more significant investment into the heating system – reconstruction of central boiler room from coal to natural gas – was made in beginning of 90’s. Despite this, the heating system based on steam as the as the medium had enormous heat losses due to technical state of the distribution system.

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This was the dominant factor of triggering the decision making process on modernization of the heating system using the EPC approach which started in the first quarter of 2012. In the course of project development also additional energy and costs saving measures have been identified. These consisted of modernization of laundry and utilization of own water well. The preparatory stage of the project was concluded by publishing of tender in October 2012. The public procurement process was concluded in January 2013.

Implementation of the measures started in March and was finished in September 2013. Actually, after finalization of the first annual saving period, it is possible to state that the aims of the project have been reached as the natural gas consumption decreased by 50% against the baseline and other significant savings were achieved on operation of the laundry and drinking water source.

Overview

Implemented via	I. Project Development	II. EPC
Type of measures	Advisory and technical assistance within project development and public procurement	Technological measures
Start date for the procurement procedure (publication of contract notice)	NA	October 3 rd , 2012
Date of contract signature	NA	January 30 th , 2013
Year of installation measures	2009 -2010	2013
Contract duration		10 years
Period of provided guarantees for energy savings		10 years
Investment volume (mill. EUR)		1.549 mill. EUR including VAT

I. Assistance co-financed from EU programme

Supplier of subsidized assistance	Energy Centre Bratislava
Implemented measures	The preparatory stage of the project consisted of: <u>1/ Technical assessment</u> of the actual state of buildings and heating system including preparation of baseline of energy consumption, definition of possible measures and estimation of related investments and energy savings; <u>2/ Development of tender dossier;</u> <u>3/ Execution of public procurement.</u>
Type and source of financing	Initial stages of the project development have been financed within European Energy Service Initiative – EESI project (co-financed by EU programme Intelligent Energy Europe). Contribution from EU resources (approx. 40% of overall costs for assistance) has been complemented with own resources of the Psychiatric ward of Samuel Blum in Plešivec

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II. Technology measures implemented by EPC

EPC provider	Siemens s.r.o.
Implemented measures	<p>The measures implemented within the project were focused into three areas:</p> <p><u>1/ Heating and hot water preparation</u> – Replacement of old heating system based on central steam boiler room with eight small object boiler rooms (10,5 – 202 kW) in individual buildings, thermal regulation of heat distribution systems in buildings, installation of new control system.</p> <p><u>2/ Laundry technology</u> – complex reconstruction</p> <p><u>3/ Own drinking water source</u> – installation of new technology for treatment of water from own water well.</p>
Financing	<p>Initial investment (1.549 mill. EUR including VAT) into the implemented measures was financed by the EPC provider which is enabled to sell the claim against client after first year when level of guaranteed savings is reached. The initial investment is completely repaid from savings on energy and water consumption.</p>

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7. DESIGN AND IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES AND MODERNIZATION OF HEATING EQUIPMENT AND BUILDINGS OF THE CITY OF MALACKY

Facility (project title)	City sports hall Malina, City centre of social services, Cinema Záhóran
Country	Slovakia
Region	Bratislava
Customer	City of Malacky
Type of building	Sport facility, Social facility, Cultural Facility

Project in short

This project was implemented as the first EPC project in Slovakia combining the usual technology measures together with significant volume of construction measures. The project was initiated as a result of technical assistance provided by Energy Centre Bratislava for the City of Malacky within project Minus 3% co-funded by the Intelligent Energy Programme, in which both entities took part as project partners.

Following recommendations provided within Energy efficiency action plan of the City of Malacky, the city administration started preparation of the project at beginning of 2013. The inevitability of construction measures implementation was considered from early beginning of the project development and was followed by decision of the city to co-finance part of the investment costs with the aim to enable implementation of the project within economically feasible duration. Implementation of the project will ensure increased energy efficiency of three city buildings gained through comprehensive modernization of one building – Cinema Záhóran, partial modernization of City sports hall (technological measures combined with selected construction measures) and modernization of heating system in the City centre of social services.

Overview

Implemented via	I. EPC
Type of measures	Construction and Technological measures
Start date for the procurement procedure (publication of contract notice)	December 31 st , 2013
Date of contract signature	April 15 th , 2014
Year of installation measures	2014
Contract duration	10 years
Period of provided guarantees for energy savings	10 years
Investment volume (mill. EUR)	0.442 mill. EUR including VAT

I. Construction and Technology measures implemented via EPC

EPC provider	COFELY a.s.
Implemented measures	1/ City sports hall Malina: <u>Technology measures</u> – modernization of boiler room, heating system, ventilating system and lightning. <u>Construction measures</u>

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	<p>– replacement of glass wall on the swimming pool hall</p> <p>2/ Cinema Záhoran: <u>Technology measures</u> – optimization of heating system. <u>Construction measures</u> – Thermal insulation of the building, replacement of windows and doors.</p> <p>3/ City centre of social services: <u>Technology measures</u> – optimization of heating system.</p>
<p>Financing</p>	<p>Initial investment (441.870 EUR including VAT) into the implemented measures was financed by the EPC provider which is enabled to sell the claim against client after first year when level of guaranteed savings is reached. To enable implementation of project within economically feasible duration, the City of Malacky will co-finance the investment with amount of 68.898 EUR through increased payments in first two years of the contract duration.</p>

BEST PRACTICE EXAMPLES OF ENERGY SERVICES IMPLEMENTED IN FORM OF PUBLIC-PRIVATE PARTNERSHIPS (PPP)

8. COMPREHENSIVE RENOVATION OF EDUCATIONAL BUILDINGS OF THE MUNICIPALITY RADZIONKÓW IN PUBLIC-PRIVATE PARTNERSHIP

Facility	Educational buildings owned by/entities of/ the municipality
Country	Poland
Region	Silesia
Customer	Municipality of Radzionków
Type of building	4 schools and 1 kindergarten

Project in short

The subject of the contract is **to achieve guaranteed energy savings** in educational buildings of the Municipality Radzionków through the execution of comprehensive works consisting of buildings thermal renovation and modernization of the lighting, combined with the maintenance of these facilities for a period of 10 years from the date of signing the contract (i.e. March 2010).

The Radzionków project is first long term ppp contract in Poland signed under new PPP Act of 19th December 2008. It has been announced on 15th July 2009 and signed on the 4th March 2010.

It provides a model example of the **green public procurement** and combines the technology and the thermal envelope measures implemented under EPC with guarantees of savings but financed by the client. The contract, under rules of public-private partnership, has been concluded after **competitive dialogue** procurement procedure. The **ppp** agreement provides *for* the joint implementation of the project based on the division of tasks and risks between the parties. The municipality bears the demand risk i.e. that the facilities are used effectively as the educational buildings within the contract duration. The private partner covers both the construction and availability risk and in addition provides energy management of the facilities for a decade (ten years) and guarantees that agreed level of savings and thermal comfort is delivered.

The competitive dialogue, a unique public procurement procedure, has enabled to create optimal contract documentation describing the energy saving measures to be implemented. The contracting authority has acquired the know-how directly from the tenderers. The assistance of the partners in determining the accounting, tax and law issues especially in relation to the public debt issues cannot be underestimated. Municipality has not hired external counsellors nevertheless project has successfully undergone several state controls.

The realised savings are steadily growing reaching in 2013: 57,99% on heating (41,96% on electricity).

Overview

Implemented via	I. EPC and maintenance	II. Energy management
Type of measures	technology and thermal envelope measures	Technology measures

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Start date for the procurement procedure	15 th July 2009. competitive dialogue	15 th July 2009. competitive dialogue
Date of contract signature	4 th March 2010	4 th March 2010
Year of installation measures	2010	2010 and onwards -
Contract duration	½construction+10 years m.	10 years
Period of provided guarantees for energy savings	10 years	10 years
Investment volume	EUR 2 million	EUR 0,2 million

I. EPC: Construction and technology measures implemented

EPC provider	SIEMENS Spółka. z o.o.
Implemented measures	Thermal insulation of walls and roofs, Replacement of windows and doors, Modernization of lighting system, Reconstruction of 5 heating sources, regulation EPC provider decided not to replace the whole heating systems but only partially renovate them taking the risk of higher maintenance costs
Financing	Guaranteed savings: 54,03%- heat and 39,77% - electricity. Costs of all measures in the amount of EUR 2 million paid by the client will be partly <u>repaid</u> by the guaranteed savings estimated at EUR 0,8 million (in 2010), currently (2014) valued EUR 1 million. Thus Client expects savings exceed 50%level.

II. Energy management financed on the yearly basis

Supplier of the energy management system	Siemens
Implemented measures	IRC- on-line individual each and every room temperature measurement and control
Type and source of financing	Deferred semi-yearly payments, clients' savings

COMPREHENSIVE RENOVATION OF BUILDINGS: COMBINING EPC WITH SUBSIDIES

9. COMPREHENSIVE RENOVATION OF PUBLIC BUILDINGS OF THE MUNICIPALITY KARCZEW IN PUBLIC-PRIVATE PARTNERSHIP CO-FINANCED WITH GREEN INVESTMENT SCHEME PROGRAM

Facility	Pool of ten public service buildings
Country	Poland
Region	Mazovia
Customer	Municipality of Karczew
Type of building	7 schools, 2 kindergartens and 1 health centre

Project in short

The subject of the contract is “Comprehensive thermal renovation of public buildings of municipality of Karczew in public-private partnership”. The contract encompasses modernization of the indoor lighting as well as the energy management and maintenance of ESM for a period of 14 years after energy savings measures are implemented.

It is a successor of Radzionków project based on the concept of TPF(Third Party Financing). First valued at EUR 3,1 million (including financial costs, payment in equal instalments) has been renegotiated to meet the Green Investment Scheme programme rules. The GIS1 programme is run by NFOŚiGW (National Fund for Environmental Protection and Water Management) and it allows to refund up to 30% of **eligible actual expenses** (not costs). The contract has been concluded after **competitive dialogue procedure**. The municipality decided to hire a legal consultant to deal with expected changes in the legal system. The investment has been completed in 2013 but the measurable effect will be known after 1st year of operation.

The realised actual energy savings will be announced yearly. To meet the GIS1 obligation the project during next 5 years must generate minimum of 145Mg avoided CO₂ emissions each year.

The Karczew case study set base for discussion on ‘hybrid projects’ i.e. ppp operations described in new CPR regulation 1303/2013/EU subsidized with EU funds of new 2014-2010 perspective.

Overview

Implemented via	I. EPC and maintenance	II. Energy management
Type of measures	technology and thermal envelope measures	Technology measures
Start date for the procurement procedure	24 th January 2012. competitive dialogue	24 th January 2012. competitive dialogue
Date of contract signature	2 nd January 2013	2 nd January 2013
Year of installation measures	2013	2014-2027 -
Contract duration	1year of construction +14 years management.	14 years
Period of provided guarantees for energy savings	14 years	14 years
Investment volume	EUR 1,9 million	EUR 0,2 million

I. EPC- Construction and technology measures implemented

EPC provider	Siemens Building Technologies Sp. z o.o.
Implemented measures	Insulation of walls and roofs

COMPREHENSIVE RENOVATION OF BUILDINGS: COMBINING EPC WITH SUBSIDIES

	<p>Replacement of windows and doors Modernisation of lamps and fixtures Reconstruction of heating sources, Regulation of heating system installation of automatic valves Basic maintenance</p>
Financing	<p>Costs in EUR million: investment -1,9; financial 0,4; energy management 0,2. Timing: 1.st year- after construction 1,3mln (0,2mln non eligible +1mln eligible of which 0,3mln refunded) years 2-15 168 monthly instalments of ≈0,006 million EUR.</p>

II. Energy management financed on the yearly basis

Supplier of the energy management system	SIEMENS
Implemented measures	IRC- on-line individual each and every room temperature measurement and control
Type and source of financing	168 monthly payments, clients' savings ≈0,001 million EUR