Category: New technology project used as exhibition centre
Case Study: New Showroom GEVO in Limassol

Project cofinanced by
European Regional Development Fund
Lead Partner
Provincia di savona
SCORE
Sustainable Construction in Rural and Fragile Areas for Energy efficiency

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Sustainable Construction in Rural and Fragile Areas for Energy efficiency

Location Limassol

Date 2010

Context

The exhibition centre of GEVO located in the central business avenue in Limassol. GEVO's new building is used to exhibit sanitary wares, fittings and building materials and it is in operation since November 2010.

It is an environmentally friendly building, since it combines perfectly the rational use and the implementation of several new technological systems utilizing renewable energy sources.

The Designers, accounting for the specific use and the specific building's operation hours, have provided innovative solutions which has lead both to the reduction of the thermal/cooling needs and to the reduction of energy consumption overall.

Description

The exhibition space in Limassol of the company GEVO is a remarkable technological project. As distinguished, the architect has followed a modern technique, using modern building materials.

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The building consists of four levels: basement, ground floor, first and second floor. Mechanical plantrooms located in the roof and basement. In basement also located Control Room.

The building directly from the construction ensures a comfortable and bright place where every visitor feels the friendly disposition of the company with long-term presence in the Cyprus market.

The materials used in the process of construction is typical for the Cyprus market: the static part made by concrete and brick walls. In the others sites of the building where the windows covering more than 85% of the surface, have been applied low U-value rates glazing: laminated (with U value=2.86 w/m²k) and double glazing (with U value=1.50 w/m²k).

In the external side of the building have been used decorative panel from sheet metal and around of the building have been installed shading elements.

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In the building incorporated several environmentally friendly technologies to improve heat insulation.

On the north side of the building, which grow large areas of walls, has been applied external thermal insulation system with expanded polystyrene.

Basic characteristic of the building is that there was an attempt to exploit the heat energy through the operation of the building itself, because the large glass surfaces in relation to the hours of exhibition space, help in this.

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Inevitably, the utilization of the combination of solar and geothermal energy for the air-conditioning classifies this work among one of the most energy saving air conditioning systems in Cyprus!

This combination of CO2 emission saving renewable technologies has been done for the first time in Cyprus. The combined system covers 95% of the building's annual needs in air conditioning and domestic hot water.

The Geothermal System for air-conditioning was placed around the building at 2-5 meters depth, using a closed type horizontal heat exchanger. The system consists more than 1,2 km of geothermal heat exchanger and high efficiency geothermal pump.

The Solar Air Conditioning system is defined in the roof of the building. Have been applied high efficiency vacuum solar panel and absorption chiller, producing more than 65% of energy needs for air-conditioning of the building. The basic characteristics of the Solar Air Conditioning system are: 42 Solar Collectors (total gross area 178 m²), 3 Hot Water Cylinder (total volume 6,000 lt), 1 Absorption Chiller (70 kW Cooling load) and 1 Cooling Tower (220 kW Cooling capacity).

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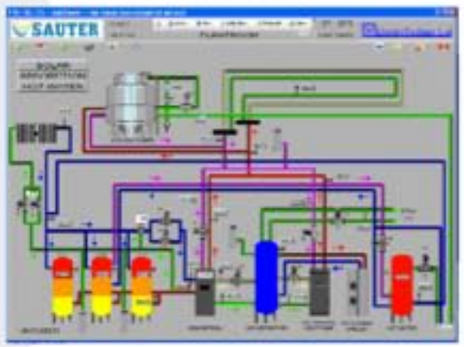
The systems are monitored and controlled by a building energy management system which was developed in such a way to enable distance access through the web so as to give the opportunity to Graduate Students and other interested parties to study its operation.



Evaluation

GEVO's Solar Air- Conditioning system is the subject of undergraduate dissertations and post graduate thesis works. In 1 year of operation of the building, already twice this project was part of research undergraduate thesis of students of the University of Cyprus.

The project participated in the 4th International Conference Solar Air-Conditioning as a pilot project in the conference technical tour in Cyprus in October 2011, with excellent reviews regarding the quality design, construction and operation.

Also, it is good mentioning that the project is qualified to take 40% subsidy from the Renewable Energies Fund with pay

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«Let us not forget that, where the sun shines and there is a smile, then the air comfort can be produced by Solar Air Conditioning System»

4th International Conference of Solar Air Conditioning, Dr. Tsiftes Kyriakos, Chairman

Total eligible costs for subsidy	~ 185.000
Subsidy (40 %)	~ 74.000 €
Annual savings (0.23€/1kWhe)	~ 27.650 €
Depreciation of Capital Spending	~ 4 years

Potential for transferability

The technological development of the renewable energy systems, combined with state grant for implementation of environmentally friendly technology, allows the exploitation of local climatic characteristics while offering owners the possibility of an economically viable investment.

The successful application of the combined solar and geothermal air conditioning in a commercial building, enables Reply with quote applications of such systems in larger buildings and energy intensive buildings.

Project cofinanced by

European Regional Development Fund

Lead Partner

- Province of Savona (ITALY)

Project Partner

- Region of South Aegean (GREECE)
- Read S.A. (GREECE)
- Local Energy Agency Pomurje (SLOVENIE)
- Agência Regional de Energia do Centro e Baixo - Alentejo (PORTUGAL)
- Official Chamber of Commerce, Industry and Shipping of Seville (SPAIN)
- Rhône Chamber of Crafts (FRANCE)
- Development Company of Kefalonia & Ithaki S.A. - Kefalonia (GREECE)
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