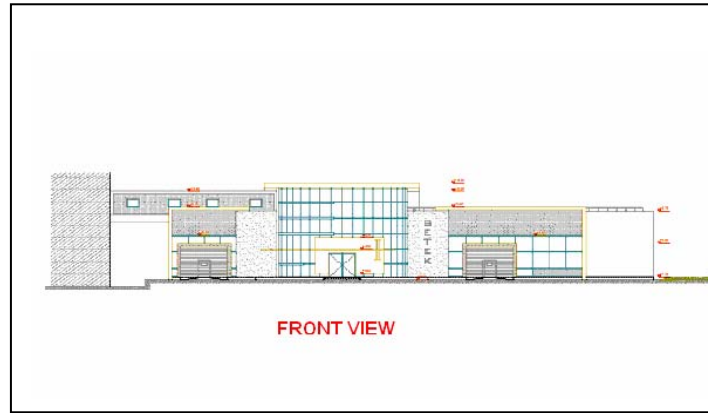


1st INTERIM REPORT

(Previous Name: BETEK Training and R&D Center, Turkey)

New Name - Turkish: "RMI Türkiye Bilimsel Araştırma ve Geliştirme Merkezi
(RMI Türkiye)"

New Name - English: "RMI Turkey Scientific Research and Development Center
(RMI Turkey)"



IN THE FRAMEWORK OF THE MED-ENEC PROJECT

– ENERGY EFFICIENCY IN THE CONSTRUCTION SECTOR
IN THE MEDITERRANEAN –

Date: 08 June 2007

Consortium Partners:

R&R Bilimsel ve Teknik Hizmetler Ltd. Şti. and BETEK Boya ve
Kimya San.A.S., Istanbul, Turkey

I THE PILOT PROJECT

PROJECT INFORMATION

Reference number	TUR01	
Country	Turkey	
Location/City	Gebze / Kocaeli	
Address	Inonu Mah. Guzeller Mevkii. GOSB	
Building Type	Training and R&D Center	
Number of Buildings	1 building with 3 floors constructed on a 800 m2 base area	
Total Floor Space	1763 m ² (total)	m ²

CONSORTIUM

Partner number	1
Partner name	R&R Bilimsel ve Teknik Hizmetler Ltd. Şti.
Role in the Project	Lead partner
Address	Sırmaperde Sok. No:69 A/3 Altunizade Üsküdar İstanbul
Country	Turkey
Contact Person	Prof. Dr. Ali Beba
Phone	Prof. Dr. Ali Beba
Fax	+90 216 651 2182
Email	+90 216 651 2194
	info@rrbilimsel.com.tr
Partner number	2
Partner name	BETEK Boya ve Kimya San.A.S.
Role in the Project	Building Owner
Address	Inonu Mah. Guzeller Mevkii. GOSB Gebze / Kocaeli
Country	Turkey
Contact Person	Mr. Sinan Ustunel / Mr. Mustafa Macit
Phone	+90-262-678-3000
Fax	+90-262-678-3215
Email	sinan.ustunel@betek.com.tr / mustafa.macit@betek.com.tr

II SUMMARY OF THE PROJECT

ABSTRACT

Main energy features of the Turkish Pilot Project, named as "RMI Turkey Scientific Research and Development Center (RMI Turkey)", are:

- Conservation of energy by utilizing the most adequate thermal insulation material with 8 cm thickness
- Utilization of renewable energy source via Ground to Surface Heat Pumps (GSHPs),
- Increase the input of the natural light in the building by two skylights (190 m²)
- Higher utilization of passive solar energy by orienting building architecture to sun

Cost of the new energy system is estimated to be around 260,000 Euro versus 175,000 Euro calculated for the conventional system. Simple pay - back period of the selected energy system was calculated to be 9.4 years with 15,537 U.S. Dollars of net present value for 20 years of life span making this project economically feasible.

THE PILOT PROJECT

"RMI Turkey Scientific Research and Development Center (RMI Turkey)", consists of approximately 1763 square meters of total area with three floors, a seminar hall, several laboratories, office spaces and application areas. It is located at the Betek manufacturing facility site in Gebze Organized Industrial Zone, Kocaeli Turkey. Building will be used throughout of the year for scientific and technical investigation of new building materials and for training purposes.

THE ENERGY CONCEPT

- a) Conservation of energy: To reduce the heating and cooling demand of the building improved insulation compared to the national standard will be implemented. This will be accomplished by utilizing 8 cm thick carbon containing insulating material.
- b) Use of renewable energy source for meeting the heating & cooling needs: A heat pump system, which utilizes ground as the constant temperature heat source is the main renewable energy source. A vertical closed loop system with 22 double-U bore-holes, each with 100 meters depths are drilled to provide the energy demand. A total of 27 ground source heat pump (GSHP) units will be used to distribute this energy throughout the building.
- c) Increase the input of natural light into the building: This is accomplished by installing two skylights, with a total area of 190 m², at the roof of the building. It is estimated that around 90 % of the lighting needs will be met this way for the halls during whole year. In addition, use of a solar light system (which has the commercial names of "Brighten Up®" and industrial type "Solamaster®") is planned to be used in order to meet part of the lighting needs of the bottom (darker) part of the building.
- d) Architectural setting and orientation of the construction is realized for the solar gain to be maximum in winter, while glare and solar gain are minimum in the summer. If necessary, a shading over the skylights will be considered.

BENEFITS OF THE PILOT PROJECT

Calculations showing the benefits over the life-span of 20 years are summarized below

	New System	Unit	Conventional System	Unit
Summer	51824	kWh	71520	kWh
Winter	62470	kWh	19650	kWh
			162696	kWh
Total	114294	kWh	253866	kWh

(15191 kg-oil equivalent electricity: 10,71 kWh/kg-oil)

Annual Energy Savings:	139572	kWh/yr
Annual Energy Savings:	11166	Euro/yr
Additional Investment Cost:	96870	Euro
Pay Back Period:	8,68	Yr

It is important to note that 9.4 years represent the worst case scenario since it does not take into account the benefits of the passive solar system plus the reduction of the lighting need due to the skylights (roof windows). When all these are taken into account, payback period is expected to be somewhat reduced.

STATUS OF THE PILOT PROJECT

Planning of the project is totally completed. Over 90 % of the construction together with the 8 cm insulation is finished. Energy production and distribution system is fully defined and the necessary equipment is already purchased and brought to the site. Building is expected to be operation by end July 2007. An official opening is planned fro 18 October 2007. Monitoring strategy is clarified yet the information dissemination strategy is under discussion.