



Energy savings in Mende, Hungary Pest County SAVE-REMA Energy Agency, Hungary

Summary

Mende is a small village, located in Pest County, 35 km south-east of Budapest. Mende has 4131 inhabitants (see <http://www.mende.hu/>). The self-government runs a Municipal Office, a GP consulting room, several schools and nurseries, with high energy costs. The SAVE-REMA Energy Agency carried out a detailed analysis of the energy balance of these institutions and made recommendations. Based on the recommendations, the Self-government significantly decreased the energy consumption and the energy costs. The energy audits were co-funded by a UNDP grant.

End-user area	Target Audience	Technical
New buildings	Citizens	Energy efficiency
Refurbishment of buildings	Households	Heating
Transport and mobility	Property owners	Cooling
Financial instruments	Schools and universities	Appliances
Industry	Decision makers	Lighting
Legal initiatives (regulations, directives, etc)	Local and regional authorities	CHP
Planning issues	Transport companies	District Heating
Sustainable communities	Utilities	Solar energy
User behavior	ESCOs	Biomass
Education	Architects and engineers	Wind
Other	Financial institutions	Geothermal
	Other	Hydro power
		Other

Context

Mende is a small village in Pest County with 4131 inhabitants (see <http://www.mende.hu/>). The self-government runs a Municipal Office Building, GP consulting rooms, several schools and nurseries, with high energy costs. In the summer of 2005, the SAVE-REMA Energy Agency carried out a detailed analysis of the energy costs of three buildings. The problems found are typical for the situations of the community buildings of small villages in Hungary.

Objectives

The objectives of the analysis included a general technical supervision of the buildings to find weak points. The aims were to determine if heating, hot water production and lighting in these buildings are energy efficient. Considering the limited financial resources of the self-government, solutions had to be recommended which provide significant savings in energy and are also cost-efficient.

Process

The Self-government of Mende ordered from the SAVE-REMA Energy Agency the energy audits of the following institutions: Municipal Office (Mende, Fő út 14.), Nursery (Mende, Fő út 10.), GP Consulting Rooms (Mende, Fő út 6.). The audits were carried out in May and June and the final reports were written in July, 2005.



Mende (Pest County, Hungary), Building of Municipal Offices

The energy audits were carried out in accordance with the requirements of the Energy Centre of Hungary. The resulting report was typically 25 pages long for each audited building. The energy audit reports included the following sections:

- Location of the building, date of construction, general state (new, used, imminent reconstruction is needed), utilization of the building (e.g. school, offices, hospital)
- Basic data of the building: type of the roof; number of levels; area and volume of levels; structure of the building; ways of heating, lighting, airing, and cooling. Current heat insulation. Ways of operation.
- Technical details of energy consumption: power rating of the heating/cooling equipments, power of main electricity consumers. Technical description (make and type) of the equipments.
- Summary of all energy bills in the last three calendar years. Monthly recording of electricity, gas, district heating, water, and sewage bills, including the original units (MJ, kWh, m³). The costs including all fees and taxes. Monthly average temperature in the last 3 years.
- Inspection of the contracts with the energy supplier firms and revision of the billing schemes.
- Analysis of the collected data: heat-loss calculations for the buildings, which take into account the technical data of building and the meteorology. Classification of the building according to total energy consumption and electricity consumption, based on a comparison with the similar average German buildings.
- Suggestions for energy savings: (i) suggested modifications of operation, (ii) suggested reconstruction of the building (e.g. new/refurbished roof, outer heat insulation, water insulation), (ii) suggested new or replaced equipment (furnaces, heating system, lighting).
- Estimation of costs and calculation of investment return times.

Financial resources and partners

The Self-government of Mende paid for the audits to the SAVE-REMA Energy Agency 200000.- HUF (800 euro), which of course only partially covered the costs. At the same time, Mende submitted an application for a UNDP-2005 grant to the Energy Centre of Hungary. The grant proposal included technical details about the audited buildings and it was also prepared by the SAVE-REMA Energy Agency as a complimentary service. Mende finally received the grant, which covered 80% of their costs.

Results

For the Mende buildings, no problems were found with the contracts with the energy suppliers and the bills. The following list shows the main problems found and the recommended actions. Apart from these, we had several other comments for the energy efficiency improvement and operation of the buildings.

In the Municipal Office Building there was electric heating and electric hot water production. Installation of gas heating and hot water production is much more economical. The investment pay-back time is 5.4 years.

In the Nursery, much hot water was used and it was generated by an electric boiler. Replacing it with a gas boiler has an investment pay-back time of 2 years, due to the lower gas price per MJ. In this building the gas



heating system is very outdated. Installation of a modern, closed heating system is needed, which costs about 5000 euro. The investment pay-back is 13.1 years. This investment is not very economical considering energy savings, but it is necessary due to the poor condition of the current system.

In the GP Consulting Rooms also installation of gas heating was recommended, with an investment pay-back time of 5.6 years. The roof was leaking which had bad consequences for both energy efficiency and the structure of the building. Also, there were structural problems with this building.

As a result of the audit, the electric heating of the Municipal Office Building was converted to gas heating, resulting in a reduction of energy costs by about 5000 euro per year. The saved electric energy is 77000 kWh in each year. The leaking roof of the GP Consulting Rooms was also fixed. The implementation of other recommended modifications are in progress.

Lessons learned and repeatability

Small villages may have community buildings, which do not consume much energy in absolute terms, but the energy consumption is high compared to the size of the building. The decreased energy costs may be significant factors in the balance of the budget of the village. Therefore energy audit services for small and medium villages may have a high social impact.

Contact for more information:

Project Web Site:	N/A
Organisation / Agency:	Pest County SAVE-REMA Energy Agency
Main contact	Dr. Tamás Turányi
Address:	H-1052 Budapest Városház u. 7.
Tel:	+36-1-411-1344
Fax:	+36-1-411-1345
E-mail:	info@save-rema.hu
Web Site:	www.save-rema.hu