

The Energy Efficiency concept

Eng. Corneliu Radulescu –ARCE Director

The reduction of the energy consumption in cities is an important direction of the Romanian energy policy and an aim of the local authorities. In municipalities, this involves the elaboration of local strategies, beginning with the identification of the main fields where high-energy consumption is registered and continuing with appropriate programs for the optimization of consumption. This is why the Energy Efficiency Law no. 199 / 2000, modified by the Ordinance 78 / 2001, pays a special attention to the energy issue at local level. Beside the obligation for the cities with more than 20,000 inhabitants to develop own energy efficiency programs, some facilities are also offered.

ARCE is committed to offer free of charge assistance to local decision-makers in a view to reduce consumption and design specific programs. The Agency is currently running 5 biomass use projects worth 10 mil EURO of which 3 mil represent Romania's participation. An apartment metering and thermostats installation program has also been launched, showing the negative implications of people's disconnection from district heating networks. This program benefited from a European Union aid of 5 mil EURO.

The energy specialists and the decision-makers are the ones able to contribute directly to the reduction of the energy consumption, influencing the municipal energy bill and participating to the preservation of a healthy and clean environment.

➤ Promotion of measures for increasing energy efficiency in buildings

Eng. Dan Berbecaru -IPCT

Building Design Research and Software Institute (IPCT) Bucharest organized a seminar in order to present the results of the project "Selection and promotion of appropriate energy efficiency measures in housing sector - ENERGYHOMES". The participants have been: the representative of the European Commission - General Directorate for Energy and Transport, specialists from ministries (Ministry of Public Works, Transport and Housing and Ministry of Public Administration), research institutes, professional associations and building companies.

The project was developed within the framework of the European Commission's SAVE Program by IPCT (coordinator) and ICPET CERCETARE from Romania, CSTB from France and MMSS from the United Kingdom.

The results of the studies showed that the 8 millions apartments located into 4,6 millions buildings have a low thermal energy insulation coefficient that leads to a huge thermal energy consumption for heating - 250...400kWh/year/square meter of useful dwelling space.

The project has identified the appropriate measures for improving thermal insulation of buildings. The proposed measures consist of: supplementary walls and roof insulation, floor insulation over unheated underground, viable solutions for windows insulation

The estimated energy savings resulted from the implementation of the proposed measures are around 5.000...18.000 kWh/year/apartment.

Two software programs for the analysis of building energy performance have been developed within this program.

Building Annual Energy Requirements (BAER) Program estimates the annual thermal energy consumption for heating a building considering the climate conditions of the location, the size of the building and the thermo-technical characteristics of the building envelope's elements.

The specific indicators obtained are: the estimated heat necessary compared to the heated volume (W/m^3) and the annual heat consumption compared to the useful dwelling space ($kWh/year \cdot m^2$).

Energy Audit Domestic Building Program (EAB) sets up an energy audit synthesis for a residential building by combining the on-site data (energy and fuels consumption resulted from bills, heating period, interior and exterior temperatures) with calculation data (thermal strength of building envelope's components, infiltration of cool air etc.).

The project conclusions present the proposal of a "National Program for thermal rehabilitation of buildings in Romania", that will be sent to Local and Central Public Administration Institutions and to all the "actors" involved.

Beginning 1.02.2002, the project will be presented on: www.ipct.ro/save-energyhomes.html

➤ Energy Auditing for Buildings Manual

Conf. Dr. Eng. Emilia-Cerna MLADIN, UPB

The manual offers specific information for energy systems managers and for future energy auditors. It approaches some aspects linked with the energy consumption of end users and some simple and efficient methods for the estimation of potential energy savings. The calculation methods are based on engineering principles so that the manual can be used both as reference for the specialists and as teaching support for training courses. The manual is structured on 11 chapters and 11 annexes. Reports on three energy audits realized according to the presented methodology are included in an attached booklet. Based on national energy policies and scientific principles for approaching energy efficiency, the chapters address energy audit measures, specific methods for data analysis, technical solutions and recommendations for energy saving and environment protection, economic analysis and financing solutions for energy efficiency projects, as well as current specific legislative aspects in Romania, Greece and France. Examples of building data base compilation and assessment criteria for energy auditors' preparation and certification courses are also considered in the manual.

➤ Swisspor - saving energy

Kurt Zeltner - Swisspor

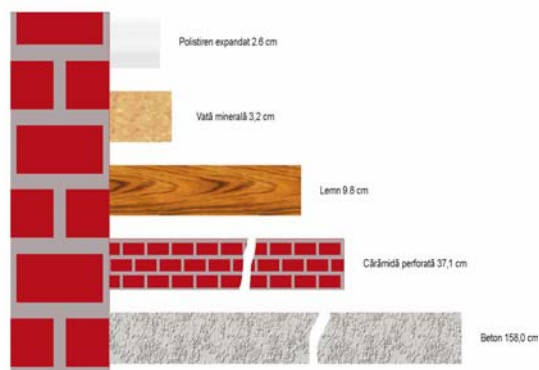
SWISSPOR SA Ploiesti is one of the companies promoting the "energy saving" concept. Fire - retarded expanded polystyrene producer, SWISSPOR has constantly tried to diversify its range of products and services, reaching now, after more than 3 years of activity on the Romanian market, to double its product range, offering Swiss quality services. Besides the already classical products like extruded polystyrene, polyurethane (boards and shells), hydro insulating membranes and expanded polystyrene boards shaped for floor heating systems, SWISSPOR can offer now also **swisslan** mineral wool products, glass fiber wool, bituminised shingles, corrugated bitumen sheets, anchors and fastening systems, expanded polystyrene sandwich panels, vapor barriers. A special place is occupied by the ECOTERM thermal insulating system for external walls.

Why is thermal insulation so important? It is well known that one of the main national level expenses is for fuels imports. This and the financial effort required can be significantly reduced through an efficient insulation of the buildings. In Romania, most buildings have an improper thermo-insulation. This is the reason why huge amounts are spent for their heating. The annual heating consumption / square meter of non-insulated external wall is of 13.9 l liquid fuel.

With a 40 mm expanded polystyrene insulation, this amount decreases to 5.9 l that means 58% saving. Using an 80 mm expanded polystyrene insulation it is necessary only 3.7 l of liquid fuel for heating, "only" 74% saving! From the total heat losses in buildings, half is through the external walls and windows, one third

through to the roof and 20% through the floor and foundation.

Considering thermal insulation, in case of using different building materials we have the following correspondence: 9.8 cm of wood equals 37.1 cm of perforated bricks or 158 cm of concrete, or just 2.8 cm of expanded polystyrene.



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➤ The seminar "State-level financing of energy efficiency as a component of environmental protection", organized by Alliance to Save Energy (SUA) and PNEC (Poland) within MUNEE regional program, took place in Krakow between 10-12 December 2001. The participants, decision - makers and experts in the fields of energy, environment and finances from 13 CEE countries, together with representatives of MUNEE partner organizations, analyzed and discussed on subjects such as legislative framework and state-level mechanisms for promoting and financing energy efficiency and environment protection projects.

➤ Beginning January 2002, 19% VAT will be charged on investments in buildings, including on thermal rehabilitation projects.

➤ Focsani municipality, assisted by Vrancea District Council, has completed the "Energy plan for Focsani municipality". This contributes to a better collaboration among the local public utilities, in order to ensure the necessary quantity and quality of the energy services for population.

➤ The rehabilitation of the existing residential buildings is one of the main actions stipulated in the governance program 2001-2004. The legal framework is established by the Ordinance 29 / 30.01.2000 on the "Thermal rehabilitation of the existing residential buildings and incentives for thermal energy saving"

➤ The following technical regulations are completing buildings' thermal modernization and rehabilitation programs:

-normative for setting up the energy audit of existing buildings;

-normative for thermal and energy expertise of existing buildings

-normative for elaborating and awarding the energy certificate for the existing buildings;

-methodology for prioritizing thermal rehabilitation measures for existing buildings

-procedure regarding the technology for the thermal rehabilitation of buildings using thermoinsulating sheets.