

PROGRAMMATIC AND REGULATORY ENERGY SAVING OPPORTUNITIES WITHIN BUILDINGS

Anton Novotný
Ministry of Construction and Regional Development of Slovak Republic
Špitálska 8
816 44 Bratislava
Slovak Republic
Phone: +421 2 59364 258
Fax: +421 2 59364 297
E-mail: pleskova@build.gov.sk

Buildings are a potential source of energy savings outside the savings to be made in the manufacturing industry. The means for the reduction of energy consumption are the object of schemes and programmes as well as technical regulations. This results in the proposal of the Program for the increase of energy efficiency and the creation of alternative sources of energy, an approved document of 1055/1999 by the Government of Slovak Republic. Even though the supporting elements for this program do exist, there are financial constraints and limitations to its realisation. Further program solution is expressed in the Buildings renewal concept predominantly aimed at residential buildings, approved by the Slovak Government resolution No 1088 of 8th December 2000. This concept takes the initiative of the legal and technical solutions enforcement, incl. economical tools.

The above-mentioned renewal concept considers changing the present physical status of buildings and expressly extending the durability via several technical modernisation steps up to a contemporary standard. The use of thermal protection and building services becomes a significant energy saving source outside the manufacturing sector.

The methods of achieving these aims are the three programmes for residential buildings and legal directives for public housing, together with financial subsidies that support development programmes.

The Ministry of Construction and Regional Development has included in the programmes of the assistance of development of housing the "Program of the

granting of subsidies to eliminate system faults in residential housing”, that was approved by document 665/200 of the Government of SR. The rules for the granting of subsidies were approved by the amended Guidance MVRR SR 3/2000. In these rules the types of system faults were defined as well as the building types they are prevalent. The limit for the subsidy is 350,- Sk per sq metre and should not exceed 50% of the total value of the cost of the repair and this is to be carried out under professional supervision that should guarantee the minimum necessary for the repair and the financial budget not to be exceeded.

It is recommended, that apart from eliminating the system faults of external claddings, thermal insulation is introduced and at the same time a change of construction. In this instance, apart from the subsidies for the system faults, the very affordable residential governmental development loans can be utilised.

The programme solution of the subsequent two steps utilises the credit provided by FRB. According to § 5 of the Slovak National Council law No. 124/1996 Z.z. on the State residential development fund as amended by law No. 1/1997, law No.76/2000 Z.z. the following is stated as residential dwellings development support :

- a) Residential and family dwellings thermal protection
- b) Completed residential and family dwellings conversion
- c) Removal of structural defects of residential stock

The first amendment of the Governmental directive SR 137/2000 Z.z. on residential development in §2 of the residential development under c) program of the renewal of the residential dwelling was added in the **part No. 229 under Slovak Government directions No. 578 dtd. December 19th, 2001.**

The above-mentioned new Slovak Government law regulation changed the building criteria introduced in § 3, chapter c) **into 20 years** instead of the initial 30 years. This represents the approximate 300 000 flats built before the year 1982 in addition to the 257 000 flats built in mass housing, which potentially come under this “renewal program” (approximately 500 000 flats altogether).

This program combines the three purposes of subsidies, therefore the length of repayments is prolonged and the repayment amount is reduced whereas at the same time the energy saving achieved is more than 20 percent.

In addition to these conditions that are a consequence of the legislation of FRB the compliance with the conditions of the legislation on building materials and most of all the legislation MVRR SR 520/2001 Z.z. on the categorization of building materials and the details how they are met. As described in the addition to this legislation the building products no. 21 Thermal isolating products and walling systems for are categorised as sub-group 2103. External thermo-isolating products that are to comply with procedures and methods of §6 section 1 letter d) is to be obtained a certificate of compliance. The means of obtaining this certificate is a technical evaluation that is issued by a competent certified body – Technical and testing office for building in Bratislava.

In non-residential buildings the Development program directs the methods for the governmental finance. The reduction of energy consumption through the four methods create the conditions to make savings of 40-60%. The complex realisation of the proposed methods is required mainly in buildings older than 30 years. The directives are specified by stricter obligatory criteria of energy consumption for old and new buildings and that is through revised specifications and generally obligatory legislation in compliance with STN and STN EN. The latest legislation, the revised STN 73 0540 that is to come into force on the 1st October 2002, will reduce the energy consumption from 70-90 kWh / m² to 50 kWh / m² per floor area. The criteria of design and to evaluate built constructions are defined as:

- criteria of minimum thermo-isolating properties of building constructions (U-value)
- the criteria of air exchange (the minimum air exchange within a room)
- hygienic centre (the minimum interior surface temperature)
- the energy criteria (the maximum energy consumption of heating)

In the regulations for general building development it is recommended that a building that is intended for habitable purposes would comply with the required thermal and light norms and requirements of hygiene.

The anticipated changes to the Slovak technical and legal requirements in the future will be those that will introduce the legislation of the European Union. The European Union has approved two documents:

- Action plan of the improvement of the energy efficiency of the European Union in year 2000
- The proposal of the European Union directive of the energy consumption of buildings

The first document states the need to renew the active support to energy efficiency of the member states of the European Union that mainly relates to the reduction of the CO emissions to comply with the Kyoto agreement.

In relation to buildings this represents 40% of the energy requirement of the EU. Therefore the building industry is a main contributor to this energy efficiency. The main activities of the European Union is the legislation related to pressurised containers (92/42/EHS), the building materials 89/106/EHS and the directives of 93/76/EHS (on the reduction of CO emissions) that relate to buildings.

The proposal of the directive is a result of the above-mentioned action plan and required measures to be taken by the building industry. The requirements are:

- Common methodology for an integrated calculation of embodied energy in buildings (including the thermo-insulation, the heating and air-conditioning services, renewable sources of energy and the design)
- The application of the minimum regulatory requirements on the energy efficiency of new buildings and the existing larger refurbished buildings.
- The energy certification of buildings, the granting of these certificates and other information

- Regular inspections of boilers and central heating systems and the survey methods of systems older than 15 years.

The embodied energy of a building is the total energy efficiency described by one or more numerical indicators that are calculated with the consideration of the insulation used, the characteristics of insulations, the design and orientation, the energy emission from the building and other factors that would affect the energy consumption of a building.

The certificate is a certified document that includes the energy calculations that were carried out following the methodology that are described in the approved directive. The energy certificate would provide an objective information on the energy use within a building during its design, its selling and renting and would affect the property trade and would positively influence investments into energy savings.

The legislation that would relate to this directive will be needed to be prepared in Slovakia in 2003 and 2004 at the latest.