News at SEVEn

ENERGY EFFICIENCY NEWS FROM THE CZECH REPUBLIC

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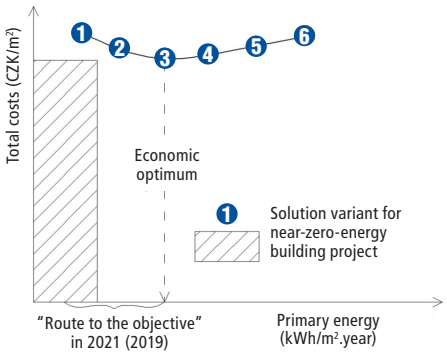
Cost-optimal building performance requirements

The revised Energy Performance of Buildings Directive (2010/31/EU, EPBD II) imposes upon the EU member states the obligation to secure minimum energy requirements for buildings and their systems leading to the energy performance of buildings attaining a level that makes these measures economically optimal. The required standard of consumption has been determined by comparative calculation of defined variants, which present possible structural and technological solutions with the aim to find the cost optimum. This requirement should apply to both new and reconstructed buildings.

The Czech Chamber of Commerce has therefore set up a task force, one of whose members is SEVEn, to carry out calculations of the cost optimum for the Czech Republic. The results of the calculation will be used as the groundwork for the respective legislative requirements that shall be stipulated by the Ministry of Industry and Trade.

The methodology of calculating the cost-optimal level defines variants of counting the energy parameters for comparative analysis, economic calculation and assessment of the variants in question. Energy parameters are understood as specific values of the energy supplied for heating, cooling, ventilation, preparation of hot service water and lighting, including their conversion to specific primary energy. Accordingly, the calculation aims to determine the total specific costs for each of the defined variants. Each variant is assigned with the investment cost of individual measures entering the calculation, operating costs, including costs for energy, maintenance, the maintenance period and the element's service life.



Furthermore, the calculation encompasses the time of the project's evaluation, the discount rate and annual energy price growth. The calculation of the cost optimum is carried out at the nationwide level; accordingly, it will not be determined for each individual project separately. In terms of methodology, the calculation draws upon the ČSN EN 15 459 standard "Energy Performance of Buildings – Methods for economic evaluation of energy systems in buildings".

The result of the optimisation calculation is the points of individual variants of the project's solution, which are interconnected by a notional curve. The cost optimum is the variant to which the lowest point on the curve corresponds. The EPBD II defines another significant term, the near-zero-energy building, i.e. a building with extremely low energy intensity whose energy consumption is to a large extent covered from renewable sources. Construction of such buildings should become compulsory from 31 December 2018 in the case of buildings used and owned by public authorities; in other cases, from 31 December 2020. The chart below shows seeking of the current cost optimum and the route to the expected optimum for new buildings in 2021 (2019).

Zuzana Šestáková, zuzana.sestakova@svn.cz

RESULTS OF VERIFICATION OF 2010 CO_2 EMISSIONS REDUCTION WITHIN THE GREEN LIGHT TO SAVINGS PROGRAMME

Within the Kyoto Protocol scheme, in 2008–2012 the Czech Republic has an expected emissions surplus of approximately 150 million tonnes of CO_2 eq. (or AAU, Assigned Amount Units). About 100 million AAU can be traded within the mechanism of international emissions trading. The goal of the Green Light to Savings programme, financed from the Czech Republic's revenues from these emission surpluses, is to support selected measures aimed at increasing energy efficiency implemented in residential buildings and resulting in immediate reduction of CO_2 emissions, as well as kick-starting the long-term trend of sustainable housing. The Green Light to Savings programme is administered by the State Environmental Fund of the Czech Republic. This article provides information about the results of verification of CO_2 emissions reduction for the Green Light to Savings Annual Report for 2010.

SEVEn has carried out verification of the presumable CO_2 emissions reduction attained through the implementation of the Green Light to Savings programme on the basis of applications registered and approved by 31 December 2010 across individual supported areas. The reduction

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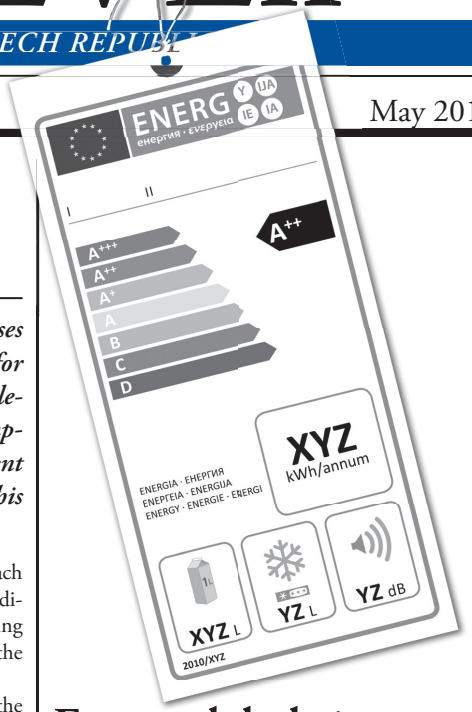

Energy labels in shops – how often do we really see them?

Energy labels ranking products by the energy intensity of their operation are a tool long used with the aim to help consumers with their purchasing decisions. They have been so successful that their usage has been widened from the traditional white appliances to other product types, such as TVs, car tyres or buildings. However, in order for labels to help us to really make an educated purchasing decision, when selecting the specific product we need to clearly see them in shops or at the point of sale. Yet the presence of labels varies significantly across different types of products and different types of shops. The Come On Labels project, active in 13 European countries, has had a look in almost 300 shops to see what the real current situation is from the consumer's point of view.

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inside:

DO YOU KNOW HOW ENERGY-EFFICIENT YOUR DATA CENTRE IS? HAVE IT CHECKED OUT!

On 11 and 26 April, the Energy Advisory Centre of Pražská energetika (Prague Energy Utility) hosted the seminar "Energy Efficiency of Data Centres and Central IT Services". It was part of the information and educational activities within the European PrimeEnergyIT (http://www.efficient-datacenter.eu/) project. Under the guidance of leading specialists from the ranks of the seminar's partners (ALTRON, INTEL, Schneider Electric, VMware), the participants were provided with information pertaining to the latest solutions that can be applied in order to reduce the energy intensity of central ICT.

The discussions that accompanied the presentations have revealed that the potential of energy savings is significant and can be attained by means of appropriate design and selection of more efficient IT equipment and subsidiary technical infrastructure of data centres (cooling, HV/LV transformers, backup sources, lighting, etc.), as well as more efficient operation.

The improvement is based on better planning and use of the computing capacity data centres possess. The first step is to implement regular monitoring, which will make it possible to identify which servers are not being used efficiently – consumption in the idle mode can in the case of standard types be up to 50% of the specific value, as a result of which during the course of the year the server consumes the bulk of the total energy without making any use of its computing capacity.

The second step is to apply the principle of virtualisation, owing to which it is possible to reduce the amount of physical hardware, to "consolidate" 10 or 15 to 1 (i.e. a single real server performing the work of the original 10-15 devices).

The third stage of optimisation is appropriate selection of hardware. Today, energy-efficient servers are designated with the Energy Star logo, indicating that they have a highly efficient power supply unit and relatively low energy consumption in the idle mode. The programme's future criteria should also take into consideration the efficiency achieved in the active mode during the carrying out of computing operations.

In addition to the potential savings at the level of IT equipment, data centres' operation can be made more efficient when it comes to their "non-IT" infrastructure. At the present time, serving this purpose are the international recognised PUE (Power Usage Efficiency) benchmarking standards and the reciprocal DCiE (Data Centre infrastructure Efficiency). Both metrics de facto express the same and show how much additional energy is needed to supply a data centre above and beyond the energy required for the IT equipment itself (typically in annual summation).

The largest amount of this additional energy is consumed by cooling, which also provides a great potential for saving. The key to efficiency is the implementation of natural cooling, using ambient air. It is noteworthy that in Czech conditions this method of cooling with minimal energy intensity can be operated for more than 8,000 hours a year (if adiabatic pre-cooling or cooling of heat-exchanging areas of heat exchangers is applied concurrently).

Significant and, at the same time, economically effective (!) savings can also be attained as a result of the correct selection of HV/LV transformers (definitely a low-loss type of transformer), appropriate dimensioning of backup sources and an economical manner of their keeping in the standby mode, as well as the cabling design and PDU, or lighting control.

The specialists at the seminar agreed that in typical Czech conditions a data centre can be built to attain the average annual PUE parameter of 1.3 (or approximately 77% according to DCiE). It would be interesting, therefore, to know what the reality in the case of the leading providers of hosting services actually is. This could, or rather should, be of keen interest to their customers.

Data centres west of the Czech Republic today compete not only in terms of their connectivity and the price of the services they provide but also their energy efficiency. Can we hope to experience the same standard soon too?

Do you consider your data centre (non-) energy-efficient? Have it checked out and thereby possibly make it more efficient! Within the PrimeEnergyIT project, SEVEn (supported by the project's national partners) offers the opportunity to assess and improve data centres' energy efficiency regardless of their size and prepare them for meeting the conditions of the EU Code of Conduct for Data Centres. Make use of the opportunity and become one of the first data centres in the Czech Republic to endorse it. The offer is limited to the end of 2012. For further information, contact the author, or visit **www.svn.cz** *and* **www.efficient-datacenter.eu**

Tomáš Voříšek, tomas.vorisek@svn.cz

« ENERGY LABELS ..., cont

The shop visits undertaken within the project took place in the period from January to March 2012 in 13 countries, including the Czech Republic. A total of 290 shops were visited, with an average of 22 shops per country.

The following table shows the aggregated data of compliance with regard to different types of shops. The last row of the table shows the weighted average of compliance from all the shops. Some countries' representatives visited the shops on a fully random basis, making sure that each one of the shop types would be represented evenly; other countries reflected the market share of individual shop types.

The results show that the **overall compliance in shops** is slightly above one half (**54%**) in the visited shops. However, the compliance varies greatly according to the type of shop, ranging from as low as 30% in kitchen studios/furniture stores to 76% in electronic superstores. Conversely, from 24% to 70% of appliances in the respective shop types are not labelled at all or are labelled incorrectly (which formally means not labelled as well). The worst situation is in **kitchen studios**, where the compliance rate can be as low as **11%** in the Czech Republic and the UK, 6% in Belgium, and 0% in Italy.

In total, over 50,000 products have been checked. Furthermore, televisions and wine storage appliances with no label have not been included in the compliance check as it was not possible to determine whether these appliances were placed on the market before or after the respective regulations came into force (30 November 2011 for both types of appliances).

In total, 63% of the covered appliances were labelled, 19% labelled partly and 19% not labelled at all. There is a significant difference between the compliance of the "more common" appliances, such as refrigerating appliances, washing machines and dishwashers, and appliances whose penetration in households is lower, such as air conditioners, electric ovens and tumble driers. The average compliance of the former is much higher (almost 70%) than of the latter (13%, 41% and 57%, respectively).

Overview of compliance in shops

Shop type	% of visited shops	Labelled correctly	Partly / Incorrectly labelled	Unlabelled
Electronic superstore	22 %	76 %	7 %	17 %
Electric specialist	35 %	48 %	12 %	40 %
Kitchen studio / Furniture store	20 %	30 %	17 %	53 %
General hypermarket / Cash & Carry	15 %	64 %	12 %	25%
Mail order and internet store	8 %	65 %	24 %	11 %
Total	**100 %**	**54 %**	**13 %**	**33 %**

Labelled, partly labelled and unlabelled appliances per product group

Product group	Labelled correctly	Partly / Incorrectly labelled	Unlabelled
Refrigerating appliances	68 %	20%	12%
Wine storage appliances	11 %	not calculated	
TVs	23 %	not calculated	
Washing machines	68%	15%	16%
Dishwashers	66%	16%	19%
Lamps	not calculated		
Air conditioners	13 %	38%	48%
Electric ovens	41%	23%	35%
Tumble driers	57%	21%	23%
Total	**63%**	**19%**	**19%**

With the aim to improve the situation, the Come On Labels project shares the results of these shop visits with the national market surveillance authorities, as well as the retailers themselves. The project organisers have prepared a training module for shop assistants, available in 11 languages, explaining why and how energy labels should be properly displayed on products.

Visit the project website **www.come-on-labels.eu** or contact us for more information.

Juraj Krivošík, juraj.krivosik@svn.cz