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A new decree on the energy performance of buildings

On 5 June 2020, a new Decree on the Energy Performance of Buildings No. 264/2020 Coll. was issued. This decree will replace the original Decree No. 78/2013 Coll. with effect from 1 September 2020. The new decree introduces numerous changes, particularly those of a conceptual nature. The changes aim to improve the evaluation of energy performance of buildings, enhance the quality, clarity and credibility of the EPCs issued and increase motivation for energy efficient technologies or the use of RES. The new decree has been accompanied by amendments and/or updates of some related standards, e.g. ČSN 730331-1 or ČSN 730540-2.

The Decree will bring the following series of changes:
→ Establishing a unified binding methodology for evaluating the energy performance of buildings

→ Adjustment of parameters and reference building values

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Crafts are getting ready for nZEB

Since 1 January 2020 it is prohibited to build other than nearly zero energy buildings (nZEB). This introduces more stringent requirements on all professions ranging from architects to masons. The construction of new buildings brings higher demand for technology but also for lifelong education. The information and knowledge we learned in school is hardly sufficient today. In comparison with school education, the share of lifelong education will keep rising.

Education courses for seven selected crafts are being prepared in the Czech Republic for the upcoming autumn and winter 2020. Most of them will not take place in classrooms but will be performed online, using training mock-ups, or within commented tours at exhibitions. This will significantly increase the interactivity and attractiveness of the training courses. The courses will take place in the Czech Republic, Slovak Republic, Bulgaria and Austria.

More information about the CraftEdu trainings:

www.craftedu.eu

You can apply for the courses at:

www.database.craftedu.eu/cs



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Collective power plants in Austria – an inspiration for Czechia

In 2017, Austria became one of the first European countries whose legislation enabled the establishment of so-called shared or community-run power plants in the case of residential as well as commercial buildings. These plants serve for the needs of at least two customers. The codification of this kind of plant is a major undertaking that will enable existing barriers to the development of decentralised sources of power generation, e.g. in the case of apartment buildings, to be overcome.

However, some EU countries allow such power plants to be located within apartment or commercial buildings and, at the same time, the electricity generated is „allocated“ among individual households or tenants who live in the building or use some of the building premises as tenants. Austria can be a good example of this for the Czech Republic, as building collective or shared power plants started here in 2018.

At present, Austria has several dozen such collective power plants and the demand for them is growing dynamically.

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Professional light sources and their LED retrofits

For some time now, the light-emitting diode has been replacing lamps used in homes, i.e. lightbulbs and reflector bulbs. Some years ago, manufacturers devised a replacement for common linear fluorescent lamps and currently the range of products being replaced extends to alternatives of high-intensity discharge lamp (HID) and non-integrated CFL (CFLni). What are our options and constraints when it comes to LED retrofits?



LED RETROFITS FOR HID LAMPS



LED RETROFIT FOR CFLNI

Common bulbs are hardly used anymore in commercial spaces, administrative buildings, street lighting and industry. Linear fluorescent lamps (LFL) still dominate most buildings and CFLni are popular as well. In industry and street lighting high-pressure sodium lamps (HPS) and metal-halide lamps are used while hotels, restaurants, galleries and other representative spaces use predominantly compact fluorescent lamps (CFLni), reflector bulbs or possibly other types of bulbs. In many cases, the above-mentioned lamps can be replaced with LED alternatives without having to renovate the whole lighting system. However, LED retrofit comes with several limitations which should be borne in mind.

Within professional practice, linear fluorescent lamps were the first to be replaced. Today's vigorous development started with lamps of poor quality and lack of safety. After several years, the market consolidation resulted in alternatives to linear fluorescent lamps, so-called LED tubes, widely used and offered by established manufacturers of light sources. T8 fluorescent lamps of 18, 36 or 58 W are those replaced most frequently. LED tubes can also be an alternative to T5 fluorescent lamps, but the savings potential is lower. Nowadays, LED tubes are usually replaced directly without any rewiring to the lighting fixture. Three different types of LED tubes are offered by manufacturers: EM for replacement of a lamp in a lighting fixture with choke ballast where the starter bridge is required, HF for replacement in a lighting fixture with electronic ballast and universal LED tube (UN), which works with all ballast types. From the technical point of view, the replacement is very simple; however, we should not forget that, originally, the lighting fixture was designed for a fluorescent lamp. By using a different lamp, the responsibility

goes from the manufacturer to the subject responsible for changing the light source. One of the biggest problems concerning LED tubes is the change of light distribution. Even with the wide beam angle of the LED tube, the overall lighting in a room is changed. The uniformity can decrease, glare can become more intense or the total light „saturation“ can be reduced (so-called cylindrical illuminance). Often the illuminance is slightly reduced as well. Therefore, it is crucial for professional practice to verify required parameters during the pilot project.

Light source manufacturers came up with other innovations and today it is possible to replace high-intensity discharge lamps (HIDs) as well. LED retrofits are limited to E27 and E40 sockets, so it is possible to replace mercury-vapor lamps, high-pressure sodium lamps and metal-halide lamps. The same products are often used to replace elliptical lamps. Therefore, the savings potential is dependent on the HID that is being replaced. LED retrofit for mercury-vapor lamp has got the greatest savings potential (around 50–60 %) but it mostly involves older lighting fixtures in poor condition. On the other hand, the savings potential of LED retrofit for high-pressure sodium lamp is much lower (around 20–30 %) but the light quality may improve (yellow light with lower colour rendering). LED retrofit for metal-halide lamp provides the lowest savings potential. The greatest limitation is surely the luminous flux, which is limited with LED retrofits and does not allow for replacement of higher power HIDs. It is only possible to replace mercury-vapor lamps of max. 250 W and high-pressure sodium lamps of max. 100 W.

Another innovation is the possibility to replace CFLni. LED retrofits for fluorescent lamps with G23, 2G11 and G24d/q sockets are offered most frequently. The savings potential is greatest when it comes → 3

table
COMPARISON OF USUAL PARAMETERS OF TRADITIONAL LAMPS WITH LED RETROFITS

PARAMETER (unit)	Mercury-vapor lamps	High-pressure sodium lamps	Metal-halide lamps	CFLni	LED retrofit
Lifespan (h)	20,000	20,000	20,000	10,000–20,000	30,000–50,000
Colour rendering index – CRI (-)	50	20	80–90	80	70–80
Lamp lumen maintenance factor (-)	0.6–0.75	0.9	0.75	0.75	0.7
Correlated colour temperature CCT (K)	4,000	2,000	2,800–4,000	3,000 and 4,000	3,000 and 4,000
Efficacy including the ballast (lm/W)	50	70–120	80–90	50–70	90–135
Approximate savings potential	55–60%	20–30%	20–30%	40–50%	–
Evaluation of the LED retrofit	The savings potential is high, provided that the light fixture is in good condition	LED replacement improves the light quality	The savings potential is not very high	If the light fixture is in good condition, it is suitable particularly for electromagnetic ballasts	

Energy efficient solid fuel boilers



As the solid fuel boiler market continues to develop, emission standards as well as the minimum efficiency values are gradually becoming more stringent. What are the parameters that should be considered for solid fuel boilers?

A significant number of households keeps using heating boilers for solid fuels. Local emissions affect the air quality during the heating period to a great extent. Therefore, the parameters for solid fuel boilers are gradually becoming more stringent.

It all started in 2000 when the EN 303-5 standard was implemented. The standard divides solid fuel boilers with a rated heat output of 300 kW or less into various categories based on their emissions. Boilers must meet emission and minimum efficiency limits

to be assigned into a class. According to the standard, solid fuel boilers were divided into three classes (1 being the least efficient and 3 being the most efficient). In 2012 the standard was updated and two more emission classes 4 and 5 were formed. The requirements for parameters of solid fuel boilers available on the market are summarised in the table.

Regulations requiring energy labelling and meeting Ecodesign requirements have also been modified. Furthermore, Ecodesign requirements have been tightening the 5th emission class. Although the requirements were mandatory from 2020 onwards, the subsidy titles (Boiler subsidy, the New Green Savings Programme) in Czechia involved the obligation to choose these energy efficient boilers even before this year. From September 2022 on, it will be possible to use solely boilers that meet the basic emission requirements of Class 3 or higher. It means that Class 1 and 2 boilers will be phased out and, in case of non-compliance with this requirement, a fine may be imposed.

At present, Ecodesign requirements apply. In practice, these minimum requirements are often exceeded by the parameters of a number of boilers available on the market. The website www.usporne-spotrebice.cz (new section – House/Dům) offers solid fuel boilers (for wood pellets and logs only) of even lower emissions than set by the Ecodesign requirements. These limits are presented in the table below. It can be expected that the review of the Ecodesign regulation in 2022 will lead to further tightening of the requirements.

table
SEQUENCE OF TIGHTENING OF EFFICIENCY AND EMISSION LIMITS FOR SOLID FUEL BOILERS

YEAR	INTRODUCTION OR TIGHTENING OF REQUIREMENTS
2000	Introduction of three categories of solid fuel boilers with a rated heat output of 300 kW or less
2012	Extension to classes 4 and 5 (class 5 being the most efficient one)
2014	Class 1 and 2 boilers banned from the market (only classes 3, 4 and 5 available)
2018	Class 3 boilers banned from the market (only classes 4 and 5 available)
2019 (Sep.)	Mandatory energy labelling for solid fuel boilers with a rated heat output of 70 kW or less
2020	Mandatory Ecodesign requirements for solid fuel boilers with a rated heat output of 500 kW or less
2022 (Sep)	Ban on the use of Class 1 and 2 boilers

PARAMETER (unit)	MINIMUM ECODESIGN REQUIREMENTS		ENERGY EFFICIENT APPLIANCES – CRITERIA	
	Pellets	Wood logs	Pellets	Wood logs
Min. energy class	A+ (approximately)		A+	
Emissions of particulate matter (mg/m ³)	40	60	15	30
Carbon monoxide emissions (mg/m ³)	500	700	30	100
Organic carbon emissions (mg/m ³)	20	30	10	15
Nitrogen oxide emissions (mg/m ³)	200	350	150	150

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Professional light sources...

CONTINUED FROM THE PREVIOUS PAGE

to the replacement for compact fluorescent lamps with electromagnetic ballast (around 50%). This savings potential can be expected with G23 and G24d sockets. With electronic ballast the expected savings are somewhat lower (G24q). 2G11 compact fluorescent lamps offer savings of around 50%, but the payback period is longer. The same limitation of maximum luminous flux applies here as well as the fact that there are no adequate LED retrofits for CFL of higher fluxes.

There are many types of lamps available on the market, such as LEDs replacing traditional discharge lamps, fluorescent lamps and incandescent light-bulbs. There are replacements for R7s halogen linear, S14s and S14d linear and a number of reflector bulbs (G53, GU5.3, GU10 and others). In all cases of LED retrofits, the same restriction applies as in the case of linear fluorescent lamps: the subject who carried out the replacement for the original light source as-

sumes all responsibility for the lighting fixture. And as with LED tubes, there are other limitations, like the change of the light distribution.

Besides technical limitations, during a replacement it is also necessary to consider the payback period from the economic point of view. Many LED retrofits are capital-intensive and total lighting system modernisation can become a more efficient and preferred option. Nevertheless, the LED market is developing vigorously, so the return on investment can decrease with some types of professional light sources and their LED retrofits.

More information about professional light sources replaced by LEDs can be found at the specialised website www.lednahrady.cz

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Climate change action at the local level

Municipalities are becoming an indispensable part of climate change policies. Carbon neutrality should be reached by 2050 and this goal will have an impact on numerous municipal agendas. Even today, climate actions, like mitigation measures to reduce greenhouse gas emissions, have often become part of standard municipal agendas. These measures include energy savings, reduction of waste production, urban planning considering water sources and use, RES integration in the heating supply system and many others. Apart from emissions savings, these measures bring numerous other benefits to municipalities, be they financial savings or a better environment and improved quality of life.



Five Czech municipalities discussed all these topics in six international meetings organized within the BEACON project in 2020. Thanks to experience sharing and exchange, the representatives of municipalities broaden their horizons and gain invaluable feedback on their own activities. This helps them maintain an overview beyond the framework of everyday operational tasks, which is crucial for the long-term development and sustainability of municipalities.

Only two out of three meetings planned for the first half of 2020 took place in person before the borders were closed as a result of the efforts to prevent and control the spread of COVID-19. In addition, this year the project brought together South European and Central European groups of countries for the first time. Municipalities could choose which topics they would like to discuss and selected a meeting accordingly, not being limited by their own group and its participation. This contributed to a more intense exchange of experiences, as municipalities from both groups now meet on a regular basis. In the Greek city of Kalamata, representatives

of municipalities from five European countries developed their knowledge of sustainable mobility, e.g. how to control and reduce traffic congestion in city centres, the ubiquitous problem of the lack of parking space, or the transition towards a carbon-free transportation system.

The second meeting in the spring took place at the beginning of March in the Romanian city of Râmnicu Vâlcea and, again, brought together diverse participants who debated the issue of waste management. The last meeting planned for the first half of the year took place online due to COVID-19-related travel restrictions. Thanks to the teams from Germany and Poland and thanks to the experience with virtual meetings gained during the first months of the spring lockdown, the participants were able to carry out the BEACON project workshops. Polish city of Zamość hosted the online workshop and the topic debated was climate actions, particularly adaptation measures, which is a topical and intensely discussed issue in the Czech Republic.

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BEACON
Bridging European &
Local Climate Action



REPRESENTATIVES
OF MUNICIPALITIES
TESTING THE CYCLING
INFRASTRUCTURE IN THE
GREEK CITY OF KALAMATA



Vertical cooperation at the local and national level

In January 2020, representatives of schools, municipalities and central government administration gathered to take part in an innovative seminar focused on discussing the integration of climate change and climate action topics in the school curricula. This two-day event brought together teachers, headmasters, councillors as well as mayors, ministry officials and education and climate change experts. The new vertical workshop format enabled representatives of different levels of the public sphere to discuss the topic of climate change education in detail and to enrich one another with feedback given by other participants who do not otherwise meet on a regular basis.

The event was part of a broader initiative of the BEACON project, a project ongoing primarily in municipalities and schools that focuses on the communication of the issue of climate change and successes achieved at these levels towards relevant ministries and other central authorities. The main objective of this initiative is to extend the project outputs and reach other Czech municipalities and schools. The BEACON project at the municipal and school level has verified a number of procedures that can be used when implementing the climate policy in Czechia. From initial measures suitable for municipalities with no experience to more ambitious steps for more advanced municipalities. It was shown that climate protection or mitigation – efforts to prevent climate change and enhance reduction of greenhouse gas emissions – can become part of a number of municipal authority agendas, e.g. maintenance of muni-

cipal buildings, energy sources, transport, waste management and, last but not least, education.

As opposed to other partner countries participating in the project, there is a close relationship between Czech elementary schools and municipalities. Therefore, implementation of climate change education as well as practical projects on energy savings for pupils are inextricably linked to municipal support. In addition, the financing mechanism for Czech schools does not allow for the adoption of the German 50:50 model, under which schools automatically get back half of the sum achieved thanks to the energy-saving project. Accordingly, the question of how to motivate schools to implement these projects was intensely debated during the workshop. One of the upcoming autumn events organised for municipalities and school representatives will be devoted to the issue as well.

The project participants, schools and municipalities on the one hand, and the Ministry of Education, Ministry of the Environment and the National Pedagogical Institute on the other hand, came to the conclusion that the best way to anchor climate change education in school curricula will be to take part in the ongoing process of updating the framework education programmes.



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BEACON
VERTICAL WORKSHOP,
JANUARY 2020

Combating energy poverty in Armenia has been a resounding success

The efforts of Armenian regions to tackle energy poverty were recognised by the EUSEW awards at the prominent European EUSEW conference.

A project entitled Engagement of Civil Society in Energy Savings in Armenia was awarded the second prize in the Eastern partnership category. The project successfully launched close and functional cooperation between local regional authorities and NGOs, including energy consultants and journalists. Through the newly formed partnerships and local microgrants over 20 local campaigns were launched. A rather low budget project mobilised around 60% of Armenia. The project was coordinated by the Armenian organisation ASBA and supported by SEVEN, the German institute IWO

and the Dutch Energie-U. Follow-up activities within a unique new network are being prepared.

Link to a short video [eu4energy.eu/videos/en/v/winner-of-the-2020-eu-sustainable-energy-award-for-the-eastern-partnership-2nd-place-armenia/](https://www.eu4energy.eu/videos/en/v/winner-of-the-2020-eu-sustainable-energy-award-for-the-eastern-partnership-2nd-place-armenia/)

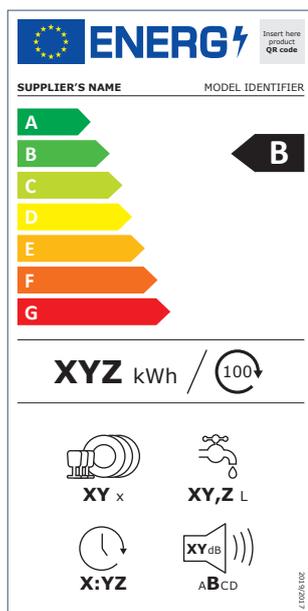
More information at www.buildup.eu/en/news/overview-energy-buildings-2020-eu-sustainable-energy-week-eusew-2020

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Energy labels – a time-proven recipe with a new look



DISHWASHER
NEW ENERGY LABEL

table
THE HIGHEST AVAILABLE
ENERGY EFFICIENCY
CLASS AFTER RESCALING
(ACCORDING TO THE
DEVELOPMENT IN 2020)

For more than a quarter century, the European energy label has been supporting consumers when selecting energy efficient products. Energy labels together with growing demand for energy-efficient products worked as a key driver for major product innovation and reduction of both operating costs and energy-related emissions. However, thanks to these innovations and technological progress, energy labels must be innovated as well. Relevant legislation has been approved and new energy labels will start appearing in shops in March 2021. What are the main changes we can expect?

The A+++ / D energy efficiency scale became rather ineffective and baffling for consumers. Moreover, most products fall into the first two or three highest classes. Therefore, one of the main changes will be the return to the original A–G scale. In addition, introducing the new energy label will leave most of the A category „empty“, so manufacturers should be motivated to produce more energy efficient products. Consequently, existing products will get new energy labels. For instance, a product in the A+++ category may become C after rescaling, without any

change in its energy efficiency. However, the label will help motivate consumers and manufacturers to select more energy efficient models.

Another novelty is the QR code on the energy label. The QR code will connect consumers with the European product database where they will be able to get additional information about the product in question. More information about the particular model will also be available for the supervisory bodies in charge of energy efficiency and compliance with legal requirements.

Other changes involve content and design modifications of some icons informing consumers about a product's operating characteristics. New labels – both in brick-and-mortar shops and e-shops – will be available for refrigerators and freezers, washing machines, washer dryers, dishwashers, televisions and monitors. In a few months, these appliances will be followed by lamps and, gradually, new labels will be accepted by all categories governed by this legislation.

The LABEL2020 project, organised by SEVEN in the Czech Republic, will bring a number of informative activities – from a TV spot and printed and electronic materials to informative seminars designed for manufacturers and sellers, etc.

More information at: www.label2020.eu

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APPLIANCES	THE HIGHEST AVAILABLE ENERGY EFFICIENCY CLASS	
	CURRENT LABEL	NEW LABEL
Refrigerators and freezers	A+++	B/C
Wine refrigerators	A+++	B/C
Washing machines (4 kg and more)	A+++	B/C
Dishwashers	A+++	B/C
Televisions and electronic displays	A+++	B/C
Lamps	A++	C/D



Are the data provided by energy labels reliable? The ANTICSS project may suggest an answer



European legislation sets regulations concerning energy labelling and ecodesign. Manufacturers of home appliances and other energy-consuming products must meet the minimum requirements concerning energy efficiency of their products, whose relative energy efficiency is to be identified by energy labels. Therefore, these products must be tested according to unified but complex testing procedures. Is it possible to circumvent these requirements and regulations and declare higher (false) energy efficiency of a product? The ANTICSS project is collecting information through detailed analyses of project documentation and laboratory tests.

The topic of „circumventing“ regulations garnered a great deal of media attention in connection with the cars' emissions scandal (known as dieseltgate). Cars „recognised“ that they were being tested and artificially lowered their emissions during the testing. But there are a number of other ways to influence the energy consumption of a product or even increase its declared energy efficiency. Not only did the ANTICSS project „Eliminating circumvention of energy efficiency standards to improve market surveillance“ define the term circumventing regulations (and not merely breaching them) through its activities, but it also carried out various tests in independent laboratories.

The ANTICSS product categories involve dishwashers, refrigerators, washing machines, televisions, clothes dryers and others. The selection of models for testing was preceded by a detailed analysis of technical documentation, discussion with manufacturers and independent experts as well as with supervisory authorities. The project gathers and documents information on specific cases of circumvention of energy efficiency requirements

and deals with the possible relationship between circumvention of regulations and so-called „smart products“ with specialised integrated software.

The ANTICSS project will result in practical recommendations for market surveillance authorities, testing laboratories, legislators and standardisation bodies on how to better identify and prevent circumvention of regulations. The project team is comprised of 19 organisations from eight EU Member States: research institutes, market surveillance authorities, energy agencies, a standardisation body, a university, an environmental NGO and independent testing institutes. The Czech Republic has two such organisations: SEVEN and the State Energy Inspectorate of the Czech Republic.

More information at:

www.anti-circumvention.eu/

twitter.com/AntiCircumvent

[linkedin.com/company/anticss](https://www.linkedin.com/company/anticss)

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Energy audits in metro stations

From this year on, the Prague Public Transit Company (Dopravní podnik hlavního města Prahy) must undergo new energy audits for all its above-ground premises as well as all metro stations.

In total, 83 premises of the Prague Public Transit Company, including 61 metro stations serving on three metro lines, three depots, eight tram depots, four bus garages, the Petřín funicular, central dispatching and a number of other areas have undergone examination by energy specialists and auditors. Audits were carried out by SEVEN in collaboration with the ENVIROS company. The Prague Public Transit Company obtained complex documents with consistent updates on each of the premises. Energy audits can be used for the administration of the premises and their effective operation and at the same time the audits may serve as materials for planning and upgrading of premises to enhance energy performance, reduce operating costs, optimise the operation of the facilities, and improve passengers' comfort.

The obligation to draw up energy audits regularly at least once in four years applies to businesses

with more than 250 employees, builders, associations of unit owners, building owners or owners of energy facilities whose annual energy consumption exceeds 1,500 GJ (417 MWh). However, this value includes only buildings and energy facilities with energy consumption higher than 700 GJ (194 MWh) per year. This also applies to organisational bodies of the state, regions and municipalities as well as to state-funded institutions. An energy audit can be carried out only by energy specialists certified (authorised) by the Ministry of Industry and Trade to draw up energy audits and assessment. Energy audit provides a comprehensive and updated overview of energy performance of a building or facility, including the proposal of appropriate measures to achieve energy and cost savings.

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A new decree on the energy...

CONTINUED FROM PAGE 1



- Updating primary energy factors (energy from non-renewable sources)
- Adjustment of energy performance certificate
- Adjusting requirements for nZEB (the requirements will come into force on 1 January 2022)

A unified binding methodology for evaluating the energy performance of buildings aims at a more accurate and unified method of evaluation and at preventing a too liberal choice made by various processors in terms of calculation inputs. Different calculation inputs might influence the final result and subsequently the classification of a particular object or building into one of the energy classes.

Parameters and reference building values have now been adjusted and set to correspond to technological progress. Values for non-RES primary energy factors for reference as well as evaluated buildings were updated to reflect the current state of energy efficiency and energy mix in the Czech Republic.

THE NEW LOOK OF EPC

Source: Decree No. 264/2020 Coll.

PRŮKAZ ENERGETICKÉ NÁROČNOSTI BUDOVY
vytvořený podle zákona č. 458/2003 Sb., o hospodaření energií, a vyhlášky č. 78/2013 Sb., o energetické náročnosti budov

Ulice, č.p./č.o.:
PSČ, obec:
K.ú., parcelní č.:
Typ budovy:
Celková energeticky vztažená plocha: m²

KLASIFIKAČNÍ TRÍDA
Primární energie z neobnovitelných zdrojů kWh/(m²·rok)

Mimořádně úsporná A
Velmi úsporná B
Úsporná C
Méně úsporná D
Neúsporná E
Velmi neúsporná F
Mimořádně neúsporná G

Požadavky pro výstavbu nové budovy po roce 2022
jsou SPLNĚNY

ROZDĚLENÍ DODANÉ ENERGIE
MWh/rok

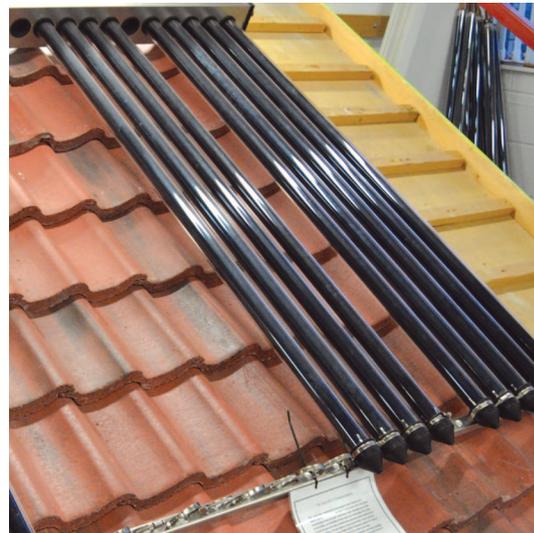
Elektrina ze sítě - XX,X
Slunce a en. prostředí - XX,X
Zemní plyn - XX,X
Biomasa - XX,X

UKAZATELE ENERGETICKÉ NÁROČNOSTI

Průměrný součinitel prostupu tepla budovy XXX kWh/m²·K C
Měrná potřeba tepla na vytápění XXX kWh/m²·rok C
Celková dodaná energie XXX kWh/m²·rok B
Vytápění XXX kWh/m²·rok A
Chlazení XXX kWh/m²·rok C
Nucená větrání XXX kWh/m²·rok D
Úprava vzduchu XXX kWh/m²·rok C
Příprava teplej vody XXX kWh/m²·rok C
Osvětlení XXX kWh/m²·rok F

Energetický specialista:
Osvědčení č.:
Kontakt:

Ev. č. průkazu:
Vyhотовeno dne:
Podpis:



The decree also introduces a new appearance, contents and requirements concerning the certificate of energy performance of buildings (EPC) and modifies the assessment of energy performance classification. A–G categories now assess a building's subsystems as well. Another novelty is that recommended measures to increase energy performance within EPC will now include a proposal of at least one alternative system of energy supply, provided it is economically, technically and environmentally feasible. The new appearance of EPC aims at better clarity and comprehensibility, which could have a positive influence on understanding operating energy-related costs as well as the importance of energy efficient measures. Nevertheless, changes like the transition from assessing total primary energy to primary energy from non-renewable sources might have an undesired and confusing effect at first due to its complex nature.

Pursuant to the decree, from 1 January 2022 the requirements for nZEB will become more stringent, particularly in terms of the values of required parameters and values. To meet the requirements, it will be necessary to implement more energy efficient measures and use renewable energy sources.

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table

COMPARISON OF CHANGES OF SELECTED REQUIREMENTS FOR BUILDING ENERGY PERFORMANCE

CRITERIA/ PARAMETER DESCRIPTION	PURSUANT TO ACT No.	
	78/2013 Coll. (until 31 August 2020)	264/2020 Coll. (since 1 September 2020)
Factor of primary energy from non-renewable sources for heating/water heating (fossil fuels) – with evaluated and reference building	1.1	1.0
Factor of primary energy from non-renewable sources for sources of electrical power – with evaluated and reference building	3.0	2.6
Efficiency of energy production by energy carrier – for reference building	80%	92%
Average power input indicator for family house and apartment building lighting in terms of space illuminance/– for reference building	0.05	0.032

Energy efficiency of buildings and the concept of housing



In many ways, the year 2020 has been a turning point. The obligation to construct solely buildings of the nZEB or a higher energy standard entered into force. The introduction of the nZEB standard as well as general technological progress in the field of construction and building energy management will substantially influence the acquisition and operating housing costs. At the same time, the current housing concept from 2011 is about to expire, or rather its revised version from 2016, and the new concept is being worked on while the development in the field of energy efficiency has to be taken into due account. A project within the Théta programme by the Technology Agency of the Czech Republic focuses on this issue. The project is being dealt with by SEVEN in cooperation with the Faculty of Civil Engineering under the supervision of the Housing Policy Department of the MRD in the role of the application guarantor. This is the very first project by the Technology Agency of the Czech Republic at SEVEN.

The project's objective is to quantify how the increase of energy standard of buildings will influence the access to housing with regard to the development of its costs and these costs have to be considered in terms of household income. The project focuses on three subtasks consisting of the creation of documentation for the concept of housing, creating a certified methodology to calculate the lifecycle costs (LCC) of apartment buildings including the calculation of

typical cost-optimal measures reducing energy consumption in new as well as renovated buildings with respect to the whole lifecycle and, finally, the project attends to the creation of a map presenting spatial disparities of housing prices with regard to housing costs in relation to the energy performance of residential buildings within regional divisions.

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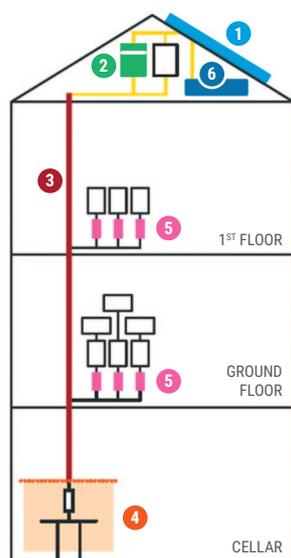


TECHNOLOGY AGENCY
OF THE CZECH REPUBLIC

Collective power plants...

CONTINUED FROM PAGE 1

AN EXAMPLE OF A COLLECTIVE POWER PLANT FOR AN APARTMENT BUILDING



To construct collective power plants (in Austrian legislation known as „Gemeinschaftliche Erzeugungsanlagen“) it is necessary that at least two individuals or legal entities be interested in establishing the plant within the given building, provided they hold the grid connection agreement. They can then become the so-called participating beneficiaries („Teilnehmenden Berechtigten“) and can jointly choose the future operator of the collective power plant. Subsequently, this operator oversees the establishment of contractual relationships with the building owner, the locally relevant administrator of the distribution system and the beneficiaries.

Electricity generated by the collective power plant is then allocated among the involved beneficiaries by the distributor either based on pre-defined conditions or continuous measurements using smart electricity meters. Furthermore, the beneficiaries do not pay any distribution fee for the electricity supplied by the collective power plant (and if they so decide, they do not pay for the electricity as such). The reason is quite logical: the collective power plant is connected to the main house network, so the electricity which remains in the building is not part of the public distribution

The picture shows a photovoltaic system 1, smart meter 2, the main house network 3, the boundaries of inner distribution 4, users 5, possible battery system for temporary storage of power generated 6.

system. Otherwise the consumption sites in family houses with their own installed power plant would receive an advantage.

The operator of a collective power plant may also be a newly established entity, e.g. an energy company. The legislative framework does not specify who can be the owner of a collective power plant either. In fact, the owner can be a civic association (established by the beneficiaries involved) as well as another selected actor (e.g. energy utility). So far, energy companies have been the biggest market drivers, as they can also offer services related to the supply of the remaining electricity demand not covered by the collective plant. From the next year onwards, these collective plants could be established and operated even by so-called energy communities, whose legal existence was codified by recent EU directives and now it is up to the individual Member States to do the same in their national regulations.

With regard to technological advances and ambitious development goals in the field of renewable energy use, which are going to be dealt with in the Czech Republic in the upcoming decade, adopting a similar legislative framework is desirable as well. At least the installation and operating conditions of immersed power plants could be compared. At present, residents of family houses are, paradoxically, in a much better position than households occupying apartment buildings. Why is that so?

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Reducing the risks of investment in energy efficient projects

The global economy is slowly recovering from the recent shock it experienced. The latest economic crisis has shown us that apart from common risks which can be anticipated, situations may occur which no one is able to predict. Therefore, many investors might be afraid of embarking upon new projects while financial institutions may become more careful when providing funds for more ambitious projects. However, supporting projects and all stakeholders involved is now more important than ever.

The goal of the Triple-A international project is to help financial institutions as well as project investors to enhance the capital invested in the field of energy efficiency. The project was launched in 2019 but now, given the circumstances, has acquired a new meaning. Thanks to the tools developed within the Triple-A project, investment in projects will become more transparent, predictable and attractive.

Step 2 – Mutual agreement

Standardisation of Triple-A tools, effective measures and handbooks translated into eight languages spoken by the consortium partners to support and accelerate investments. The key performance indicators selected in this step should contribute to the conclusion of 40–80 agreements on providing investment funds.

COUNTRIES INVOLVED IN THE TRIPLE-A PROJECT



Step 3 – Assignment of the tool

Examples of repeatability and overall use in the countries in question, including recommendation of realistic and feasible investments in the context of the country and sector, as well as short- and medium-term financing. This step will result in the assignment of appropriate financial tools and the drawing up of project sheets for 50 projects.

The task of the Triple-A project is to answer three fundamental questions:

- How to assess financial tools and risks in the early phases of project preparation?
- How to come to a mutual agreement concerning investment based on selected key performance indicators?
- How to assign particular investment intentions to possible financing tools?

The Triple-A project is introducing procedures to address these questions:

Step 1 – Project assessment

Strategies of the member states to reduce risks, including the web database, facilitating a comparison at the national and field level, identification of market maturity, sharing experience and examples of best practice – all this is supposed to reduce uncertainty of investors. At least 100 energy efficient and financially attractive projects are expected to undertake this step of the assessment.

Case studies from the countries involved in the Triple-A project were selected, considering diversity of various factors relating to each of the following countries: Germany (leading European economy), the Netherlands (innovative pioneer in the field of energy), Greece (economy which has undergone one of the longest and most severe recessions), Italy (slow economic recovery), Spain (diversified economy with a strategic geographical location, the birthplace of some of the largest European companies), Lithuania (a country which experienced one of the fastest economic recoveries in Europe), the Czech Republic (a progressive country which used to take a rather sceptical approach to low-carbon development), and Bulgaria (a country recovering from a slow transition towards a market economy; increasing regional importance and great ambitions within the EU).

All eight countries involved in the project will take part in regional trainings designed for financial institutions and investors in energy efficient projects. It is also possible to get involved in other project activities.

More at the Triple-A project website: www.aaa-h2020.eu

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Gain the grant for an energy study easily in six steps



LOGO OF THE ENERGY SAVINGS WITH REASON (ÚSPORY ENERGIE S ROZUMEM) PROGRAMME

The new Energy Savings with Reason programme launched by the Ministry of Industry and Trade is focused on supporting the creation of new energy saving projects. The programme is designed for owners and operators of family houses and apartment buildings as well as public and commercial buildings. The programme's goal is to record and increase the quality of projects dealing with the renovation of existing buildings, to improve energy savings and thus to contribute to meeting energy-related EU objectives.

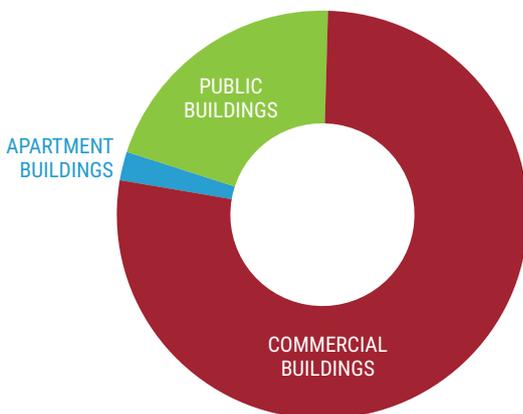


The programme is intended to motivate building owners to elaborate an energy feasibility study in terms of building renovation. The study should be based on the principles of good practice and should include, among others, a broad range of various energy efficient measures, their comparison in terms of economy and achieved energy savings. The

study should also include recommendations for the most advantageous project solutions. The measures may relate to operation, construction or technology, according to the type and purpose of the given building. A building owner can gain a grant for the energy study of CZK 30,000–200,000, according to the type of building, and the grant may cover up to 70% of eligible costs. The whole process of filing the application can be done in six steps with the guidance of a guarantor chosen by the applicant. More information can be found on the programme website www.usporysrozumem.cz.

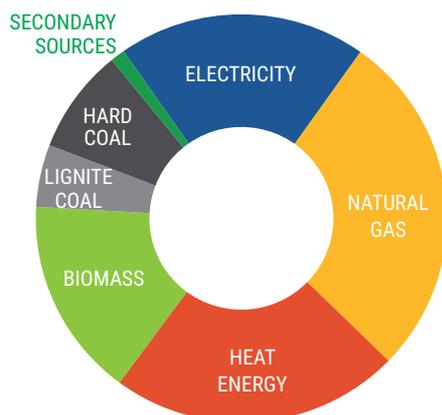
graph 1
THE SHARE OF BUILDING CATEGORIES

- 0 % Family houses
- 2 % Apartment buildings
- 21 % Public buildings
- 77 % Commercial buildings



graph 2
SHARES OF ENERGY CARRIERS IN OVERALL ENERGY SAVINGS

- 20 % Electricity
- 27 % Natural gas
- 23 % Heat energy
- 16 % Biomass
- 5 % Lignite coal
- 8 % Hard coal
- 1 % Secondary sources



In total, 44 energy studies carried out under the programme were submitted for assessment in 2019. Most of the studies dealt with commercial buildings (77%) and public buildings (21%). However, owners of family houses and apartment buildings can apply for support for their projects as well, provided that a significant amount of energy savings may be achieved through the implementation of appropriate measures. Eventually, 93% of energy studies submitted were recommended for approval.

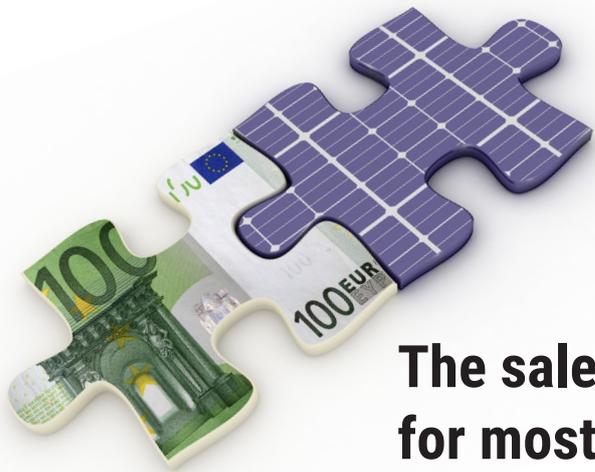
The median of the simple payback period relating to proposed and recommended measures to implement was almost 15 years. The average cost savings for one project varied from CZK 175,000 to CZK 550,000 per annum based on the building type. The overall energy savings of selected measures to implement achieved

10,167 MWh/per annum. Natural gas accounted for the biggest share of the savings (27%), followed by heat energy (23%), electricity (20%)

and biomass (16%). Hard coal (8%) and lignite coal (5%) represented a notable share as well.

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The sale of receivables provides financing for most EPC projects in the Czech Republic

Sale of receivables is the most common method of financing Energy Performance Contracting (EPC) projects in the Czech Republic, which makes it different from other EU countries. This method has been used to fund most public sector EPC projects completed since 2005, although it has been used only rarely in the private sector.

Previously, the prevailing procedure consisted in the EPC provider taking out a short-term operating loan for the purchase of technological equipment and subsequently repaying it by selling receivables. Today, most projects are implemented by large companies that do not need this short-term loan. By selling the receivables to a financial institution (FI), the EPC provider will free up funds for another project. The sale of receivables is carried out without recourse to the EPC provider, when, upon sale, the liability is deleted from the EPC provider's books. The assignment of the receivable does not change the obligation of the EPC client, as it remains a trade obligation (i.e. a supplier credit) and does not change into a bank loan. This is an important factor especially for municipalities and their reporting of bank loans to the Czech National Bank.

An agreement on the future sale of receivables between the EPC provider and the FI is usually signed before the start of the procurement procedure. Approval of the sale of receivables is usually agreed with the client in advance, although all details of the financing agreement are agreed exclusively between the EPC provider and the FI.

The FI purchases only financial receivables, while responsibility for the technical condition remains with the EPC provider under the EPC contract. The FI usually purchases 100% of the contracting rate according to the EPC contract minus the amount for energy management services.

The FI purchases receivables after the handover certificate on the transfer of assets by the EPC provider to the client is drawn up. The handover certificate states whether the work was handed over without defects and, if there are any defects, how they will be eliminated. The EPC contract remains in force for the entire maturity period of the receivables. The EPC provider must inform the FI every year whether the guaranteed level of savings according to the EPC contract has been achieved.

You can read more about the refinancing schemes for EPC projects in the EU on the website of the new European REFINE project www.refineproject.eu.

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Setting up national qualification and training scheme for craftsmen in the Czech Republic and EU and welcomes outside submissions. SEVEN is located at Americká 17, 120 00 Praha 2, Czech Republic. Editor: Jiří Karásek (jiri.karasek@svn.cz), Juraj Krivosík (juraj.krivosik@svn.cz). Phone: + 420 224 252 115, + 420 224 247 552, fax: + 420 224 247 597, e-mail: seven@svn.cz, internet: www.svn.cz. Graphic design Pavel Cindr. ISSN 2570-592X. MK ČR E 13241.

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