# News at SEVEn

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ENERGY EFFICIENCY NEWS FROM THE CZECH REPUBLIC

## Biogas stations: The future of municipal power engineering and waste management?

*Biogas stations are for towns and municipalities an interesting means of producing energy from some types of biologically degradable wastes. Today, in the better case, these wastes end up in composting plants; in the worse, in landfills or sewerage systems.*

However, several "buts" pertain to the economic viability and general benefits of biogas stations (BGS). If these are not resolved, the stations need not necessarily meet the desired expectations, and they even can within a short time struggle for survival. Is it possible to preclude these difficulties?

### Problem no. 1 – Location

When choosing a location, investors primarily strive to make use of the existing economic operational facilities (access roads, concrete bins, cesspits) so as to make the investment as low as possible. These premises are frequently on the outskirts of municipalities, yet close to residential houses. Accordingly, such a location of a BGS need not be optimal. A natural accompanying phenomenon with plants fundamentally designed for controlled decomposition of various substances of organic origin without access of air is the origination of odour. Even though the main components of the produced biogas – methane and $CO_2$ – are odourless gases, biogas can smell, very strongly at times.

Unfortunate experience with excessive odour in the case of biogas stations built recently clearly shows that even with the maximum care it is not possible to fully eliminate odour production. This is not only down to non-professional control of the procedure, but also low-quality, or even absence of, technical equipment capable of effectively reducing odour production (bio filters, etc.).

How then to tackle the problem? Future biogas station projects should be situated a sufficient distance from residential quarters. Possible negative odour impacts on the surroundings must be assessed not only formally within declaratory proceedings, but, if need be, also as part of a full-value EIA. At the same time, a biogas station should be located ... *cont. on page 5*

## The "We Are Seeking Class A Drivers" campaign has been running for several months – what's next?

*The approaching end of the year is a good opportunity for evaluating the first phase of the international campaign promoting energy-efficient and safe driving. The campaign has been running since April with the assistance of several important partners. How successful has it been to date, and how will it evolve?*

Right at the very beginning of the campaign, its ideas aroused vigorous interest on the part of the media. Information about its launch appeared in nationwide dailies (HN, MFDNES), on Czech Television (ČT1) and Czech Radio (ČR1). In connection with the campaign, the internet server idnes.cz even started an "economical driving school" series through brief video spots.

Partners contributed to the campaign's promotion too – by means of accompanying press releases, articles in company magazines and, subsequently, also through distribution of promotional materials, using their own information means.

The public's initial interest, boosted by the media, was further enhanced by the campaign's activities themselves – economical driving courses and a long-term competition (about application of principles of economic driving in standard operation), which will run until the end of the year at www.uspornajizda.cz.

Between April and October, there were 17 days of economical driving courses. They were attended by more than 800 drivers. The courses were also frequently enlivened by one-day competitions for the lowest fuel consumption attained on a test circuit in a selected place. Lecturers from Autoklub Škoda made a significant contribution to the successful organisation of the courses.

The campaign's other crucial aspect – the competition - aimed to create and, at the same time, support a group of drivers who also feel like applying economical driving principles over the long term in standard operation. Through courses and general promotion, the competition was joined by some 500 drivers, 150 of whom had already driven the 5 thousand kilometres required for inclusion in the final evaluation. The contestants have driven in total over 2 million kilometres.

Next year, the first phase of the We Are Seeking Class A Drivers campaign will link up to another two interesting activities.

The first of these is the GreenPlan programme, a global initiative of the company LeasePlan. The aim of the programme is to raise the company's clients' interest in programme reduction of negative environmental impacts of the vehicle fleet used by the firm in question.

Within the programme, the participating companies are offered the possibility of implementing monitoring of car- ... *cont. on page 2*

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## Information on energy savings – where to get it?

Amid growing energy prices, and, consequently, rising costs for heating, hot water and operation of electrical appliances, all consumers – from households to industrial companies – are interested in rational possibilities of reducing their energy consumption. Some of the basic sources providing this information are direct suppliers and sellers of energy (electric, thermal or individual types of fuel). Therefore, we asked selected companies to give us a summary of the activities they organise for their clients when it comes to providing information about possible reduction of energy consumption. We were interested both in promotional projects for the general public and individual consultancy for large consumers. After all, from the customer's viewpoint it does not only concern supplies of energy, or kilowatts and gigajoules, but also, and primarily, services, i.e. heat, light, etc.

### Pražská energetika, a.s.

Pražská energetika, a.s. (PRE) has been devoting to energy-saving issues for a long period of time. Since 1997, it has operated a Consultancy Centre, which has annually attended to more than 20 thousand customer questions, mostly pertaining to savings and alternative energy sources. Eleven special customer magazines have been published, which have always dealt with one particular topic related to energy savings or consumption. At the same time, the centre has available two films for those interested in photovoltaics and heat pumps.

The PRE website provides information, tips and calculators, including a virtual consultancy house. Several publications ... *cont. on page 4*

# The European Energy Award in the Czech Republic

*Many towns and municipalities strive to implement projects aimed at increasing the quality of life of their inhabitants. Some of them are members of various domestic and international programmes applying the principles of communication and cooperation with the public in line with Local Agenda 21, or have even gained quality control system certification according to ISO 9001 or 14 001. Another programme evaluating the work of local authorities is the European Energy Award (eea®).*

european energy award

By means of 90 indicators, the programme assesses all the municipality's activities pertaining to energy generation and consumption. When the municipality receives 50% of the total number of one hundred points, it is included in the list of European towns that have been awarded a certificate. Evaluation of energy projects primarily focuses on reduction of $CO_2$ emissions. To date, some 280 European towns and municipalities have succeeded during the evaluation.

*The award ceremony with the Kněžice town representatives.*

Two Czech municipalities, Kněžice and Vsetín, have also participated in this programme. Following a preparation period lasting more than a year, this year they were audited by a foreign auditor. The auditor investigated the comprehensiveness of the municipalities' activities not only in technical, financial and organisational terms, but also as regards the public's engagement in the control procedure.

In Kněžice, the auditor above all praised the municipality's full-scale energy self-sufficiency. For example, the local biogas station processes biological waste from the village and its environs. The accumulated gas is used for electric power and heat production. The municipality generates more electricity than it can use, hence, it sells the remainder to the distribution network. Heat is supplied for the community heating system and is utilised for preparation of hot water, and possibly for additional heating in the spring and autumn. In the winter period, heat is also supplied to the community heating system from a boiler plant combusting biomass (wood chips and straw). Furthermore, the village produces agricultural pellets. In this manner, the municipality of Kněžice has significantly reduced $CO_2$ emissions from local combustion plants.

In Vsetín, the auditor commended its comprehensive approach to a number of energy projects, as well as the very good results when it comes to community work in particular. The town has succeeded well in implementation of energy-saving projects, use of renewable energy sources and improvement of the energy performance of buildings. Some projects are almost finished, hence there is a good chance to show that Vsetín is able not only to prepare projects but also complete them.

The municipality of Kněžice, in the Nymburk district, gained a score of 50.9% and on 24 October 2007 received an eea®.certificate and thereby joined the "European League of Towns and Municipalities".

The town of Vsetín recorded a score of just under fifty per cent and will do its utmost to receive the certificate next year. The conditions for participation in the eea® programme:

- Official consent of municipal representatives to participation in the programme. Drawing up of an agreement or contract on provision of consultations between the municipality and an EEA consultant.
- Setting up of an energy task force to supervise the programme and participate in the creation of the municipality's energy policy.
- Payment of a membership fee for specialist and organisational consultations. ■

***WHERE CAN I GET MORE INFORMATION? If you are interested in the EEA programme, contact: Pavel Kárník, SEVEn, o.p.s., pavel.karnik@svn.cz or visit: http://www.european-energy-award.org***

# The "We Are Seeking...

... *cont. from page 1*

bon dioxide emissions or other harmful substances produced by company cars. Subsequently, specific measures aimed at emissions abatement – either direct or indirect – are recommended.

Economical driving courses are perhaps the only activity that can have negative costs for carbon dioxide emissions reduction, i.e. they allow a firm to decrease its (average) $CO_2$ emissions from company cars and, in addition, bring about costs saving. Experience has shown that consistent adherence to rules of economical driving can lower every vehicle's average real fuel consumption by a litre per hundred kilometres, which represents a saving of more than 25 grams of $CO_2$ per driven kilometre. Thus, the commensurate saving of costs for unconsumed fuel (and perhaps maintenance and repairs as well) may very well more than offset the money laid out on drivers' regular training and their possible motivation for economical driving. This serves as proof that the idea promoted by the campaign has the relevance and potential to be viable in the future, functioning on a commercial principle.

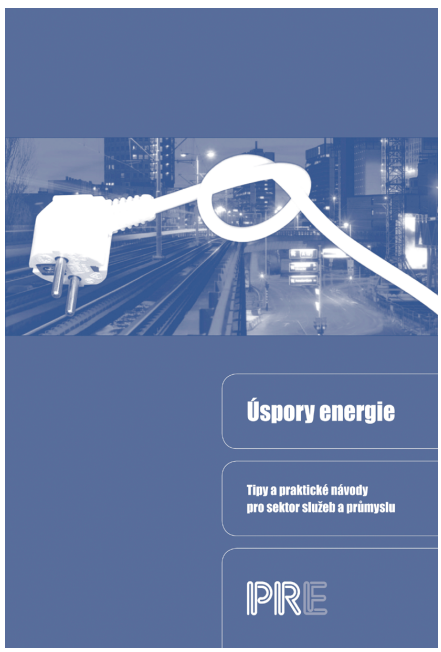
*The launch of the campaign with the participation of the Minister of environment Mr. M. Bursík (left).*

The second interesting activity is extending the campaign to include truck drivers and transport companies. Upon SEVEn's initiative, a task force was set up with the participation of representatives of the Association of Road Transport Operators (ČESMAD) and truck dealers (Scania and Volvo Trucks). The team is now preparing the concept and rules of the programme. The crux will be the announcement of a time-limited call addressing transport companies: "We Are Seeking Class A Transport Companies". The programme will encompass evaluation of vehicle fleets, their operation and maintenance (including the staff), and the company's relation to the environment. The firms that will manage to gain a sufficient number of points in individual categories will receive a certificate documenting that they are class A transport companies. The programme is scheduled to be officially announced at the beginning of 2008. ■ *Tomáš Voříšek*

# Energy saving – Tips and practical instructions for the service and industrial sectors

Rising energy prices, lack of information about possibilities of energy saving, but also interest in renewable energy sources as tools for reduction of energy bills – these all are aspects drawing ever-increasing attention on the part of all energy consumers, industrial companies and the service sector. In some cases, it is a question of the right information in the right place; in others, it concerns a long-term process entailing study and decision-making.

Pražská energetika, a.s. (Prague Energy Utility, PRE) has decided to lend a helping hand to large energy consumers in this respect. In cooperation with SEVEn, it has prepared an information material on energy savings and renewable energy sources. The material contains a number of practical tips, as well as advice on how to save energy in all relevant consumption segments. The publication is available for those interested through PRE commercial representatives. ■ *- jk-*



# Information about the amended regulation on energy performance of buildings

*Energy consumption in buildings is one of the key consumption spheres that experts focus their attention on when seeking possibilities of energy consumption rationalisation. The endeavours for capturing the attention of owners and operators of buildings in this respect have resulted in the EU Energy Performance of Buildings Directive (EPBD), which has also been implemented in Czech legal regulations. What are the characteristics of this directive, and how has it been specifically reflected in our legal system?*

The main areas of operation of the Energy Performance of Buildings Directive:

- It ensures that attention is paid to energy consumption in buildings;
- It presumes increased investments in energy savings in buildings;
- With certain exceptions, it applies to all buildings, households and industrial and service facilities.

What are the objectives of the Directive? Increased energy efficiency in buildings by requiring:

- Methodology for calculating the energy performance of buildings;
- Minimal energy demands for new buildings;
- Minimal energy demands for existing large buildings under reconstruction;
- Regular inspection of boilers and air-conditioning systems.

The Directive was implemented in the Czech legal order within Act 177/2006, on energy management, in which, among other things, Section 6 on energy efficiency was fundamentally amended. In addition, the related Regulation 148/2007 stipulates specific requirements for energy performance of buildings.

According to the law, requirements for energy performance of buildings are deemed to have been met if the energy performance of the evaluated building is better than the energy performance of the reference building and general technical requirements for construction have been fulfilled. The calculation method issues from the general framework for calculation of energy performance of buildings, which is an Appendix to the EPBD.

The energy performance of the reference building is the total annual supplied energy in GJ, which is determined by balance valuation. Appendix 2 to the mentioned regulation defines the details of calculations and the required input data for assessment of the energy performance of buildings. In the case of modification of a completed building, these required input data are entered for calculation of the total required annual supplied energy in GJ only for the building's systems or components that have been modified, while other entries are identical to those of the evaluated building. The evaluation is based on the principle that the same calculation method applies to the determination of the energy performance of the reference building and the energy performance of the evaluated building.

In linkage to the EPBD, the regulation also stipulates the procedure for assessment of the technical, environmental and economic feasibility of alternative systems of energy supplies for heating, and possibly also for preparation of hot water and cooling in the case of new buildings with the total floor area exceeding 1,000 $m^2$. Attention must be drawn to the fact that the EPBD stipulates the methodology of evaluating the energy performance of buildings uniformly for all EU member states, so if it may seem that, owing to the already established procedures (energy audits, land-use energy conceptions), this measure is superfluous in the Czech Republic, it is necessary to understand it as unification of the secondary legislation in all member states.

The classes of the energy performance of the evaluated building are determined according to a detailed table for the calculated specific energy consumption in kWh/$m^2$/year contained in the mentioned regulation and distinguishing between buildings according to their purpose (family house, block of flats, hotel, restaurant, administrative building, hospital, etc.). Specific energy consumptions in kWh/$m^2$/year in class C are reference values for the listed types of buildings, i.e. values that cannot be exceeded in the case of new constructions or modified constructions.

Furthermore, the regulation also defines the situation in which calculation of the total annual supplied energy of the evaluated building shows that its consumption is higher than the comparative, i.e. reference, consumption. In this case, the regulation imposes the obligation to propose technically and economically suitable measures aimed at improvement of the energy performance of the building to the required level. Comparison of the energy supplied for covering partial needs with the corresponding partial reference values is used for the proposal of the recommended measures. A summary of recommended measures is stated in the form of the building's energy performance passport and serves to inform the owner, investor or tenant of what type of measures they should take and with what energy-saving effect. ■

*Pavel Kárník, pavel.karnik@svn.cz*

# Where do the savings disappear? Obstacles, and how to overcome them

*Reduction of energy consumption represents a unique opportunity to address three fundamental energy problems: security of supplies, climate change, and economic development. According to the data of the International Energy Agency, owing to the energy-saving programmes implemented since 1973, today's global energy consumption is some 50% lower than it would have been without them. However, should other economically returnable saving measures be successfully taken, it would be possible to decrease consumption by another 83 EJ by 2030.*

Why then does such a significant proportion of the total saving potential still remain untapped? There are numerous barriers hindering more extensive use of energy saving in practice. These include: insufficient access to investments, inadequate information about energy prices, lack of information about the possibilities of specific measures, the owner/tenant problem.

The latter of the barriers is one of the fundamental examples of insufficient motivation for energy savings: the lessor offers for use equipped and furnished real estates and electrical appliances, while the tenant pays for their consumption. Accordingly, the lessor buys cheap products with the aim to minimise his investments and the tenant has but the possibility of striving for their energy-saving operation.

A similar, or opposite, problem occurs in a number of administrative buildings or hotels, where the tenant wants to maximise his comfort regardless of the energy consumed. That is also why the lessor, who has to pay the energy bills, installs, for example, motion detectors reducing energy consumption after the occupant has left a room.

Studies dealing with this problem that have been carried out in Norway have revealed that consumption of the energy necessary for operation of leased offices is up to 20% higher than the energy consumption of offices directly used by their owners. A mere 20% of offices are used directly by their owners.

Another study, this time from the Netherlands, compares households' equipping with energy-efficient heat sources and thermal insulation of houses with their form of ownership. Privately-owned flats and houses have a 20 to 30% higher frequency of the mentioned measures as against households occupied by tenants, while 47% of houses are let out.

An example of an appliance whose use has been significantly growing is the set-top-box for reception of digital TV signals. In the USA, for example, there are some 150 million of them in operation, an average of 1.5 per household. Their average electricity consumption is 10 to 25 watts, yet the saving potential up to 75%. The problem is that in many cases this appliance is not purchased directly by customers but operators of a cable or satellite television network.

What are the basic recommended methods aimed at elimination of this unnecessarily high energy consumption? Even though there is no miracle cure, the following principles are generally recommended:

- Contracts between the owner and the occupier should to a much greater extent take into consideration the costs related to energy consumption;
- Legal limits diminishing energy consumption or defining energy efficiency of operation can reduce the total energy consumption of products and buildings;
- Provision of appropriate information for both the owner and user of products and buildings. ■

*-jk-*

*The information contained in the article comes from the publication "Mind the Gap - Quantifying Principal-Agent Problems in Energy Efficiency", issued in October 2007 by the International Energy Agency. For more information, visit: http://www.iea.org/w/bookshop/add.aspx?id=324*

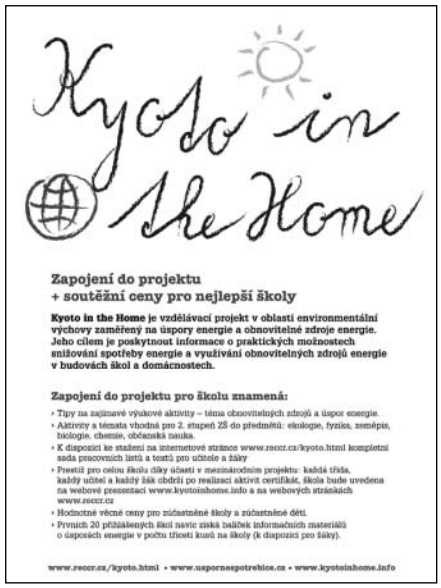
# Fighting climate change through the Kyoto in the Home project

*Prevention of climate change is a crucial part of the UN Decade of Education for Sustainable Development project initiated by UNESCO. The Czech Republic is one of the eight European countries striving for active participation of even its youngest inhabitants in sustainable lifestyle within the three-year Kyoto in the Home project. The project, which originated with support from the European Commission within the Intelligent Energy Europe programme, promotes the development of educational strategies pertaining to renewable sources and energy savings.*

On 3 October 2007, Prague hosted a seminar within which 40 Czech primary school teachers were trained in a special course focused on guidance and methodology of a tuition system for renewable energy sources. The seminar's main content was the work with a set of professionally drawn up sheets accompanied by an information basis for individual renewable energy sources. As the project's title indicates, the target group is not only pupils but also, and primarily, their homes – families who will be enlightened in this manner and informed of the potential of energy savings and renewable sources.

Over the next few months, pupils and students will have the opportunity to participate in the preparation of individual activities, gain knowledge and practical experience of energy savings and renewable energy sources, and directly test their possibilities in practical exercises. Philips CZ will present the project's most active participants with high-quality light sources for the whole of their schools and households, mp3 players, and a set of information materials about energy-efficient lighting. At the same time, the trained teachers and all the participating schools will receive project certificates. ■

*For more information about joining the Kyoto in the Home project, contact Juraj Krivošík, email: juraj.krivosik@svn.cz.*




# Information on energy savings – where to get it?

... *cont. from page 1*

on the topics of low-energy houses and heat pumps have been supported.

Over the course of the past five years, PRE has prepared for customers more than 10 edification competitions linking up to energy savings. The company has also devoted to education of pupils and students, supported (for three years now) the Tereza foundation programme focused on energy savings, produced teaching aids (for example, wall maps depicting the principles of heat pumps and energy-efficient lighting), organised lectures and excursions.

PRE has financially contributed to the installation of 459 heat pumps (CZK 40,000 per pump). Since 2002, PRE has operated a demonstrational photovoltaic power plant. This year's novelty is a publication on energy savings, containing advice and practical instructions for the industry and service sectors, and distributed to large customers free of charge.

**ČEZ, a.s.**

The ČEZ group has implemented for its customers a host of activities pertaining to energy savings. It has also put emphasis on development of renewable energy sources. Within its basic product offer (Comfort) the group provides free consultancy at its Customer Centres, while extended and detailed consultancy is part of the "Exklusive" product series.

This year, ČEZ published a brochure bearing the title "Shedding light on savings" – an energy adviser for households which thoroughly analyses savings in individual areas: purchase of electrical appliances, heating, water warming-up, thermal insulation, and low-energy housing. The brochure is available free of charge at all ČEZ contact points.

Since September 2007, the utility has also implemented the "Shedding light on savings" road show, an entertainment/edification campaign in some 28 Czech and Moravian towns, which comprises a mobile office and a multimedia display. In every town, an edification programme takes place with the aim to draw customers' attention to saving issues and raise their interest in specific saving measures. Two specialist advisers are available at the mobile office, which also functions as a full-value customer centre. In the afternoon, customers can compete for energy-efficient fluorescent lamps, which are also sold on the spot at discount prices. Part and parcel of the event is a series of 9 seminars free of charge.

The special www.posvittesinauspory.cz website for this campaign has been launched. It provides comprehensive information about the road show, as well as information about energy savings in a separate section within the www.cez.cz web presentation.

**E.ON Česká republika, s.r.o.**

The energy company E.ON has launched the long-term E.ON EnergiePlus+ programme aimed at environmental protection and saving customers' money. It concerns an offer of selected energy-efficient domestic electrical appliances with a discount ranging from 17 to 28% for all the company's customers. The other form is a special 20% discount for purchase of a state-of-the-art gas boiler. Thus, owing to the E.ON EnergiePlus+ programme, customers can save money twice over – first when buying an appliance, second when paying their electricity or gas bills. This special offer is valid from 17 September to 30 November 2007.

According to E.ON representatives, environmentally friendly behaviour is becoming evermore cost-effective.

Other continuous activities carried out by E.ON in the area of efficient energy use:

- Information on the internet (www.eon.cz)
- Printed information materials
- Specialist consultancy (by telephone, email, in person)

**RWE Transgas, a.s.**

The RWE group intensively devotes to energy savings and efficiency in natural gas use. It provides consultancy and services to all customer groups. Thorough and lucidly arranged information about possible cost savings is brought within the "I save energy" project, comprising instructions on how one's own behaviour can result in savings while laying out minimal investments or investments with a fast payback period. The project has its own website, www.setrimenergii.cz, comprising several practical interactive tools by means of which it is possible to monitor the current development of one's own natural gas (as well as electricity and water) consumption in the household and evaluate the effectiveness of the saving measures taken. Another online application, "Test your dwelling", recommends the most suitable tailor-made saving measures according to the entered parameters. A virtual visitation of a flat and house provides a host of simple advice, tips and ideas on how to use energy as efficiently as possible.

Another information source is the RWE brochure, available at all the group's customer centres and from contractual partners. It can also be ordered on the RWE customer line.

When it comes to large customers, the RWE group provides services focused on cost monitoring or saving. They pertain to energy controlling, AVE Internet and energy auditing. As regards medium-sized customers, RWE is willing to contribute financially to gasification of vehicle fleets and public transport vehicles. At the same time, within the Heat project, the group proposes environmentally friendly and energy-efficient solutions for heating of new buildings and old houses. ■

*Juraj Krivošík, juraj.krivosik@svn.cz*

*Note: More detailed information about energy savings can be obtained within the network of EKIS consultancy centres, a list of which can be found at the address www.i-ekis.cz.*

## Biogas stations ...

... *cont. from page 1* in such a place so that raw materials are not transported to and from the station on roads directly in an urban area. Odour production itself can be reduced by the type of substrate processed and logistical measures.

### Problem no. 2 – Processed raw materials

Closely related to odour problems is the type of raw materials processed at the station. The anaerobic fermentation process allows for obtaining returns on a number of raw materials of organic origin, virtually regardless of the volume of water in the given biomass.

If the fermentation process so allows, substrates with higher energy value have been ever more frequently used in both new and existing biogas stations. As against liquid manure, which used to be a traditional source for agricultural BGS, preference is given to substrates with higher specific biogas production per unit of amount/volume in raw state. These are suitable types of phytomass (primarily maize and fodder crops treated by ensilage prior to fermentation) and plant and animal by-products or wastes from food-processing plants with a high content of fats, carbohydrates and proteins (slops, residues from rape processing, sugar beet, fat in general and oils of biological origin, bone-meal). Nevertheless, preference given to substrates with higher energy gain has an impact on the dimensioning of the reactor volume and the actual operation of the biogas station (substrates need to be kept a longer time in fermenters), as well as the quality of the output substrate. The wider the raw material basis, the higher the risk of bringing in unwanted substances which subsequently contaminate the output digestate and, in addition, can threaten the fermentation process itself.

### Problem no. 3 – Output Optimisation

The decisive reason for giving preference to substrates with higher energy yield is the fact that they improve biogas stations' economic situation. Given the current prices of corn, replacement of 1 tonne of liquid manure, generally acquired free, with maize ensilaged corn, which must be grown somewhere, harvested, transported and stored, brings, owing to the existence of public support for generation of energy from biogas, an additional net yield amounting to at least CZK 300 to 400 (if biogas is used for electricity production). In the case of using bone-meal or fats, this yield can be significantly higher.

Related to output optimisation is energy evaluation of biogas. The current setup of the entitled public support for biogas stations, which was introduced by Act 185/2005, on support for electric power generation from renewable resources, serves as motivation for utilising biogas for the highest possible energy production. It is virtually happening uniformly in cogeneration units with combustion engines whose by-product is heat.

Today, the best machine units – motor generators – are able to transform more than 40% of the original energy in biogas into electric power. The price of a kWh of primary energy in biogas is approximately CZK 1.2 (i.e. more than 330 CZK/GJ). This is much more than it is possible to get when giving preference to heat production (for its subsequent sale beyond biogas stations), when it is necessary to factor in prices of substitution sources that can be significantly lower.

Heat production, however, is a necessary accompanying phenomenon. After discounting the station's own needs, it is possible to supply from every MWh of biogas to other consumers at least 300 kWh of energy in the form of hot water. Making use of this potential can improve biogas stations' economy. Especially if the heat produced could replace generation from more expensive fuels.

In addition, similarly to other countries, in five to ten years we can expect a growing trend of not using biogas for electric power and heat production but as motor fuel (instead of compressed natural gas – CNG) or for supply into the gas distribution network. ■ *Tomáš Voříšek*

*A complete version of this article appeared in the monthly Moderní obec.*

## Energy consumption monitoring – the first step to savings

*International experience has proved that up to 10% of households' energy consumption can be reduced by means of regular monitoring and evaluating of energy consumption. In linkage to consumption development, we can regulate and control our domestic consumption. Yet how to acquire continuous, synoptic, reliable and financially accessible information?*

A number of energy companies have begun installing "smart" meters that not only allow for long-distance reading of consumption data, but also afford consumers the opportunity to scrutinise their own consumption in more detail.

Installation of "smart" devices measuring electricity, gas, heat and water consumption is expected to bring significant energy and economic benefits both for end consumers and organisations supplying network energy forms.

How can smart meters contribute to this? On the one hand, through the possibility of faster and more detailed informing of customers about the given medium's consumption and related costs (and possibly also about which appliances participate in it), thereby making it possible for them to adapt their behaviour.

However, grid suppliers should benefit from installation of smart meters too – in the form of consumption control, they will be able to better affect demand, thus optimising their summary consumption curve. At the same time, they can also reduce labour costs owing to the possibility of installing remote reading systems and even automatic control instead of manual reading and meter management, as is the case today.

Analysis of the project's objectives has revealed that there are several systems that can fulfil these functions. It concerns the following systems:

- AMR – Advanced Meter Reading
- AMM – Automated Measurement and Management
- HDO – Ripple control – bulk remote control of a distribution company's electricity supply system

The AMR system mostly allows for unidirectional data transmission and facilitates the simplification of invoicing for individual consumers and distributors. Communication is carried out in the form of wire, radio or GSM connection.

The AMM system is usually bidirectional and makes it possible for a distribution company to read consumption, switch on and disconnect some of the consumer's appliances. Communication is largely in the form of wire or GSM connection.

The HDO system controls take-offs of the electricity supply system by means of orders across its network. Switching on and off consumers' loads not only regulates load in the grid, but also reduces consumers' electricity costs. Consumers can plan energy-intensive activities for the time of the lowest tariffs.

Comparison of the possibilities of all three systems has shown that active participation of the consumer is necessary in order to reduce energy consumption. By analysing energy bills, provided that they are drawn up properly in content and graphic terms, it is possible to affect the consumption's structure and timing. Hence, some countries are planning in the near future to gradually equip all households and small consumers with electricity meters capable of providing the mentioned functions.

In terms of the level of quality of measuring grid energy consumption, the situation in the Czech Republic is not at all bad, especially when it comes to electric power supplies. At the present time, small consumers' electricity consumption is to a certain extent regulated through the HDO system, whose use is not so common in other EU countries. Owing to this system, we also have perhaps the highest number in Europe of tariffs for small consumers with various prices for electricity in dependence on the nature of its final use. However, in the wake of the market's liberalisation, the possible benefits of the HDO system have been significantly reduced since its management has been taken over by distributors, not electricity suppliers. Consequently, today HDO serves more to optimise the grid's load than for effective regulation of customers' consumption curve and optimisation of the total consumption on the part of the supplier.

Hence, the question arises of how to involve individual consumers in the process of monitoring and reduction of energy consumption. Will **more items of information and their better structuring** allow for permanent reduction of energy consumption and energy costs? Does the simpler **HDO** system provide possibilities of reducing consumption and costs for electric energy? Is support for the programme of informing about energy savings on the part of distribution companies more effective than analysis of costs contained in the bill?

Seeking answers to these and other questions is a consortium of 14 partners from ten countries, including the Czech Republic, within the ESMA – European Smart Metering Alliance – project. More information about ESMA can be found on the official website http://esma-home.eu/. You are also welcome to ask this article's author, who coordinates the project's activities in the Czech Republic. ■

*We look forward to hearing your opinions.*

*Pavel Kárník, pavel.karnik@svn.cz*

*http://esma-home.eu/*

# The GreenLight programme and its partners

*Regular readers of News at SEVEn are well aware of the GreenLight programme, initiated by the European Commission with the aim to promote companies and organisations which make use of energy-efficient lighting (including street lighting, in the case of municipalities).*

In 2006, the GreenLight programme was joined in the Czech Republic by the IKEA stores in Ostrava and Prague-Černý most, the South Bohemia Regional Authority, the Town of Hostětín, Grand Hotel Symphony Ramada in Prague, and the Prague 8 district, within the relighting of the nursery school in Poznaňská street. In 2007, the textiles producer CNM Textil, a.s. Oskava, the utility Energetika Vítkovice, a.s., the City of Zlín, and the Ministry of Environment joined the programme too.

The programme's official promoters in the Czech Republic include Philips Lighting, Kanlux, the National Network of Healthy Cities, and the Regional Environmental Centre. In 2007, the Agency for Environmentally Friendly Products and the companies Doublepower! and Indal, s.r.o. became promoters too.

### Greenlighting

One of the most recently involved organisations is concurrently a partner of the website greenlighting.cz, dealing with environmental aspects connected with lighting and mainly intended for mayors and municipalities. It aims to improve general awareness of public lighting issues and strives for light to be perceived as one of the major elements forming the nature of towns and villages. Greenlighting.cz organises seminars and in the future it will inform citizens about energy-efficient lighting in other manners too (e.g. in the media or a portal with a similar focus).

### Kladno and its lighting

A specific example of refurbishment of lighting, in this case street lighting, is the replacement of all lamps in four streets (Cyrila Boudy, Jaroslava Kociána, Americká and Vodárenská) in Kladno. The town of Kladno decided to begin implementing this project in 2007 on the basis of specified savings of operating and servicing costs. New lighting fixtures, equipped with 70W discharge lamps, have fully replaced the old units with the input of 150W. This has resulted in savings of 87W, or 54%, as regards every lighting fixture's input. The new lighting units were recommended on the basis of a specialist calculation declaring compliance with the valid standards for road lighting.

Furthermore, the use of aluminium lighting fixtures with IP 66 has resulted in reduction of maintenance costs (general replacement of light sources once every four years). At the same time, the question of what to do with the non-recyclable material after the termination of the lighting fixtures' service life (25-30 years) has been resolved.

This example shows that stringent economic and environmental criteria need not have a negative impact on the functionality and suitability of street lighting in towns and villages. ■

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*More information: www.eu-greenlight.org*

***The coordinator of the New GreenLight programme in the Czech Republic and another seven Central and Eastern European countries, where the programme has been joined by towns and municipalities, private companies and other organisations, is SEVEn. In the European Union as a whole, there are a total of 400 partners, ranging from large multinational companies to small towns and villages.***

# Last chance to join the REMODECE project

Within the REMODECE international project, for almost a year an in-depth survey has been taking place in the Czech Republic aimed at pinpointing the factors affecting electricity consumption in households. It is carried out in the form of a questionnaire inquiry on a sample of 500 households, linking up to which is direct measuring of the main appliances in 100 selected homes.

Should you be interested, now is your last chance to participate in this survey! The entry form can be downloaded from the address www.svn.cz/remodece.

After filling in the questionnaire, you will receive by post a package of useful advice and information providing instructions on specific possibilities of reducing your energy consumption. It will serve as a useful aid advising you how to save money, even amid ever-increasing energy prices. As a small bonus, every questionnaire respondent will also receive a gift token for electricity take-off from the company Pražská energetika, a.s. ■

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# Fulfilment of the European Directive on energy services

In 2006, Directive 2006/32/EC of the European Parliament and Council, on energy end-use efficiency and energy services, was adopted. The document imposed upon EU member states the obligation to submit the first energy efficiency action plan by 30 June 2007. The action plan serves to present ideas on how to meet the national orientational energy-saving objective. The goal is reduction of annual average 2002-2006 consumption by 9 per cent, and it is planned to be achieved in the period between 2008 and 2016.

The average consumption between 2002 and 2006 in the Czech Republic was calculated as 220,462 GWh. Accordingly, the national energy-saving objective is 19,842 GWh.

However, without including saving measures, the average annual energy consumption in 2008-2016 is expected to increase to 289,167 GWh. After including saving measures, the average annual energy consumption is presumed to amount to 269,325 GWh.

The Czech Republic submitted to the European Commission its National Energy Efficiency Action Plan at the beginning of October 2007, i.e. more than three months behind schedule. Yet it was by no means the only country to have failed to meet the deadline for the document's delivery. As at 1 September 2007, only nine of the 27 EU member states had handed over their action plans.

In the second half of October, there were only two countries that had not delivered the required document to Brussels. And four states had only informed the European Commission of the status of its drawing up by letter. To date, thirteen countries have submitted the National Energy Efficiency Action Plan in their own language version and an English translation.

By the end of the year, the European Commission is scheduled to have compiled comments on individual action plans, which will be subsequently discussed with individual states during the course of 2008.

The open question arises, however, of to what extent the National Energy Efficiency Action Plan will remain merely a statistical summary of the current measures and to what extent the document can become the initiator of new, meaningful activities. ■

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***An overview of the texts of individual action plans of EU member states, including the Czech Republic, is available at the address: http://ec.europa.eu/energy/demand/legislation/end_use_en.htm#efficiency***

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