

# CZECH FOCUS

The magazine of the Association for Foreign Investment and CzechInvest Number 1/2014

## Going Green



**Energy and the environment  
in the Czech Republic**



# CZECHINVEST PARTNER FOR FOREIGN INVESTMENT IN THE CZECH REPUBLIC



CzechInvest is a state contributory organisation established in 1992 as a subordinate body of the Ministry of Industry and Trade of the Czech Republic. Its objective is to support business and investments in the Czech Republic.



In 2013 CzechInvest mediated 108 investments in the combined value of nearly CZK 48 billion, nearly twice the total in 2012. Companies that have invested in the Czech Republic are enjoying success and investing repeatedly: 80% of the investments mediated by CzechInvest last year involved expansions. And what better calling card could a country have than satisfied investors?



#### The most attractive sectors for foreign investors:

- vehicle manufacturing
- mechanical engineering
- electronics and electrical engineering
- IT and software development
- research and development



#### Why the Czech Republic?

- advanced economy
- well-developed infrastructure
- high-quality suppliers
- skilled yet affordable workforce



#### How can CzechInvest help you?

- provision of information on state-aid possibilities
- investment incentives
- identification of business properties
- establishment of contact with Czech suppliers
- aftercare services



*All of CzechInvest's services are provided free of charge.  
More information is available at [www.czechinvest.org](http://www.czechinvest.org).*

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Discover the Czech Republic's  
rich winemaking tradition

# Masthead

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## Dear Readers,

I believe that, with few exceptions, it is impossible these days to undertake an investment without having access to sufficient and affordable energy sources. Moreover, you cannot invest or expand if you don't take into account the environmental aspects of your decision. This is not due only to limitations and regulations pertaining to the environment, but also because



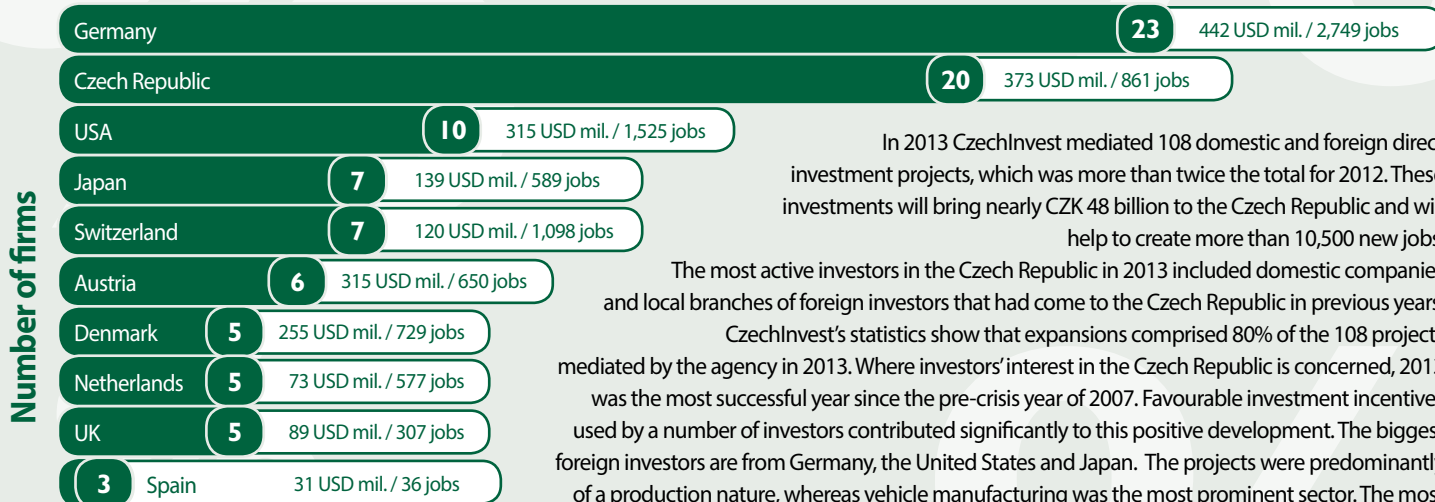
environmentally friendly investment will be more sustainable and acceptable, at least in the medium- and long-term perspective. The Czech Republic has a unique position in terms of the energy and environmental sectors. We are one of the very few European countries that are able to export electricity. We are situated in the heart of Europe and our energy grids (electricity and, to some extent, gas pipelines) have excellent connections to the neighboring countries, which enables our energy market to function efficiently. We have a long history in the energy industry and there are thousands of companies that are active in the fields of power engineering, power generation and energy trading, among other areas. Czech research and development capacities are rather unique in comparison with countries of comparable size. For example, in the nuclear industry we have more than one hundred companies that are subcontractors (or even main contractors) in nuclear power-plant construction. Our research and development capacities work with foreign counterparts in Europe, North America, Australia and Asia on research and design of new nuclear power-generation options. Even for people who do not support nuclear power, I am sure that having such capacity shows that our industry and research in other, less complex areas of the energy sector, are very advanced.

The Czech Republic is able to provide competitive offers of energy sources to investors in manufacturing and services, as well as virtually any other area you can think of. Besides the fact that you can get the best deal when it comes to your investment in the Czech Republic, there is also rising interest in technological measures that bring forth energy savings while combining various uses of new renewable energy sources. Czech researchers and universities are still working on and introducing many unique solutions for saving energy and thus reducing energy costs in general. We also have a comparable number of new, developing companies and start-ups in the area of environmentally friendly technologies such as development of renewable energy, energy-efficiency measures, wastewater treatment and technologies for energy utilisation of reusable materials. If you are in search of subcontractors to deliver you any component, from wind turbines to nuclear-grade certified cabling, you can find them in the Czech Republic. If you need 100 MWh to be quickly available on the industrial site of your choice, you are in the right place. Our country also ranks among the global leaders in the construction of energy-efficient buildings. The Czech Republic is doing its best in coping with constantly changing European energy and environmental legislation. CzechInvest and the AFI will help you to achieve the best position in this environment and find the best partner for your investment. You can find more information about the Czech cleantech, energy and environmental sectors in this issue of Czech Focus. I hope you will enjoy reading it and feel free to contact me with any suggestions.

*Kamil Blažek*  
Chairman, AFI  
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# Last year CzechInvest mediated domestic and foreign direct investments worth nearly CZK 48 billion

## Selected investments – distribution by country of origin in 2013



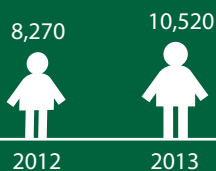
In 2013 CzechInvest mediated 108 domestic and foreign direct investment projects, which was more than twice the total for 2012. These investments will bring nearly CZK 48 billion to the Czech Republic and will help to create more than 10,500 new jobs.

The most active investors in the Czech Republic in 2013 included domestic companies and local branches of foreign investors that had come to the Czech Republic in previous years. CzechInvest's statistics show that expansions comprised 80% of the 108 projects mediated by the agency in 2013. Where investors' interest in the Czech Republic is concerned, 2013 was the most successful year since the pre-crisis year of 2007. Favourable investment incentives used by a number of investors contributed significantly to this positive development. The biggest foreign investors are from Germany, the United States and Japan. The projects were predominantly of a production nature, whereas vehicle manufacturing was the most prominent sector. The most popular location in 2013 was South Moravia, which 15 out of the total of 108 investors chose for their investments. However, the largest volume of investments was in the Moravia-Silesia region. The biggest investment of last year was undertaken by the Danish company Fibertex Nonwovens, which is expanding its production of nonwoven textiles and textile materials in Svitavy at a cost of CZK 2.6 billion. ■

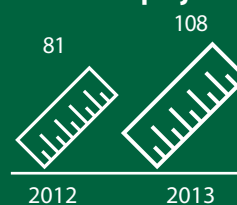
### Investment amount (CZK mil.)



### Number of jobs



### Number of projects



## The Czech Republic wins third place in the investment destination of the future competition



Aleš Červinka, director of the Shanghai office accepting the third-place plaque

The Czech Republic is the third-best location in the world for future investments. The results of the competition organised by Site Selection magazine and the FDI Association were announced in November 2013 during the World Forum for Foreign Direct Investment in Shanghai. The Czech Republic was entered in the competi-

tion by CzechInvest and the third-place plaque was accepted by Aleš Červinka, director of the Shanghai office of the Ministry of Industry and Trade of the Czech Republic. Not only countries, but also regions and cities could enter the competition to be named the most attractive location in the FDI Destination of the Future category. The winner was Birmingham, UK, followed by Colombia in second place.

## Awards presented to the most significant investors

### and business properties of 2012

Factors such as investment volume, the number of newly created jobs and benefit for the given region determined the most significant investors in the Czech Republic of 2012. The winners were announced by CzechInvest together with the Association for Foreign

Investment in November 2013, at the Czech National Bank Congress Centre in Prague. The awards ceremony was held under the auspices of President of the Czech Republic and Minister of Industry and Trade. Automotive Lighting took first place in the Manufacturing category, while Eaton Elektrotechnika and Comdata Czech took the top honours in the Research and Development and IT and Shared Services categories, respectively. CTPark Mladá Boleslav attracted the largest volume of investments in 2012 and thus won in the Industrial Zone category. The Rostoky Science and Technology Park Complex received the award in the category Property of the Year for Technology Centres and Services. A regenerated laundry facility that houses the headquarters of DIKRT was named Brownfield of the Year. A completely new feature of this year's edition of



the event was the presentation of the AFI Prize for Significant Achievement in the Area of Investments, which was won by Tex Trading Cavaliere. AFI Prize for Long-Term Contribution to the Investment Environment of the Czech Republic was awarded to the Czech-German Chamber of Trade and Industry.



Comdata - winner of Investor of the Year, IT and Shared Services category

## Halla Visteon opens a new production facility

In November 2013 Halla Visteon Climate Control Corp. ceremoniously opened a new production facility in its manufacturing plant in Hluk, thus increasing the plant's capacity for manufacturing exhaust-gas recirculation coolers and radiators for European carmakers by roughly 20%, thereby further strengthening HVCC's position in Europe. With approximately 430 employees, the plant in Hluk manufactures radiators, EGR coolers, condensers and intercoolers for global vehicle manufacturers.

According to expectations, the number of employees should rise with the addition of roughly 140 workers over the course of next year, when the plant will begin full operation.

## Mondelez to invest EUR 75 million in Opava

The food company Mondelez International has announced its intention to expand production at its plant in Opava. The company is investing more than EUR 75 million in tripling the plant's capacity and plans to hire at least 200 new employees. The company will produce Oreo and belVita biscuits here. Mondelez International will launch new production lines at the highest technological level in the second half of 2015. The products that will be produced here are intended primarily for the European market. Ingredients for production will be acquired from Czech suppliers.

## Toray begins production in a new facility in Prostějov

Toray Textiles Central Europe, the Czech branch of the Japanese firm Toray Industries, a manufacturer of waterless offset printing plates, ceremoniously commenced production at its new manufacturing facility in Prostějov in January 2014. In addition to representatives of CzechInvest, which helped

to mediate the investment, the event was attended by other important guests, including the Japanese ambassador to the Czech Republic, Tetsuo Yamakawa, Deputy Minister of Industry and Trade, Milan Hovorka, and Akihiro Nikkaku, president of Toray Industries.

## The AFI unveils its new website

The Association for Foreign Investment has a new website where investors can find key



information about investing and doing business in the Czech Republic, as well as useful contacts, the latest news about investing and investment opportunities, analysis and case studies, and offers of professional services from AFI members – a group of top-rated firms that help foreign investors to launch their operations in the Czech Republic and to further develop their business here. Of course, the new website employs the latest technology, so it can easily be viewed on mobile telephone. The website has been developed by User Technologies, the Czech start-up agency ([www.usertechologies.com](http://www.usertechologies.com)). ■



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Representatives of the winning project (Multimodal Holographic Microscope) with Minister of Education, Youth and Sports Prof. RNDr. Dalibor Štys, CSc. and Kateřina Kostková from Česká spořitelna a Member of Erste Group

Case studies are available at [www.spolupraceroku.cz/nejlepsi-spoluprace/case-studies](http://www.spolupraceroku.cz/nejlepsi-spoluprace/case-studies)



It is a fact that modern economies and their success are based on the competitiveness of industry and industrial research. The Czech Republic has always had a strong industrial tradition and substantial innovation potential. The government systematically improves the environment and framework facilitating interaction between the business and research sectors. Current projects indicate a favorable trend in the area of cooperation between universities, research institutes and companies leading to innovations. Such cooperation is a prerequisite for a prosperous industrial economy and it raises awareness of top-quality Czech technologies abroad.

# Making progress, together

## The purely Czech firm TESCAN and Brno University of Technology conducted the most effective cooperation last year

**W**ithin the Cooperation of the Year project, the Association for Foreign Investment, the American Chamber of Commerce in the Czech Republic and the Technology Agency of the Czech Republic recently recognised the best cooperative projects conducted by companies and the research sphere in 2013. First place was awarded to the Czech company TESCAN, Brno University of Technology and the Institute of Molecular Genetics for a project involving a holographic camera microscope using 3D technology. Four other projects have been awarded (for details see p. 5). One-third more projects were entered in the competition than in the previous year. Entrants were projects from traditionally strong sectors

of the Czech economy, such as mechanical engineering, the automotive industry, biotechnology, IT, electronics, nanotechnology, optics and aviation. Moreover, we registered the participation of almost all major Czech universities. The Cooperation of the Year project's partners are Erste Corporate Banking, Huawei, ICT Alliance, HP and 3M. AFI and AmCham constantly strive to raise awareness of successful examples of the practical application of scientific findings in the business realm and to encourage such cooperation in future. Cooperating entities are inclined to build on successful projects and to benefit from long-term synergistic effects of cooperation. The symbiosis of ideas from general basic research with applied research based on

contact with industry and awareness of the needs of the market leads to success. The automotive industry is a good example. It has not only developed a network of production facilities, but has also expanded its know-how through the activities of the research departments of manufacturers and independent branches of research and engineering service companies. Therefore, this sector is very successful in the Czech Republic. ■

*Martin Michalov*  
PR and Marketing Manager  
Association for Foreign Investment

**1<sup>st</sup> place****Multimodal Holographic Microscope**

**TESCAN**  
**Brno University of Technology**  
**Institute of Molecular Genetics**

TESCAN a global supplier of grid electron microscopes and related applications and the Faculty of Mechanical Engineering at Brno

University of Technology (BUT) developed a revolutionary prototype of a microscope based on camera scanning which enables researchers to precisely gauge the localisation and trajectory of very rapidly changing examined objects – e.g. cells – in 3D. This device will find uses in biology and technical fields. The micro-

scope's optical system is already protected by Czech and European patents and its protection is being expanded further. The technical solution has been granted a European patent and the company is now seeking patents in the Russian and American markets. TESCAN is planning commercial use of the project's result in 2015.

**2<sup>nd</sup> place****Flying Laboratory for Testing a Turboprop Propulsion Unit**

**První brněnská strojírna Velká Bíteš**  
**Brno University of Technology**  
**JIHLAVAN – airplanes**  
**Air Jihlava – service**

První brněnská strojírna Velká Bíteš, a significant producer in the areas of aviation and turbomachinery both in the Czech Republic and on the international scale, and the Aviation Institute of the Faculty of Mechanical Engineering at BUT

developed the experimental VUT 061 TURBO aircraft serving as a flying laboratory for testing the TP 100 turboprop engine. Within the project, measuring technology was used to a significant extent for gauging and recording both the engine's operating parameters and the plane's overall flight data. On the flying laboratory it will be possible to operatively test and verify newly developed engine components and modifications that increase the engine's utility properties.

It is anticipated that the entire TP 100 production volume will be intended for export, both to aircraft producers and individuals who want to have the advantages of a turboprop engine in comparison with piston engines in the form of lower weight, use of readily available JET-A1 aviation fuel and sustained engine performance at higher altitudes. The first delivery of a TP 100 engine was to a customer in the United States.

**3<sup>rd</sup> place****Diagnostics for Detecting Dangerous States of Steam Turbines**

**Doosan Škoda Power**  
**University of West Bohemia in Plzeň**

The device functions as a diagnostic system that enables online monitoring of steam turbines with the purpose of detecting contact between the turbine's rotor and stator (rubbing) and subsequent localisation

of the contact point. This makes it possible to detect undesirable and often dangerous states of turbines and the causes of such states. Introduction, installation and use of this diagnostic system are currently very pertinent in connection with construction of new production blocks and modernisation of existing steam-turbine blocks. This advanced system

is unique in the world because this form of assessing, localising and detecting rubbing in the stated scope is not available in existing diagnostic systems used in turbomachinery in the Czech Republic and abroad. The project's results have been rated highly by top foreign experts and several major global firms have expressed interest in the system.

**Czech ICT Alliance Prize****Automated Mining of Information from Speech**

**Phonexia**  
**Brno University of Technology**

Phonexia and the Speech@FIT research group of the Faculty of Information Technologies at BUT have been engaged in intensive cooperation leading to a new generation of technology for mining information from un-

structured spontaneous speech that was not intended for computer analysis. Automatic processing of speech requires knowledge of engineering, humanities and, to a limited extent, medicine. The project involves technology for mining information from speech for security and commercial applications. Adaptations of the technology to a customer's

acoustic channels and a solution for analysis of a call centre's voice operation have already been delivered. The technology will find uses in, for example, mining information from telephone conversations and inferring business decision-making or verification of customers' voices when providing sensitive information.

**Prize of the Technology Agency of the Czech Republic****SW Technology for Increasing the Precision of Machining by up to 80%**

**KOVOSVIT MAS**  
**Czech Technical University in Prague**

KOVOSVIT MAS and the Institute of Production Machines and Equipment and the Research Centre of Manufacturing Technology at the Czech Technical University in Prague designed software technol-

ogy that compensates for heat generated by an MMC 1500 machining centre. Compared with commonly used software, manufacturing precision was increased by 80% without complicated interventions in the machine's design. In relation to the current requirements for the precision of machine tools, it is a very inexpensive and effective way to

achieve greater precision, as changes in a machine's structural temperature can cause up to 70% of its overall production imprecision. Installation of the software increases the value of the machine and extends its service life. In addition, the project's results are usable for other machines and types of equipment.



# Czechs make waves at IGEM 2013

**T**he fourth annual International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM), the biggest event of its kind in Southeast Asia, took place in Kuala Lumpur in October 2013. For the third time, a Czech delegation participated in the trade fair within the European pavilion thanks to the economic diplomacy of the Ministry of Foreign Affairs of the Czech Republic. With the topics of waste management and renewable energy, the Czech presentation received an outstanding response from trade-fair visitors. Today's Malaysia faces a full spectrum of ecological challenges. In 2013, the country's capital, Kuala Lumpur, experienced the worst air pollution, exacerbated by forest fires on the nearby island of Sumatra, that it had seen in the past sixteen years. Local flooding and landslides are a depressing reality. The impact of groundwater contamination poses a threat to future drinking-water supplies. At the same time, there are deficient infrastructure and legislation in the area of processing solid household waste. The environment is currently a very much discussed topic in Malaysia

and is no longer being ignored by representatives of the country's government. Malaysia's new Minister of Energy, Green Technologies and Water Management, Datuk Seri Dr. Maximus Johnity Ongkili, visited the Czech stand, which was part of the European pavilion where France, Italy, Spain and Poland also exhibited. The Czech delegation was composed of representatives of the Czech environment ministry's office in Kuala Lumpur, CzechInvest and Czech firms operating in the area of environmental technology, water management and waste management. SVCS Process Innovation presented its diffusion furnace for the semiconductor and energy sectors, AVAS Export-Import exhibited its sustainable agriculture solutions and Hydropol, a firm operating in the field of small hydropower plants, managed to establish cooperation with the Malaysian firm Naim. Besides exhibitions, conferences and prearranged bilateral meetings between potential partners, the trade fair's programme included a full range of supporting events set up by the trade fair's organiser and the EU-Malaysia Chamber of Commerce and Industry. Czech

representatives, including CzechInvest's cleantech specialist, Petr Růžička, attended the accompanying block of seminars and workshops.

The state of the environment in Malaysia, including strong support from the Malaysian government, is an important opportunity for development of new technologies that can solve local ecological problems. Beside those previously mentioned, opportunities can also be found in, for example, sustainable processing of palm oil, which is Malaysia's main commodity, and development of related sectors including biomass processing. This year's IGEM drew over 300 exhibitors from 23 countries and was attended by more than 50,000 businesspeople, manufacturers, investors and representatives of science and research institutions and governmental organisations from Malaysia and other South-east Asian countries. ■

*Petra Menclová  
PR Specialist  
CzechInvest*



*Czech stand, IGEM*

**F**ifteen years ago, ecology and the environment were fringe issues in the Czech Republic. The country had only one faculty, at Jan Evangelista Purkyně University in Ústí nad Labem, that was focused on ecology. Later, however, this field grew tremendously as the necessity to resolve environmental issues from the past became apparent. Today, the environment is a matter of concern not only for specialists, but also for the general public. The field of ecology and environmental protection is now part of almost every university's curriculum, Czech companies think and act ecologically and in many sectors are developing and applying clean technologies that are supported by various national and European aid programmes. Malaysia is currently trying to implement this trend, which appears in the greater economy

under the term "green economy". In order for these changes to be successfully and comprehensively undertaken, it is important to focus the necessary efforts on the government level, the industrial and commercial sphere, and on households and consumers. For example, a positive approach to this issue is being taken in Kuala Lumpur, where most taxi drivers fuel their vehicles with natural gas (LPG), which when combusted has the lowest level of CO<sub>2</sub> emissions in comparison with other fossil fuels. Malaysia is also open to renewable sources of energy, whereas the local climatic conditions offer tremendous potential for construction of small hydropower plants. ■

*Petr Růžička  
Sector Manager for Energy and Environment  
CzechInvest*





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The Czech Republic has a reputation as a centre for high-tech engineering, software development, nanotechnology as well as medical research & development, among others. CTP is the Czech Republic's premier developer of high quality premises for lease throughout the country. Our clients demand not only specialized fit out, but long term value, and CTP has a successful record developing customized manufacturing facilities, clean rooms, and BREEAM certified offices for clients such as Honeywell, ABB, and SmithsMedical, while providing full property management services long after move in. Whatever your industry, call us today to see how CTP can get your company close to the high-tech hubs you need to be a part of.



In the era of industrial expansion, coal was the primary source of energy in the Czech Republic. At that time, emphasis was placed on economic development, while the environment was of secondary concern. This trend eventually proved to be unsustainable and interest in environmental protection began to intensify over time. In the 1990s, Czech coal-fired power plants began the process of desulphurisation with



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# The greening of industry in the Czech Republic

cyclonic separators and filters, i.e. clean technologies. Today we encounter clean technologies almost everywhere in everyday life and in every sector, in wastewater treatment plants, various waste separators, catalysers that neutralise harmful particles in exhaust gases, and technologies for energy utilisation of reusable materials, among. Clean technologies are mainly seen as technologies that help to generate energy from renewable resources, such as small hydropower plants, wind farms, solar power plants, and power plants fuelled with biomass and geothermal energy. Technologies that save, conserve and intelligently manage energy in established industrial processes and administrative buildings, as well as in households, are coming to the fore. The main purpose of these technologies is to achieve maximum efficiency and savings through synergistic relationships and thus to achieve a reduction of operating costs.

## Current trends in green industry

The European Commission recently set out the objective of reducing CO<sub>2</sub> emissions in Europe by 40% as compared with 1990. This is a clear signal that industrial technologies need to adapt and thus throws tremendous support behind clean technologies.

In the Czech Republic, most energy is consumed by industry, as well as in households and in transportation. Therefore, there is rising interest in technological measures that bring forth energy savings while combining various uses of renewable energy sources, such as

installation of heat pumps in combination with solar collectors on roofs and the use of biomass-fuelled boilers to replace obsolete heat sources, whether in industrial enterprises or in households. In the Czech Republic, these measures are supported within European and national aid programmes.

Energy consumption and negative impacts on the environment can be reduced by constructing energy-efficient buildings, which are designed, built and operated with the objective of creating an ecologically and socially considerate environment.

The Czech Republic ranks among the global leaders in the construction of such buildings. The latest addition to the local property market in this category is CTP Invest's Spielberk Tower, which was awarded BREEAM certification at the "excellent" level in 2012. Another example is the "AIR House Energy Self-Sufficient Solar Building" project carried out by

energy and thus reducing energy costs. In cooperation with the design, engineering and consulting firm Tebodín Czech Republic, an individualised plan of coaching activities was formulated for the university and implemented with the objective of preparing its technology for commercial use. This specifically involves a reductor that reduces input voltage from the grid to such an extent that it is usable for the proper operation of appliances and other devices. The benefit of this technology, whose development is supported within the Operational Programme Research and Development for Innovation, is expected to consist in improvement of the condition of the customer's distribution grid, while extending the service life of appliances, reducing energy consumption and making operation more efficient. This technology is already being tested in practice, for example in a wastewater treatment plant,

*"The Czech Republic ranks among the global leaders in the construction of energy-efficient buildings."*

the Czech Technical University in Prague in cooperation with major Czech companies. The project won the bronze medal in the Solar Decathlon, an international competition organised by the US Department of Energy. The Technical University of Ostrava and its Innovation Support Centre has also come up with an interesting solution for saving

a call centre and in the public lighting system. The decentralisation of energy sources and heating is the natural course of action on the part of Czech businesses in meeting the energy needs of their operations. This trend involves the necessary replacement of old energy and heat sources in companies, whether in an entire complex or within



individual firms. Subsidies from European and national programmes provide strong motivation to implement such changes in both the public and private sectors. A frequent solution is to replace coal-powered boilers with cogeneration units that produce both electricity and usable heat. This type of clean technology mainly uses natural gas as its input energy. Cogeneration units are used by schools, hotels, hospitals, airports, shopping centres, industrial plants and biogas stations. The best-known Czech supplier of cogeneration units is the globally operating company Tedom. Decentralisation of the energy market increases the demands placed on the electricity grid. Therefore, it is necessary to invest in reinforcing the energy infrastructure and, at

the same time, to introduce smart-grid technology that would enable the two-way flow of electricity between the user and the power distributor. In connection with the incorporation of this technology into the Czech Republic's energy infrastructure, the country's leading power company, ČEZ, is implementing the Smart Cities pilot project in the Vrchlabí region. In the area of renewable energy sources, the Czech Republic has reached several important milestones. Development of biogas stations followed the solar boom that occurred in 2009-2010. Today these areas of energy production are developing naturally in connection with the Czech Republic's climatic conditions. Small hydropower plants are currently enjoying a degree of popularity, though there

are still a certain number of available locations that predominately have low flow gradients. This situation could be changed by the new swirl turbine technology developed by Brno University of Technology in cooperation with ČEZ, thanks to which it will be possible to use small hydropower plants on watercourses with low flow gradients.

The rise of technologies for exploiting reusable materials can also be expected. A draft amendment to the Waste Management Act should discourage the disposal of waste in landfills and support the development of technologies for reusing it. ■

*Petr Růžička*

*Sector Manager for Energy and Environment  
CzechInvest*

## R&D centres and laboratories

### Centre for Research and Utilisation of Renewable Energy

The primary objective of the Centre for Research and Utilisation of Renewable Energy is to concentrate significant research and development capacities for resolving the complex issue of using renewable energy sources, including in the field of electrical engineering. The centre is a facility of Brno University of Technology, which has a long history of research and, thanks to the centre, aspires to become a respected institution of European significance in the field of energy research.

### University Centre for Energy Efficient Buildings

As its name implies, this newly established research institute at the Czech Technical University in Prague will focus on energy-efficient buildings that have healthy interiors and are also environmentally friendly. In its science and research activities, the centre will specialise in innovative technologies and construction solutions for buildings and elements thereof with integration of new materials and renewable resources, optimisation of buildings' control systems and energy sources, use of renewable, recyclable and recycled household materials, and formulation of concepts, methodologies, directives and technical standards.

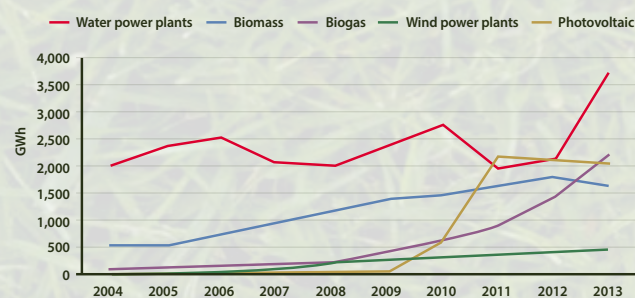
### Hydraulics Laboratory

The newly built hydraulics laboratory of the company ČKD Blansko Engineering serves for the development and acceptance testing of physical models of hydraulic machines pursuant to IEC international standards. Thanks to this research laboratory, which is co-financed from European funds, it is possible to test in the Czech Republic water turbines used in hydropower-plant projects around the world.

### Alternative Drive Units and Fuels Laboratory

This research facility at the Technical University of Ostrava is focused on the use of chemical energy from standard and alternative fuels and conversion thereof into various types of energy with minimal impact on the environment. This primarily involves the application of new, non-traditional technical solutions in practice. The laboratory's main areas of interest include research of cogeneration units, on which it cooperates with the business sector, e.g. the companies Viessman and Capstone.

## Gross Electricity Production from Renewables, between 2004-2013



Source: CzechInvest, 2013

## Investment case studies

### The Kyocera group's largest solar-module assembly facility located in the Czech Republic

Kyocera, a Japanese company established in 1959, is known for the uniqueness and high quality of its technologies. The company entered the Czech market in 2005, when it built its first solar-panel manufacturing plant here. Thanks to the company's successful development and positive experience with manufacturing conditions in the Czech Republic, Kyocera added a second production facility with capacity of 360 MW in 2011. In total, the Czech branch's production capacity amounts to 560 MW, which ranks it among the biggest solar-panel production facilities in the entire Kyocera group.

### Vyncke in the Czech Republic

Vyncke, a renowned family-owned Belgian firm, has been involved in the development of technologies for generating energy from biomass and waste for the past century. In 2012 the company built a modern generating facility in the Czech Republic, where it expanded its operations with development of new technologies. One of the main motivating factors for expanding the firm in the Czech Republic was the availability of highly qualified specialists, technicians and engineers, thanks to which the company has advanced rapidly in recent years and reached the peak of technological development in its field.



# Czech solar house shines in international competition

The sixth annual U.S. Solar Decathlon, a prestigious international competition of universities organised by the U.S. Department of Energy and the National Renewable Energy Laboratory, was held in California in October 2013. The participating teams of students had the task of designing, transporting to the competition venue, constructing and operating a small, energy-positive building. The teams competed in ten disciplines evaluated by a jury and on the basis of measurements of the buildings' actual operation.

Team Czech Republic, composed of students from five faculties of the Czech Technical University in Prague, took part in the competition for the first time. In competition with 19 prestigious universities, the nearly forty-member team led by Dalibor Hlaváček of the Faculty of Architecture won several awards, e.g. first place in architecture and second place in engineering, and came in third in the overall ranking.

The Czechs' competing structure, called AIR HOUSE, is intended for couples over the age of 50 (i.e. empty nesters) who long to live in contact with nature. The design combines

minimal interior living space with generous outdoor space. The main principles of the architectural solution are simplicity, tidiness and emphasis on natural materials. The concept had to fully take into account the demands of overseas transport and rapid assembly and disassembly.

The house's energy concept, which had to be designed to work properly both in California and in the Czech Republic, was based primarily on passive principles: smart screening of solar radiation, natural ventilation and high-quality thermal insulation. Thanks to outstanding active technologies and energy-efficient appliances, it was possible to minimise energy consumption and thus to reduce the size of the photovoltaic panels needed for the project. The entire project, whose preparation took more than two years, could not have been undertaken without financial and professional assistance from a number of firms and

individuals, support from the university and the aegis of Zdeňek Zavřel, dean of the Faculty of Architecture.

Students gained experience with working in an interdepartmental team and benefited from the valuable advice of a number of specialists who assisted them. The Czech team's success in the international competition between prestigious universities confirms the traditional high quality of technical education at Czech universities. ■

More information about the AIR House project is available at [www.airhouse.cz](http://www.airhouse.cz).

Information about the competition is available at [www.solardecathlon.gov](http://www.solardecathlon.gov)

*Antonín Lupíšek  
University Centre for Energy Efficient Buildings  
Czech Technical University in Prague*

# Nanomaterials and electric field help in the fight against old ecological burdens

Industrial activities and, primarily, imperfect handling with hazardous chemical substances led in the Czech Republic in the past to the leakage of such materials into the environment. Substantial funding is currently being expended for the elimination of these so-called "old ecological burdens" in the Czech Republic. The commonly used technologies of "cleaning up" these ecological burdens are based primarily on extractions, which are expensive and not entirely effective methods. A major challenge on the water-treatment market is thus development of completely new remediation technology applicable for "cleaning up" contaminated sites – a technology, which is based on geochemical reactions directly in a geological environment. The interconnection of academic facilities with extensive research potential (Palacký University in Olomouc, Technical University of Liberec) and specialised commercial company (MEGA) clearly defining the objec-

tive and parameters of research, resulted in the formation of a balanced team of experts focused on the development and implementation of innovative decontamination technology. As a result of applied research thematically targeted at specific requirements, several patented technologies have been founded on newly designed reactive composites (formed by micro particles and nanoparticles of elemental iron) being used in synergy with applied electric current. This completely new approach in decontamination technologies has great application potential for groundwater treatment. Substantial attention was focused on management of the control and inspection of the process as a necessary prerequisite for successful commercialisation of the results of the research.

The newly developed methods can be successfully deployed even at localities with complicated geological conditions and in densely built-up areas where conventional processes are ineffec-

tive or inapplicable. Other key advantages of the technology are the long-lasting effectiveness of microparticles and nanoparticles of elemental iron in groundwater, their mobility in groundwater sufficient for the creation of a continuous barrier preventing penetration by contaminants and, of no less importance, optimisation of the reaction paths minimising the emergence of undesired (i.e. often toxic) intermediate products of chemical degradation of pollutants, especially chlorinated hydrocarbons. ■

*Jaroslav Hrabal, Division Manager, MEGA*

*Jan Filip, Scientist, Regional Centre of Advanced Technologies and Materials, Palacký University, Olomouc*

*Miroslav Černík, Scientific Director, Centre for Nanomaterials, Advanced Technologies and Innovations, Technical University of Liberec*



# Cogeneration fully uses energy

In the torrent of information on reducing greenhouse-gas emissions, lowering energy intensity and supporting renewable energy sources, the topic of cogeneration remains somewhat on the fringe of interest even though it is one of the most effective means of producing electricity and heat while saving fuel and reducing CO<sub>2</sub> emissions.

Cogeneration means simultaneous production of electricity and heat. Though heat arises basically in any kind of electricity generation, we can speak of cogeneration when we put that heat to some sensible use. Therefore, this is referred to as so-called useful heat in connection with cogeneration. The key to effective deployment of cogeneration is thus to use all heat that a cogeneration unit produces together with generation of electricity. Production of electricity in ordinary power plants is not exactly efficient. Power plants only convert one-third of the energy in fuel to electricity; the remaining energy is converted to heat, most of which is not used. Therefore, we can say that an ordinary power plant oper-

ates at roughly 35% efficiency, whereas the remainder comprises losses in the form of waste heat, while useful heat is generated elsewhere in boilers. The fact that a cogeneration unit can use the heat from power generation raises its efficiency to roughly 90%. Thus, from the global perspective, cogeneration reduces the demands for fuel of power generation, as the heat produced in a cogeneration unit does not have to be produced elsewhere. Reduction of CO<sub>2</sub> emissions goes hand in hand with fuel savings. Therefore, combined generation of electricity and heat is supported in most European countries.

Cogeneration has a long tradition in the Czech Republic, primarily thanks to the country's heat-generation industry and its district heat-

ing system, where greater cogeneration units are used. However, current potential lies particularly in small cogeneration units that can cleanly and conveniently produce electricity and heat from natural gas where the energies are needed. A number of other countries are recognising similar potential. Development of cogeneration will be connected with development of other decentralised energy sources and their inclusion in smart grids. Cogeneration units will thus find ever increasing use in dozens of European and non-European countries. ■

*Josef Jeleček*  
General Manager  
TEDOM

# Perspectives on waste management in the Czech Republic

The Czech Republic must manage waste in accordance with the so-called waste-management hierarchy, which derives from European law (specifically the Waste Framework Directive) as well as Czech legislation in the area of waste management (the Waste Act). Consistent compliance with the waste-management hierarchy and advancement toward the upper levels of the hierarchy are the main challenges in creating a strategy in the area of waste management in the Czech Republic.

The lowest point in the hierarchy is waste disposal, especially in landfills. However, in the Czech Republic mixed municipal waste is still disposed of predominantly in landfills. The objective of the Czech Republic and the European Union is to gradually and substantially restrict the use of landfills for disposal of municipal waste and other defined types of waste that can be recovered. Therefore, the Ministry of Environment wants to support

waste management according to the upper levels of the hierarchy, i.e. support the development of technologies for re-using, recycling and recovering of waste. The above-mentioned aspects are being incorporated into newly prepared waste-management legislation and the main strategic document titled "Waste-Management Plan for 2015-2024", on which the Ministry of Environment is currently working intensively.

It is also necessary to state that the Czech Republic is committed to fulfilling its recycling targets as well as the objective of diverting biodegradable elements away from landfills. For this purpose, it will be necessary to support the further development of waste-recycling technologies (material recovery) and waste-to-energy technologies.

In order to achieve the stated objectives and fulfil its obligations, the Czech Republic also receives assistance from Structural Funds within the EU cohesion policy. Waste manage-

ment has an important position within the current Operational Programme Environment (OPE) 2007-2013, which has contributed aid to a large number of projects. Waste management will remain one of the main priorities in the prepared Operational Programme Environment 2014-2020.

Thorough preparation of the new OPE 2014-2020 is currently underway, whereas waste is ranked in Priority Axis 3: "Waste and material flows, ecological burdens and risks". Besides waste prevention, support for material and energy use of waste is contained within the proposed individual objectives of this priority axis, which are derived from the Czech Republic's obligations ensuing from EU directives. ■

*Jan Maršák*  
Director, Waste Management Department  
Ministry of the Environment of the Czech Republic

# Czech-Scandinavian trade relations: more than just LEGO and IKEA

*Charles bridge, Prague*

A low level of corruption, a high degree of competitiveness with emphasis on research, development and new technologies, a strong welfare state and high taxes are the attributes associated with Sweden, Finland, Norway and Denmark, the countries comprising the region covered by CzechInvest's foreign office for Scandinavia.

In many respects, the Scandinavian countries are seen as examples of successful economies characterised by the so-called "Nordic welfare model", which depends on social cohesion and solidarity, equal opportunity and flexibility in the labour market, support for the autonomy of individuals and emphasis on innovation and education. The openness of the Nordic economies is complemented by a strong welfare system consisting in protection against the risks associated with an open and flexible economy. The financial demands of the system are thus offset by relatively high taxes. The low level of corruption in the Scandinavian countries is reflected in the Corruption Perception Index compiled by Transparency International. In 2013, all four of the countries ranked among the top nations with the lowest perceived corruption. Among other things, this is due to the anti-corruption sentiment in Scandinavian society, transparent government and social trust and responsibility. This aspect also contributes to the countries' ranking in the

top fifteen nations with the highest degree of competitiveness according to the World Economic Forum's Global Competitiveness Report 2013-2014. Together with effective state administration, these countries also place emphasis on education and career preparation, thus creating fertile ground for development of innovations and advanced technologies. With R&D spending in excess of 3% of GDP, Finland, Sweden and Denmark rank at the top in this area globally. This is confirmed by the Union Scoreboard 2013 report, which ranks these countries among the innovation leaders in the EU, with above-average results in the areas of publishing scientific papers, the number of patent applications and the business sector's spending on research and development. The favourable innovation climate has given rise to numerous major companies such as Nokia, Ericsson, Lego, Tieto, Volvo, Scania and Electrolux and is currently contributing to the growing number of newly established start-ups that have the potential to become leaders in their respective fields. The sectors in which the Scandinavian countries enjoy primacy include

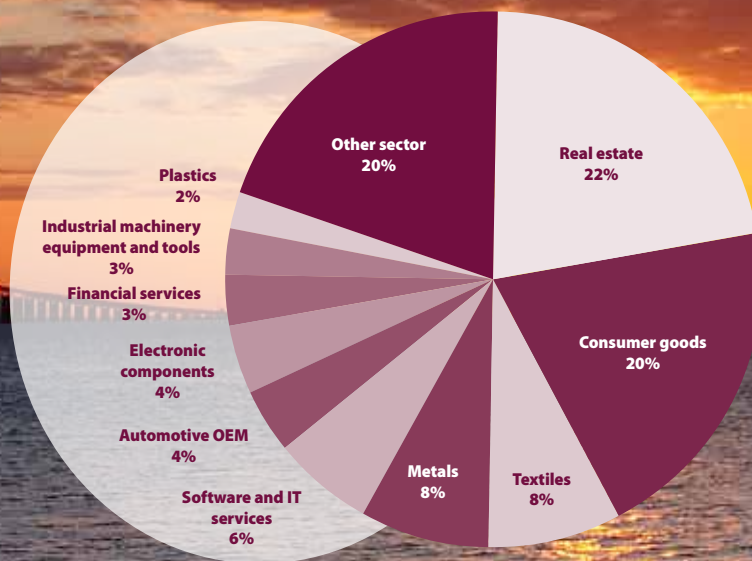
cleantech, renewable energy sources, the paper industry, IT and software development, telecommunications, the creative industry and design, life sciences and high-tech engineering. In the case of Norway, mineral extraction is also a key sector. Especially IT and software development, telecommunications and high-tech engineering, together with consumer goods and the textile industry, comprise the main pillars of the Scandinavian countries' foreign direct investment in the world.

## **Scandinavian investments in the Czech Republic**

According to data from the Czech National Bank, Scandinavian investments accounted for more than 2% of the total investments in the Czech Republic in the period from 1993 to 2012. CzechInvest's statistics indicate a similar share, where 2.1% of the total volume of incoming investments mediated by the agency came from Scandinavia. In light of this statistic, Scandinavia's impact on the Czech economy can seem insignificant, but many of the Scandinavian investors are major regional employers. The most important projects undertaken by Scandinavian firms in the Czech Republic include the investment implemented by LEGO, which came to the Czech Republic in 1999, when it established a branch in Kladno for production and completion of building kits and is now expanding. LEGO has opened a new research and development centre whose total area should grow to 140,000 m<sup>2</sup> by 2016 with a total of nearly two thousand employees. Production of models comprises a separate section within the Kladno complex. The company's distribution centre in Jirny on the eastern outskirts of Prague covers approximately 100,000 m<sup>2</sup> and is operated by an external supplier. It is



## FDI inflow from Scandinavia to the Czech Republic by investment volume (2003-2013)



Source: fDi Intelligence from The Financial Times, 2014

the main distribution centre for Europe and dispatches parcels for a number of other countries outside the EU. Thanks to its undertakings in the Czech Republic, LEGO won second place in the 2011 Investor of the Year competition. Other Danish investors include Kompan, a playground-equipment manufacturer, and Bang & Olufsen, a renowned producer of sound systems. Swedish projects include those of the Sandvik mechanical-engineering group, which manufactures stainless-steel and special alloy products in the Czech Republic, and Trelleborg Automotive, a producer of vibration- and noise-reduction systems. Among Finnish investors, we can mention the major IT-services provider Tieto, the leading conveyance-system manufacturer Kone, and the paper company Stora Enso. Norway is represented by Jotun Group, a manufacturer of paints and powder-coating materials. All of these investors were attracted to the Czech Republic primarily by the country's strategic location in Central Europe, as well as its industrial tradition, level of quality and, in comparison with Scandinavia, inexpensive labour. Companies with Scandinavian roots are also

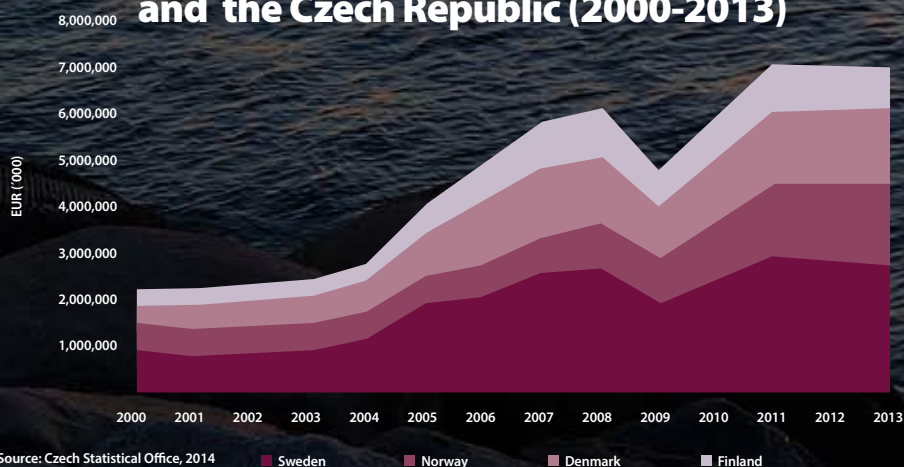
in particular has managed to raise awareness of not only simple and functional Scandinavian design, but also of Swedish cuisine in the Czech Republic.

### The Czech impact on Scandinavia

The carmaker Škoda Auto, which has long ranked among the best-selling vehicle brands on the local markets, is undoubtedly among the Czech companies that have made the biggest impact in Scandinavia. For example, the Škoda Octavia was named the 2014 Car of the Year in Denmark and the Octavia Combi was named the 2013 Family Car of the Year in

Other Czech firms have also set a northward course, many of them supported with services provided by CzechTrade. Major infrastructure projects, which offer a number of challenges due to the local natural and climatic conditions, are very attractive. Worth mentioning is the participation of Metrostav, a Czech construction firm, in the expansion of the underground system in Helsinki (the Western Underground project of the Finnish company Länsimetro). Beginning in 2010 Metrostav, in cooperation with its local partner, the building firm Destia, took part in the construction of access tunnels and a separate section of the underground system between the cities of Helsinki and Espoo. The company is also involved in another project in Helsinki, the construction of the Kalasatama multipurpose centre, where Metrostav also performed work in connection with tunnel construction. Another Czech company involved in infrastructure projects, specifically in the area of bridge design, is Stráský, Hustý a partneři, which cooperates with the multinational firm WSP on commissions in Sweden and is seeking opportunities for expanding its activities into Norway. Notable firms outside the area of infrastructure projects include Helio, a manufacturer of fluorescent lamps, which supplies its products to customers in Norway and Finland. We can expect that trade relations between Scandinavia and the Czech Republic will continue to gain in intensity thanks to the Czech Republic's attractive investment environment and Czech exporters' high-quality products and services. ■

## Foreign trade turnover between Scandinavia and the Czech Republic (2000-2013)



Source: Czech Statistical Office, 2014

active in the construction and services sectors in the Czech Republic. The construction and property-development groups Skanska (Sweden) and YIT (Finland) have long been present on the Czech market, while the Swedish firms IKEA, H&M and Kapp Ahl, and JYSK of Denmark are prominent in the Czech retail sector. IKEA

Sweden. Passenger cars comprise the top Czech export to the Scandinavian countries with a nearly 20% share of total exports in 2013. Other major exports include popular Czech beer (e.g. Staropramen, Pilsner Urquell, Budvar and Velkopopovický Kozel) and turbines and generators from Škoda Power.

Petr Heczeko  
Representative for Scandinavia  
CzechInvest



# Czech construction firm building underground system in Helsinki



**T**he joint-stock company Metrostav was established in 1971 with the sole purpose of building Prague metro. Since then it has grown to become the Czech Republic's biggest universal construction firm. Besides tunnels in Prague, the company works throughout the Czech Republic on all types of projects, including bridges, railways, roads and motorways, manufacturing facilities, industrial complexes, utilities networks, water-management facilities and architecturally interesting public buildings. Metrostav's work is also known abroad, primarily in Slovakia, Croatia, Poland, Germany and Belarus, as well as in Iceland, where its construction of two road tunnels covering a distance of more than ten kilometres served as the launching pad for Metrostav in being awarded commissions in Helsinki, Finland.

The company entered the Finnish market in 2010 with the objective of applying its vast experience in subterranean construction. The first of its projects on the local market involved the construction of three access tunnels to the newly built Länsimetro - Westward metro, the biggest Finnish infrastructure project to date, which connects Helsinki and Espoo. However, the icing on the cake for the Czech company was the construction of a separate 1.3 km section of the underground system running mostly below sea level. Concurrently with the construction of the metro rail tunnels, Metrostav constructed two technical tunnels beneath a major development project, Kalasataman keskus. In the past three years, Metrostav has constructed a total of six tunnels in Helsinki and its close surroundings. The company wants to further expand its activi-

ties in the region. Highly anticipated projects include a nearly seven-kilometre extension of the Westward metro. In the very near future, Metrostav's workers would like to expand the already developed segment of underground structures with a comprehensive delivery of bridge structures.

The region's economic and political stability, ever expanding infrastructure and membership in numerous European and international organisations convinced Metrostav to establish a branch office in Finland. However, beyond these geopolitical factors, the key aspects are mutual respect and, in particular, reliability. It is good to work in a land where a deal can be closed with a handshake. ■

*Václav Pavlovský  
Head of branch office, Metrostav*

## ŠKODA Octavia G-TEC – affordable technology that cares for the environment



**A**lso under the spotlight at the world premiere in Geneva was the new ŠKODA Octavia G-TEC – the first mass-produced Octavia with natural gas drive. "ŠKODA has rigorously reduced consumption and emissions in the development of its vehicles," says Dr. Frank Welsch, ŠKODA Board Member for Technical Development and Design. The new Octavia G-TEC represents an important milestone and has enhanced the ŠKODA range with particularly environmentally-friendly and affordable models.

The ŠKODA Octavia G-TEC is the ultimate fuel economiser. The maximum range of the 1.4 TSI/81 kW Octavia G-TEC is 1,330 km. The engine can use both compressed natural gas (CNG) and petrol fuels. Two full gas tanks will last a distance of up to 410 km. When the CNG tanks are empty, the vehicle switches over automatically to run on petrol. Running entirely on petrol, the range

is up to 920 km. The Octavia G-TEC comes fitted with the environmentally-friendly Green tec package (start-stop system and brake energy recovery as standard). Fuel consumption is 5.4 m<sup>3</sup> (3.5 kg) natural gas per 100 km with CO<sub>2</sub> emissions of just 97 g/km.

The environmentally-friendly natural gas drive is available for both the ŠKODA Octavia and the ŠKODA Octavia Combi. The new ŠKODA Octavia G-TEC is currently ŠKODA's second natural gas vehicle. The ŠKODA Citigo CNG Green tec was launched in October 2012. This clean little car uses just 4.4 m<sup>3</sup> or 2.9 kg natural gas per 100 km and boasts a CO<sub>2</sub> output of just 79 g/km. The total range is 620 km (400 km gas, 220 km petrol). As with the Octavia G-TEC, here again, two underbody tanks are positioned under the chassis floor to save space.

The Citigo CNG Green tec is proving to be a resounding success. In 2013 ŠKODA delivered

more than 1,300 vehicles to customers in total.

One record-breaking journey last year in particular raised its profile. In August 2013, Austrian fuel-saving champion Gerhard Plattner drove the Citigo CNG from Italy to Sweden taking five days at an average fuel consumption of 2.39 kg CNG/100 km. He spent just 81.24 euros on fuel for the entire 2,619 km journey.

Natural gas drive is an important pillar of ŠKODA's sustainability strategy. Outstanding environmental values are offered by the economical, low-emission ŠKODA GreenLine models. Currently there are 97 ŠKODA models with emission values below 120 g CO<sub>2</sub>/km, 17 of which have values under 100 g CO<sub>2</sub>/km. ■

*David Šikula  
Corporate Communications  
ŠKODA AUTO*



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# The Ústí region: the cradle of Czech heavy industry

## Basic data

Area	5,335 km <sup>2</sup>
Population	825,646
Unemployment rate	9,5 %
Average salary	EUR 814
GDP	9,863 (EUR mil.)

### Ústí nad Labem



## Top ten investors in the region by investment amount:

	Company	Sector	Investment amount (CZK million)
1.	Nemak Europe	Vehicle manufacturing	11,361.00
2.	CHEMOPETROL	Oil coking and refining	7,852.90
3.	IPS Alpha Technology Europe	Electronics and electrical engineering	2,958.12
4.	Knauf Insulation	Rubber and plastics	2,944.00
5.	Tivall CZ	Food	2,940.00
6.	Glaverbel Czech, member of the Glaverbel group	Other	2,826.00
7.	KOITO CZECH	Vehicle manufacturing	2,634.00
8.	Glaverbel Czech	Glass	2,022.87
9.	PREOL	Chemical and pharmaceutical	1,880.00
10.	Mondi Štětí White Paper	Wood processing and paper	1,788.50

**T**he Ústí region has ranked among the Czech Republic's main industrial areas for decades. The chemical, mechanical-engineering, mining and energy sectors are traditional key components of the region's economy. Brown-coal deposits in the sub-Krušné hory basin comprise the Czech Republic's most important source of energy. The region is located in the north-west of the Czech Republic, sharing borders with the Liberec, Central Bohemia, Karlovy Vary and Plzeň regions. To the northwest, it borders the German federal state of Saxony. The Ústí region has a century-old tradition of industrial and agricultural production and trade, and thus features a dense network of transport routes. The Teplice and Litoměřice districts are traversed by the major international E55 motorway connecting northern and southern Europe and intersecting the D8 motorway at Lovosice. The main railway comprises an international route from Germany through Ústí nad Labem to Prague. The Elbe River, which is the most important watercourse in



the Czech Republic and enables shipping to the North Sea port of Hamburg, flows through the region.

### The cradle of industry

The regional economy is specific for various areas of the region, which is due to the very different types of terrain found there. The lowlands (Litoměřice and Louny districts) are suitable for agriculture, whereas the basin area is more suited to industry, and mining is dominant in the region's mountainous landscape (Krušné hory, České středohoří, Doupovské hory). Generally, however, the Ústí region is traditionally associated with the energy, mining and chemical industries. Despite the large number of local job opportunities, the region ranks among the areas of the Czech Republic with the highest levels of unemployment. For example, every fifth working-age person in the Most district is unemployed. Therefore, tremendous effort is currently being focused on creating suitable conditions for investors that could bring their business projects and environmentally friendly production operations

“Tremendous effort is currently being focused on creating suitable conditions for investors that could bring their business projects and environmentally friendly production operations to northern Bohemia.”

to northern Bohemia and thus significantly reduce the unemployment rate.

### Chemical industry

Major employers in the local chemical industry include ČESKÁ RAFINÉRSKÁ, Flexfill, Lovochemie, PREO, Spolchemie and UNIPETROL RPA. Another important player in the industry is the Research Institute of Anorganic Chemistry, which, in cooperation with its partners from the academic and commercial spheres, is involved in several extensive research projects focused on the area of oil refining and petrochemical research, catalysers, waste and anorganics. In 2013 a platform was established to foster active and systematic cooperation between chemical firms in the region.

### Energy

The Ústí region is the cradle of the mining and energy industries in the Czech Republic. Prominent companies in these sectors include Czech Coal POWER, Severočeské doly, Litvínovská uhelná and Vršanská uhelná. The first two companies mentioned above are the most significant and have the majority share in the Brown Coal Research Institute, whose work depends on international scientific and technical cooperation and contacts with universities, other research institutes and development laboratories of supplier organisations. Excellent laboratory technology enables the institute to conduct extensive research, consulting and tailored service activities in the area

of mining, as well as to solve current problems in the fields of ecology, construction, agriculture and other sectors.

### Glass industry

The local glass industry is concentrated mainly in the Teplice district. The main player in the sector is AGC FlatGlass Czech, a member of AGC Group, which produces and processes flat glass for use in construction. The company Český porcelán is a manufacturer of Rococo-style porcelain with an onion motif, which can be found in nearly every Czech kitchen. VITRABLOK is known for its production and sales of glass blocks. The Ústí region is also home to the company Vodní sklo, which produces various types of water glass and binding agents based on sodium silicate.

### Automotive industry

Numerous automotive firms operate in the Ústí region. The most significant employers in this sector include GRAMMER CZ, which manufactures and assembles headrests and other interior equipment for passenger cars. KS Kolbenschmidt

Czech Republic manufactures pistons for internal-combustion engines and compressors, and Koito Czech produces electrical lighting components. Other companies active in the local automotive sector are Benteler Automotive Rumburk, FTE automotive Czechia, Toyota Gosei Czech, Eaton Industries and TRCZ.

### Mechanical engineering

Mechanical engineering is another major industry in the region. TOS Varnsdorf is a significant company in the area of manufacturing horizontal milling and boring machines and machining centres. Significant employers in the local mechanical-engineering sector include Constellium Extrusions Děčín, Sandvik Chomutov, Precision Tubes, Chart Ferox, Aisan Industry Czech and HENNLICH, which was named the region's Company of the Year in 2013. HENNLICH has been operating in the Ústí region since 1922 and currently has operations in fifteen European countries. Its Hennlich Energy division, which focuses on using waste heat and renewable sources of energy, deserves special notice. HENNLICH offers municipalities and industrial and agricultural enterprises solutions in the form of innovative technologies focused on using low potential heat, waste heat and agricultural waste. For example, it offers to its clients the Alpha Ferm product, which is a mobile biogas station based on the principle of dry-wet fermentation. Biowaste (e.g. silage, grass) is used as the input material. The company's ZERO FUEL

GEN 50 kW generator is an innovative product based on Organic Rankine Cycle technology for converting waste heat to electricity and is highly efficient even at low input temperatures.

### Food industry

The region's agricultural areas include the Žatec and Louny districts. Žatec is home to the Hop Research Institute, which conducts comprehensive scientific research in the area of hop cultivation, harvesting and post-harvest processing. The institute performs breeding of new hop varieties, maintenance breeding and propagation of Czech hop varieties. The various hop varieties are tested in a trial microbrewery. Other prominent firms in the local food industry are Shanghai Maling, Czech Pak Manufacturing, Tivall CZ and Aroma Praha.

### Science

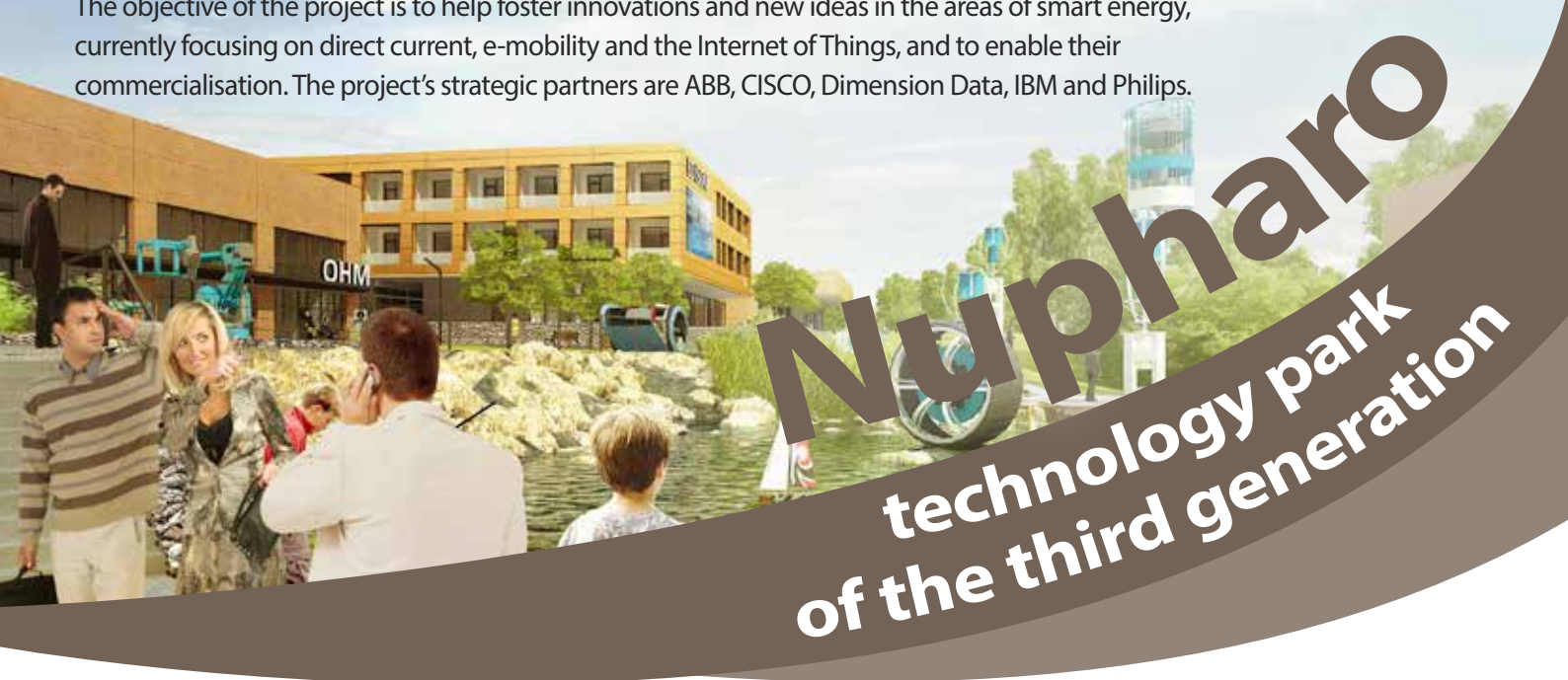
The Ústí region is home to Jan Evangelista Purkyně University, which is often associated with its Faculty of Pedagogy, which is the oldest of its kind in the Czech Republic. The region also has several detached facilities of various Czech universities (Czech Technical University, Czech University of Agriculture, Technical University of Ostrava) and several private universities (University of Applied Psychology, University of Finance and Administration, and the Banking Institute). One of the activities carried out by CzechInvest's Ústí Regional Office is to organize roundtable meetings in cooperation with Jan Evangelista Purkyně University, the primary objectives of which are to bring firms together with the university, establish initial ties and support cooperation. The first result of this activity is the interconnection of these entities via the university's website, which will lead to more effective cooperation in the future.

### Interesting features of the region

Prominent natural features of the Ústí region include the 7,900-hectare České Švýcarsko National Park, which was established in 2000, and the České Středohoří, Labské pískovce and part of Lužické hory protected landscape areas. We can also find 154 smaller protected landscape areas covering 4,308 hectares in the region. In the field of entertainment, the region hosts the Barevná planeta Multiethnic Festival, which has been successfully held for fourteen consecutive years and is the culmination of a full year of work by the Counselling Centre for Integration, a non-governmental non-profit organisation. For sports enthusiasts, the Ústí nad Labem Half Marathon takes place every year in the regional capital, which is the smallest city in the world to have been awarded the silver mark of quality by the International Association of Athletics Federations. ■

*Irena Petračková*  
Director, Ústí nad Labem Regional Office  
CzechInvest

Located close to Ústí nad Labem, the newly established Nupharo campus will serve as an incubator, innovation technology centre and global platform for creating a community of international experts. The objective of the project is to help foster innovations and new ideas in the areas of smart energy, currently focusing on direct current, e-mobility and the Internet of Things, and to enable their commercialisation. The project's strategic partners are ABB, CISCO, Dimension Data, IBM and Philips.



# Nupharo technology park of the third generation

In this phase Nupharo offers rental premises with a total area of 16,000 m<sup>2</sup> comprised of light manufacturing, offices, showroom, conference hall and other premises.

Besides spaces for sharing comprehensive services and technical facilities, the park also offers services in the areas of financing, consulting and marketing. The campus' facilities include the Welcome Business Centre with a lodging, restaurant, and accommodation, all with a creative atmosphere. The campus offers basic services such as a day-care centre, education facilities and programmes, a fitness centre, rental shop, a map of hiking and sports activities and a generally cultural/educational and creative environment. Completion of the technology park is planned for 2015.

#### Smart technology campus and green buildings

The Nupharo project combines the technology of passive buildings pursuant to modern environmental standards with active building technologies, e.g. DC technology, which helps to manage and, especially, reduce operating costs by as much as 50%. LED lighting, latest ICT solutions and installation of state-of-the-art rapid-charging stations for electric cars and bicycles. The Nupharo campus is designed as a maximally self-sufficient and sustainable complex with its own island water-treatment system which, thanks to its own purifier, is divided into three water circuits: potable water, wastewater and rainwater. For heating and cooling purposes, 84 boreholes for heat pumps will be installed in the complex. A system for recuperating and sharing waste heat will also be used. All of the buildings are prepared for installation and DC connection of solar panels. The complex also features stations for continuous emissions

measuring. With all of these technologies in place, Nupharo is striving to achieve one of the highest LEED certifications.

#### Innovation is the primary objective

Nupharo collaborates with public institutions and major Czech and foreign universities, such as the University of Pittsburgh, Delft University of Technology, the Indian Institute of Technology, Jan Evangelista Purkyně University in Ústí nad Labem, Czech Technical University, the Institute of Chemical Technology in Prague, and the Technical University of Liberec. Together with the University of Pittsburgh, Nupharo organised the first annual conference on the topic of DC technology last year in Prague. The conference was attended by more than eighty specialists from around the world. Nupharo's philosophy is to not wait only for the construction of a modern campus, but to work now on the content of future developments. In keeping with that philosophy, Nupharo organises specialised workshops and networking events, and is preparing several projects in cooperation with universities. It has already established a foundation to support the nearby town of Libouchec and is planning to formulate in the very near future a strategy to support not only the local area, but also creativity and innovation in the Ústí region. Nupharo is exceptional also in that it has its own start-up programme. Initial recruitment of start-up companies will take place in 2014.

#### Unique global focus

The Nupharo project is based on the idea that energy is the foundation of everything.

The advantages of long-neglected direct current technology are increasingly coming to the fore and the commercialization of this old new know-how is the globally unique focus of the Nupharo project. The advantages of direct current include - in addition to higher safety and ease of use - particularly better compatibility with renewable and local sources of energy and higher efficiency, making it more ecologically sound. A good example of this is LED lighting technology, which is based on direct current and is roughly 75% more efficient than ordinary artificial lighting. Because it requires less energy and consumption, direct current is far more environmentally friendly than alternate current. Starting with renewable resources, such as photovoltaic, which function on direct current, transitioning to direct current could help to save energy also due to the fact that it is already used by electronic devices such as computers, telephones and LED lamps and televisions, as well as electric cars and bicycles. However, these devices have built-in convertors or batteries that convert AC to DC, which results in the loss of approximately 15% of input energy. The quantity of electrical appliances that we need for everyday life is constantly increasing - and the amount of lost energy is ever greater. However, it is expected that in 2014 a new USB format, called USB Power Delivery, will appear on the market and make it possible to transmit electricity via telephone (data) lines for much more powerful (100W) appliances, thus helping to reduce energy loss. ■

Robin Čumpelík  
Strategy Mediator  
Nupharo.com



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- Greening the heating plant – boiler K14, ArcelorMittal Ostrava, Czech Republic
- Client´s engineer, ecological program, Powerstation Opatovice, Czech Republic
- Reduction of emissions (NO<sub>x</sub>, SO<sub>2</sub>), heating plant E3, Energetika Třinec, Czech Republic
- EDISON PROJEKT – Slovnaft, Modernization of Powerstation, Slovakia
- Assembly plant for gearboxes, Škoda Auto, Vrchlabí, Czech Republic
- H-project, Hyundai Motor, Nošovice, Czech Republic
- TPCA, Car assembly plant, Kolín - Ovčáry, Czech Republic
- KIA Motors – Car assembly plant, Žilina, Slovakia
- PSA - Peugeot Citroen Assembly plant, Trnava, Slovakia



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# The Czech Republic prepares new aid possibilities for energy-efficient projects

The European legislation that regulates the conditions of the 2014-2020 programming period was approved in December 2013.

At the national level, a draft Partnership Agreement, which will determine the Czech Republic's overall strategy for using EU funding, is currently being prepared. Settlement of the agreement's final form with the European Commission is expected at the end of the year. At the same time, the Commission will also debate the form of individual Operational Programmes, approval of which should occur in the autumn. Businesses could see the initial calls for submission of applications at the end of 2014. A total of EUR 21.6 billion has been allocated for the Czech Republic for the 2014-2020 programming period.

## Operational Programme Environment (OPE)

Within the new programming period, the OPE will again cover a broad spectrum of issues involving environmental protection and reduction of energy intensity. According to the structure published by the Ministry of Environment of the Czech Republic, the new Operational Programme will be composed of six priority axes

containing a total of 19 specific objectives from which supported measures will be derived.

The OPE 2014-2020 will again have a strong regional focus, i.e. the main recipients will again be municipalities and contributory organisations and other legal entities established by them. The aid amount will reach 90% of eligible costs; recipients will pay the remaining 10% from their own funds.

In the case of business entities, the maximum aid amount will be limited by the regulations governing the provision of state aid. Currently, the aid amount can be as high as 60% of eligible costs (or 80% in the case of small and medium-sized enterprises). However, from 1 July 2014 the aid intensity will be reduced and the exclusion of some sectors is being considered.

The Ministry of Environment has announced the simplification and improvement of the processes for the administration of applications and approved projects so that from the administrative perspective the new programme will be as easy as possible for applicants and recipients. We can thus look forward to a reduction of the volume of documentation and acceleration of the overall administration of projects.

## Operational Programme Enterprise and Innovation for Competitiveness (OPEIC)

The most important programme for business entities in the previous programming period was the OPEIC, which provided support for businesses within the Innovation, Development, Eco-Energy, ICT, Training Centres and other programmes. Within the new programming period, in 2015 it will again be possible to submit applications within this programme intended primarily for businesses. For the OPEIC, EUR 4 billion will be allocated and distributed among a total of five priority axes:

All business entities, regardless of their size, in all regions of the Czech Republic (outside of Prague) can apply for aid. Depending on the size of the given enterprise, aid intensity will reach 25-45% of eligible costs.

It is thus apparent that aid incentives will again play an important role in the area of projects involving energy savings and emissions reductions. With respect to the strategic planning of investments for the coming period, now is the time to consider using these resources for the development of your business in the Czech Republic. ■

Pavel Růžička

Consultant, OPE, ENVIROS

Roman Kamarýt

Consultant, OPEIC, ENVIROS

## Structure of the Operational Programme Environment 2014-2020

Priority axis	Specific objectives
PA 1 – Improvement of water quality and reduction of flood risk	1.1 Reduce the amount of pollutants released into surface and ground water from sources in the category of up to 2000 EO and assurance of potable-water supplies in the appropriate quality and quantity 1.2 Reduce the quantity of pollutants from industry and agriculture released into surface and ground water, ensure effective management of water resources 1.3 Ensure flood protection in built-up areas and in open country, effective management of water resources 1.4 Support preventive anti-flood measures
PA 2 – Improvement of air quality in human settlements	2.1 Reduce the exposure of the population, ecosystems and vegetation to excessive concentrations of pollutants 2.2 Improve the system of monitoring, evaluating and predicting the development of air quality, the weather and climate and the earth's ozone layer
PA 2 – Improvement of air quality in human settlements	2.1 Reduce the exposure of the population, ecosystems and vegetation to excessive concentrations of pollutants 2.2 Improve the system of monitoring, evaluating and predicting the development of air quality, the weather and climate and the earth's ozone layer
PA 3 – Waste and material flows, ecological burdens and risks	3.1 Enhance waste-prevention measures 3.2 Increase the overall material usage of waste and the level of recycling 3.3 Increase the energy usage of waste as a source of raw materials 3.4 Increase the level of hazardous-waste management 3.5 Eliminate unauthorised landfills and recultivate old landfills 3.6 Inventory and eliminate ecological burdens 3.7 Reduce environmental risks and develop systems for managing them
PA 4 – Protection and care of nature and landscape	4.1 Strengthen biodiversity 4.2 Strengthen the natural functioning of the countryside 4.3 Improve the quality of the environment in settlements 4.4 Reduce environmental risks caused by geo-factors
PA 5 – Energy savings	5.1 Reduce the energy intensity of buildings and public lighting
PA 6 – Technical assistance	6.1. Technical assistance for ensuring implementation of OPE 2014-2020

Source: Ministry of the Environment, Priority No. 9/2013

## Structure of the Operational Programme Enterprise and Innovation for Competitiveness 2014-2020

Priority axis	Specific objectives
PA1 – Enhancement of research and development for innovation	1.1 Increase the innovation performance of companies 1.2 Increase the intensity and effectiveness of cooperation in research, development and innovation
PA2 – Development of the business operations and competitiveness of small and medium-sized enterprises	2.1 Increase the number of new business projects of start-up and developing companies 2.2 Increase the internationalisation of small and medium-sized enterprises 2.3 Increase the usability of infrastructure for businesses 2.4 Improve the infrastructure for human-resources development in the business sector with emphasis on specialised technical education
PA3 – Effective energy management, development of energy infrastructure and renewable sources, support for the introduction of new technologies in the area of managing energy and reusable materials	3.1 Increase the share of energy from RSE in the Czech Republic's gross end consumption 3.2 Increase the business sector's energy efficiency and development of energy services 3.3 Strengthen the transmission system's energy security and introduce smart-grid elements into the distribution system 3.4 Greater application of low-carbon technologies in the area of energy management and increased exploitation of reusable materials 3.5 Increase the use and introduction of KVET, develop and modernise heat-supply systems
PA4 – Development of high-speed internet access and information and communication technologies	4.1 Increase high-speed internet coverage 4.2 Increase the level of state-of-the-art and advanced ICT and provision of sophisticated shared services in the business sector
PA5 – Technical assistance	

Source: CzechInvest



# Interest in the R&D tax deduction is rising. Here's how it works

**T**he amount invested in research and development in the Czech Republic in 2012 reached CZK 72.36 billion, i.e. 1.88% of GDP. Public spending

on support for research and development comprised nearly 53% of the total, whereas private-sector spending accounted for nearly 46%. When comparing the annual volume of R&D investments in the period from 2002 to 2012, it is clear that increased spending in this area is an ongoing trend, as the amount invested nearly tripled over the course of a single decade. We can also see a rising trend in the number of applied tax deductions for research and development, which 1,029 companies claimed in 2012.

For increasing their investments in research and development, companies in the Czech Republic can use both direct aid instruments (i.e. subsidies and investment incentives) and an indirect instrument in the form of a tax deduction for research and development.

The R&D tax deduction makes it possible to write off 100% of costs expended on the implementation of research and development projects. In order to have a uniform process of applying the deduction, the Ministry of Finance issued instruction D-288.

**When using the tax deduction, a company can write off research and development twice in one tax period – first as accounting costs reducing the company's financial result and again as an item deductible from the tax base.**

If a company reports a tax loss in a given year or its tax base is not sufficiently high, it can claim the deductible item in the subsequent three tax periods. However, a company can apply the deduction only in the case that it did not

receive any direct support, i.e. subsidies or investment incentives, for the given research and development project. In order to claim the tax deduction, a company must fulfil two conditions: it must prepare written research and development project documentation and keep a separate record of spending (costs) included in the tax deduction. It can be said that, in the assessment of research and development activities, the purpose of such activities is more important than whether they were conducted using completely new methods or the most sophisticated instruments. The key thing, however, is fulfilment of two criteria – an appreciable element of novelty and technical uncertainty. An appreciable element of novelty is understood within the context of the taxpayer, meaning that because the objective of a project or a part thereof is known by another company, it suffices to demonstrate the taxpayer's lack of access to such solution.

A research and development project can, but does not necessarily have to, lead to a particular economic or intangible result (patent, utility model, know-how, etc.). It does not matter whether, for example, the result of a given research and development project will be monetised by issuing a license to a third party. Pursuant to the legislation in force, it is possible to include commercial commissions for specific clients in a research and development project. The personnel costs of a company's employees who participate in research and development are most commonly applied in the R&D tax deduction. Applicable costs can also include amortisation of assets used for research and development, material costs and travel expendi-

tures. Other operating costs can also be reported, though keeping records of such costs can take more time than the actual tax savings are worth and thus it is necessary to consider whether or not all eligible costs should be applied.

With its coming into force on 1 January 2014, the amendment to the Income Tax Act brought forth several changes. **Companies can now newly deduct the costs of financial leasing of tangible assets connected with research and development and expenditures for intangible results of research and development and services purchased from public universities and research organisations.** Furthermore, it is possible to apply 110% of increased costs of research and development compared with the preceding tax period. As of 1 January 2014, however, it is no longer possible to include certification costs in a tax deduction.

Companies can also newly use a tax deduction to support the acquisition of assets for specialist education and to support costs expended on students and pupils.

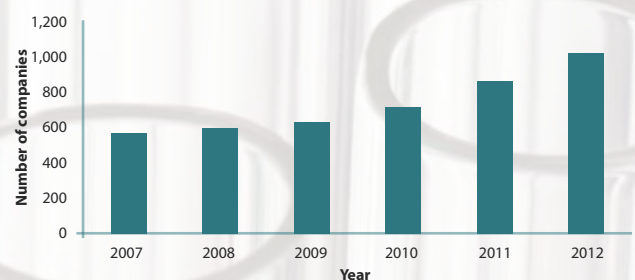
The tax deduction for research and development is an effective instrument that can bring companies significant tax savings every year and support their competitiveness. The number of companies that use the R&D tax deduction is constantly increasing and the use of this form of support can be expected to intensify in future. ■

Lenka Kováčová  
Consultant  
Deloitte

## Examples of the possibilities of R&D activities in individual industrial sectors:

Industrial sector	Examples of research and development activities
Information and communication technologies	Development of software and software modules, development of specialised software components and algorithms
Mechanical engineering and other manufacturing	Design and development of new and improved products and technologies, production of prototypes, trial production
Construction, engineering	Design and construction work, new and substantially improved construction technologies, calculations and designs serving for the development of new or technically improved structures.
Pharmaceuticals	Development of drugs and reagents, clinical trials, development of medical devices
Food	Design of new or improved products and technologies, development in the area of packaging technology and hygiene
Breeding/cultivation	Selective breeding/cultivation
Materials engineering, metallurgy	Development of new or substantially improved materials

## Number of companies that have deducted R&D costs from their corporate income-tax base in the Czech Republic



Source: Czech Statistical Office

# Czech firms taking charge in exporting investments

**T**he AFI has established a working group to support export of investments, which works closely with government agencies and relevant ministries. The working group is also formulating the position of AFI in this area. A summary of our key issues is provided below. The export of investments and investment services is an important indicator of the industrial and export development of individual countries and firms, and has a long-term impact on their economic results and prestige. Export of investments and investment services differ substantially from other export sectors especially in terms of their cost, capital intensity of production, implementation period and degree of business, financial and political risk. Furthermore, this type of export has significant multiplier effects. Implementation involves not only the general contractor, but also a full range of other firms, from engineering and design organisations and subcontractors providing technological and construction elements to special banking and insurance institutions. Of no less importance, the export of investment units creates conditions for future export opportunities in the form of consulting services, general maintenance, replacement parts and technological innovations.

## Strategy for supporting export of investments and investment services

Czech companies have a tradition of delivering technology and equipment (and the expertise required to install and operate such technology) to foreign markets and have strong potential to continue doing so. One of the main objectives of the Czech export strategy is to increase the volume of Czech exports to markets outside of Europe and to reduce the country's dependence on the European Union. The orientation of exports to CIS, Asia, Africa, Latin America and other prospective territories is strategically correct. In these cases, we have in mind particularly investment and technology units in the energy, mechanical-engineering, infrastructure and transport construction, chemicals, petrochemicals, food and water-management sectors. Financing is undoubtedly an important factor in these projects. The Czech Export Bank, via which state export aid is disbursed, and number of commercial banks have a major role in providing financing. The Export Guarantee and Insurance Corporation is focused on insuring export-credit risks.

The objective of the Association for Foreign Investment and its working group for support of export of investments is to help formulate a strategy for supporting the export of investments and investment services at the government level and to co-create suitable conditions for Czech firms that manage or implement such projects. An integral part of this is active cooperation with Czech embassies and foreign offices of the Ministry of Industry and Trade, participation in professional events, active search for opportunities in foreign markets and provision of key services related to implementation of these complicated projects. In the area of exporting investments and investment services, the AFI is able to ensure expert support and consulting services in all key project phases beginning with top experts in design and engineering works, legal assurance in foreign jurisdictions, and mediation of contacts with reliable consulting firms in all parts of the world.

## Procedures and processes for managing investment exports

In the area of supporting the export of investments and investment services, the AFI not only ensures financial and legal support, but can also assist exporters in completing and complying with the procedures and processes of project management and coordination, i.e. preparation and implementation of investment exports generally, including the necessary related engineering-consulting services. This can be provided both in the case of ensuring implementation of an investment unit in the form of an investment-unit general contractor or final contractor of a separate, complete part (operating aggregate – process unit or structure – civil unit), i.e. in the case of direct assurance of deliveries and services by the contractor through turnkey delivery ensured in the form of an Engineering, Procurement, Construction Contract (EPC), as well as in the case of ensuring implementation of an investment unit in the form of a full range of consulting services in the comprehensive and complete form of an Engineering, Procurement, Construction, Management Contract (EPCM). All of these procedures and processes are carried out for any form of assurance of delivery of a given technology and equipment in accordance with the conditions and rules of the Fédération Internationale des Ingénieurs-Conseils, which is the most commonly used international standard for management processes and implementation of investment units and is, of course, applied to

the relevant character of the given investment unit and location.

## Don't just close the deal. Finish it

Through renowned and experienced law firms, the AFI is able to provide legal services for anyone in a long line of firms that are in some way involved in exporting investments and investment services, i.e. not only for EPC and EPCM contractors, but also for any subcontractor. Support of AFI members in the field of law begins at the time of forming the implementation team on the client's side (including foreign support if needed), negotiation of the deal and searching for possibilities of financing (export financing) including arrangement of bank guarantees and other forms of assurance. Provision of support continues with the acquisition of technical certificates in the country where the investment is to be implemented, examination of legal, tax and customs issues (including the issue of responsibility for customs clearance) and procurement of visas and work permits. Our members can assist with selection of the governing law (legal order), which will govern the legal relationship with the investor and the language of the contract. A good business contract must anticipate not only the smooth running of the project, but also the possibility of crisis scenarios. Besides common clauses that define, for example, the means of delivery and the form of the investor's cooperation, AFI members insert into contracts a range of provisions for the case that not everything will go according to plan. These basic provisions include a rule for resolving possible disputes including an arbitration clause and the language of arbitration. Another important part of the legal framework is protection of rights to intangible assets, including patent and licensing services in particular. Legal services of AFI members respect and support the objective of our exporters: not only to close the deal, but primarily to successfully complete it with an appropriate economic benefit. ■

*Kamil Blažek  
Partner, Kinstellar  
Chairman, AFI*

*Viktor Malý, Chief Operating Officer  
AS CHEMOPRAG*

*Jan Kohout, Jakub Lichnovský and Daniel Rosický  
Partners, PRK Partners*



# Back to the centre

Companies in Western European metropolises are beginning to return to city centres. This trend is also coming to Prague and the supply of state-of-the-art offices is attracting firms back to the centre from the outskirts of town.

*Quadrio complex, visualisation*

Offices covering more than 70,000 m<sup>2</sup> are currently being built in the Czech capital. Nearly 95,000 m<sup>2</sup> is planned and developers are in various stages of construction preparation. For example, CPI Group is now completing the multipurpose Quadrio complex on downtown Prague's Národní třída right above a metro station. The property will offer future tenants a high degree of comfort in the heart of the city, an attractive location at a central public-transport node, modern architecture and high-quality services.

In the past decade, massive construction of offices in locations outside of the city centre attracted firms to relocate there thanks to low rents. However, after years in operation, it became apparent that lower rent alone cannot replace the advantages of a central location. A company that wants to keep the best employees must give them the possibility of a social life. Furthermore, electronic communication has not restricted personal contact in the business world, but has rather enhanced it. Meeting with people is absolutely essential for the work of, for example, sales professionals. Therefore, in Europe we are seeing a clear trend of tenants returning to city centres or moving into strong office agglomerations. Besides a prestigious address, the maximum possible availability of public transport is a major advantage of being in the centre.

In past decades, there was minimal office construction in the centre of Prague, with an-

ual additions of only around 10,000 m<sup>2</sup> of new office space. Today, there are more than 200,000 m<sup>2</sup> of A-category offices. Upon completion of the projects that are currently underway, that volume will increase by one-third. Finalisation of such a large quantity of offices over the next few years will bring forth a reduction of rental rates, which are already at the lowest level of the past twenty years.

However, price isn't everything. One of the effects of the economic crisis is the rising quality of new offices, mainly in the centre of Prague. The crisis also brought about a change in tenants' behaviour, whereas if a company is to occupy new spaces, then it must receive the highest quality and/or savings. Developers are well aware of what attracts clients to new premises and so now they listen more to tenants and place greater emphasis on the use of higher-quality materials. In the case of the project going up in the centre of Prague, quality truly increased after the outbreak of the crisis. Companies that lease offices there do not focus only on size, but also on the overall appearance and quality of the property. Of no less importance, they also require a prestigious address. Today's modern office projects are full of intelligent technical solutions that are not entirely visible to the end user but still reliably ensure comfort, safety and financial savings for the user every day.

As recently as 2007, developers believed that they would not need green certificates. However, under pressure from tenants, they

changed their attitude and green certification has become a standard feature of new projects. For most investment funds, having at least some kind of green certification is a necessity. For example, the Quadrio project heeds the ecological parameter and is being built to fulfil the conditions for acquiring the Leed Silver certificate for green buildings.

Major real-estate investors mainly seek properties that are the best in terms of revenue, but there are not many of those on the market. The highest-quality administrative centres are found in lucrative locations that are easily accessible by car and public transport, with properly functioning services in the vicinity, and boast an impressive mix of tenants. An extraordinary draw for future users of the attractive offices in the Quadrio complex is, for example, the roof terrace, which is available for all tenants and offers views of old Prague with the backdrop of Prague Castle. In addition, Prague's historical centre offers a high concentration of diverse services, rich cultural and social life, places of interest and many relaxation zones. Important bureaus, celebrated restaurants and significant monuments, green spaces and shopping zones are all within easy reach. ■

*Pavel Skřivánek*  
Director of Office Letting  
CPI Group

## What are the typical cases of soil and groundwater contamination within Czech brownfields and what clean biotechnologies are used to treat them?

The most frequent contaminants found within Czech brownfields are oil hydrocarbons, chlorinated solvents and polyaromatic hydrocarbons. The Czech environmental company AECOM CZ is one of the partners of 6<sup>th</sup> EU Research Programme, Bioutil, and also of two excellent 7<sup>th</sup> EU Research Programmes, Bacsin and Magicpah. These programmes address decontamination of such compounds from the biological point of view with the use of advanced methods of molecular biology and microbiology for investigations of microbial communities present on contaminated sites and tailored strategies for stimulating clean-up efforts. The number of sites on which soil or water have been contaminated by such pollutants is estimated at several hundred thousand in Europe alone. Our researchers have studied how the metabolisms of surface soil and water bacteria respond to such pollutants by examining characteristic proteins and genes. They found out that a self-cleaning, regenerative

aspects potentially exist at contaminated locations and evaluated how active and effective the bacteria are in breaking down pollutants. Researchers also learned what spectrum of bacterial proteins is indicative for the adaptive capabilities of the microorganism community as a whole. They pointed out that bacteria form molecules that trigger fast and frequent changes in their genetic make-up when the environment is severely contaminated. This allows for rapid adaptation to changing environmental conditions. Now our researchers better understand how this functions and we will be able not only to assess degradative potential and activity, but also to predict the evolution of microbial communities. We will thus know early on whether a particular bacterial population will manage to break down a specific pollutant or how long a certain toxic situation is going to last. In this way, clean-tech biotechnologies capitalised on previous efforts of European Framework Programmes



to harness and exploit the enormous catalytic potential of microorganisms for the benefit of the environment and biotechnology. ■

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AECOM CZ

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## How much lower are the operating costs of warehouses that use sustainable technologies (such as rooftop solar panels) compared to standard warehouses?

As companies increasingly work to reduce the ecological footprint of their activities, it has become routine for them to require “green solutions”, or sustainable development principles, in their manufacturing and operations. In the Czech Republic today we find many logistics and production companies that put great emphasis on environmental aspects, mainly because such principles not only reduce the impact on the environment, but also have great potential for financial savings. If a company wants to take a “green”, or sustainable, approach to the development of a commercial property, it needs to take a holistic look at the building and its operation and maintenance over its entire lifecycle, ideally from the very first draft during the design stage. For example, the proper orientation of a building on a plot of land in relation to the sun can yield substantial savings. That combined with outside blinds reduces heat accumulation in summer and translates into energy savings

in the area of cooling the given warehouse or manufacturing premises. Installation of gas condensation boilers can reduce office heating costs by up to 20%. Minor “green” interior elements are also a source of savings and contribute to environmental protection. These include, for example, smart touchless water faucets with infrared sensors and flow-limiting heads, which can cut water costs by half. For the optimal result, i.e. an environmentally friendly building with low operating costs, a developer needs to be familiar with the specifics of the future user’s operations. In this respect, build-to-suit facilities can result in substantially more economical solutions, especially for exposed operations. Cross-docking centres, for instance, suffer their greatest heat loss on their ramps during loading and unloading operations in winter. With this in mind, P3 built a distribution centre for Yusen Logistics that is fitted with specially insulated loading bays, which have brought heat loss down to a very

considerable extent. In the area of environmentally efficient development of commercial properties, energy consumption is a whole chapter unto itself. This is where intelligent lighting and solar panels come into their own. A well-balanced combination of an economical lighting system, skylights (as a source of natural light) and solar panels can significantly reduce energy consumption. At P3’s PointPark Prague D1 logistics facility, the lighting system we installed includes not only motion sensors but also sensors that register the intensity of sunlight, saving 30% to 40% in energy costs. Solar panels bring down the cost of electricity by another 5% to 10%, depending on whether we are looking at a multi-shift or single-shift operation. ■

Tomáš Míček  
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## What are the main points of the **Energy Performance of Buildings Directive** as implemented in Czech legislation?

Directive 2010/31/EU (EPBD II) is new legislation from the EU regulating the level of energy efficiency required for all new buildings and renovations. Under the Directive, member states must establish and apply minimum energy performance requirements for buildings, ensure that a building's energy performance is certified, and carry out regular inspections of heating and air-conditioning systems. In addition, the directive requires member states to ensure that from 2021 onwards all new buildings will be "nearly zero-energy buildings". The Directive was implemented in the Czech legislation by an amendment of Act No. 406/2000 Coll., on Energy Management, as amended, which came into force on 1 January 2013. In relation to the implementation of the Directive, other Czech legal regulations were also changed (especially Decree No. 148/2007 Coll., on the Energy Performance of Buildings) and a new methodology for energy performance assessment was introduced.

### The main features of the Directive are as follows:

- *Nearly zero-energy buildings (Article 9)*  
By 31 December 2020 all new buildings must

be nearly zero-energy buildings (for new buildings occupied and owned by public authorities, the deadline is 31 December 2018).

- *Leading role for the public sector (Article 9)*

The Directive explicitly states that the public sector should take a leading role in all new construction. An energy performance certificate must be issued for:

- (a) Buildings or building units constructed, sold or rented out to a new tenant.
- (b) Buildings with total useable floor area of more than 500 m<sup>2</sup> that are occupied by a public authority and are frequently visited by the public.

- *Setting of minimum energy performance requirements (Article 4)*

Each country has an obligation to set minimum energy performance requirements for buildings with a view to achieving cost-optimal levels and working towards the "zero-energy" standard.

- *Major renovations (Article 7)*

When buildings undergo major renovation, the energy performance of the building or the renovated part thereof must be upgraded in order to meet the set minimum energy performance requirements in so far as this

is technically, functionally and economically feasible.

- *Regular inspections of heating and air-conditioning systems (Articles 14 and 15)*

There must be regular inspections of the accessible parts of air-conditioning systems with an effective rated output of more than 12 kW. There must also be regular inspections of the accessible parts of systems used for heating buildings.

- *Independent control systems for energy performance certificates and inspection reports (Article 18)*

Finally, independent control systems for energy performance certificates and reports on the inspection of heating and air-conditioning systems must also be established. ■

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## Can M&A be a faster way to start production in the **Czech Republic**?

Foreign investors have traditionally been inclined toward investments in greenfields which, despite the advantage of a new structure fully adapted to the investor's needs, are very demanding in terms of the time required to implement an investment. The period of time needed to put a new factory into operation ranges from 6 to 18 months in most cases (depending on the preparedness of the site). Another possibility is to lease production facilities, which, however, have to be equipped with the necessary machinery. Alternative solution can be a joint venture with an existing local company or complete acquisition of such a company. Besides speed, capital participation in a local company brings forth a number of other advantages, including use of the local industrial tradition, an existing distribution network, knowledge of the local business

environment, and the presence of machinery and a skilled workforce. With capital entry into a Czech firm, an investor gets all of these attributes in a bundle that is prepared for potential further development. CzechInvest's CzechLink Capital Participation Project assists with this form of entry into the Czech market. This project serves as a platform that brings investors together with Czech companies seeking a foreign partner. More than fifty companies, mostly family-owned and with conservative financial management, have become involved in CzechLink during its three years in operation. CzechInvest currently offers foreign investors 26 companies. Upon signing a non-disclosure agreement, a foreign investor receives a detailed financial analysis of the given Czech company's operations for the past five years. The project specialises in

firms operating in the manufacturing industry and the IT sector. Firms of all sizes participate in CzechLink, though most participants are medium-sized enterprises (50-250 employees). There are two reasons why local companies get involved in CzechLink. Project participants are either companies seeking a partner and funding for further expansion or owners who do not have an heir and are thus considering leaving their respective companies. In the case that the timing of the start of production is the main priority for an investor, capital participation in a local company with a long tradition is a step in the right direction. ■

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# Discover the Czech Republic's rich winemaking tradition

Even though the Czech Republic is rather known for its production and consumption of beer, local wines and winemaking have enjoyed an unprecedented boom in recent years. This is evident in the successes achieved by Czech vintners in international competitions, where they are overtaking the heavyweights from traditional winemaking countries. White wines from Moravia are highly esteemed, while varieties developed in the Czech Republic, such as Cabernet Moravia, André and Muškát moravský are gaining recognition. Wine tourism has blossomed in the region in conjunction with the rising interest in winemaking.

## Romans and Burgundy

The first vines were brought to Moravia, specifically to the Pálava area, by Romans in the third century. According to legend, Bohemia's first vineyard was planted several centuries later between the towns of Nedomice and Dřísý, where St. Václav, the patron saint of the Czech Lands, learned to cultivate grapes. An annual wine festival is held in his honour in the nearby city of Mělník. King Charles IV secured a special mix of traditions when he brought winemaking families from Burgundy to Bohemia. Those families in turn taught the local people how to cultivate grapes and make wine in the Burgundy style.

## Two main regions

The Bohemian wine region is part of the northernmost area of European viticulture. Most of the region's vineyards are located in the vicinity of Mělník, Litoměřice and Most. A few vineyards still survive in Prague, such as those near Troja Chateau and south of the city near Karlštejn Castle. The grapes grown in Bohemia are white varieties that are accustomed to harsher climes, primarily Grüner Silvaner, Müller Thurgau, Rhine Riesling, Pinot blanc and Pinot gris. The region's more variable weather conditions led Bohemian vintners to store and age their wines in barrels for a number of years.

The heart of winemaking in the Czech Republic beats in Moravia, where 95% of the country's vineyards are registered. The area's personality consists in its unique diversity of wines and the varied landscape of the Moravian wine region, from Znojmo to Brno and beyond to Uherské Hradiště. This area features 1,200 kilometres of marked cycling paths known as the Moravian Wine Trail. In Moravia the most successful are white wines with an interesting spectrum of aromas and spiciness. The most common red and white varieties include Müller Thurgau, Grüner Veltliner, Welschriesling, Saint Laurent, Blaufränkisch and Pinot noir.

## Wine festivals and traditions

It is possible to visit wine cellars throughout the year. The grape harvest is celebrated in many cities in September and October. In southern Moravia, these events mostly have a folkloric character, with the possibility to dance with the locals in traditional costumes and sing along to dulcimer music. In Bohemia, the festivals have a historical atmosphere with medieval fairs, performances of historical fencers and costume parades.

At exactly 11:00 a.m. on 11 November, St. Martin's Day, the first wine of the autumn harvest, named in honour of the saint, is opened around the country. The tradition is somewhat similar to the French celebrations of young Beaujolais, though the Czech ritual is significantly older. The wine is served with St. Martin's goose, stuffed chicken, goose liver, St. Martin's cakes and Czech-style doughnuts.

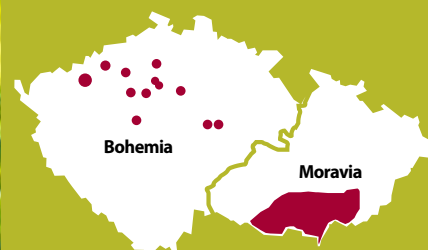
The local straw and ice wines, which are relatively rare and thus also relatively expensive, are highly esteemed. Ice wines are pressed from frozen grapes, which must not be allowed to thaw during processing. Straw wines are produced from dried grapes that have ripened on mats of straw or reeds.

## Where to taste Czech wines

In Moravia, it is possible to visit four wine sub-regions – Znojmo, Velké Pavlovice, Mikulov and Slovácko. An important winemaking centre is the city of Znojmo, which features an extensive labyrinth of wine cellars. In Jaroslavice there is a unique archive of wines with the oldest examples in the Czech Republic, while the renowned Šobes vineyard is open to visitors in the Podyjí National Park. Grüner Veltliner is the dominant variety in the Znojmo sub-region, but Sauvignon and Rhine Riesling are also excellent.

The Velké Pavlovice area is home to the largest number of registered vintners in the Czech Republic. The town of Velké Bílovice enjoys supremacy in this respect. Red wines, especially

## Map of wine regions in the Czech Republic



## Wine in the Republic, in numbers

17,198 ha planted vineyards  
19,037 registered growers  
1,278 wine trails  
384 wine towns

Saint Laurent and Blaufränkisch, are very successful here. Another town worth visiting is Čejkovice, whose dominant feature is a medieval gothic tower with cellars built by the Knights Templar in the 13<sup>th</sup> century.

A visit to the Mikulov area is an unforgettable experience thanks to the picturesque Pálava protected landscape area, Valtice Chateau and the Lednice-Valtice complex, which was named a UNESCO World Heritage Site due to the most expansive man-made landscape in the world. Six hundred thousand litres of the highest quality wine are stored in the chateau's cellar, which dates back to 1430.

The most widespread domestic variety, Moravian Muscat, was developed in the Slovácko sub-region, which is characterised by its folklore, folk songs, costumes and crafts. At the open-air museum in Strážnice, visitors will find a unique collection of structures related to viticulture. Mutěnice has an extensive array of wine cellars. The vineyards around Uherské Hradiště comprise the northernmost area of grape cultivation in Moravia. Visitors should be sure to taste the Bzenecká lipka variety from the town of Bzenec. ■

Iva Fialová  
Editor of Czech Focus magazine  
Association for Foreign Investment



# THE CZECH AEROHOLDING GROUP

Czech Aeroholding, established at the beginning of 2011, is a distinguished national group of companies operating in air transport and related ground services in Ruzyně, Prague. The sole shareholder of the mother company is the state, represented by the Ministry of Finance of the Czech Republic.

The Czech Aeroholding Group encompasses, among other companies, Prague Airport, the operator of the international Václav Havel Airport Prague, Czech Airlines, Czech Airlines Technics – a company providing technical aircraft maintenance services, and Czech Airlines Handling – a company responsible for the ground handling of aircraft and passengers. The Czech Aeroholding Group is also a major employer with a sum total of 4,500 employees working for all its subsidiaries.



- The mother company, Czech Aeroholding, owns real estate (buildings and lots of land) at the Ruzyně airport and leases these assets to Prague Airport and other subjects active thereto. As the parent company, it coordinates, financially manages and ensures synergy within the group. It provides the subsidiaries with shared services, such as IT, human resources management, central procurement and sales, marketing, legal services, financial services and accounting. Czech Aeroholding is 100% owner of Prague Airport, Czech Airlines Technics, Czech Airlines Handling and other companies. At the end of the year 2013, the Korean Air company (owner of 44% of ČSA stock) informed Czech Aeroholding about its requirement to use option to exercise its right to purchase additional 34% of Czech Airline stock from Czech Aeroholding. Korean Air will subsequently sell the purchased 34% stake to Travel Service, an air carrier, which will thus become a co-shareholder of Czech Airlines, joining Korean Air which holds 44% of shares, Czech Aeroholding with the final share of 19.74% and Česká Pojišťovna which will continue to hold its 2.26% share in ČSA.



- Prague Airport is the operator of the international civil airport in Ruzyně, Prague, that was renamed Václav Havel Airport Prague pursuant to a resolution of the Government of the Czech Republic on 5<sup>th</sup> October 2012. The Ruzyně airport has handled throughout its history a total of 201 million passengers. Since its launch of operations in 1937, there were about 4 million civil flights performed. In 2013, Václav Havel Airport Prague handled almost 11 million passengers. 52 airlines provided regular scheduled flights to a total of 118 destinations from there in 2013. Prague Airport has received the IATA Eagle Award for 2011 for the best developing airport in the world.



- Czech Airlines was established on 6<sup>th</sup> October 1923 and belongs among the five world's oldest airlines still in operation. Since its inception, Czech Airlines has carried more than 115 million passengers and nearly a million tonnes of cargo and mail. Its flights have taken off from and landed in 145 destinations in 76 countries worldwide. Working with its partners, Czech Airlines offers connections to 126 destinations in 50 countries during the summer 2014 timetable. Czech Airlines is a member of the International Air Transport Association (IATA) and has been a member of the SkyTeam Alliance of airlines from 2001. The carrier is a holder of certifications pursuant to IOSA (IATA Operational Safety Audit), representing the most advanced safety standards in the air transport industry.



- Czech Airlines Technics provides aircraft maintenance and their regular certified service in the following areas: Base Maintenance, Line Maintenance, Components Maintenance, Engineering and Landing Gear Overhaul/Repair. The company with a long tradition and established reputation runs a top of the line facility and has teams of experienced mechanics.



- Czech Airlines Handling provides complex ground handling services, i.e. passenger and aircraft handling, for a number of airlines. With its top-notch facilities and experienced personnel, the company handles more than half of all movements and passengers each year at Václav Havel Airport Prague. The company has recently launched its aviation fuelling services and in the second half of the year, it will launch operations of a Contact Centre for Czech Aeroholding Group member companies and external clients.



**Olivier Rigaux**  
EU fund specialists  
Dalkia Česká Republika

"I recommend Czech cakes and especially those small cookies prepared for Christmas."

**What do you like most about living in the Czech Republic?**

I live in the northern Moravia-Silesia region, near Ostrava, an area well known for its industrial tradition. I'm happy in this region because it has kept a human dimension: the cities have a reasonable

size, traffic jams are rather rare, the countryside is never very far away and the beautiful Beskydy and Jeseníky Mountains are maximum one hour by car. It is also important to notice the rich historical and cultural background of this region where, for example, Sigmund Freud and Leoš Janáček were born.

**What was the most surprising for you?**

I arrived in the Czech Republic in April 1994. There were no supermarkets, foreign goods were very expensive, all houses were grey and people finished work at 3 p.m.! The pace of change then increased, consumption modes dramatically changed especially after the year 2000, when people no longer felt they had to hide what they owned.

**What is your favourite Czech food?**

Czech cuisine offers a very broad variety of excel-

lent soups, but above all I recommend Czech cakes and especially those small cookies prepared for Christmas by every woman who cooks for pleasure.

**What would you recommend to visit in the Czech Republic?**

Besides Prague, I would recommend the Ostrava region for its specificity. Not only for its unique industrial sites, which are open to the public, also for Stodolní Street, which is now renowned for its bars and its atmosphere. The surrounding region also boasts typical mountains, lakes, castles and museums.

**About my company**

Dalkia is one of the largest independent producers of combined heat and power in the Czech Republic. It provides heat and energy services in Prague and the main cities of the northern Moravia-Silesia region, as well as in Olomouc, Kolín and Mariánské Lázně. ■



**Samuel Leduc**  
Business Manager  
REED

"I am still surprised by the importance of sports to Czechs."

**What do you like most about living in the Czech Republic?**

I enjoy the fact that there are four real seasons and the climate is quite dry compared to Ireland, where I used to live. Czechs are easy-going and still

curious about foreigners, especially in South Moravia, which is quite pleasant. Restaurants and pubs are affordable and it's a country where you feel very safe.

**What was the most surprising for you?**

Besides the complexity of the language, I recall seeing on my first day in the Czech Republic two ladies in their sixties drinking a pint of beer in the middle of the day on the terrace of a bar, which is something you'd never see in my home country (France). I am still surprised by the importance of sports to Czechs (literally any discipline) and by seeing "Templars" on tramways in Brno.

**What is your favourite Czech food?**

Moravský vřabec (small cuts of pork in a thick sauce and served with dumplings).

**What would you recommend to visit in the Czech Republic?**

The South Moravia region and the city of Brno, Mikulov and its surroundings, Český Ráj, Nové Město nad Metují and Adršpach.

**About my company**

I work as the business manager for Reed, which is one of the largest employment agencies in the United Kingdom and its global expertise spans Europe, the Middle East and Asia-Pacific. Reed is independent, has 425 business units and employs more than 3,000 people in 180 locations worldwide. We have been in the Czech Republic for more than five years and our offices in both Prague and Brno deliver world-class service across more than 30 specialisations. ■



**Audhild Skoglund**  
Writer

"I love the city of Prague because of its beauty and atmosphere."

**What do you like most about living in the Czech Republic?**

I love the city of Prague because of its beauty and atmosphere. For such a big city, it feels rather laid-back. It's nice to be able to sit for hours in cafés and read or write, which is my job, or just take a stroll.

The climate is also much better than in Norway, and the prices are good. I also find that the people are friendly and helpful.

**What was the most surprising for you?**

As I had visited Prague frequently for many years before I moved here, there were no big surprises, but I was impressed with how efficient the flood was handled last year, and how easy it was to get updated information in both English and Czech.

**What is your favourite Czech food?**

I would say duck and goose. It is rare to find those on the menu in Norway.

**What would you recommend to visit in the Czech Republic?**

I would definitely recommend Prague. When my friends from Norway come to visit, I take them

around the Old Town, Charles Bridge and Malá Strana. I also recommend the classic cafés, like Café Louvre, Kavárna Slavia, Obecní Dům and Café Savoy. In the summer it is very nice to use the many parks and walk by the riverside. I recommend not just running around to see as much of the museums as possible, but enjoying the city itself.

**About my company**

I am self-employed. At the moment I am writing my fourth book, with a publishing contract in Norway. I also do freelance work for different Norwegian publishers and some journalism. Sometimes I have to go to Norway to give a lecture or interview, or do some public speaking. At the moment I mostly get booked to talk about lone-wolf terrorism, which my last book was about. Since there are direct flights to Oslo every day, it is very easy to manage the travelling. ■



The Association for Foreign Investment (AFI) is a non-governmental, non-profit organisation representing a group of global and regional firms actively supporting investors and being leaders in their respective fields in the Czech Republic. The AFI focuses on foreign direct investment, export of investments and services, commercialisation of R&D, support for innovative start-up projects and development of the Czech business environment.

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