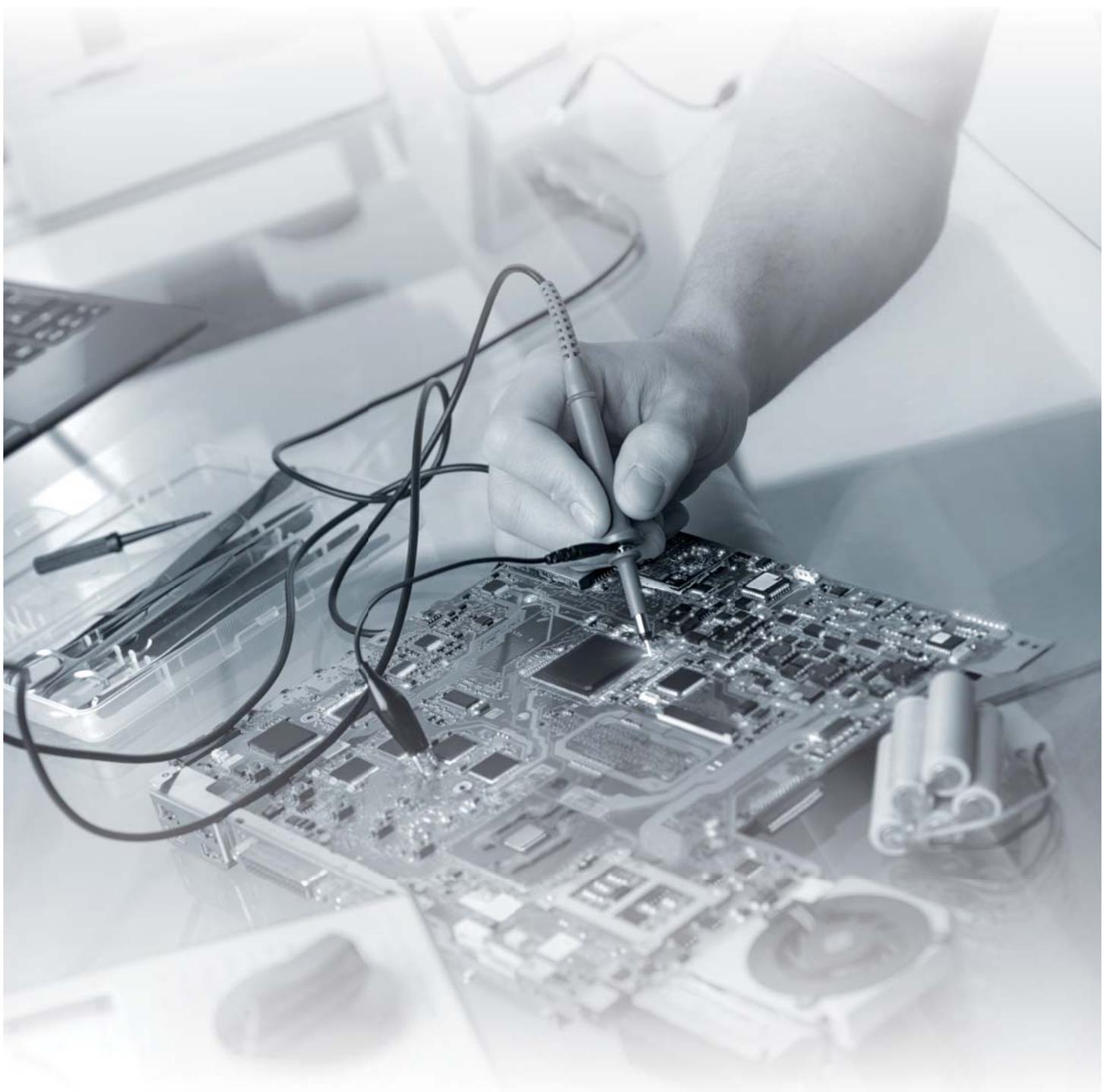


ELECTRONICS IN THE CZECH REPUBLIC





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Czech Trade Promotion Agency is proud to present the Czech electronics industry in the new sector guide.

The production of electronics and innovations have a long tradition in the Czech Republic and enjoy a strong reputation around the world particularly thanks to their excellent quality.

If you are looking for a supplier in the Czech Republic, Czech Trade Promotion Agency will be delighted to assist you in order to find new Manufacturing / Service partners, professional organizations and interest groups.



CzechTrade is a government trade promotion agency of the Czech Republic focusing on developing international trade and cooperation between Czech and foreign businesses. CzechTrade works with Czech companies to facilitate their success on international markets.

The goal of this brochure is to inform interested foreigners about the field of electronics in the Czech Republic. Take the companies listed in this brochure as a sample listing, which will help you to formulate a better picture of the specific field. If you are interested in more information on Czech companies, please contact: supplier@czechtrade.cz

CzechTrade

YOUR BUSINESS PARTNER IN THE CZECH REPUBLIC

Foreign companies contact CzechTrade when looking for new reliable partners in the Czech Republic. CzechTrade foreign office network together with its sourcing team will identify potential suppliers based on your requirements:

- ⊙ Initial consultation by phone/email/in person
- ⊙ provision of a basic overview of a special sector
- ⊙ enquiry exposure to an entire supplier database through the National Business Opportunities website and a parallel dedicated supplier search
- ⊙ compilation of a contact list of companies interested in cooperation
- ⊙ eventual facilitation of meetings with Czech companies

Other services:

- ⊙ doing business in the Czech Republic guide
- ⊙ access to verified Czech suppliers
- ⊙ assistance with language support
- ⊙ Czech companies presentation at foreign trade shows
- ⊙ preparation of business missions to the Czech Republic



**Information and contacts
for individual foreign offices
can be found at
www.czechtradeoffices.com**

Head Office:

CzechTrade Promotion agency
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128 01 Prague 2
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Phone: +420 224 907 820
E-mail: Info@czechtrade.cz

DID YOU KNOW?

CzechTrade has an extensive network of foreign offices in more than 50 countries on five continents. With their scope of activities, the foreign network offices cover Europe from Scandinavia to the Balkans, Eastern Europe and the CIS, Africa from Sub-Saharan Africa to South Africa, major Asian regions, the American continents from Canada to Latin America, and Australia.

THE ELECTRICAL AND ELECTRONIC ASSOCIATION

The Electrical and Electronic Association of the Czech Republic (EIA) was established in January 1992 as an economically and legally independent employer and entrepreneurs' association. The association associates both legal entities and natural persons of the electric engineering and electronic industries as well as entities with the same interests as the electronic industry. The association promotes the interests of employers on the principles of entrepreneurial democracy. In addition to the collective negotiations with the trade unions, which is a basis of social dialogue, it further communicates with the respective state administration bodies (Ministry of Industry and Trade, Ministry of Labour and Social Affairs, Ministry of Education, Youth and Sports, Ministry of the Environment etc.) and of course with the umbrella employer organization, The Union of Industry and Transportation of the Czech Republic. It enables its members to participate in the creation of new legislation standards, at work in expert groups and other activities.

Other activities of the association:

- ⊙ supporting pro-export activities of member companies
- ⊙ promoting its members
- ⊙ organizing conferences
- ⊙ organizing general meetings
- ⊙ buying energy centrally for its members
- ⊙ cooperating on Operating programs and EU projects
- ⊙ having its own collective RETELA system

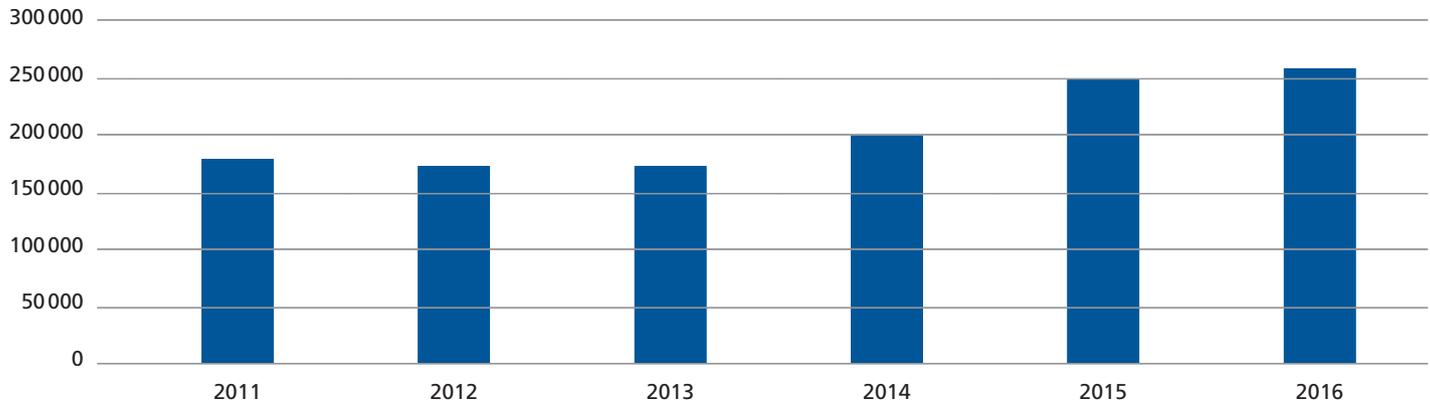


1 ELECTRONICS IN NUMBERS



Electronics is a pillar of the Czech economy and the second most important sector of the Czech economy.

EXPORT OF ELECTRONIC AND TELECOMMUNICATION PRODUCTS FROM THE CZECH REPUBLIC (IN MIL. CZK)



Source: The Czech Statistical Office; 2016: preliminary data
Average exchange rates (2016): 1EUR: 27,033 CZK; 1USD: 24,431 CZK

Competitive advantages of the Czech Republic: advantageous position, infrastructure and mainly the available and sufficiently qualified labour together with relatively low costs as well as the system of investment incentives.

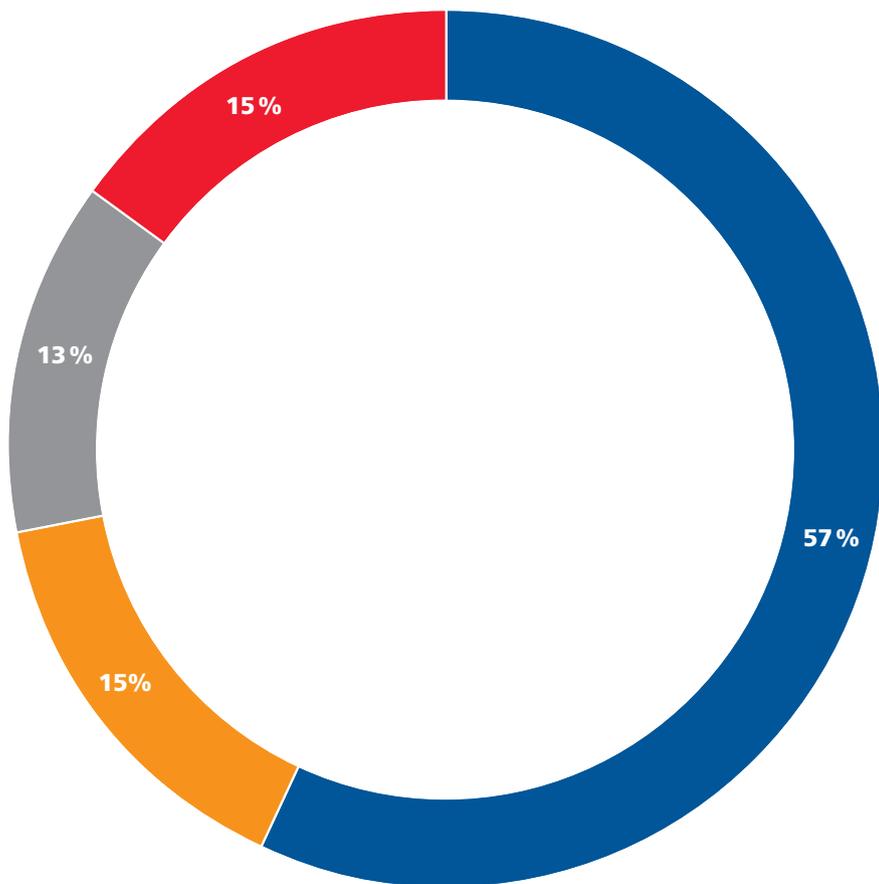
The own technological potential of the Czech Republic is really

strong and it is a guarantee of the competitiveness in the foreign markets including emerging markets and relatively saturated Asian markets.

Electronics is one of the key sectors, due to the high added value of products classified in the category of high and medium sophisticated technology.

The industry requires lots of investments in science and research and this is also the reason why the further development has been supported by direct foreign investments, where foreign companies provided for the transfer of technologies and the production basis.

EXPORT OF ELECTRONIC AND TELECOMMUNICATION PRODUCTS FROM THE CZECH REPUBLIC IN 2016



Source: The Czech Statistical Office; 2016: preliminary data

- Telecommunication devices
- Electronic devices
- Semi-conductors
- Devices for recording

THE ELECTRONICS INDUSTRY IN NUMBERS

The second major industry of the Czech economy

14 %

share of industrial production

15,848

enterprises

Turnover of CZK 607,465 million

130,580

employees

Exports: CZK 933,305 million

Average exchange rates (2016):
1EUR: 27,033 CZK; 1USD: 24,431 CZK

2 CZECH REPUBLIC: CRADLE OF ELECTRONICS

The electronics industry is now one of the most important industries in the Czech Republic with a long and rich history.

COMMUNICATION AND SIGNALING EQUIPMENT HAS BEEN PRODUCED IN THE CZECH REPUBLIC SINCE THE 19th CENTURY

Approximately from the middle of the 19th century, electro-engineering became a full-fledged independent industry and a common part of the life of the society and the first production plants producing telegraph devices and signaling equipment were established in the territory of what now is the Czech Republic. Shortly after the telegraph expansion, the telephone also appeared in the territory of the current Czech Republic, which was related to further development

of electrical and electronics plants. In addition to telegraphs and telephones, work on the development of electric lighting were carried out during the whole 19th century. František Křižík (1847 – 1941) played a crucial role in this development. It was his patent, according to which lighting was installed in a lot of industrial enterprises, buildings, public and exhibition premises, mainly in the second half of the 19th century.



FRANTIŠEK KŘIŽÍK as the Czech Edison

František Křižík contributed to the development with his first invention in 1878 – the automatically controlled semaphore for increasing the safety of rail traffic. Three years later he presented one of his most important inventions - the improved arc lamp. He was awarded the gold medal for this achievement in the international exhibition of electric engineering and electronics in Paris. Consequently, he had founded an electroengineering plant in Prague, which soon had hundreds of employees. In 1891 he presented the light fountain in the Anniversary provincial exhibition. At the same time, he also established the first tram track in Praha - Letná. Křižík's other achievements also include the first electrified track in the Austrian-Hungarian empire, which was put into operation between the Czech towns of Tábor and Bechyně. He built more than one hundred municipal power plants thus electrifying several Czech towns and municipalities.

THE CZECH INDUSTRY ALREADY HAD TO FACE FOREIGN COMPETITION IN THE 19th CENTURY

In what is today the Czech Republic, lighting was mainly installed by foreign companies (Siemens and Halske from Germany, Ganz and Co. from Budapest, Glücher from Galicia etc.) and less by Czech ones (F. Křižík, Waldek and Vágner, etc.). Electrical goods were delivered by several foreign companies to our territory and it was not easy for our entrepreneurs to establish themselves in trade. Thus, they were forced to proceed in such a way that their production did not directly compete with these foreign companies. The first electromechanical workshops dealing in electro-forming and the production of electrical devices in our country were established in the 1860's. a typical electro-engineering plant dealt with the production and installation of less sophisticated products such as buttons, bells, electric clocks, battery devices etc. Sophisticated devices were only assembled here using parts imported from abroad. Most electro-engineering plants were established in Prague.

SOON AFTER 1900, THE CZECH COMPANIES BEGAN MERGING WITH THE FOREIGN CAPITAL

In the last two decades of the 19th century, several new electro-engineering companies were established there, which later became the main drivers of this industry during the existence of independent Czechoslovakia. The most important ones included namely companies by František Křižík (founded in 1882), Emil Kolben (1896), Josefa Donát and Robert Bartelmus, Alois Duda (1895) or Waldek and Wagner (1884). Originally, most of these companies were Czech-owned; later they merged with the foreign capital.

ESTABLISHMENT OF ELECTRO-ENGINEERING BUSINESS GROUPS IN THE 20th CENTURY

In the period between the two wars, the Czech electro-engineering industry produced a relatively wide portfolio of products. In the 1920's, the electrical and electronic production started to concentrate into bigger companies. An increased focus on the heavy-current electro-engineering was characteristic of this period. Before World War II, the electro-engineering industry in Czechoslovakia employed about 200,000 persons working in 60 plants. a part of the electrical and electro-engineering industry developed under the influence of foreign licenses from renowned companies such as Siemens, Osram, Philips, Blaupunkt, AEG, Ericsson etc.

EMIL KOLBEN – a giant of the electro-engineering industry

In 1896, Prague born Emil Kolben founded Kolben a spol. dealing with electrical machines and devices, with its headquarters in Vysočany, Prague. In 1900 the company produced its first steam engine and was awarded gold medal for its thousandth alternator in Paris International Exhibition. In 1921, the company merged with Českomoravská strojírna and six years later Českomoravská-Kolben-Daněk was founded through another

merger. Mr. Kolben - in the position of Managing Director - brought this machinery group to the position of a worldrenowned manufacturer of electrical machines, transformers and engines. ČKD manufactured a wide range of products including aircrafts or combat tanks. It established the first trolleybus track in Prague, which was operated in the ČKD corporate area. It exported water and steam power plants worldwide.

START OF THE DYNAMIC GROWTH AFTER 1990

In spite of the fact that some domestic electro-engineering products achieved a global level and in spite of the long tradition of this industry in our country, the Czech electronics and electro-engineering industry generally lagged behind global development from the 1970's. In the 1990's the electronics and electro-engineering industry reached its transformation's low level with a production drop as low as below 50 % of the original volume. Since these times, this industry has been characterized by dynamic growth in production, labour productivity and the quality of products. The main

factor that initiated this dynamic development was the arrival of several major foreign investors. Currently, the main features of our electronics and electro-engineering industry include the assembly nature of the production, the significant share of the multi-national capital both with new and existing investments, the utilization of high technologies, the wide range of technological processes, the high extent of the utilization of science and research in the production and the need for highly qualified employees in research, development and production.

THE WORLD TOP LEVEL OF CZECH COMPANIES DRIVEN BY THE TRADITION AND KNOW-HOW

In this biggest detail the Czech Republic is the world's leader

The Czech Republic, in particular the city of Brno, is the proud leader of the world's electron microscopy. Currently, several companies produce over 30 % of the global production of electron microscopes. Brno has the highest concentration of companies and scientific and research institutes in this industry in Europe. However, DELONG INSTRUMENTS is not the only company in the Czech Republic specializing in the production of electron microscopes. Tescan and FEI Czech Republic, which is a part of the FEI world group, also have their registered offices in Brno.



Invention of the electron microscope

The beginning of the current success of DELONG INSTRUMENTS dates back to times of the Institute of instrument technology founded in 1953. In 1955 the commercial repeated production of electron microscopes was started here and in 1962 professor Armin Delong was appointed the director of the institute. Prof. Ing. Armin Delong, DrSc is a Czech scientist, the world-renowned physician and the founder of the electron microscopy in Czechoslovakia. He worked on the production of electron microscopes from the 1950's. In 1958 he was awarded the gold medal for

his prototype of the desk electron microscope BS242 in the Brussels EXPO International Exhibition. Therefore, professor Delong stands behind the development of the LVEM5 (Low Voltage Transmission Electron Microscope) with the 2-nm resolution, which is 100 times bigger resolution compared to the high-quality light optical microscope. Currently, the company is a world leader in the production of electron microscopes. DELONG INSTRUMENTS, www.dicomps.com

Czech sewing machines are operated around the world

Minerva realizes a turnover of over CZK 1 billion and sewing machines produced by MINERVA are used by renowned brands (Baťa, Adidas, RIEKER, GABOR, RICOSTA, MEINDL, Högl, ARA, LLOYD,...) for the production of their products. Nevertheless, the company history dates back to 1883.

MINERVA BOSKOVICE,
www.minerva-boskovice.com

ATAS motors

ATAS elektromotory Náchod is a company with a longterm tradition. In 1928, Antonín Taichman founded the ATAS electro-engineering plant in Náchod. From its establishment, the company focused on the production of low-output electric motors and ventilators and developed successfully. ATAS manufactures both electric motors for the general use and "custom" motors designed according to the required application.

ATAS elektromotory Náchod,
www.atas.cz

The world is broadcasting on Czech waves

TESLA is a successor of the one of the first electro-engineering companies in the territory of former Czechoslovakia, which was founded in 1921 under the name of Elektra exclusively with Czech capital. From 1932 to 1945 it was owned by Philips. Its production range included bulbs, vacuum tubes, radio receivers and military technology as well as radio and TV transmitters. By the end of the 20th century, over 1,500 television transmitters were installed in the territory of the former Soviet Union alone providing for over 60 % of the radio and TV broadcasting there. a number of radio transmitters were sold to Egypt, Algeria, Yemen and Syria despite the competition from other

world producers. Currently, TESLA is also a renowned manufacturer in the field of military technology. It is one of the leading suppliers in the field of special radiocommunications and the connecting technology for the military stationary and mobile tactical networks. The main commodities of the company include the production of radiorelay equipment for the creation of micro-wave communications, maintenance of security equipment and systems, weak-current systems, structured networks and the setting up of circuit boards. It also ensures complete services for all supplied technologies.

TESLA, www.tesla.cz



KOPOS has been beating its competitors worldwide for almost one hundred years

The history of the KOPOS KOLÍN plant has been related to the development of electro-engineering dating back to the beginning of the 20th century.

In 1927 the production of shell type and armoured wiring conduits including mounting boxes and other accessories was started. In the prewar period the company stood up to the tough competition and actually had the monopoly position in this assortment.

KOPOS KOLÍN is still a Czech owned company. Currently, its main activity consists of the production of underground wiring material. This mainly includes electro-wiring trunking and channels, fixed and KOPOS has been beating its

competitors worldwide for almost one hundred years! flexible tubes, boxes and fastening material. The wide assortment of products is divided into five complete sets according to the purpose of use, environment and the mechanical stress. PVC accounts for the majority of processed materials. Currently, Kopus mainly produces underground electro-wiring materials. In addition to these classical sets used mainly in the electro-wiring field, KOPOS KOLÍN also has production technologies used for other areas of the market. This is for example the production of shielded pipe fittings NEUTROSTOP, which are used anywhere, where the environment must be protected against neutron radiation. Furthermore, it produces food and industry crates, coils for painted wires as

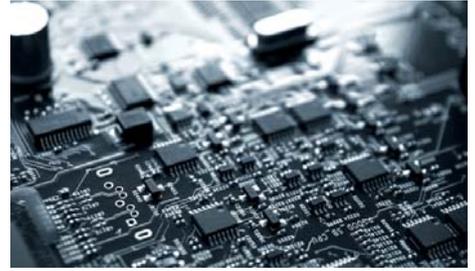
well as the complete range of plastic water pipelines.

KOPOS KOLÍN has a production and technical background which enables it to respond quickly to market requirements and the continuous extending of the offer of new products. The company has its own development and design basis, its own workshop and prototype shop for the development, preparation and verification of new products. Recently, a new PVC mixing plant was put into operation, allowing for the preparation of high quality materials both in terms of the mechanical properties and the permanence of colours.

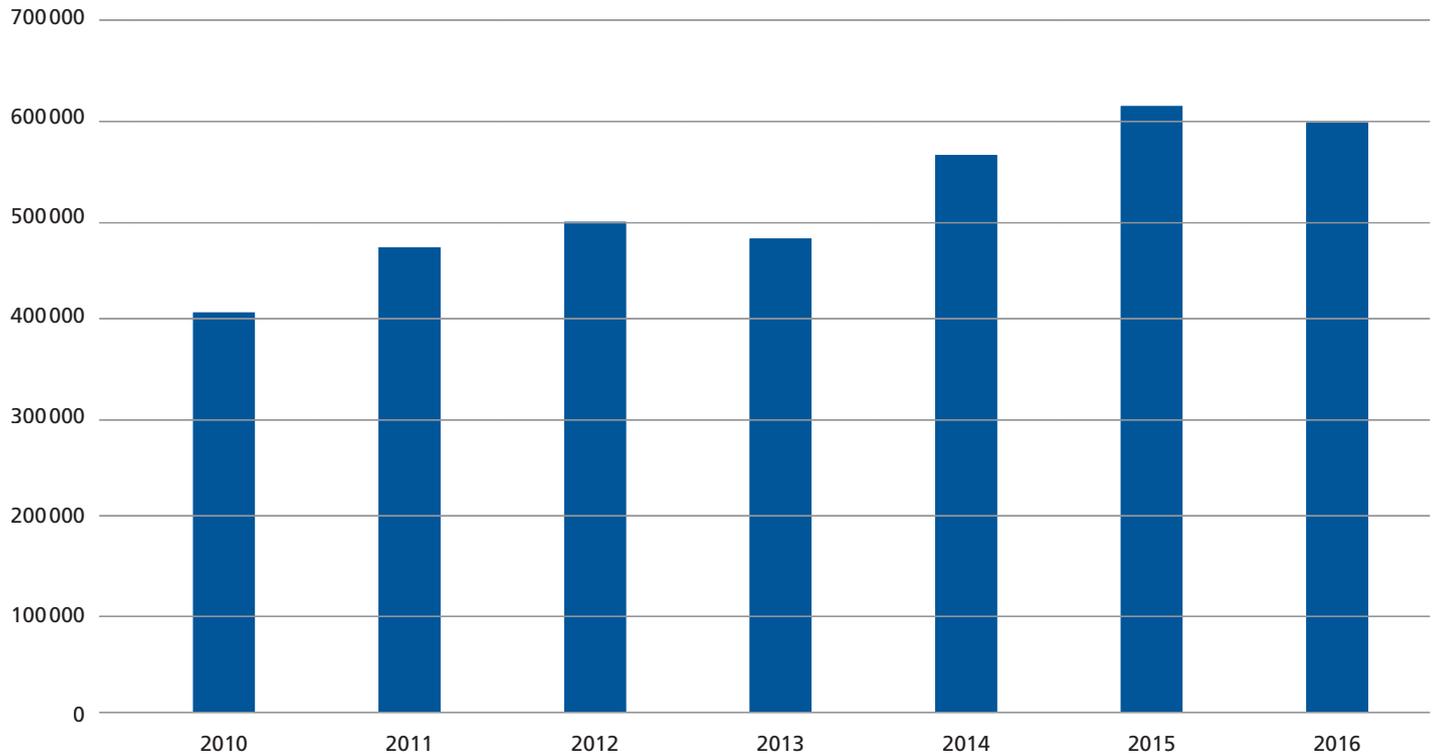
KOPOS KOLÍN,
www.kopos.cz



CZECH ELECTRONICS: TOP TECHNOLOGY

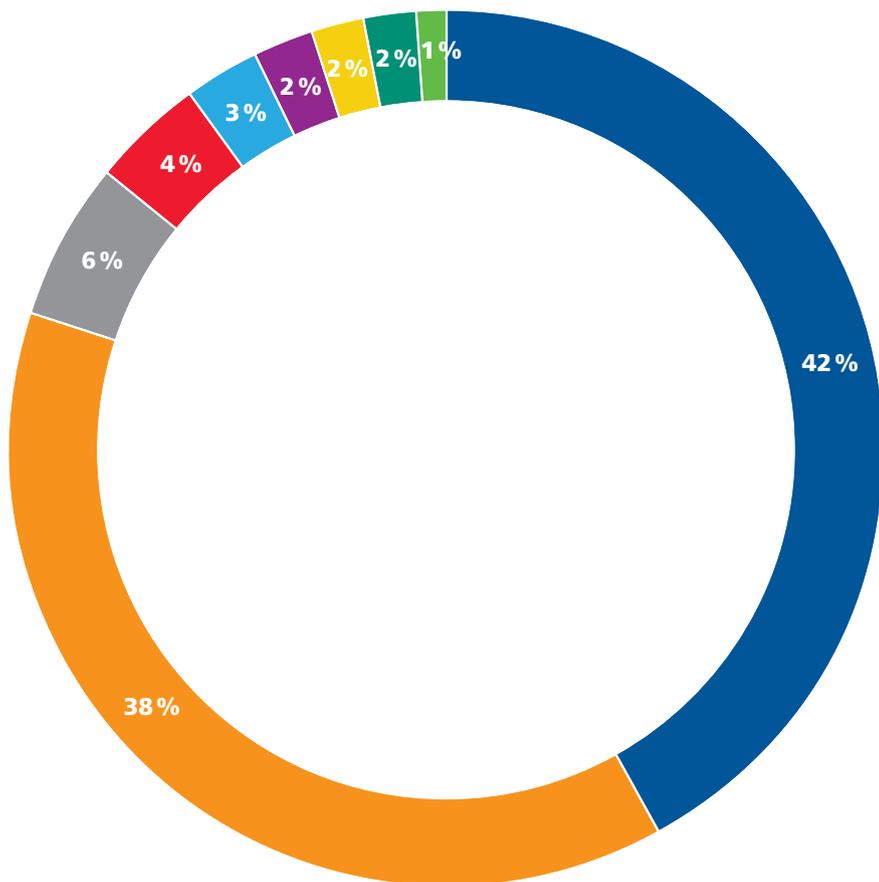


EXPORT OF ELECTRONIC AND TELECOMMUNICATION PRODUCTS FROM THE CZECH REPUBLIC (IN MIL. CZK)



Source: The Czech Statistical Office
Average exchange rates (2016): 1 EUR: 27,033 CZK; 1 USD: 24,431 CZK

EXPORT OF HIGH TECH GOODS FROM THE CZECH REPUBLIC IN 2016

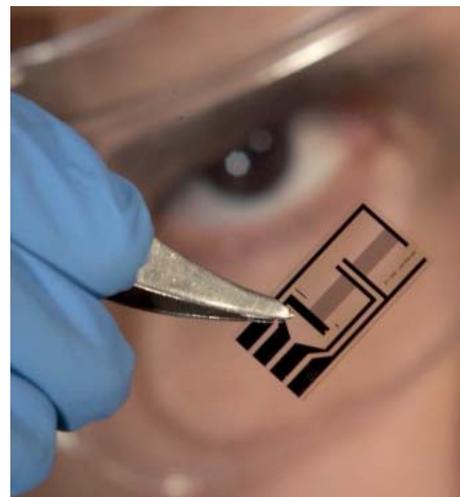


Export of high tech goods from the Czech Republic in 2016
Source: The Czech Statistical Office

- Electronics and telecommunications
- Computer technology
- Scientific apparatus
- Non-electric machines
- Electrotechnics
- Aerial technics
- Pharmacy
- Other high-tech
- Chemistry

HIGH QUALITY OF EDUCATION AND GROWING INVESTMENTS IN SCIENCE AND RESEARCH

The Czech Republic is above average in terms of the share of technical jobs in the total number of employed, which is one of the competitive advantages when it comes to attracting foreign investors. At the same time, this fact also supports the economic and technology development in electro-engineering. The current trend is the intense cooperation with the private sector making the research more pro-market oriented with emphasis being placed on experimental research thus ensuring added value in technological innovations. Currently, research and development are mostly financed from private business sources.



The cooperation of successful companies and universities provide the Czech electronics sector with a competitive advantage

TESLA designs and produces aerials, antenna arrays and antenna fields up to the 40 GHz frequency. Currently, it also focuses on SIW aerial structures. It cooperates with the electromagnetic field department of CTU Prague and BUT Brno on the aerial system with the switchable bundle width.

TESLA, www.tesla.cz

Czech Technical University in Prague, www.cvut.cz

Brno University of Technology, www.vutbrno.cz

Therefore highly specialized scientific and development centres and scientific-technical parks, have been established where the custom made development and research has been developing intensely, guaranteeing the quick innovation transfer, which makes the Czech companies highly competitive in comparison with a cheap - for example Polish or Chinese - production.

Centre of scientific excellence in the field of sciences on animated nature and advanced materials and technologies: CEITEC

The first scientific centre in the Czech Republic, which integrates research and development in this extent. The research in the fields of electronics and electro-engineering is focused for example on intelligent sensors using new materials, advanced control technologies, mobile robotic systems,

computing and built-in systems. It results in unique inventions: Autonomous tele-presentation robotic system - ATEROS intended for the autonomous or supervised research of areas non-accessible or dangerous for people represented by professor Luděk Žalud. CEITEC, www.ceitec.cz





Building incubators, supporting start-ups and spin-offs

Ostrava Science and Technology Park was founded in 1997 to build in the Moravian-Silesian region in cooperation with local universities and research institutions a leading regional center that would serve to coordinate scientific and technological research. Currently, in the area of VTPO there are already 4 objects fulfilling the function of the administrative and operational center of the park with a total leasable area of office spaces on a higher European standard in the range of about 10,150 m²; and own technology centers of the companies ELCOM and Ingeteam. The aim is to encourage the emergence of innovative companies such as start-ups and spin-offs (IDEA Incubator and Technology Incubator), initiate into the economic life of the hopeful startups and entrepreneurs in high-tech fields

(eg. Biotechnology, nanotechnology, development and production of laboratory, measuring and test engineering, software development and IT technology, research and development activities in the field of alternative energy sources etc.), but also attract research and centers of worldwide companies. The long-term vision of the company VTPO is to create new jobs in order to avoid the outflow of educated graduates of local universities in the region, to increase motivation to do business and awareness of innovative business, to create conditions and space for initiation, implementation and development of new business activities in research and development, to promote transfer technology. Ostrava Science and Technology Park, www.vtpo.cz

DID YOU KNOW?

Czech scientists have worked on the appliance for the Solar Orbiter. Czech scientists from the Academy of Sciences of the Czech Republic have completed the development of a device that will measure electromagnetic waves in space. It is to be part of the RPW (Radio and Plasma Waves) on the Solar Orbiter interplanetary European probe, which will circulate between the Sun and Earth. The completed probe should be dispatched in orbit in 2018. Own production by qualified technological processes was carried out by the company G. L. Electronics, which owns the necessary certification required by the European Space Agency.



The world level universities

Czech Technical University
in Prague, Faculty of Electrical
Engineering

The faculty of Electrical Engineering provides for research development works in the following areas: measuring systems, acoustic sensors (transducers), advanced radio systems, intelligent decision making support and control systems, CIM robotics, real-time management, modelling and management of the dynamic systems, biomedicine engineering, sensors and micro-systems, designing, modelling, simulation and diagnostics of the microelectronic and optoelectronic structures, analysis and synthesis of circuits in the A/D systems, microwave technologies, technologies of millimeter waves, lighting systems, energetic systems, control of drives etc.

During the past two years the Faculty of Electrical Engineering obtained CZK 77 million directly from companies for the contractual research. Many development projects are secret but we can for example mention the Czech branch of the Cisco Group, the biggest Chinese locomotive producer, CNR



as well as Honeywell, Eaton and Škoda Auto.

Another CZK 650 million have been granted to the faculty (during two years) for a research project from grant agencies for the research and development projects.

Participation in the NASA space research activities: Doc. R. Hudec has solved the joint Czech-U.S. project aimed at the cooperation with NASA and the development of the innovation technologies on a basis of active x-ray optics for the envisaged U.S. mission called Generation X (2008-2012). This project has now continued through another Czech-American project in the field of space technologies with the objective of studying and developing the wide-angle optics for the space-satellite experiments. The Czechs helped creating the artificial intelligence with intuition. It is not like a common computer anymore and

offers a revolution across industries. The DeepStack artificial intelligence bluffs and is able to cheat humans. It has a sort of intuition and thanks to this it managed to beat the world's leading poker players. The information of this breakthrough development, which, according to some experts, was not supposed to ever have been managed by artificial intelligence, has attracted lots of attention in the world. Authors of the DeepStack program include students from the applied mathematics department in the Mathematical-Physical Faculty of Charles University and the Artificial Intelligence Center Faculty of Electrical Engineering of the Czech Technical University in Prague. Czech Technical University - Faculty of Electrical Engineering, www.fel.cvut.cz

First-rate global level customized development

VUES Brno is a development centre founded back in 1947. Currently, it operates in the market as a development production company. It focuses on customized non-standard designs of electrical machines - rotational according to customers requirements. It has its own development basis and in addition has been cooperating with VUT Brno experts for a long time. As an example we can mention a joint project called the Research centre of special rotary machines, where in addition to the mentioned VUES and VUT companies, the consortium also includes another 9 companies both industrial and those from the research area. This project has been implemented under the support of the Technology Agency

of the Czech Republic. The output of the mutual cooperation between VUES Brno and VUT Brno within the project will be functional samples of high-revolution machines with the output parameters from 6 kW to 200 kW and rotational ranges from 20,000/min to 120,000/min. VUES Brno, www.vues.cz Brno University of Technology (BUT), www.vutbr.cz Technology Agency of the Czech Republic (TA ČR), www.tacr.cz

INNOVATIVE AND DESIGN SOLUTIONS

Focusing on the most successful Czech companies, even here the importance of technologies and innovations become obvious. Take ELCOM as an example. Currently, this is a world-renowned supplier of advanced solutions, especially in the field of automated measuring and testing systems, systems of monitoring the electricity quality, industrial testers and camera systems. It has achieved its position due to the unique level of research and application of innovations. ELKO LP is another example; this company has been exporting electrical wiring to 70 countries in the world thanks to its own development and innovations. It has succeeded in the foreign markets also due its quick and perfect maintenance service. Currently, it is the innovations that characterize the most successful global players. These include the Czech company ZPA Smart Energy, which made it to the finale of the AT Kerney best innovator prestigious world chart. With these high added value commodities we observe a generally positive trend of export diversification, which is not only focused on EU countries, but has also been successful in prospective emerging markets and in Asian countries. Czech companies are successful on foreign markets through the high quality of processing, innovative technology solutions as well as due to the emphasis placed on the design, speed and reliability.

DID YOU KNOW?

Czech companies also placed in the chart of 500 leading European companies in terms of investments in the science and research (CEZ GROUP). The Czech Republic reports the highest research and development intensity among new EU member states (except Estonia and Slovenia). Worldwide, the Czech Republic placed the 29th in terms of the investments in the research and development (which is comparable for example with Scandinavian countries).

Intense collaboration with universities

ELCOM has had long-term cooperation with the Faculty of Electrical Engineering and Computer Science at VŠB - Technical University of Ostrava. They supported the cooperation with universities also by constructing the building in the area of the Science-technology park in Ostrava and by building the technological centre. ELCOM, in cooperation with National Instruments supplied the measuring system for the measuring of the temperature of plasma in Tokamak COMPASS in the institute of Plasma Physics of the CAS (The Czech Academy of Sciences). This year the solution as a system has been presented at two expert symposiums of physics in Rome and Austin. In the field of the development of SW applications based on the LabVIEW system, ELCOM has been cooperating with the Czech Academy of Sciences. Thanks to business relationships with the world's leading manufacturers of measuring technology, camera systems and optical systems, it has been mainly participating in the development of software with new products in these areas. The power electronics experts cooperate on

the MOET (More Open Electrical Technologies) project, which is a task aimed at establishing a new industrial standard of the design of electric systems for commercial aircrafts. This project is about to increase the competitiveness of the European aerospace industry and contribute to the reduction of air transport emissions and improvement of the operational capacity of aircrafts. ELCOM Virtual instrumentation division: Within its lifetime, it has developed solutions of system integration projects to such an extent that by now it has become a renowned supplier of hi-tech solutions, especially in the field of authorized measuring and testing systems. Since 2003, ELCOM has been - as the only Czech company - a member of the worldwide National Instruments Alliance Program - a network including more than 600 partner companies dealing with the technical support, system integration and sale of National Instruments products. The aim of this membership is to provide highly sophisticated services in the field of virtual instrumentation to customers worldwide - currently ELCOM has achieved the



certification of the second highest level within this program. ELCOM Applied electronics division: The research, development and manufacture of special power electronic devices, especially special power supply sources for railways, testing and means for the improvement of electricity quality. ELCOM, www.elcom.cz

TRADITION & INNOVATIONS

ELKO EP

is a purely Czech manufacturer of electronic instruments. Thanks to its long-term experience and presence on the electro market, it has become a specialist in electronic module devices - relays; now, it produces over 200 types of relays. Currently, it exports its products to 70 countries all over the world and it already has 10 foreign branches. The company is rightly proud of its own production of components as well as its own development and innovation of new products. It is also able to offer immediate distribution as well as quick and trouble free

service. ELKO EP was awarded the Company of 2012 award as well as the TOP 100 Czech award. Its own production, modern instruments and the development and research centre - this all enables directing the development to the most demanded technologies of today, the smart iNELS electrowiring system. Currently, this system is an integral part of passive and low-energy houses. These electrical wirings have been exceptionally successful for example in India. Just in the last year, the company increased the turnover by more than 600 % in this country.

ELKO EP, www.elkoep.cz



TES Vsetín

is a manufacturer with a unique position on the global market, especially in the field of the development of synchronous generators, which are the heart of power plants worldwide. The company was founded in 1919 and within just one year after its establishment lodged over 200 Czech and world patent applications. Since 2000 it has been expanding into other continents and has become the European leader in the field of water power plant generators. TES Vsetín, www.tes.cz



ETD TRANSFORMÁTORŮ

is a leader in its category. In the beginning, in 1924, the company started to produce machines of its own design. Only thanks to the intensive R&D and the work of educated and committed people, the ETD transformers have become successful both on the Czech and foreign markets. Every territory as well as every investment project has its specifics and the company is able to solve such challenges. Thanks to this, it has become the leader even in such a competitive environment as the transformer market. Therefore, it invests high amounts in upgrading and in new technology and production procedures. The company pays lots of attention to the high quality of the technology service provided to its products. This especially applies to transformer measuring before their putting into operation, within the production diagnostics and regular transformer inspections throughout their operation. ETD TRANSFORMÁTORŮ, www.etd-bez.cz

KOPOS KOLÍN

is a traditional Czech electroengineering company, which has been active on the Czech market for decades. The wiring material is the main field of business of the company. Nevertheless, it has also been active for a number of years in the field of research and development in the area of radiation shielding in nuclear plants using the product marketed under the name NEUTROSTOP. KOPOS KOLÍN, www.kopos.cz



THE COMPETITIVE ADVANTAGE OF CZECH MANUFACTURERS IS CUSTOM MADE INNOVATIVE SOLUTION

ELEDUS

was founded as a technical start-up established on the basis of previous experience in the field of x-ray devices and electronics development. Within the custom made development, ELEDUS is able to design single-purpose machines for x-ray inspection, power supply sources for specific applications, high-voltage sources or devices with integrated wireless communication through GSM, 3G or LTE. ELEDUS, www.eledus.cz

RCD Radiokomunikace

supplies radio and communication systems both for external and internal covering buildings and underground premises. They also specialize in tailor made solutions in the most difficult conditions. In addition, they specialize in solutions in the field of the Internet of things. RCD Radiokomunikace, www.rcd.cz

4 TECHNOLOGY TRANSFER: FOREIGN DIRECT INVESTMENT

The Czech Republic offers a unique combination of the rich history of the electro-engineering industry and the scientific research, creating a great basis for further development and that is why ever since the 1990's the Czech Republic has been a favourite destination of foreign investors. The main benefits of foreign owned companies in the Czech Republic are the high productivity, growth rate, sales and

FOREIGN COMPANIES FINANCE THE RESEARCH AND PROVIDE FOR THE TECHNOLOGY TRANSFER

As the structure of research and development financing indicates, the foreign direct investments are the driving force as companies controlled by foreign owners are the main operators of the science and research in the Czech Republic. The benefit of these enterprises is enormous, especially in the field of the electro-engineering and electronics industries, which is more than 60 % owned by foreign companies (the majority of foreign capital). Most of the foreign trade in the industry is implemented thanks to these relationships - foreign contracts constitute more than 70 % of the total

generation of new jobs. The Czech TOP 100 chart classifying the most successful companies in terms of sales leading positions in the field of electronics and electro-engineering has long been occupied by such companies as Foxconn CZ s.r.o., Siemens s.r.o., ABB s.r.o. and Witte Nejde s.r.o. In addition, the links to parent countries enabled mitigating the negative impacts of the economic crisis.

amount of contracts and contribute significantly to the employment in the regions of the Czech Republic. The research and development is also a priority area for the Siemens group. Siemens has been investing in the research and development heavily and opened a new Development and design centre at its Prague residence, which belongs amongst the technologically most advanced in the world. It is going to invest another CZK 7 billion CZK over the next several years in technology upgrades and the new electric motor development centre. The development driven by the development of electric



Panasonic AVC Networks Czech (PAVCCZ)

is a subsidiary company of Panasonic Corporation - manufacturer of Panasonic branded products. This company, which uses hi-tech production technology, is a plant of the Panasonic concern manufacturing PDP and LCD TV sets in Europe. Panasonic AVC Networks Czech, www.panasonic.cz

motors and the 4.0. industry may turn the Czech Republic into a leader in the fields of digitalization. The links to foreign companies also have a positive impact in terms of the guaranteed sales of goods; on the other hand there is a danger of investment efflux or drop in demand in Europe affected by the economic crisis - whereas Europe is the major export market for them. This trend is also clearly observable in terms of the amount of new contracts with a 70% foreign market share but a decreasing trend.

The Czech Republic is not an assembly shop anymore. It is the brain and centre of research and development. Foreign investors tend to confirm this exceptional position by often only establishing research and development centres here instead of production plants.

Drives, the Danfoss division, has been present here thanks to the excellent Czech researchers and designers as well as their insightful knowledge, creative thinking and exceptional work commitment. This division was created in 2014 by merging two strong brands - VLT® and VACON® and it is currently the second largest producer of frequency changers for the alternate low-voltage electric motors in the world. It deals with the manufacture of frequency changers with outputs from 0.18 kW to 5.3 MW to be applied in the fields of air-conditioning and ventilation, water economy, sewerage systems, industrial applications and applications for manufacturers. Thanks to its 68-year experience, 12 R&D centres and the new team, which globally consists of over 5,000 experts, the company is able to supply the most efficient solutions.

Danfoss, www.danfoss.cz

The position of the Prague office of Sysgo is exceptional among branches of this company by being responsible for the independent development of a product - namely the ELinOS system. The Sysgo team has developed a purely software solution, which is currently implemented to the Power PC group of processor but basically it is transferable to any other processor. This contributes to significant cost savings appreciated by such customers as Airbus or Boeing, with which Sysgo cooperates. SYSGO provides operating system technology, middleware, and software services for the real-time, safety and security critical embedded markets. a differentiating capability of SYSGO is the Safe and Secure Virtualization platform PikeOS, a paravirtualization operating system which is built upon a small, fast, and safe micro kernel. It supports the coexistence of independent operating system personalities on a single platform,

including ELinOS, SYSGO's embedded Linux distribution. PikeOS has been designed for use in safetycritical applications and has gone through a comprehensive validation according to safety standards like DO-178B, EN 50128, IEC 62304, IEC 61508, ISO 26262, IEC 61513 of either the avionics, automotive, railway, medical, industrial automation or nuclear power plants. SYSGO supports international customers with services for embedded Linux, realtime capabilities and certification for safety-critical applications. Markets include Aerospace & Defense, Industrial Automation, Automotive, Transportation and Network Infrastructure. SYSGO has facilities in Europe and North America, and offers a global distribution and support network, including a strong presence in the Pacific Rim. In 2012, the group was acquired by the French group Thales. SYSGO represents one of the R&D centres of SYSGO group.

SYSGO, www.sysgo.com



5 ELECTRONIC COMPONENTS

Since the 1990's, Czech manufacturers have specialized in the production of various electronic components and electronics. Czech production is characterized by modern technologies and technical innovations, with emphasis placed on the quality and maximum adaptation to the needs of customers, which have been appreciated by Czech and especially by foreign partners.

SMART GRIDS AND SMART METERING

The global installed basis of smart electric meters is expected to reach as many as one billion units by 2020 with growth being supported mainly by Asian demand (China). Nevertheless, the European market is also very important. The European Union plans to replace 80 % of electric meters with smart electric meters by 2020. By 2020, almost 72 % of European consumers are expected to have a smart electric meter, which means investments of up to EUR 45 billion and 200 million electric meters. Czech companies are leaders in the smart meter market both in the Czech Republic and in the world.

LOGAREX Smart Metering

The LOGAREX Smart Metering company is a Czech firm established in 2011. As a development, production and supplying firm, it specializes in meeting the demands of the energy branch focusing on the measurement, processing and transferring data. The company focuses on the complex solution of customer's demands. All technical activities of the firm continue the knowledge and long experience of development and marketing specialists. These experiences are bound to the further development of new technologies and products, which will fulfill the demands of both Czech and foreign customers, and to the further expanding of its field of action, preferably on foreign markets.
LOGAREX Smart Metering,
www.logarex.cz

ZPA Smart Energy

is the leading Czech manufacturer of electric meters, mass remote control and modern measuring systems. It can rely on its long-term experience, as it was established as early as in 1958 and applies advanced know-how - almost one quarter of its core employees work at development workplaces. It is the leader on the Czech market. In addition to the domestic market it also managed to succeed in the emerging markets of both the CEE and the Balkans (e.g. Poland, Slovakia, Lithuania, Kosovo, Bulgaria and Macedonia) and in Western Europe (Germany, Switzerland, the Netherlands etc.) The portfolio of ZPA Smart Energy is directed at electricity measuring and control. The digital electronic electric meters enable very precise measuring and transfer data to the control headquarters. Thanks to the bi-directional communication, smart meters are even able to control the consumption.
ZPA Smart Energy,
www.zpa.cz

TRENDS IN INDUSTRIAL AUTOMATION IN THE AREA OF INDUSTRY 4.0.

The industrial automation industry has been rapidly evolving with a number of partial trends. The field of the Internet of things (IoT) is important. The new high level of the communication and computing technologies with end devices opens up possibilities for holistic and adaptive automation with a clear objective of increasing efficiency. This is a logical development step in the direction toward the trend of more sensitive and efficient production. The objective of the Internet of things is to provide I/O (inputs/outputs) interactions, including sensors, action elements, analysers, drives, machine vision and robotics, in order to achieve higher production output and flexible production. This revolution will manage the intelligence of equipment with the ultimate goal of all industrial devices to support IP including I/O.

Data collection and their efficient use is another trend. The high-volume data, which can be collected directly from the production with the use of new technologies, are further used for analyses and the optimization of automatic processes for the purpose of increasing productivity and efficiency. Interconnecting in-house information systems will also play an important

role in the future. The integration of systems in the production with other business software logically seems to be the next step in the industrial production evolution. The rapid robotics development can be due to the price availability of robots compared to the PC development. In his recent statement, the president of IFR (International Federation of Robotics) said that we witness explosive growth in the field of robotics when the worldwide year-to-year growth achieves fifteen per cent.

The major risk for companies in this regard consists in a failure of adopting these new principles and the consequent necessity of catching up with competitors, who have not been afraid to risk. Lots of Czech companies responded to this challenge in the very beginning thus becoming leaders in the field of industrial automation.

SOPHISTICATED ENGINEERING, ELECTRO & INDUSTRIAL AUTOMATION

Blumenbecker Prag

Whether we look at elaborating the whole automation projects, the design and/or assembly of low voltage distributors, putting into operation or a guarantee or after-guarantee service, the application of powerful robotic workplaces or the implementation of camera systems into the existing production capacity - this is where Blumenbecker Prag is the market leader.

Blumenbecker Prag,
www.blumenbecker.cz



FCC průmyslové systémy

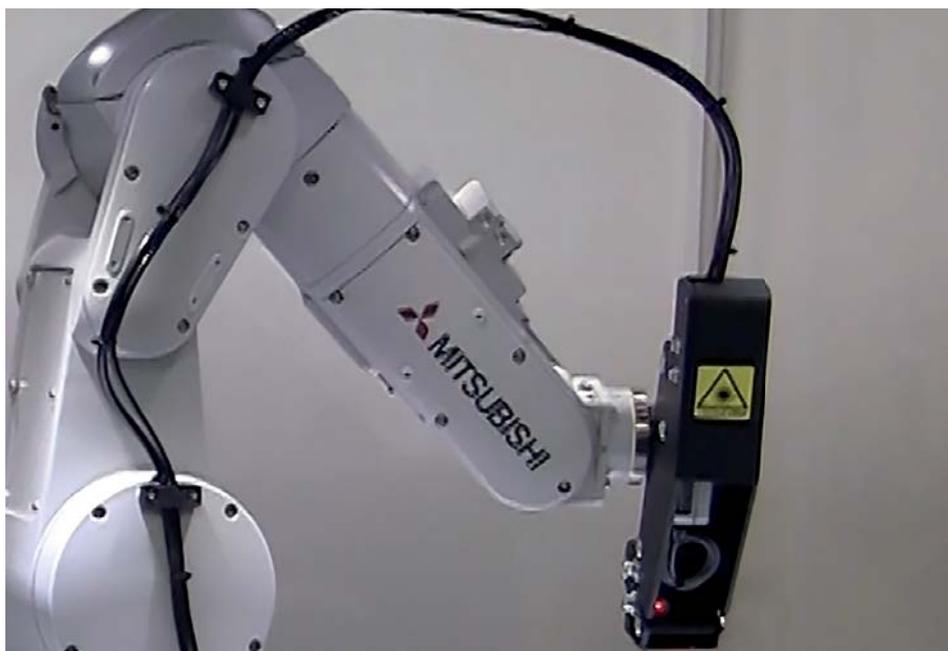
FCC průmyslové systémy is a technology-oriented trading company, representing important manufacturers of industrial automation and communications equipment. The portfolio of industrial process control systems and components includes sensor systems, industrial busses, industrial communication devices, industrial process control and telecommunications computer systems based on specialized PCs. An important area of company focus covers machine vision systems applied in factory automation and

quality control. FCC průmyslové systémy customers and partners are engineering companies and system integrators working in the field of control systems, industrial data communications and telecommunications. FCC průmyslové systémy are a representative of companies such as ADVANTECH, AAEON and AXUS (industrial computers, data storage systems), DataLogic (machine vision) and Westermo Teleindustri and HMS Industrial Networks (industrial communication). FCC průmyslové systémy, www.fcc.ps.cz



Industrial robots

The Stäubli robotic division offers very fast and precise robots for a number of industrial applications - packaging, pick and place, application in the foodprocessing industry or the clean environment. The Czech branch of Stäubli was established in April 2005 and also has the technical support for divisions, logistic background, warehouse as well as a training room with several robots in the Czech Republic. In March 2006 the branch started its active operation in the field of electric connectors and took over the representation of the Stäubli Electrical Connectors division. Opening of the robotic divisions followed, thus completing the activities. Currently, the branch is also responsible for Slovakia, Hungary, Romania, Bulgaria, Slovenia, Croatia, Serbia and other countries of South-Eastern Europe. Stäubli Systems, www.staubli.cz



ICT & SPECIALIZED INFORMATION SYSTEMS

Czech companies have achieved an important position on foreign markets in the field of IT and communications thanks to their unique and innovative solutions, with which they have always been a step ahead of their competitors. Therefore, the efficiency of the Czech technology industry has been growing, which has been evidenced by the 13 % year to year sales increase of the one hundred most successful Czech ICT companies.

Investments in the digital transformation and improving the IT and business interconnectedness are expected. More dynamic transfer to the so-called third platform of technological innovations and growth, consisting of on four pillars: mobility, cloud services, analysis of big data and social technologies including technology solutions based on them. This has been reflected in the growing expenses in cloud services exceeding the amount of USD 71 million in 2014, which corresponds to almost the 18 % year-to-year increase. Czech manufacturers and researchers have been responding to these trends

and also foreign corporations have noted their qualities. As a result, the technology hub of Novartis moved to the Czech Republic; its IT experts thus provide services to other Novartis branches in the world. The Czech Republic has therefore become a leader in the field of artificial intelligence, as is registered by Angee, an innovative household security product, or Neuron soundware, which is able to recognize failures according to sound and has already been used by such companies as Deutsche Bahn or Siemens. IoT, Internet of Things, is another new trend, which has been developing very quickly in Europe. Although still in the initial stage, according to IDC researches, the Internet of things will grow in Central and Eastern Europe by double-digit rates, it will bring essential technology innovations, allow for innovating enterprise processes and shift the digital transformation further than has been possible up to now. In 2018 the market value might exceed USD 13 billion and reach one billion of autonomous devices connected to networks just in the Central and Eastern Europe region.



DID YOU KNOW?

The Czech Republic is the only country where Google is not the No. 1 browser (the local browser Seznam.cz. is the No. 1 browser in the Czech Republic).

The Czech producer of the anti-virus software, Avast, started to develop its first anti-virus software already in 1988. Avast has been so successful that in 2016 it took over another, originally also Czech anti-virus producer - AVG, which had been its major competitor by that time. Together they have over 400 million users.

The production of the communication and sensor modules for all important wireless networks

The production of the communication and sensor modules for all important wireless networks is the domain of RCD Radiokomunikace. The wireless (radio) communication systems currently belong to the most important technical means - not just because they increase our comfort and mobility but especially because they are a part of the absolute majority of security and safeguarding devices. In addition, with the advent of IoT, Smart City, Industry 4.0. or indoor localization phenomena, their importance seems to continue its sharp increase. This is also the reason why it is important that in every stage of a new building or its remodeling the availability of radio services and their errorfree operation is considered. And this is the domain of the RCD Radiokomunikace, thanks to which the radio signal is available for example in a number of big tunnels and subways in Europe.

RCD Radiokomunikace

The research, development and production of radio communication equipment in the 40 MHz – 8 GHz range. Radio networks design, assembly and maintenance. Integration of security and radio systems for the critical infrastructure protection. RCD Radiokomunikace, www.rcd.cz



The radio communication technology not only for the army

The security systems and equipment, printed circuits, radio stations and other components ... this is only a fraction of the wide portfolio of products supplied by TESLA. This company is one of the manufacturers of military radio-communication technology with a long term tradition. The beginnings of the development and later also the production date back to the 1960's. The development

and production team has always responded to current needs flexibly. Furthermore, Tesla produces and supplies aerial systems, radio-relay connections, mobile water treatment plants and automatic PET bottle fillers and blowers. In addition, it offers TV and radio transmitters, solar technologies, solar power plants, external assemblies of electronic and security devices. Production of military electronics; tendering procedures both in the Czech Republic and abroad. TESLA, www.tesla.cz

Mobile applications in the field of control systems

UniControls responds to tendering procedures in the IT field with the MOMA mobile application. UniControls, the internationally renowned supplier of control systems and electronic equipment in the field of railway transport and industry control, has developed and is further improving the system of MOMA mobile applications management. MOMA provides services to more than 2,000 vehicles with five forwarding companies in the Czech Republic and Slovakia, for which it transfers data from the wide range of applications. For example, MOMA provides for updating travel time tables for the automatic train control, collection of data of measuring electricity consumption on vehicles, the distribution of the electronic train documentation, recording data for informing passengers both in the visual and acoustic form, the on-line transfer of booking

data, prediction of train delays and information on platforms or the distribution of multi-media presentation of forwarders and regions. UniControls systematically deals with the development, production and installation of the control system and electronic devices in the fields of rail traffic and the industry control. The company mainly specializes in applications requiring a high reliability in demanding means for work, the system integration of the communication, control, information and diagnostic systems, dispatching management systems, research and the development of custom made solutions. The focus on highly innovative products reflects the goal of the company to become a leading and internationally renowned supplier of control systems and the complex of related services. UniControls, www.unicontrols.cz



Orientation and information systems

DINASYS has focused on the development of multifunctional information and navigation systems that may also be used by visually impaired persons. The company deals with complex deliveries of orientation and information systems to buildings and exteriors, which are adapted for the needs of people with physical and sensory disabilities. Furthermore, the company deals with the analyses of the barrierfree society, processing of route itineraries, advisory and consulting. The portfolio includes audio systems; orientation systems including touch elements or Braille legends; information systems both for interiors and exteriors. DINASYS, www.dinasy.cz



7 CONSUMER ELECTRONICS AND HOUSEHOLD APPLIANCES

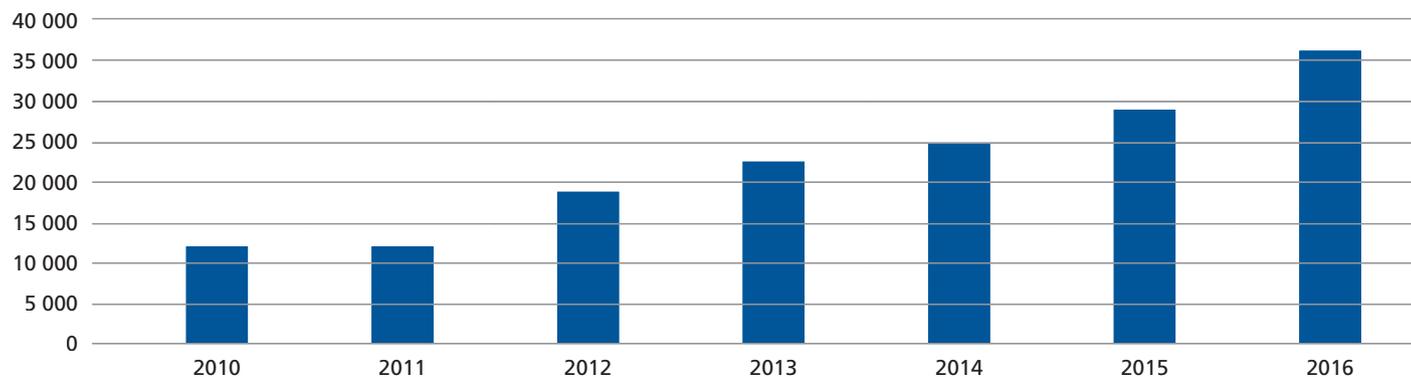


The Czech Republic has already become a favourite destination for foreign investments in the field of consumer electronics, due to its great geographic location, logistics and open business environment with a number of incentives as well as thanks to the highly qualified labour force and the excellent level of technical education and the connection with research and development. Panasonic AVC Networks Czech from Japan is one of the companies, which are active in

the field of consumer electronics in the Czech Republic. It is one of the key production plants of Matsushita, based in Japan and it focuses on meeting the requirements of the European TV set markets. The company placed 26th in the main chart of the TOP Czech companies. Foxconn based in Taiwan is another example of a successful foreign company, which continues to extend its production plants. Also the producer of the luxury electronics, Bang & Olufsen, has its only production

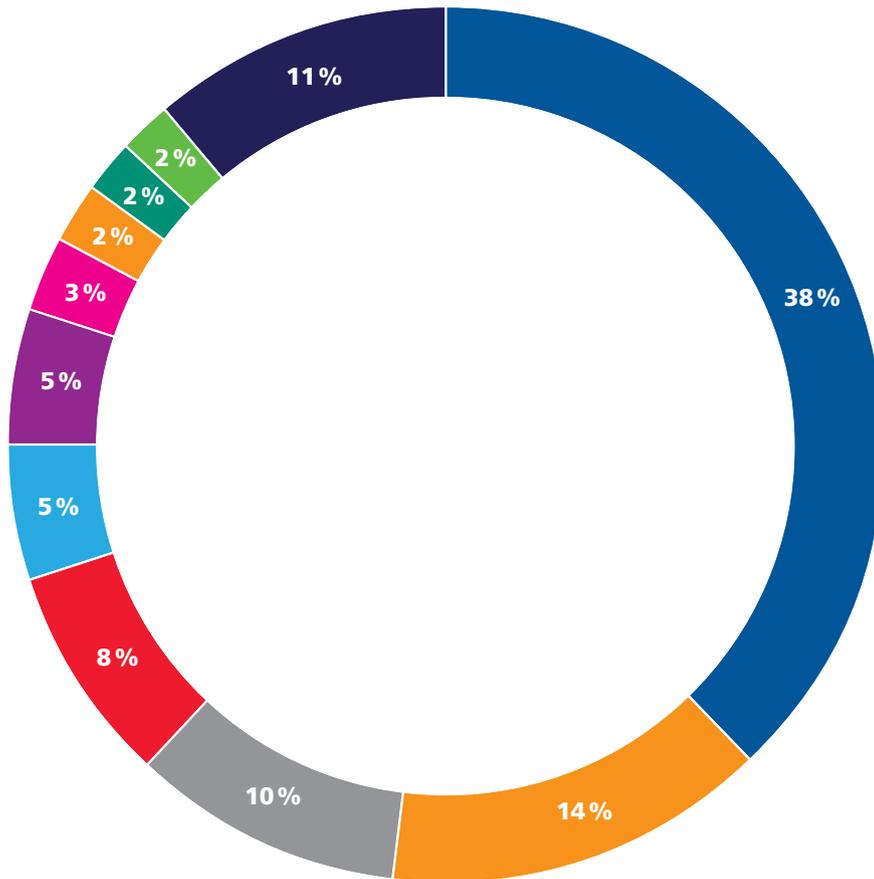
plant outside the domestic Denmark, including the research and development department, in the Czech Republic. Lots of electronics companies are important suppliers to other industry sectors, especially to the automotive industry and machinery. These are such companies as Siemens, Bosch, Daikin, Tyco and Kostal. In the Czech Republic, headlights are produced by Hella Autotechnik, Varroc Lightning Systems, Automotive Lightning etc.

EXPORT OF HOUSEHOLD APPLIANCES FROM THE CZECH REPUBLIC (IN MIL. CZK)



Source: The Czech Statistical Office; SITC 3: 775 – Household type, electrical and non-electrical equipment
Average exchange rates (2016): 1 EUR: 27,033 CZK; 1 USD: 24,431 CZK

EXPORT OF HOUSEHOLD APPLIANCES FROM THE CZECH REPUBLIC IN 2016 – TOP COUNTRIES



Export of household appliances from the Czech republic in 2016 - top countries
 Source: The Czech Statistical Office; SITC 3: 775 – Household type, electrical and non-electrical equipment

- Germany
- The Netherlands
- Slovakia
- France
- Hungary
- Poland
- Italy
- Republic of Korea
- Austria
- Russian Federation
- Others

Panasonic AVC Networks Czech

Panasonic AVC Networks Czech was founded in 1996 in Plzeň as a manufacturer of hi-tech TV sets. Currently, it has become one of the biggest and respected industrial plants in the Czech Republic. Since the start of the production in 1997, employees of Panasonic have been producing TV sets with high added value for customers from more than 30 European countries. In 2004, the company started the transition from the production of classical TV sets to modern flat-screen TV sets. Panasonic AVC Networks Czech, www.panasonic.cz



Almeto

A supplier of electronic components - radio interference filters, ferrite cores, choking coils, transformers, CuSn wires. Furthermore, it offers cable assemblies, condensers, RC elements, PWM controllers, high-voltage lighters, variable-resistance resistors, compensation condensers, coils.

Almeto, www.almeto.cz



EXMONT-Energo

The joint-stock company EXMONT-Energo was primarily focused on the repair of electric motors. The manufacturing program was progressively extended to other branches of engineering with a focus on manufacturing and repair of all energetic machines. The company supports complete

services in the branch of water turbines, electric motors, generators and steam turbines using the most modern available technologies. The cooperation with the Department of water machines at VUT Brno (technical university) is very useful in that way. Since 2001, EXMONT-Energo has had its own manufacturing area. EXMONT-Energo, www.exmont.cz

8 MEASURING AND NAVIGATION INSTRUMENTS

The Czech Republic is the world leader in the production of electron microscopes with three leading microscope manufacturers having their registered offices here; those with the longest tradition include DELONG INSTRUMENTS, Tescan Orsay and FEI Czech Republic. Recently, perhaps the biggest microscope manufacturing plant in the world was built here. The cluster of smaller

suppliers and collaborating scientific institutions has been created around these dominant players and a generation of highly educated microscopy experts has been growing here. The perfect intersection of science and business has been achieved here. Most products are exported to countries of the whole world.

The oldest producer of electron microscopes with unique know-how is from the Czech Republic

DELONG INSTRUMENTS is a company mainly engaged in electron optics, microscopy and vacuum technology. Its activity covers research, development, manufacturing, assembling and the testing of various physical instruments including vacuum chambers and components, ion pumps and power supplies, motion systems, and respective control electronics and software. DELONG INSTRUMENTS offers its own

products of electron sources and low voltage electron microscopes, and also serves as a contract developer of unique custom made devices. DELONG INSTRUMENTS collaborates with world renowned companies and has long-term experience with joint projects. DELONG INSTRUMENTS, www.dicomps.com



DID YOU KNOW?

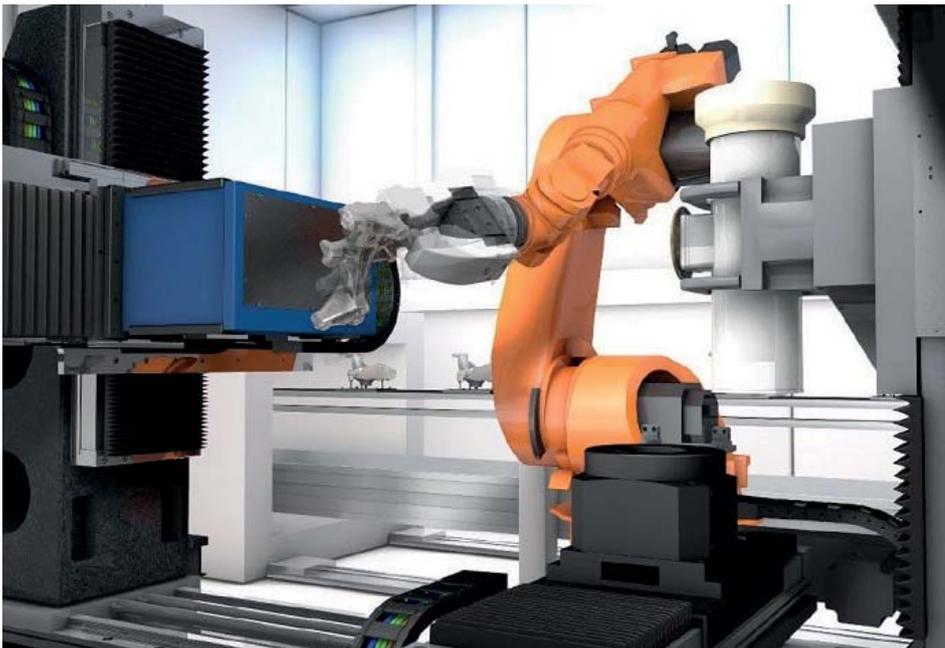
1/3 of the global electron microscope production is produced in the Czech Republic.

RTG are used more and more often in the industry in situations when checking the internal components of products all the way to their covering is required. Due to new manufacturing trends an ever-increasing number of companies need these X-rays. X-ray instruments are relatively expensive but the Czech manufacturer ELEDUS, for example, offers RTG, the SCIOX instrument for approximately half price compared to its competitors. ELEDUS X-ray instruments are especially designed for checking the quality of electronics components assembly both in the development and manufacture.

This successful Czech start-up wins over its competitors both with quality and price

ELEDUS is engaged in the development and production of X-ray inspection equipment for industrial non-destructive testing, control and inspection. X-ray devices are used during quality checks soldering modern components in BGA and QFN packages where the optical control methods are insufficient. X-ray (RTG) radiation can penetrate through the material and make it possible to see into the products, which can not be visually tested. You can detect short circuits inside the component, check the

quality of the soldering cooling pads beneath the chip and test the BGA mounting at the joints, in order to prevent the formation of voids (air bubbles). ELEDUS X-ray devices can also be used for the quality control of welds in machine design or for quality control of the product casting. Besides the development and production of X-ray inspection equipment, ELEDUS is also engaged in developing custom design, firmware and software. ELEDUS, www.eledus.cz



BD SENSORS

Electronic pressure measuring gauges produced in the Czech Republic have been successful worldwide thanks to the unique price-quality ratio and wide offer assortment. For example, BD SENSORS offers an assortment of 80 sensors offering a technically and price adequate solution for each application. Currently, it employs about 200 persons in four branches - Germany, the Czech Republic, Russia and China.

BD SENSORS,
www.bdsensors.cz

The world's leading supplier of metering instruments is from the Czech Republic

The diversity of components, the great extent of accuracy requirements as well as growing measuring productivity demands have forced special measuring instruments manufacturers to use an ever wider range of measuring methods. Currently, contact measuring methods have begun to be replaced with contactless optical methods, from simple workshop measuring gauges to measuring and control stations. MESING, which is a company dealing with production of custom-made measuring instruments, has been successful in the field of custom made measuring technology. It has recently been

awarded a number of awards for its products, which in many cases have literally been ahead of their time. However, the success is also based on technical parameters, price, short delivery terms and the perfect maintenance service. The majority of measuring gauges developed and produced by MESING are delivered to automotive subcontractors. a big part of the production is supplied to the bearing industry. In terms of territorial distribution, more than half of the production is realized outside the territory of the Czech Republic - namely in Slovakia, Switzerland, Lichtenstein, England, Germany, Poland, India, Turkey etc.

MESING

The custom made measuring instruments for measuring lengths according to specific requirements of customers such as workshop and laboratory gauges and instruments, checking stations and sorting automatic machines and assembly automatic machines for the electronics industry. SPC based systems, possibly with the feedback to the machine tool, are an important part of the portfolio. MESING is a leading supplier of calibration gauges and a monopoly producer of induction length sensors in the Czech Republic. MESING also performs the modernizing of various older gauges and instruments.

MESING, www.mesing.cz



KPB INTRA

Design, manufacture and supply of current and voltage instrument transformers. Manufacture of epoxide components.

KPB INTRA, www.kpbindra.cz

9 ENGINES, GENERATORS AND TRANSFORMERS

HIGHLY SOPHISTICATED AND CUSTOM MADE PRODUCTION IS THE DOMAIN OF CZECH MANUFACTURERS

Czech manufacturers have also been growing due to the production of products with a high technical added value. This is an example of ATAS elektromotory Náchod, which keeps investing in new technologies - especially in the field of engines with electronic commutation and location

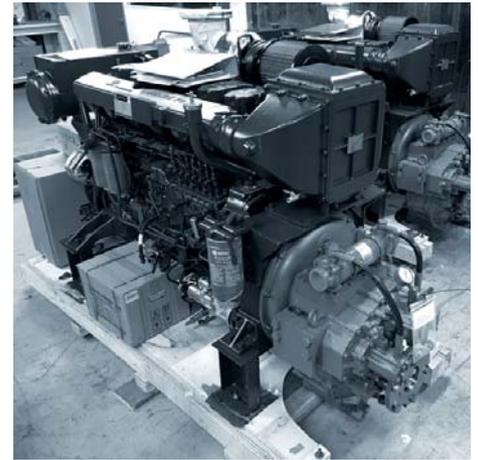
ATAS elektromotory Náchod

ATAS elektromotory Náchod was founded in 1928. It manufactures induction motors up to 1 kW, DC motors up to 1.5 kW, transmission motors, EC motors, resolvers, axial and radial ventilator, metal sheet cutters, moulds for pressure moulding of plastics and Al alloys.

ATAS elektromotory Náchod,
www.atas.cz

sensors. This is one of the reasons why products are so highly demanded and the company exports 80 % of its production to 50 countries of the whole world, especially Germany. The main customers include EBM PAPST, Busch and the renowned manufacturer of cleaning technology - Kärcher.

Special custom made solutions and innovative technologies are also characteristic of ELCOM. It mostly deals with special products competitors either find too difficult from the technical point of view or on the other hand the multi-national electronics groups, which mainly deliver catalogue products, find uninteresting. Nevertheless, the success requires high-quality experts and engineers and bringing new technical solutions all the time. A big part of deliveries and solutions is a result of the corporate research and development. Therefore, most products bear the ELCOM Intelligence Inside trade mark, which exactly grasps the



originality of the solution. We can therefore find unique ELCOM solutions all over the world. For example, special compensation high voltage distributors are mostly exported to the Middle East region whereas special high performance electric engines are exported to reconstructed or new plants in Russia. Furthermore, ELCOM deals with the development of SW libraries and toolkits for the field of power duality and measuring of synchro-phasors enabling building analysers for Smart Grids on modern HW platforms. The developed algorithms are used in the new measuring device - synchro-phasor measurer (PMU), the testing of which is now going on in cooperation with National Instruments in the laboratories of Bonneville Power Administration in the U.S. We could further name a number of other successful projects abroad. Currently, the company also has foreign branches in Abu Dhabi, Hongkong and Changshu.

ELCOM

ELCOM conducts business in the field of power electrical engineering, virtual instrumentation and it is divided into the five divisions. The division of Applied Electronics has been working on research, development and production of special power electronic devices for railway, testing and means for the improvement of the quality of electricity. The division of Drives and Motors is a specialized workplace for the delivering of electromotors and whole regulated drives, mainly in an explosion-proof design. The division of Realization and Design specializes in compensations and substations for low and high voltage levels. The division of Manufacturing serves as a production and materiallogistic unit for all other division. The division of Virtual Instrumentation was founded in the Science and Technological Park in Ostrava. It provides services in the system integration, designing and delivering of measuring and testing workstations that are based on virtual instrumentation. ELCOM, www.elcom.cz

ETD TRANSFORMÁTORÝ

ETD TRANSFORMÁTORÝ is a designer and manufacturer of both serially produced and special power transformers, chokes, and reactors with its own know-how, complex technologies and special testing equipment in Central Europe. Transformers have 90 years experience in production mostly under the ŠKODA brand and satisfied customers all over the world. Production programme: phase regulating oil transformers, power output range 10 – 350 MVA, nominal voltage up to 420 kV; three-phase non-regulating transformers, power output up to

410 MVA, nominal voltage up to 420 kV; single-phase non-regulating oil transformers with the total power output of the three-phase composition up to 1200 MVA and voltage up to 420 kV; regulating and non-regulating transformers of special manufacturing; autotransformers of power up to 400 MVA, nominal voltage up to 420 kV; locomotive transformers; furnace Transformers; traction chokes; reactors. Service activities: Modernization; Repair works; High voltage Testing laboratory; Accredited electrotechnical testing laboratory. ETD TRANSFORMÁTORÝ, www.etd-bez.cz



TES Vsetín

TES Vsetín, another Czech company, has also succeeded through the application of exceptionally sophisticated technology. For example, it has developed the thermo-crimping machine, which is able to weld wires very quickly and position them into a joint or jumper. Compared to manual welding, this is done within shorter time, which is a clear benefit of this technology. Thanks to this, the insulation of cable outlets is not thermally affected and damaged. The machine is also exceptional by its ability to rotate its head. Thanks to this no big and heavy stator handling is required as the machine is able to get to them comfortably, to weld required wires and locate them to the joint.

TES VSETÍN, www.tes.cz



KPB Intra

Another Czech company - KPB Intra - boasts of its remarkable success abroad exporting seventy per cent of its production. Although the European Union is its major market, it also exports to more distant countries such as Russia, Pakistan, Algeria, Morocco and Iran. It also has customers in the U.S. It mainly deals with the development, manufacture and sales of instrument power and voltage transformers. Its major long-term customers include ABB, ČEZ, DRIBO, EATON, E-ON, EVN, KPB INTRA Polska, OHL-ŽS, Ormazabal, PRE, SIEMENS, SCHNEIDER ELECTRIC and many others.

KPB INTRA, www.kpb intra.cz

THE NARROW SPECIALIZATION AND UNIQUE TECHNOLOGIES ARE THE ADDED VALUES OF CZECH PRODUCTION

SOPO

SOPO was founded in 1993. It focuses on the production of winding parts of electric motors. Due to its narrow specialization, top ranking technologies and huge know-how, SOPO can cover the entire portfolio of winding parts for smaller and middle-sized electric motors. One of the most important strategic targets of the company is to become a European leader in winding. SOPO has top-ranking technological equipment at its disposal and combines the machines of reputable world-famous producers with its own technologies, machines and tools. The amount of investments only into new technologies and technological solutions in 2013 – 2015 exceeded one million euros. SOPO, www.sopo.cz

VUES Brno

Design and production of tailor – made AC rotating electric machines, electric drives and loading test stands with dynamometers, according to the customer specifications. Custom build AC electric machines and drives. Permanent magnet synchronous servomotors and motors with high dynamics and accuracy. Synchronous and induction linear motors. Electric dynamometers and test stands. Low-speed and high-speed electric motors. Synchronous and induction generators built to demand. Electric traction motors and generators. Aircraft technology board generators and electric starters. Power supply sets and rotating power sources. tests with international validity. VUES Brno, www.vues.cz



THE DYNAMIC DEVELOPMENT OF CZECH COMPANIES

KOPOS KOLÍN

is a traditional Czech company involved in the production of electroinstallation materials and has operated on the Czech market for many decades. The KOPOS brand has become synonymous with products used in electro-

installations. Even though electro-installation materials are the company's primary focus, for many years the company has worked in the area of the research and development of radiation shielding in nuclear devices using the product called NEUTROSTOP.

KOPOS KOLÍN, www.kopos.cz

ELKO EP

The products of the company include modular electronic devices, installation devices for protection and switching, RF Control – wireless control system, iNELS – intelligent electronic system including its modified version iNELS Multimedia. For several years the company has had a quality management system certified to ISO9001 and Environmental management system certified to ISO14001. The Elko EP super-multifunction relay SMR was awarded "Golden product" (Automation area) at the fair Elektrotechnika 99 – Ostrava. The company received an honourable mention for the

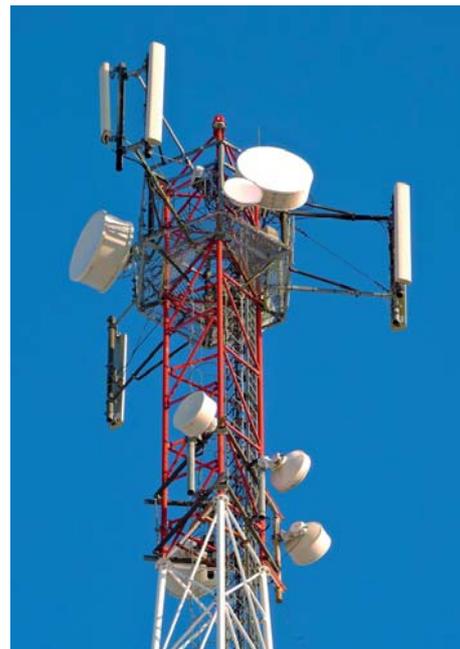
product SHT (time switch) and for the product HDUI (monitoring relay for 3-phase net control). Jiří Konečný, Technological Entrepreneur of the year 2004, became the Head Executive of ELKO EP. The latest awards include the Grand prix for the iNELS Multimedia system at the Electron 2011 exhibition and the Golden Amper for the product RF Touch at the international fair Amper 2011. In 2014, the company won an award from Moravian Electrical and Electronic Association for an innovative product for the device "LARA 5 in 1".

ELKO EP, www.elkoep.cz

SALTEK

SALTEK is a leading Czech company specialized in the development and production of surge protection devices (SPD). The company offers a broad range of lightning current arresters and surge protection type 1-3 according to EN 61643-11 and surge protection for information technology, measurement and control and telecommunications and photovoltaic applications. SALTEK products provide protection against the lightning and technological overvoltage and thereby increase the safety and troublefree operation of the technologies and machinery in the industry, telecommunications, data centers, office buildings even

in ordinary homes. The principle of dynamic company expansion consists in its own product development. a team of experienced development engineers work in the test development laboratory with unique devices and technologies. The sophisticated materials, design processes, technologies and measurement methods are used for the development of SALTEK products. Production is equipped with automatic and robotized assembly lines. SALTEK places emphasis on quality, but also ton the design of products. The line of surge protection devices with unique color coding has been awarded the Red Dot® 2014 design prize. SALTEK, www.saltek.eu



ALPS Electric Czech

The company is OEM manufacturing company. ALPS can assemble any electrical parts or products including the supplying of all components (incl. plastics), if required. The goal is to supply customers with top quality products or services at very competitive prices. ALPS can offer large flexibility on the level of production. ALPS way is to find the cheapest location for production, where a high quality of production can be reached. ALPS Electric Czech, www.alps.cz



OEZ

For seven decades the company OEZ has evolved from a producer of circuit breakers and fuses to become an integrated supplier of products and services for protecting electrical circuits and low-voltage devices. Since 2007, OEZ has been a member of the group Siemens. OEZ's products have

been in use in power engineering, industry, infrastructure as well as in housing development. The company's delivery programme focuses on: Minia devices, Modeion moulded case circuit breakers, Arion moulded air circuit breakers up to 6300A, Varius fuse systems, Distri enclosures and Conteo devices for switching and control. OEZ, www.oez.cz



ABB

ABB is a leader in power and automation technologies that enable utility, industry, transport and infrastructure customers to improve their performance while lowering the environmental impact. The ABB Group of companies operates in roughly 100 countries and employs about 140,000 people. The company has been present in the Czech Republic since 1970 and today employs more than 3,400 people. ABB operates in 8 locations. The Czech ABB can use the international know-how and the latest results of the research and development achieved by the global company. It offers its customers added value in the form of a strong base of its own engineering and service centres and long-standing experience of traditional Czech producers. Nowadays ABB has five divisions: Power Products, Power Systems, Discrete Automation and Motion, Low Voltage Products and Process Automation. ABB, www.abb.cz

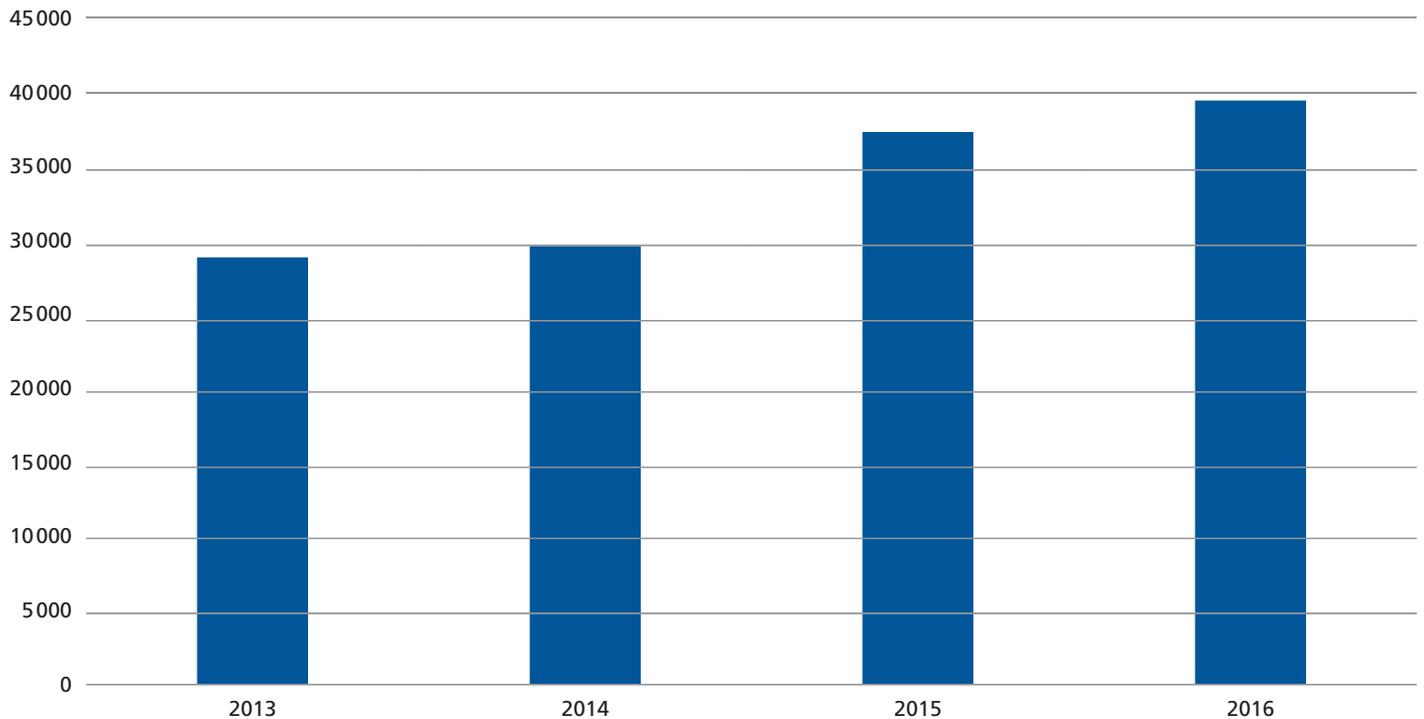
10 CABLES, WIRES AND WIRING SYSTEMS

Export of semi-conductors from the Czech Republic amounted to 39.3 bil. CZK in 2016 and this amount means year-on-year growth by 5 %. Since 2013,

the export of semi-conductors from the Czech Republic has been growing every year. Compared to 2013, exports grew by 34 %.

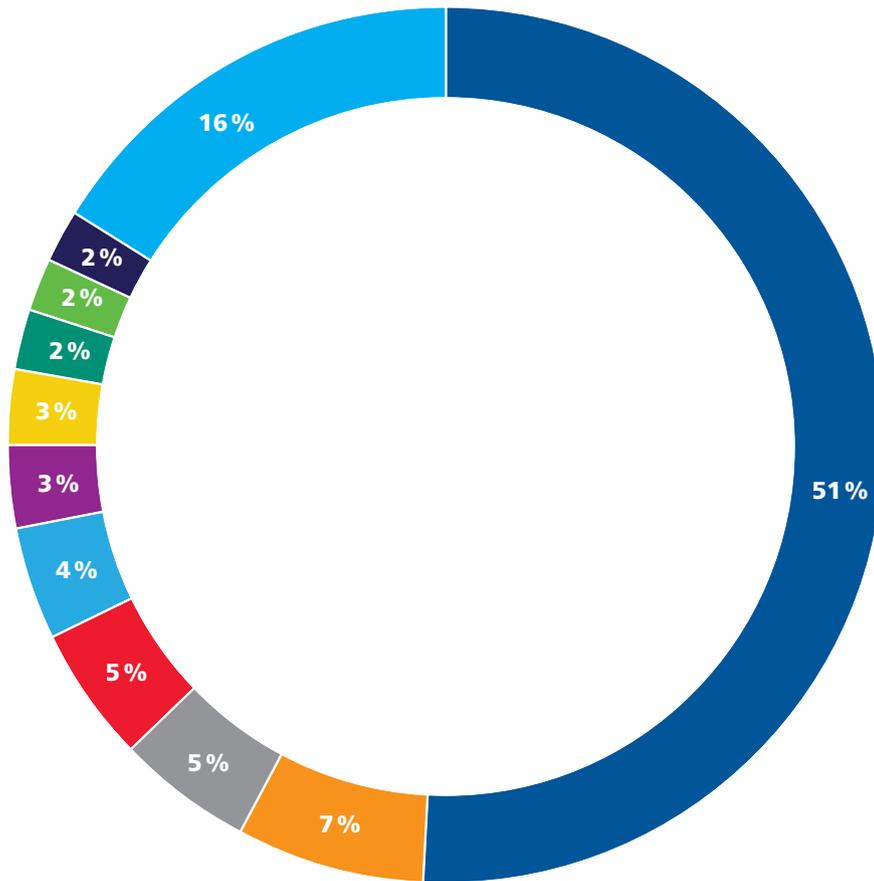


EXPORT OF SEMI-CONDUCTORS FROM THE CZECH REPUBLIC (IN MIL. CZK)



Source: The Czech Statistical Office; SITC 3: 775 – Household type, electrical and non-electrical equipment
Average exchange rates (2016): 1 EUR: 27,033 CZK; 1 USD: 24,431 CZK

EXPORT OF WIRES, CABLES AND CONDUCTORS FROM THE CZECH REPUBLIC IN 2016 – TOP COUNTRIES



Source: The Czech Statistical Office; HS 4: 8544 – Insulated "incl. enameled or anodised" wire, cable "incl.coaxial cable"

- Germany
- Ukraine
- Austria
- France
- Slovakia
- Spain
- Poland
- China
- Romania
- Others
- Hungary



ONE OF THE MOST INNOVATIVE CZECH COMPANIES HAS BEEN SUCCESSFUL WORLDWIDE

ZPA Smart Energy is the leading Czech manufacturer of electric meters, mass remote control and modern measuring systems. It is the leader on the Czech and Slovak markets. With the 70% market share in the field of electric meters and actually the 100% share in the field of HDO receivers it is the most important supplier of these technologies for ČEZ, E.ON and PRE. However, the export range of ZPA Smart Energy is significantly broader. It has been delivering its products both to EU countries and to Belarus or the post-Yugoslavia countries. It delivers its most sophisticated products such as electric meters for remote data collections for several pilot projects of ČEZ and PRE as well as to Lebanon, Poland, Hungary and Montenegro. It closely cooperates with local companies on foreign markets. In its African expansion, the Egyptian owner plays the dominant role in the market strategy. Although ZPA Smart Energy was among the leading domestic electro-engineering and electronics companies (in 1970 – 1975 the first generation of ADT computers was manufactured here), the product portfolio changed significantly after 1990 in the direction towards highly sophisticated products with electronic components. Former technologists

and mechanic engineers have been replaced by development engineers in the field of electric meters hardware, i.e. kind of “small computers” common in all households. Graduates from new fields also participate in software and firmware development and in equipment operation and maintenance in modern manufacturing operations. The electrical engineers from Trutnov pay lots of attention to the development of the software background for the smart measuring field. The system allows the collection and processing of data from smart

electric meters as well as from other instruments such as instruments metering water, gas, calorimeters etc. It is also able to evaluate the collected data and to use them in the energy consumption control. At the same time it is able to prepare billing and invoices for individual tenants of building owners based on the collected data. This product is intended both for big distribution enterprises and for administrators of shopping and business centres, industrial zones and commercial areas.

ZPA Smart Energy

ZPA Smart Energy is the largest and most important Czech manufacturer of electricity meters, smart systems, ripple control receivers and AMR/AMM solutions. Their expertise is based on decades long experience going back as far as 1958, as well as cutting edge technology – almost a quarter of total manpower work in R&D. The company HQ and production plant are located in East Bohemian Trutnov, the heart of the Czech electrotechnical industry, where industry icons like ABB, TYCO and Siemens reside as well. Subsidiaries are stationed in Prague, Berlin and Sofia. Customerwise, ZPA Smart Energy has traditionlly

held a leading position on the Czech market and successfully penetrates foreign markets too – whether those are emerging in Central, Eastern and South Eastern Europe or highly developed markets, such as Germany, Switzerland and Netherlands. To mention just a few, the product portfolio of ZPA Smart Energy specifically targets electrical energy measurement and management. ZPA Smart Energy offers integrated system solutions for the measurement and management of electrical energy via communication modules and concentrators to communication servers and database client applications. ZPA Smart Energy, www.zpa.cz

Pilz Czech

With 2,000 staff members worldwide, Pilz operates internationally as a technology leader in automation technology. In this area, Pilz is consistently developing a role as a total solutions supplier for safety and control technology. In addition to the head office in Germany, Pilz is represented by 32 subsidiaries and branches on all continents. Products include sensor technology, electronic monitoring relays, automation solutions with motion control, safety relays, programmable control systems and an operating and monitoring range. Safe bus systems, Ethernet systems and

industrial wireless systems are also available for industrial networking. Pilz solutions can be used in all areas of mechanical engineering, including the packaging and automotive sector, plus the wind energy, transport and press industries. These solutions guarantee that baggage handling systems run safely at airports, that theatre scenery moves smoothly and funiculars or roller coasters travel safely. Pilz also provides a comprehensive range of services with an extensive selection of training courses. With safety advice and engineering, a comprehensive and competent service is available. Pilz Czech, www.pilz.cz



Gebauer a Griller Kabeltechnik

Gebauer & Griller is an Austrian company with long-time business activities in the Czech Republic and is one of the leading manufacturer of cables, wires and cable harnesses for the automotive, elevator and escalator industry as well as for special industrial applications. Gebauer a Griller Kabeltechnik, www.griller.cz

Helukabel CZ

HELUKABEL is a leading international manufacturer and supplier of wires & cables, custom cables, cable accessories, data, network & bus technology and media technology, as well as pre-assembled cable protection systems for robotics and handling systems. Helukabel CZ, www.helukabel.cz

CONTACTS

Electrical and Electronic Association of the Czech Republic, **www.electroindustry.cz**
EIA is a free union of entrepreneurs, employers, associates, the most significant domestic producers and the suppliers of electrical and electronic industries as well as of information technology. Its members include both domestic branches of large international corporations as well as medium and small enterprises in the ownership of domestic capital. The proportion of members in the Electrical and Electronic Association of the Czech Republic within all electrical production in the Czech Republic has been approximately 70 % for a long period of time.

ABB s.r.o., **www.abb.cz**

ABB is a leading company in the area of power and automation technologies. Its products enable utility, industry, transport and infrastructure customers to improve their performance while lowering their environmental impact.

Almeto s.r.o., **www.almeto.cz**

Almeto supplies a variety of components of electrical engineering such as transformers, coils and condensers.



ALPS Electric Czech, **www.alps.cz**

It is an OEM manufacturing company which can assemble any electrical parts or products including the supplying of all components.

ATAS elektromotory Náchod, **www.atas.cz**

This traditional Czech company produces a great variety of motors, resolvers, axial and radial fans, stamping tools and dies for the die casting of plastic and aluminium alloys.

BD SENSORS s.r.o., **www.bdsensors.cz**

This firm is a major global provider of electronic pressure measurement devices.

Blumenbecker Prag s.r.o., **www.blumenbecker.cz**

This firm's activities include the engineering of projects for automation systems of technological processes, regulated drives, robotic cells, structured industrial networks and many more. It also offers a broad range of SWAC welding equipment and operator panels.

Brno University of Technology, **www.vutbr.cz**

BUT in Brno conducts its own research and development. It is focused on non-specified research as well as on clearly defined research projects. Applied research is directly initiated by both Czech and international companies.

Central European Institute of Technology (CEITEC),

www.ceitec.cz

Central European Institute of Technology is a joint project of the Brno University of Technology, Masaryk University and five other partner institutions in Brno. Its aim is to build a modern, high quality scientific research infrastructure.

Czech Technical University in Prague, Faculty of Electrical Engineering, **www.fel.cvut.cz**

Faculty of Electrical Engineering CTU in Prague offers study programmes in Electrical Engineering and Informatics, Software Technologies and Management and many more. Besides this it carries out its own research and development in a broad variety of fields such as robotics and biomedical engineering. In addition to that, this university provides programmes and courses supporting further training and education.

Danfoss s.r.o., **www.danfoss.cz**

A Czech division of the global Danfoss Group produces highly efficient frequency convertors utilized in the field of air-conditioning, water and wastewater, industrial applications and applications for manufacturers.

DELONG INSTRUMENTS a.s., **www.dicomps.com**

This company produces electron optics and microscopy, and vacuum technology. Besides these activities, Delong Instruments offers its own products of electron sources and low voltage electron microscopes, and serves as a contract developer of unique custom made devices.

DINASYS s.r.o., **www.dinasys.cz**

DINASYS develops orientation and information systems suitable for indoor as well as outdoor use. It analyses barrier-free accesses, provides consultancy services and itinerary planning. All products are adapted to the needs of handicapped people.

ELCOM a.s., **www.elcom.cz**

This company's activities focus on the field of power electrical engineering, energy engineering and virtual instrumentation. It is divided into several divisions that are oriented e.g. on the research, development and production of special power electronic railway devices, explosion-proof drives or system-integration-services.

ELEDUS s.r.o., **www.eledus.cz**

A firm whose core activity is the development and production of X-ray inspection equipment for industrial non-destructive testing, control and inspection. This company's products can be used e.g. in machine design and the quality control of product casting.

ELKO EP s.r.o., **www.elkoep.cz**

This company manufactures modular electronic devices, provides a wireless control system, intelligent electronic system and installs devices for protection and switching. The multifunction relay SM was awarded a "Golden product" and in 2014 the Moravian Electrical and Electronic Association awarded the innovative device "LARA 5 in 1".

EPCOS s.r.o., **www.epcos.com**

The division of EPCOS in Šumperk produces over three thousand types of ferrite cores and one thousand ceramic PTC thermistors.

ETD TRANSFORMÁTORÝ a.s., **www.etd-bez.cz**

A company designing and producing transformers, chokes, and reactors. Taking advantage of its own know-how and 90 years of experience in this field, the company offers not only serial production but also tailor-made solutions.

EXMONT-Energo a.s., www.exmont.cz

This company focuses on the manufacturing and repair of all types of energetic machines. It provides services connected with water turbines, electric motors, generators and steam turbines.

FCC průmyslové systémy s.r.o., www.fcps.cz

FCC is a technology-oriented trading company representing the important manufacturers of industrial automation and communications equipment. It provides a variety of process control systems and components such as sensor systems, industrial busses, industrial communication devices and many more.

Gebauer a Griller Kabeltechnik, spol. s r.o., www.griller.cz

This Austrian company operating in the Czech Republic is a leading manufacturer of cables, wires and cable harnesses for the automotive, elevator and escalator industry as well as for special industrial applications.

Helukabel CZ s.r.o., www.helukabel.cz

Helukabel is a leading international manufacturer and supplier of wires and cables, cable accessories, data, network and bus technology as well as media technology. It also produces cable protection systems for robotics and handling systems.

KOPOS KOLÍN a.s., www.kopos.cz

Kopos is a traditional Czech company producing electric installation materials. Besides production, this company focuses on its own research and development of radiation shielding in nuclear devices.

KPB INTRA s.r.o., www.kpbindra.cz

KPB INTRA manufactures and supplies current, voltage transformers instruments and epoxide components.

LOGAREX Smart Metering, s.r.o., www.logarex.cz

A Czech firm specializing in the area of measurement, processing and data transfer. Combining the experiences of development and marketing specialists, meets this company the demand of the Czech as well as foreign customers.

MESING, spol. s r.o., www.mesing.cz

MESING is one of the major suppliers of calibration gauges. It is the only producer of inductive length transducers in the Czech Republic.

MINERVA BOSKOVICE, a.s., www.minerva-boskovice.com

The core activity of this company is the development, production and sale of industrial sewing machines such as post bed, flat bed zigzag and many more. This company offers a wide range of single or twin needle lockstitch suitable for shoes, leather goods and textiles.

OEZ s.r.o., www.oez.cz

A Czech firm specializing in the area of measurement, processing and data transfer. Combining the experiences of development and marketing specialists, this company meets the demand of Czech as well as foreign customers.

Ostrava Science and Technology Park, www.vtpo.cz

Ostrava Science and Technology Park supports the cooperation of Moravian-Silesian universities and research institutions. Its goal is to encourage innovative companies such as start-ups and spinoffs, increase motivation to do business and awareness of innovative business and create conditions and space for initiation.

Panasonic AVC Networks Czech, s.r.o., www.panasonic.cz

It is the manufacturer of high quality PDP and LCD TV sets in Europe. The Czech subsidiary of this company produces colour TV sets of this brand.

Pilz Czech s.r.o., www.pilz.cz

Pilz is a technology leader in automation technology. It supplies total solutions for safety and control technologies which can be used in all areas of mechanical engineering, including the packaging and automotive sector, plus the wind energy, transport and press industries.

RCD Radiokomunikace spol. s r.o., www.rcd.cz

This company focuses on the research, development and production of radio communication equipment. It designs and installs radio networks and integrates radio and safety systems for Critical Infrastructure Protection.

SALTEK s.r.o., www.saltek.eu

Saltek is a leading company in the production of lightning and technological overvoltage protection. This company's products help to increase the safety and trouble-free operation not only of industrial technologies, machinery, telecommunications, data centres, and office buildings but also of family houses.

SOPO s.r.o., www.sopo.cz

A company focusing on the production of winding parts of electric motors. Taking advantage of the narrow specialization, top-ranking technologies and huge know-how, SOPO covers the entire portfolio of winding parts for smaller and middle-sized electric motors.

Stäubli Systems, s.r.o., www.staubli.cz

Stäubli provides innovative mechatronic solutions leading to the improvement of industrial productivity including robotic technologies.

SYSGO s.r.o., www.sysgo.com

This company provides operating system technology, middleware, and software services for the real-time and safety and security critical embedded markets. SYSGO offers its own paravirtualization operating system known as the Safe and Secure Virtualization platform PikeOS.

Technology Agency of the Czech Republic, www.tacr.cz

It is an organizational unit of the state aiming to support research, experimental development and innovation. This organization is considered to be one of the cornerstones of the fundamental reforms in research and development in the Czech Republic.

TES VSETÍN s.r.o., www.tes.cz

This company offers serial and unit production solutions in the area of electric motors and drives, generators, and parts of electric machines in the field of power engineering.

TESLA a.s., www.tesla.cz

Tesla produces and supplies high quality and certified TV and broadcast transmitters, antenna systems, radiorelay equipment, a wide range of solar technologies and electronic military equipment.

UniControls, www.unicontrols.cz

This company focuses on the design and complete supply of industrial and transport control systems suitable especially for use in demanding conditions, system integration of communication, control, information and diagnostic systems design and supplies of complete electronic equipment for rolling stock. It also offers customised solutions.

SOMA spol. s r.o., www.soma-eng.com

Soma Engineering produces machines for the packaging industry. It provides innovative die cutting machines, slitter rewinders and flexographic printing press.

VUES Brno s.r.o., www.vues.cz

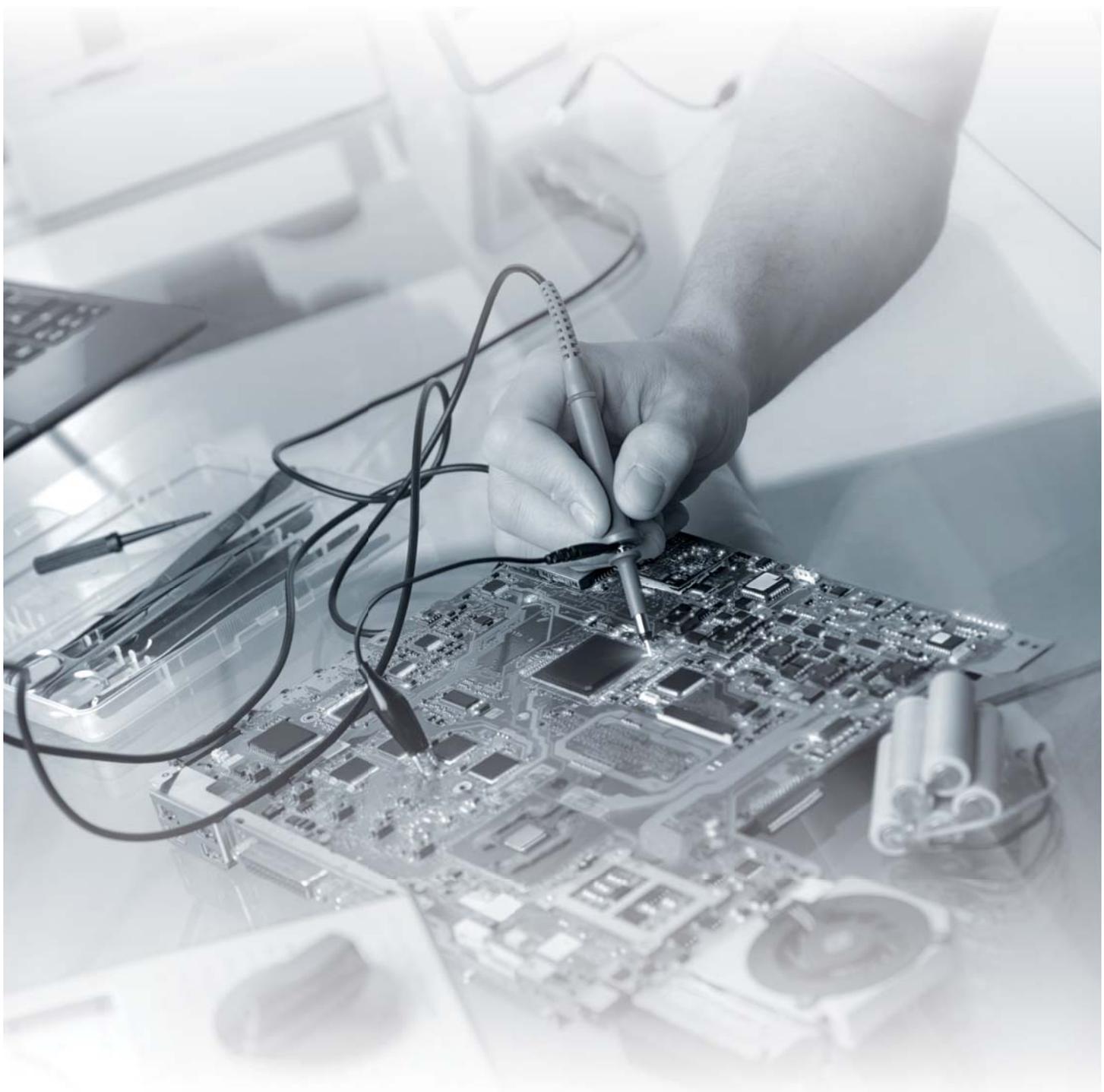
VUES Brno is a designer and producer of tailor-made AC rotating electric machines, electric drives and loading test stands with dynamometers, various motors, aircraft technology board generators, electric starters etc. Besides this activity, VUES Brno provides design and verification consulting and has an accredited test field.

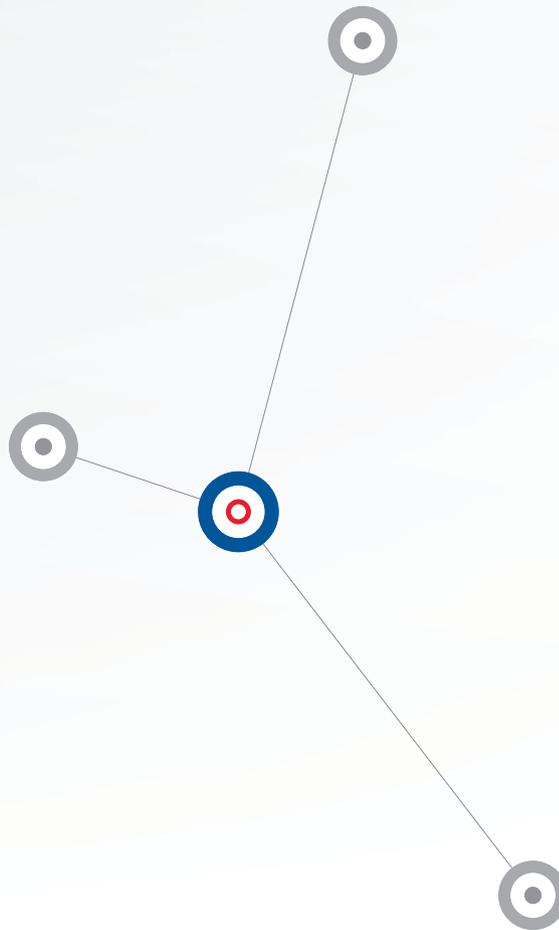
ZPA Smart Energy a.s., www.zpa.cz

ZPA Smart Energy is the largest and most important Czech manufacturer of electricity meters, smart systems, ripple control receivers and AMR/ AMM solutions. It produces integrated system solutions for the measurement and management of electrical energy.

The catalogue of electronics in the Czech Republic was created as collaboration between the Agency CzechTrade and the Electrical and Electronic Association of the Czech Republic.







CONTACT

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www.czechtrade.eu

