

MEDICAL EQUIPMENT





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Czech Trade Promotion Agency is proud to present Czech medical technologies & equipment in the new sector guide Czech Medical Equipment.

Medical technology production 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 assist their success in international markets.

The goal of this brochure is to inform interested foreigners about the field of health care technology 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/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
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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 offices network covers 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.

STATISTICS ON HEALTH PRODUCTS IN THE CZECH REPUBLIC



MEDICAL TECHNOLOGY IN NUMBERS

The manufacture of medical technology has strong growth potential in the Czech Republic, in particular due to the increasing demand from abroad. It is driven

by the ageing population and the world-wide growth of health care and related technologies. The demand for medical technology has also been growing due to the increasing

involvement of the private sector in health care, the increasing popularity of health tourism, the growing middle class as well as health care availability.

13 400

Employing about 13.400 persons

22.5

Turnover of CZK 22.5 billion

35 %

35 % of production is exported, including 17 % to the E.U., 9.5 % to Russia and 5 % to Arabic countries (2013 data).

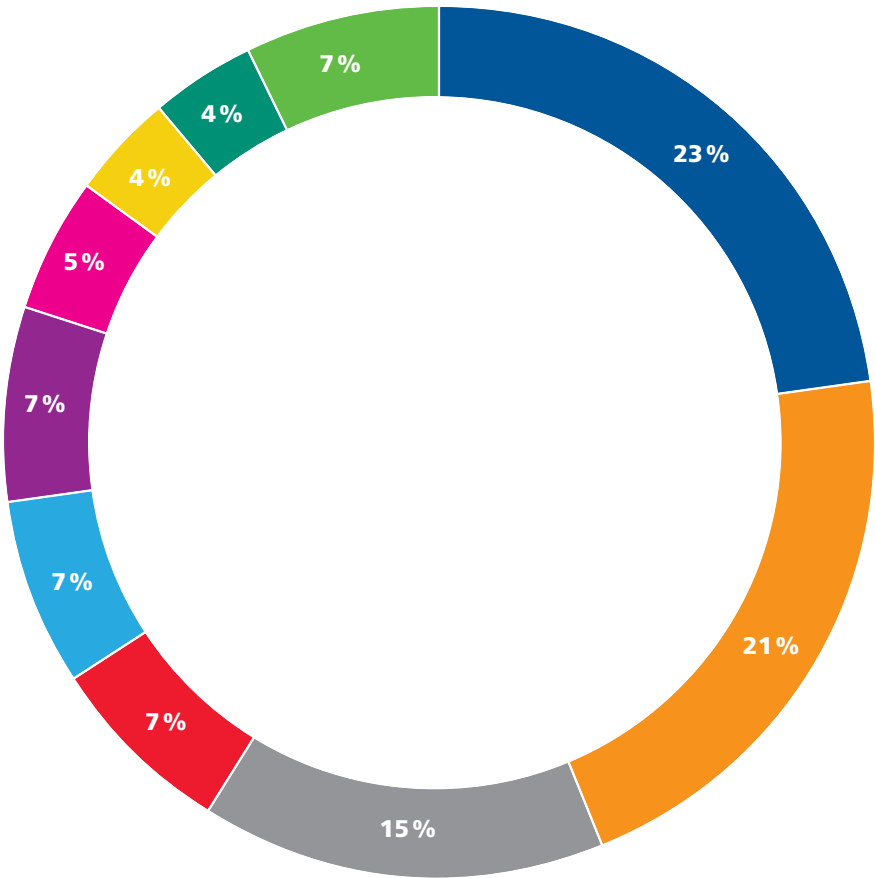
The exports of this segment have been continuously increasing since 2010.

CZECH COMPANIES OFFER A WIDE RANGE OF MEDICAL DEVICES

Czech companies, often world-wide renowned brands, mainly specialize in the manufacture of high-tech products with outstanding processing, high quality and a unique design. In terms of exports, particularly microscopes and optics (the high quality of technology), tools and textiles (innovative materials), furniture (patented solutions and design) and rehabilitation aids play the most important role.

¹Members of the Association of manufacturers and suppliers of health care products + members of CzechMed

CZECH MEDICAL TECHNOLOGY EXPORTS IN 2016*



Source: CSO
* except the items that have both medical and common use

- Medical, surgery and stomatology tools
- Other microscopes than optical fractographs
- Cotton, gauze, bandages
- Devices for mechanotherapy, massage devices and aqualungs
- Parts of motorcycles, bicycles and wheelchairs
- Medical, surgery furniture
- Devices for physical and chemical analyses
- Orthopaedical aids, devices for hard of hearing
- Hydrometers, thermometers, pressure gauges
- Other

2 INNOVATION, TECHNOLOGIES AND DESIGN

INNOVATION

The degree of innovation of Czech products in the field of medical technology has recently been skyrocketing. For example, **LINET** has been among the most innovative companies comparable to such brands as Ferrari or Coca-Cola. The majority of this company's production is exported to over a hundred countries around the globe. **BMT Medical Technology** mainly deals with the research and production of sterilizing devices. It has already been awarded three patents in this field serving for the protection of devised procedures and solutions.

ELLA-CS has successfully patented a biodegradable stent. In addition, it has been awarded a number of both Czech and global patents, thanks to which it is represented in more than 70 countries around the world. Likewise, **ProSpon** is also an important player. Due to the intense cooperation with universities, colleges and research institutes, the company has succeeded abroad with such patents as the non-invasive growing knee-joint prosthesis intended for children. These efforts have resulted in the fact that the company currently exports 50 % of its production to the E.U. and the whole world.



In addition, **MEDIN**, specializing in the production and research of medical instruments in particular for surgery, stomatology, traumatology and orthopedy is a 100% Czech-owned manufacturing company. The company offers over 22,000 products and exports more than half of its production. The company also collaborates with leading Czech universities in the field of medical equipment research. These as well as many other companies are members of the **Association of manufacturers and suppliers of medical devices**, bringing together almost 100 companies doing business in this field in the Czech Republic.



Association of manufacturers and suppliers of medical products

The Association mainly focuses on the development of the sector. It encourages companies to increase the innovativeness of their products, in which three main elements are encountered: research aimed at achieving high technical parameters; a design that helps sell the products and quality, which means product reliability.

All companies which are members of the Association declare the high quality of their production and services. The Association aims at supporting the expansion of all members both on the Czech and global markets.

www.medtechnik.cz

⦿ New substances

Czech scientists invented a new effective substance for healing very extensive wounds. The research leading to the development of the medical agent HemaGel began in the first half of the 1990s. The existence of HemaGel came from the discovery and development of hydrophilic polymers based on poly (2-hydroxyethyl methacrylate). The discovery invented by Prof. Wichterle and his team, which in the 1960s enabled the launch of soft contact lenses, thus forms the basis of HemaGel.

KNOW-HOW & CZECH INVENTIONS

Reasons why Czech technologies are sophisticated include the long-term tradition in the field of research and development. There are Czech patents, which have not been surpassed yet.

⦿ **4 blood groups** were classified by Jan Janský in 1907. Jan Janský is considered to be the first who made the classification of blood into the four types (A, B, AB, O) of the AB0 blood group system. Janský's classification remains in use today. Janský was also a supporter of voluntary blood donations.

⦿ **Contact lenses** invented by Otto Wichterle in 1961. He produced the first four hydrogel contact lenses on a home-made device that he built using a Mercur building kit for children, a bicycle dynamo of his son and a bell transformer. He invented a new method of producing lenses using a centrifugal casting procedure. In 1965, the National Patent Development Corporation (NPDC) bought the American rights to produce the lenses and then sublicensed the rights to Bausch & Lomb which started to manufacture them in the USA. The lenses are now used by more than 100 million people all over the world.



◉ Nanotechnology

Nanospider is based on a revolutionary invention called the Roller Electrospinning system developed by prof. Oldřich Jirsák from Technical University in Liberec in 2003;

This method is now known under the name Nanospider from Elmarco Company in Liberec and this unique technology enables the industrial production of nonwoven textiles formed by nanofibres – fibres with a diameter of 20 to 500nm. Elmarco has produced different types of nanofibres since 2006 – one of these nanofibers is NANOSPIDER AntimicrobeWeb™ that is used for the removing of physical or biological impurities from inhaled or exhaled air. AntimicrobeWeb was tested in American Nelson Laboratories in Salt Lake City, where it was found that the efficiency of the capture of viruses is greater than 99.9 %.

Currently, innovations come as a result of the more efficient interrelationship between the research and the private sector.

CIIRC

The Czech institute of Informatics, Robotics and Cybernetics mainly deals with research and offering services in the field of biomedicine and assistive technology (representation and modelling cardiologic data, smart ICT technologies for medical diagnostics and rehabilitation, artificial intelligence tools for the analysis and modelling of biochemical and physiological data, telemedicine solutions, personal health care systems). CIIRC, www.ciirc.cvut.cz

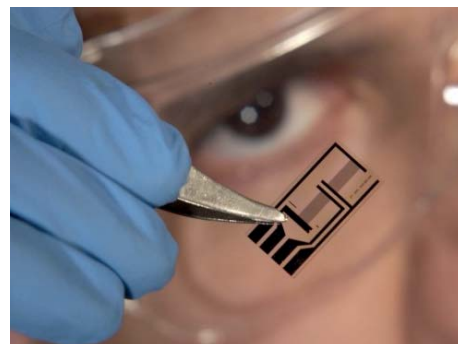
World unique inventions from Liberec: nano-blood-vessels, bionic hand...

The Technical University of Liberec boasts numerous world inventions and unique devices, namely nanofibers to mention the most important invention: currently the research teams are also working on the more efficient use of nanotechnologies in the field of medical technologies. Blood-vessel substitutes made of nano-materials are worth a mention. In addition, research in the field of mechatronics is also important: an alternative to the bionic hand was recently presented there; which is approximately ten times cheaper compared to competing products.

Technical Un, www.nano.tul.cz

DID YOU KNOW?

The cardiac defibrillator and the electron microscope were two Czech products, which were awarded golden medals at the Brussels EXPO in 1958.



3 HOSPITAL EQUIPMENT

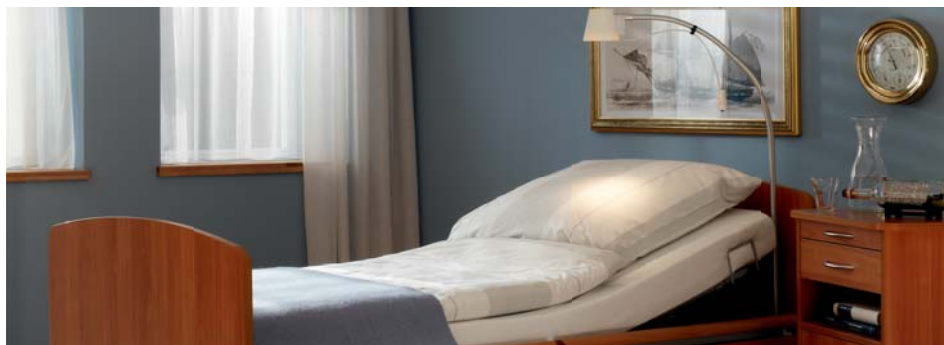
The portfolio of medical products and technologies, in which Czech manufacturers specialize, is so wide that it allows for the turnkey implementation of entire health care facilities. There are several companies dealing with such complex deliveries in the Czech Republic including VAMED, the European leader in this field. Those Czech products that are based on innovations, superior technologies and unique design are the most successful ones. Hospitals around the globe are equipped with the sophisticated LINET furniture and EGO Zlin products protect patients against dangerous infections; products manufactured by BORCAD have gained lots of awards in the field of design worldwide; armies rely on VARIEL field hospitals in case of disasters.

TURN-KEY HOSPITALS

Recently, Czech companies have been successful in the participation in deliveries within complex health care contracts and exports of turn-key hospitals. We can mention hospitals in Laos, Papua-New Guinea and Ghana as examples of such projects. Within these projects, Czech companies have cooperated under the umbrella of VAMED Health Project CZ, the VAMED subsidiary. These contracts differ from others due to the fact that dozens of subcontractors – medical technology manufacturers, health care equipment manufacturers, suppliers of furniture as well as design companies – cooperate there – namely LINET (manufacturer of hospital beds), AUDY (producer of rehabilitation



equipment), MZ Liberec (producer of medicine gases distribution), KLARO (manufacturer of handling carts), TSE (manufacturer of incubators), MEDIN (manufacturer of medical instruments and implants) etc. Costs for these projects amount to billions of Czech crowns and the major part was implemented by Czech companies – for example within the project of the delivery of the hospital in Papua-New Guinea the expenses amounted to CZK 2.3 billion including CZK 1.3 billion realized by Czech companies. We can also mention the construction of a hospital in the Gabon capital, Libreville. The Czech subsidiary VAMED Health Projects CZ participated in this contract with the delivery in the amount of EUR 28 million and other Czech companies participated in it as well. In addition to turn-key hospitals, Czech companies also participate in other projects. For example MEDIN exported traumatological implants to Colombia and Algeria.



Complex turn-key deliveries of health care facilities

BLOCK focuses on the provision of complex services in the field of the project preparation, production, construction and consequent service of capital equipment with sophisticated technologies and a high quality environment (clean premises). In the health care sector, the company specializes in the delivery of the following functional “turnkey” units: operating rooms, central sterilizing, autopsy rooms, intensive care units, X-Ray workplaces, health-care laboratories, preparation of cytostatic, complete hospitals, tissue centers, PET centers, IVF clinics. Currently, BLOCK through its seven branches, implements contracts in the Czech Republic as well as in Eastern Europe, Russia, Northern Africa and the Middle East. BLOCK, www.blockcrs.com

VAMED Mediterra Group offers high quality medical care in the whole range of modern medicine. He is a member of the multinational group VAMED, which is one of the leading European players in the complete management of medical and spa facilities. VAMED operates more than 600 implemented projects in 70 countries of the world relying on the 30-year tradition. In addition, it connects professionals in the field of medicine and is also able, due to its know-how and experiences, to offer services in the field of operative management – development of projects, consulting and engineering activity and project and construction management. VAMED Mediterra, www.vamed-mediterra.cz

OPERATING ROOM EQUIPMENT

Czech production is renowned both due to its quality and variability enabling the complete equipping of operating rooms with products from the Czech Republic. Compared to competing products, they excel due to reasonable prices, a long service life and the quality of design and material – for example in the case of instrumentation carts and metal furniture. Other benefits of Czech products include the intensive development and tailor made solution. As an example, we can mention the research, development and manufacture of highly specific products in the field of lighting. Moreover, the development and the maximum comfort for the end customer is another example of the added value of Czech production. This often results in unique technical solutions such as operating rooms for the third millennium.





Field hospitals

VARIEL deals with the research, development, design, engineering and the production of special military containers (sanitary cell, sanitary cells for patients, kitchen and canteen, drinking water tanks, septic tanks as well as cooling, storage, laboratory, commander, accommodation, health-care, telescopic, ballistic and NBC resistant containers etc.). Thanks to unique technologies and know-how the company exports its products to countries around the globe.

VARIEL, www.variel.cz

Tailor made production of metal furniture for health care

KOVONAX is a modern manufacturing company with a stable position on the market of metal furniture, the surface treatment of metals and metal working activity. It produces metal furniture: especially chairs, rotating seats, armchairs, benches, deck chairs, dining and conference tables, clinical and day care beds as well as medical accessories. It implements the tailor-made production of metal furniture for health care, laboratories, the education sector, institutions, hotels, restaurants and the military. You can encounter KOVONAX products in a number of towns and cities in the Czech Republic, Slovakia, other EU countries, Russia, Ukraine as well as remote destinations in Africa and the Middle East.

KOVONAX, www.kovonax.cz

METALLIC FURNITURE FOR OPERATING ROOMS

Czech companies are able to deliver a complete assortment of stainless and other metallic furniture and equipment, and not only for operating rooms.

Tent system

EGO Zlín offers products and systems to provide for short-term and long-term shelters in field conditions, for humanitarian purposes or systems for crisis situations with the occurrence of a high number of injured or dead. EGO Zlín, www.egozlin.cz



The emphasis placed on cooperation with experts in healthcare is characteristic for the complete range of products manufactured by Klaro, which have recently been increasingly demanded, and not only by EU countries. In addition to the wide range of products, the company offers wheelchairs personalized according to the needs of clients. Currently, clients can choose from more than 600 types of wheelchairs, which can be mutually combined and extended with accessories. The company also sells its products to important foreign companies such as UAB Limeta in Lithuania, Klaro Polska in Poland, Panon Trade in Croatia, VAMED ENGINEERING in Austria or MedicSteel in the Netherlands. Klaro, www.klaro.cz



A wide assortment of stainless steel equipment both for operating rooms and consulting rooms, hospital warehouses etc. is offered by Jiva Jiráček. JIVA Jiráček, www.jiva.cz

High quality and innovations are also characteristic for the MÁLEK family company, which offers a wide assortment of instrumental desks and specialized UNI desks, transportation wheelchairs etc. MÁLEK & SPOL. s.r.o., www.zdravotnickynabytek.cz

OPERATING ROOMS

The Czech Republic also specializes in the development, design and production of operation, intervention and transportation desks. Czech producers are often leaders of their categories both within Europe and globally and they export most of their products abroad. BORCAD CZ established its success on development and superior design, which was evidenced by its Red Dot 2011 award for the GRACIE gynecological room. BORCAD exports its products to over 80 countries in the world. Another successful company - RQL, which is known for its elaborate design of Golem tables – sells 70 % of its production abroad.

BORCAD Medical Company primarily focuses on the production of birthing beds, gynecological chairs and other multifunctional and specialized chairs. In obstetrics and gynecology, the company is one of the world's leading companies, which is evidenced by its successful sales worldwide as well as a series of designer awards (such as the Red Dot Design 2011). The company has recently entered the Chinese market. By doing so, it extended the export of its products to 60 countries in the world in 2015. For the years to come, BORCAD Medical a.s. plans intensive product growth and entering new markets, especially the US market, where the company has not been active yet. BORCAD products meet the demands of high functionality, intuitive operation, a high level of safety as well as the most stringent hygiene standards required from medical devices by the most demanding customers. Thanks to the unique design and original solutions, the company ranks among the most innovative companies in the industry. BORCAD MEDICAL, www.borcadmedical.com

Thanks to the favorable quality and price ratio, these surgery desks are among the best-selling in the Czech Republic and are also building their position on foreign, namely European markets.

RAMED, www.ramed.cz

TECHNOLOGY IN OPERATING ROOMS

The current trend is the application of innovations in the field of ICT to the whole life cycle of hospitals and operating rooms to eliminate risks to the maximum extent and at the same time to increase work efficiency and data mining.



Medical deck-chairs, desks, arm-chairs and chairs of the Golem brand are synonymous with solid and stable design, superior styling and elaborated functions verified by many years of development. The good production quality, thoughtful styling of Golem deck-chairs and desks, the verified functionality and favorable prices help this manufacturer to enter mature

foreign markets and maintain its position there. Currently, RQL exports around 70 % of its production abroad, mainly to Italy, Spain, Portugal, France, Slovakia, Poland, Austria, Croatia, Serbia, Bosnia and Hercegovina, Ukraine, Lithuania, Latvia, Romania, Bulgaria, Saudi Arabia, Russia, UAE, Israel, Thailand etc.

RQL, www.golemtable.com

BLOCK deals with complex projects in which the quality of the medical equipment and the efficiency of new technologies is combined to the maximum extent. Their BLOCK® Surgical operating rooms are built in operating rooms, surgery rooms, hybrid operating rooms and their rear facilities. These are complex systems, which comply with the strictest requirements in premises with emphasis placed on the high quality of the environment (so called clean premises). For health care units, BLOCK supplies necessary technologies and internal equipment to be able to offer clients a fully equipped and fully operational operating room and its anteroom.

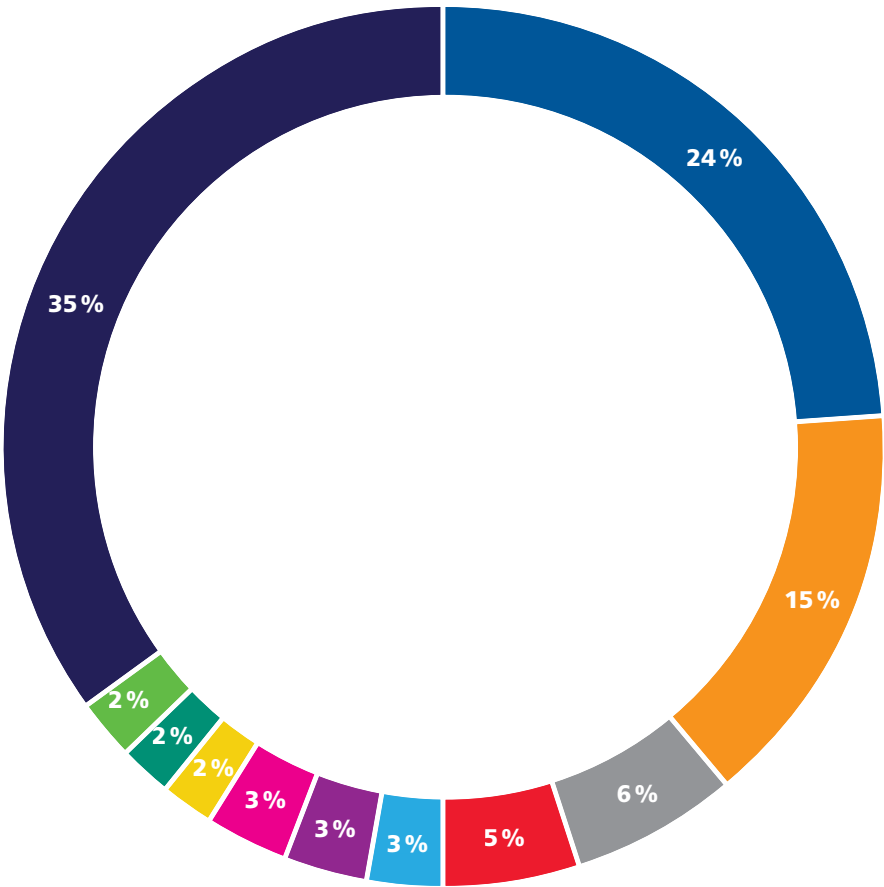
Therefore, the supply may include surgery lightings, operating tables, surgery and anesthesiologic stands, multi-functional panels, complex digitalization of rooms, cameras and monitors for surgical luminaires, built-in display and medicine monitors, stainless steel equipment, dustproof cabinets, working lines, apothecaries etc.

BLOCK, www.blockcrs.com

MEDICAL FURNITURE

In the field of health care furniture, Czech manufacturers offer a wide portfolio of products excelling with innovations and connection with modern technologies allowing for the simplification of hospital operation and making it more efficient. This is also true for LINET, which is one of the leading world innovators; this has also been recently confirmed by the A. T. Kearney consulting company, which organises the Best Innovator competition in 20 countries evaluating companies according to the quality of the innovation management. The most important ones are mentioned in the book called Masters of Innovation, where LINET is presented next to such companies as Coca-Cola or Ferrari. The unique styling is another feature of Czech products. We can mention the luxury equipment of hospitals, which in the functionalistic style, uses superior materials offered by KOVONAX. This offer is a response to the trend of increasing private sector investment in the health sector.

EXPORTS OF MEDICAL FURNITURE FROM THE CZECH REPUBLIC IN 2016 BY COUNTRY



DID YOU KNOW?

Czech health care furniture is exported worldwide.

- Germany
- The United States
- France
- Italy
- Mexico
- Poland
- Russia
- Spain
- Belgium
- Egypt
- Other

LINET is the world's third largest producer of hospital and nursing care beds. Over the past 15 years, LINET has experienced exceptional growth and successfully expanded to foreign markets. The holding LINET Group SE, which was established in 2011 through a merger with the German hospital beds producer WiBo, manufactures upwards of 70 thousand beds per year, exports its products to more than 100 countries, and has subsidiaries in 13 countries. The company also produces a wide range of accessories such as antidecubitus mattresses, mobiliary, and hospital furniture. LINET has firmly established itself as a leader

in the complex healthcare technology market thanks to two key areas of emphasis: technological innovation and design. LINET regularly introduces products and services with innovative features that reduce the degree of physical exertion required of caregivers as well as increase patient comfort and safety. An example of such innovation is the company's contactless vital sign monitoring system, the development of which has been carried out in collaboration with leading healthcare professionals and scientific experts.

LINET, www.linnet.com

DOMKAT is a company focused on the development and the production of hydraulic jack elevators for tiltable furniture under the MEDACT production brand. Due to its reliability and technical parameters it is especially applied in the production of height-adjustable hospital beds and in special adjustment also bariatric, transport and massage deckchairs, bathroom jacks, armchairs and instrumental tables, where it is not possible to use electric drives. Since the start of production, the MEDACT bed, seat and desk jack elevators have been successful in markets throughout Europe, in the Far East and Northern America. DOMKAT, www.domkat.cz



Luxury and design in health care – functionalism from the Czech Republic with over a onehundred-year tradition of the production of the bentwood metal furniture Slezákovy závody is one of the unique and traditional Czech brands. KOVONAX has recently proudly re-established the Slezákovy závody premium brand, which brings the functionalistic furniture of the elegant line and the high-quality design to the current world and health care. KOVONAX, Slezákovy závody, www.slezakovy Zavody.cz



More and more emphasis has recently been placed on the equipping of hospitals with functional and reliable furniture, which simplifies and also increases the safety of collective and individual catering. This area also has a Czech representative, whose solutions have been successful in more than 30 countries in the world.



ABNER manufactures professional stainless steel devices for catering operations, mainly in hospitals, schools, centers for seniors and institutes of social care for the distribution and output of meals. The company product range includes output and transport carts (neutral, heated, cooled), handling carts, collecting carts, Thermoline tableting systems and Active Tray passive and active as well as stainless steel furniture. The company has been active in this field since 1993 and exports its products to 30 countries all over the world.

ABNER, www.abner.cz

Variable equipment of tailor made consulting rooms

The company Ing. Jan Turek has long been involved with the production of medical equipment, such as gynecology armchairs, veterinary tables and other equipment of consulting rooms. It also offers tailor-made equipment of consulting rooms. The products are mainly intended for rehabilitation facilities, gynecology consulting rooms and veterinary consulting rooms. The

company also provides maintenance services. The company further offers medical aids and rehabilitation equipment – such as walkers for the disabled and seniors, crutches, bathroom handrails, bathroom and bath extensions and many other aids and devices to facilitate the overall mobility and the general rehabilitation.

Ing. Jan Turek, www.janturek.cz





Complete implementation of design interiors for health care

The complete implementation of interiors of hospitals involves all premises including entrance premises, receptions, waiting rooms, common rooms, consulting rooms, sick-bed-rooms, offices, doctor rooms, the rear area for staff, cloakrooms etc. It presents new concepts for interiors in health care, day care and laboratories, which are defined by requirements of the dynamic team of doctors and staff and correspond to new technologies. The company

management has already in the past decided on cooperation with external designers and architects, which has proven to be the correct path and currently they also employ their own designers and architects and regularly introduce new products to the market. The latest product line is MOVE ME furniture, which can be used to equip offices, and consulting rooms as well as apartment interiors.

PROFIL NÁBYTEK,
www.profil-nabytek.cz

Luxury and functional turnkey interior designs

KOVONAX implements the custom manufacture of metal furniture for health care facilities and laboratories and more around the world – in the European Union, Russia, Ukraine and more remote destinations in Africa and the Middle East.

KOVONAX, www.kovonax.cz



The unique modular design system offers thousands of modifications for special beds

PROMA REHA deals with the production of high-quality health care equipment and furniture and has its own development and design team and modern production technologies. The core production range consists of recovery room beds, hospital beds, special beds, day care beds, children's and newborn baby beds. Other groups of products include bedside tables, transport and multi-purpose charts, cardiac wheel-chairs, examination deckchairs, height-adjustable desks and laboratory desks. The offer portfolio is accompanied by height-adjustable CHEF MATE kitchen units, sanitary equipment and many others. The company currently produces approximately 30 basic types of beds, which can be offered and adjusted in thousands of modifications thanks to the unique modular design. In this way, beds are successfully sold

where even global competitors have little to offer. As early as from the development of new products, the company cooperates with health care experts so that the products comply with the most demanding requirements of modern medicine and at the same time facilitate everyday acts to the staff and patients. The ongoing innovation and the development of new products is especially enabled by the proprietary electronic system, which has been specifically developed by the company for the medical beds. Thanks to this, the company has also marketed such products as the world-unique bariatric bed TITAN for patients up to a weight of 500 kg or the VISION intensive care bed. Owing to the aforementioned, the company has successfully established itself in 50 foreign markets.

PROMA REHA, www.promareha.cz



CLEAN PREMISES AND AIR-CONDITIONING

Czech companies offer complex solutions for laboratory and clean premises. The technological units feature worldquality and functionality with the inbuilt modern elements. The design of clean premises enables the complete overview of the quality of air, temperature, sterility and overpressure, which are vital functions especially in the field of operating rooms. In addition, the elaborated air conditioning systems comply with the latest environmental trends, allowing for the very efficient operation of laboratories and other specialized hospital premises. For example, BLOCK presents the so called thinkingLAB® system, which provides the monitoring and control of the airconditioning environment in the whole laboratory.



In all its projects, BLOCK uses its long-term experience with design, implementation and the maintenance of clean premises and medical operations. With supplies of investment or functional units, it uses the expert knowledge of employees, the quality of the production of modular systems for clean premises, furniture or some technologies (insulators, decontamination chambers etc.), the knowhow of its own technologists, validation engineers, designers and implementers of medical technology and equipment. The company also cooperates with established architects, highquality suppliers of medical technologies and important construction companies. Their systems of in-built medical premises are highly variable and flexible thus allowing the establishment of modern technologies and adjusting premises to the latest medical trends. Their main benefits include the high speed of installation, modularity and flexibility as well as the fact that they are easy to clean and have long-term reliability.

BLOCK, www.blockcrs.com

Complex provision of clean premises from engineering to turnkey delivery

CRAC, spol. s r.o. is an engineering company, which cooperates with investors in all phases of the investment projects, from the phase of the preparation of the investment plan, to the project preparation and providing engineering supplier services, or turnkey deliveries.

CRAC, www.crac.cz



Distribution of medicinal gases

MZ Liberec provides its customers with complex services of the highest quality (from mapping the situation through the preparation of a tailor made project up to the proposal of delivery and implementation). Along with the vision, the company also ensures the perfect operability of the supplied equipment all over the world. Terminal elements of the distribution systems such as bed head units, source bridges, revolving ceiling complexes and other medical equipment form an

integral part of the manufacturing program. These are consequently installed in operating rooms, intensive care units or anesthesiologic and resuscitation departments around the world. Furthermore, MZ Liberec provides deliveries and completions of the medicinal gas sources, i.e. oxygen generators, compressor, vacuum, reduction and evaporating stations.

MZ Liberec, www.mzliberec.cz

4 ELECTRONICS AND ICT IN HEALTH CARE

Czech electronics have a good reputation in the world and a strong position on foreign markets especially thanks to sub deliveries for the automotive industry. The intense research and the highly-specialized production is a benefit of Czech electronics and ICT in general for the health care sector. Currently, modern medicine cannot exist without top technologies and computers including data administration, hospital information systems, strong telemedicine development and the utilization of robots in sophisticated procedures such as surgeries. Czech manufacturers have much to offer in all of these areas.



Examples of blending the technological know-how developed in the automotive industry and its use in medicine include TSE. TSE combines the technological know-how it applies in the production of electronic parts for the automotive industry with intense research in the field of medical technology. The company is the only manufacturer and exporter of incubators in the Czech Republic and one of the world's four leading companies in this segment.



TSE specializes in the production of neonatal equipment such as stationary incubators, transport incubators and phototherapy lamps. The latest line of stationary infant incubators "Shelly" is designed for intermediate as well as intensive care. It provides a protective and comfortable environment for the smallest patients and enables staff to be one step ahead of their demanding needs. The phototherapy unit "Lilly" using LED technology corresponds with the latest trends in the treatment of hyperbilirubinemia. It combines highly effective treatment with economical operation thanks to the long life of LEDs. A more than 50-year tradition in electronic manufacturing, its own development and production plus qualified staff ensure the high quality of our products, which are exported to countries all around the world.

TSE, www.tse.cz

ICT

The development of specialized software and hardware combined with innovations and the consequent maintenance service is a benefit of ZPT Vigantice, which has successfully established itself on foreign markets thanks to the electronically controlled systems and micro-processor applications. CODACO has developed unique communication systems it exports to lots of countries of the world including Azerbaijan, Chile, Vietnam, Dubai as well as a number of other world territories. STAPRO has been marketing products covering key processes of the medical equipment in the field of patient care placing a strong emphasis on the collection and effective use of all information submitted to the user – i.e. all clinical processes of medical equipment including supplements, operating room management and central sterilization. It offers a comprehensive solution in the field of the logistics of medicines and medical material with the possibility of making records for individual patients. The solution also includes the comprehensive coverage of the catering operation.

Leading supplier of software and services for hospitals and other health care providers in Central European markets

STAPRO s.r.o. since the foundation in 1990 belongs to leading suppliers of software and services for hospitals and other health care providers in Central European markets.

The company develops software for all health care areas – both medical software (hospital information systems and laboratory systems) and non-medical software (management information systems, boarding systems, store logistics, and many others). They supply comprehensive solutions based on our own products supplemented with all related services, including the long-term support and outsourcing of medical information systems. Their systems make work more efficient for doctors, nurses, medical facility management and ensure enhanced safety for patients. Their expert consulting services enable health care providers to efficiently control the quality of reporting, secure medical documentation and efficient management of contractual relations with health insurance companies. Currently we cover 204 hospitals, 452 laboratories with more than 72 thousand users.

During last 3 year they expand into Lithuania market. Together with or

partner Limeta they install laboratory information system OpenLIMS in 6 laboratory chains and 7 separated laboratories.

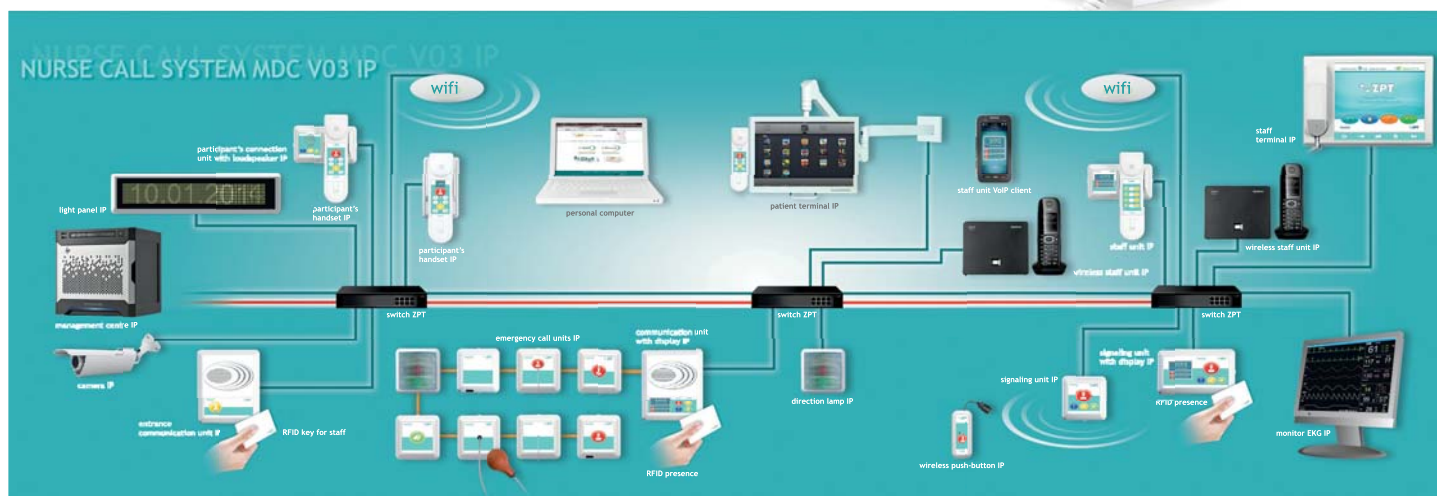
OpenLIMS is the new generation of the Laboratory Information Management System, equipped with open architecture. In addition to standard laboratory function they can supply also specialized modules as microbiology, blood bank, transfusion dept. and storehouse. Statistic and financial part of system offer strong tool to evaluate financial output to laboratory management. OpenLIMS enables communication with all types of analyzers and can easily define the communication interface with external systems (HIS). System has important operational modules accessible via WWW interface for on-line laboratory examination ordering, result-viewing and storehouse exchange. OpenLIMS supports language modification and enables easy module customization according to any specific legislation. Software is directly connected to Stapro HelpDesk, and can be constantly monitored from the remote center in Stapro. STAPRO, www.stapro.eu

The main production program of the company represents the product line MediCall – nurse call communication and signaling systems for healthcare institutions and the social sphere. A new model line MDC V03 IP system is based on IP technology. The main advantages of the system are modern technology, high operating reliability, a variable modular system, simple and intuitive operation, easy installation, upgrade and servicing, a high level of user comfort and a favorable price. Vigantice systems work in hundreds of hospitals in the Czech Republic, in Slovakia, Russia, Belarus, Kazakhstan, Georgia and Poland. ZPT Vigantice,

www.zptvigantice.cz

One of the main subjects of CODACO activity is the area of communication systems for healthcare. The company currently offers an integrated range of communication and signaling devices intended for hospitals, sanitariums, social care institutes and similar facilities. This unique and comprehensive program which has been developed ensures reliable communication between clients and personnel. From calling equipment in surgeries and nurse-patient signaling systems, right up to an integrated and comfortable communication system for inpatient wards of medical facilities.

CODACO, www.codaco.cz



E-HEALTH AND TELEMEDICINE

Advanced Medical Solutions s.r.o. develops, produces and implements telemedical solutions for the early and non-invasive diagnostics of patients suffering from chronic diseases with the specific focus on the quality of perfusion mainly with diabetic patients or other patient groups with risk factors for cardiovascular systém. To this purpose, the company proposes the following main solutions:

- 1) Early and non-invasive diagnostics of the quality of perfusion on limbs (arterial and venous function) with the detection of patients in early enough stages when the alterations are still reverseable and it is possible to

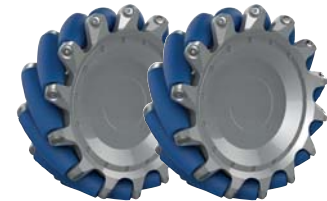
apply more sensitive, non-invasive and more cost-effective therapies

- 2) Monitoring of patients in their natural environment with the aim of therapeutical procedure optimization and the improvement of the overall patient prognosis
- 3) Integrated system including sonograph – complete solution for centers focused on vascular diagnostics

The company currently has clients not only in Europe but also in remote areas in Brasil, India and Africa where the system operated by a nurse with the remote support of expert doctors. The supply is comprised of the devices, software and the support of experienced doctors who are vascular experts.

Advanced Medical Solutions,
www.amsolutions.cz

The Czech Institute of Informatics, Robotics and Cybernetics deals with research and also offers services in the field of biomedicine and assistive technology (representation and modelling of cardiologic data, smart ICT technologies for medical diagnostics and rehabilitation, artificial intelligence tools for the analysis and modelling of biochemical and physiological data, IT solutions for telemedicine and personal health care systems).
CIIRC, www.ciirc.cvut.cz



ROBOTICS

Karel Čapek, the famous Czech writer, came up with the world “robot” and medical technologies also have much to offer in the field of the development of robotic systems. The research and development potential together with using new technologies in practice – this is the recently established Czech institute for informatics, robotics and cybernetics, which cooperates with companies such as Airbus or the U.S. defense department.

ROBOTSYSTEM is a highly creative research and implementation company specializing in breakthrough project solutions, in the field of service robotics and mechatronics - focusing on the Industry 4.0, Smart Cities, breakthrough medical multifunctional treatment rehabilitation and transport multirobots (ROBOCOUCHAIR, SMART WALKER, ROBOSTRETCHER),

physiotherapy mobile robots for telemedical processes, to support life without assistance and simultaneously to transport immobile persons with autopilot. Furthermore, it also focuses on fully robotized workstations in the field of nuclear energetics, as well as research and implementation of insular energy centers based on RES.
ROBOTSYSTEM,
www.robotsystem.cz

5 URGENT MEDICINE

CRISIS SITUATIONS

Rescue teams from the whole world know the Czech brand EGO Zlín, which specializes in the medical systems used in crisis situations, in particular in cases of Ebola, SARS and bird flu epidemics as well as in solving other global disasters or diseases.

Science in practice

The EGO Zlín development center in cooperation with Tomáš Baťa University in Zlín present an ambulance intended for the transport of persons with highly infectious diseases, as an immediate response to the global situation caused both by the occurrence of highly infectious diseases and dangerous epidemics and the escalating refugee crisis increasing the risk of a possible spread of dangerous infections.

EGO Zlín is an important manufacturer and supplier of systems helping in crisis situations. The business activities of the company mainly focus on deliveries of products to clients in the state sector, namely hospitals and their infectious departments or emergency departments, health care rescue services, firefighting teams, police, military health care or logistic units, units of CBRN protection, hygienic stations, regional and municipal crisis

departments, government material reserves, humanitarian organizations etc. Its strategy is not limited to the sales of products; it also provides methodological help in solving particular crisis situations at particular places. Products and systems have been delivered to customers in over 30 countries of the world including the EU countries, Saudi Arabia, Japan, South Korea, Canada, Taiwan etc.

EGO Zlín, www.egozlin.cz



System of biological protection

Products and systems providing protection in the case of the occurrence of dangerous microorganisms in the environment (highly dangerous or virulent diseases). It contains personal protection means for adults and children, transport trains for infected persons and hospitalization and insulating chambers including decontamination.



Decontamination system

Products and systems for immediate decontamination and the hygienic cleansing of persons, equipment or technology in field conditions.



Emergency system

Products used in urgent medicine, such as devices for the immobilization of patients (vacuum fixation splints or mattresses, vacuum-compression loin clothes, children retention systems for stretchers), various types of transport rescue devices or rescue bags, backpacks and suitcases developed according to the newest needs and standards.



SPECIAL VEHICLES AND AMBULANCE CARS

Czech companies manufacture fully equipped ambulance cars both for domestic and foreign customers. The Czech offer is also exceptional thanks to the development and production of special vehicles responding to current issues. These, for example, include vehicles intended for mass disasters, vehicles for the transport of highly infectious patients or mobile laboratories. Due to combining superior technologies with good quality and competitive prices, Czech vehicles are well-known around the world.



Lighting and acoustic alarm technology

HOLOMÝ is the leading Czech producer of lighting and acoustic alerting technologies for special vehicles (electronic sirens, lighting sets, beacons, direction alleys, working lighting fixtures or for example alerting lighting fixtures using modern LED technologies). The development, comprehensive production base and the more than 75-year tradition of electronic production are the guarantee of the high quality and competitiveness of products and services, which address customers in more than twenty countries in the world. HOLOMY, www.holomy.cz



Special ambulance cars

SICAR has got its own manufacturing premises with a capacity of approximately 500 ambulance vehicles a year; SICAR delivers vehicles for example to Germany, Austria, Switzerland, Slovakia, Syria, Norway, Vietnam, Albania, Romania, the Netherlands, the United Kingdom and so on. Production meets the requirements of ISO quality and all European norms. SICAR, www.sicar.cz



Transport of patients with highly infectious diseases

EGO Zlín presented a special ambulance car intended for the transport of patients with highly infectious diseases. The ambulance car is equipped with a bio-bag, in which the patient is isolated. Nevertheless, at the same time, the doctor can administer medicines to the patient and monitor his/her condition during the journey. The biobag also allows for breathing assistance and infusions without endangering people in the vicinity of the infected patient. There is also decontamination equipment, protection suits for staff and other things in the ambulance car.

EGO Zlín, www.egozlin.cz



MEDICAL INSTRUMENTS, TECHNOLOGY AND OTHER EQUIPMENT

BIOSTER is a manufacturer of a wide assortment of health and medical devices, from a unique product line of hemostats and a product called Traumastem for the treatment of acute and chronic wounds, to special field dressing material and a first aid kit program. The company has been collaborating with several academic workplaces on a long-term basis and focuses a lot of attention on its own research development and the continuous innovation of products. It was the first to introduce the modern-day Traumastem Biodress dressing, which is made of cotton-based oxidized cellulose for the treatment of acute and chronic wounds. BIOSTER also provides radiation sterilization services. The Bioster product portfolio contains hemostats, the treatment of chronic wounds, special military dressing material, a First Aid & Rescue Program, car first aid kits, other medical material, radiation sterilization and other services. BIOSTER, www.bioster.eu



Beds and stretchers for integrated rescue systems are offered by the traditional Czech manufacturer of metal, bent furniture KOVONAX. Its product range includes innovative anti-decubital beds and mattresses, folding beds and stretchers or military beds and deck chairs. KOVONAX, www.kovonax.cz



6 DIAGNOSTICS

INNOVATION

Diagnostic and measuring devices for the field of prosthetics

ING corporation delivers the odometer device. This is a diagnostic device for the examination of sarapes patients. It serves for the direct observation and evaluation of a loaded foot for measuring heel valgosity and varosity values using the goniometric gauge and to determine the length of the foot using the integrated scale in the supporting glass plate of the device. The in-built lamp lighting is intended for highlighting the observed plantograph. To archive the plantograph, the possibility of a photographic record can be used.

ING Corporation,
www.ingcorporation.cz

Tailor made production and innovations

LabMediaServis s.r.o. is a dynamically developing company which focuses on producing and distributing culture media, blood derivatives, MIC sets, and diagnostic sets for human and veterinary medicine. The company's key attributes are high quality, price and reliability. The company is becoming popular among its customers as well as with experts and cooperates with universities and research institutes (Masaryk university- Faculty of Medicine Brno, University of Veterinary and Pharmaceutical Sciences in Brno, Veterinary Research Institute Brno, Institute for State Control of Veterinary Biologicals and Medicines). It is currently expanding abroad.

LabMediaServis,
www.labmediaservis.cz



DIAGNOSTICS IN VITRO

The enormous development and improvement of health care, treatment methods and the general care for patients would be impossible without the same big qualitative and quantitative leap of the whole area of medical devices of in vitro diagnostics. These play a very important role in the personalization of medicine and in the future may even more significantly contribute to increasing the quality of medical care in combination with a more effective use of available sources. According to global statistics, in vitro diagnostics actively participates in 80 % of decision making on further treatment.

Czech Association of Producers and Suppliers of In Vitro Diagnostics bring together the Czech manufacturers of diagnostic materials, who are among the best.
CZEDMA, www.czedma.cz

IMAGING DIAGNOSTIC TECHNOLOGIES

The production of the most innovative diagnostic devices has gained its importance on the Czech market and Czech companies have been expanding abroad where they have established themselves successfully.

X-RAY

Czech companies deliver X-Ray systems and accessories in the form of tailor-made productions, which is also their competitive advantage. These systems boast high quality and a long working life.



FOMA BOHEMIA spol. s.r.o. (Ltd.) remains one of the last traditional manufacturers of photosensitive material in the world. The whole factory's complex is placed in the Czech Republic. FOMA BOHEMIA has been a producer of black and white photo materials since 1921. FOMA BOHEMIA produces products designed for the medical field. It is an experienced manufacturer of intraoral and extraoral X-ray films

DID YOU KNOW?

Polarography was invented by Jaroslav Heyrovský in 1922. Polarography is an instrumental method of chemical analysis used for qualitative and quantitative determinations of reducible or oxidable substances. It now has many useful applications in chemical analysis. Polarographic techniques can be used in analyses to determine the presence of vitamins, alkaloids, hormones, and coloring agents in various substances. Consequently, it plays a vital role in the food-processing industry, toxicology reports, the analysis of drugs and pharmaceuticals, and in the determination of the presence of residual herbicides and pesticides in foods and other substances. Heyrovsky was awarded the Nobel Prize in Chemistry in 1959.

DENTIX used in dental radiography. A very important production line of FOMA BOHEMIA is its own film system for non-destructive testing including all speed ranges of NDT films INDUX/ FOMADUX. In addition, FOMA BOHEMIA manufactures special films and other materials for different user purposes. In the group of the special materials you will find personal monitoring films, aerial photography films, fingerprint

lifters for criminal investigation, leader films, tachograph papers, etc. FOMA BOHEMIA exports their products to more than 90 countries. We have our clients in the EU, USA, Iran, China, South Korea, India, Philippines and others. Since 1996, FOMA BOHEMIA has implemented a quality system according to the EN ISO 9001. FOMA BOHEMIA, www.foma.eu

7 REHABILITATION AND PHYSIOTHERAPY



Rehabilitation and physiotherapy have had a long tradition in the Czech Republic, thanks to which Czech companies have become leading companies in this field. In particular, BTL is a world-renowned company, which has succeeded thanks to its unique technologies. Dozens of other Czech producers cover the complete portfolio in the production and development of rehabilitation and locomotion aids.



The most innovative technologies in the field of orthotics

The most innovative technologies in the field of orthotics: The research and development of ING corporation focuses on the application of modern digital technologies (3D scanning, CAD design, CNC machining, 3D

print, bio-mechanic movement analyses), advanced materials (carbon composites, silicone materials) and clinical-technical procedures in orthotics and prosthetics. The company results have been applied in Ortopedická protetika Frýdek-Místek, which was established in 2010 from the clinical division of ING corporation. The company implements its research and development projects together with

important university, clinical and industrial partners both from the Czech Republic and abroad. In the field of production, sales and the distribution of medical devices, it has been cooperated with leading domestic and foreign companies in the fields of orthotics and prosthetics. ING corporation, www.ingcorporation.cz

LOCOMOTION AIDS

The only manufacturer of unique locomotion aids in the Czech Republic

ERILENS is engaged in the production of locomotion aids such as forearm crutches, axillary crutches, walking sticks and other medical materials. The company places strong emphasis on the quality, functional properties and design of its products, therefore its experienced research and production team works according to the current trends and requirements of users. Currently, ERILENS is one of the leading distributors on the domestic market. It exports a significant part of its production. ERILENS, www.erilens.com



REHABILITATION AND COMPENSATION AIDS

The most innovative fitness equipment with a wide range of adjustability for particular exercises enables a very efficient and timely returning of a person to movement. The rehabilitation devices and aids offer a wide range of uses from professional care in treatment facilities, at rehabilitation centers as well as during the treatment of the long-term sick and at home care.



Rehabilitation and compensation aids to more than 40 foreign markets

Since 1994, Patron Bohemia has been engaged with the production and distribution of health aids as well as the comprehensive care of the handicapped person at the same time. Thanks to unique solutions and the added value in the form of customized solutions (the majority of production is realized on the basis of customer requirements) this Czech company is currently among the

leading European companies. It has two production divisions including one focusing on the production of baby strollers and the other one producing rehabilitation aids. Its products include children rehabilitation strollers, mechanical and electrical carts, staircase climbers and ramps, compensation aids for bathrooms and restrooms, walking aids, anti-decubite seats and mattresses, bands and orthosis and other products.

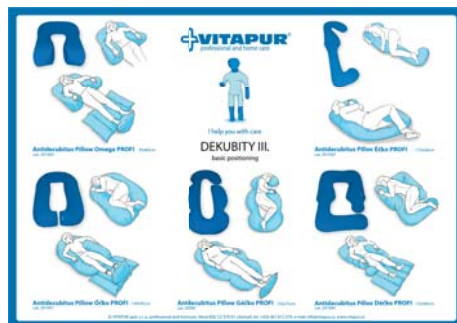
Patron Bohemia,
www.patron.eu



AUDY is another world-renowned, important producer of rehabilitation aids; its range of products includes the anti-decubite program, rehabilitation aids and deck chairs, as well as hygienic and rehabilitation bathtubs, transport and elevating equipment etc.
AUDY, www.audy.eu

COMPENSATION AIDS

During the production of compensation aids, Czech companies mainly place emphasis on client comfort and the high functionality of the product. The range of products includes wheelchairs, bathroom aids or for example day care deck chairs.



DID YOU KNOW?

Vojta Diagnostics and Therapy (the principles of reflex locomotion) was developed by Prof. Dr. Václav Vojta, a famous Czech neurologist and paediatric neurologist, between 1950 and 1970. Based on studies of the treatment of children with cerebral palsy, some specific reflex points were identified - thanks to them it is possible to stimulate the human body to certain inborn movements (to crawl and turn). At the same time this method activates major muscle groups, the diaphragm, helps to achieve deep breathing, positive stimulation of nervous centres and total improvement of mental activity. The first focus of the method was used for children up to 4 years then it was also spread with success to adults. Today the courses of Vojta therapy are held in many countries.

VITAPUR is a Czech manufacturer largely focusing on innovations and the quality of materials in the field of aids for providing professional and home care. Under the VITAPUR brand, products for professional and home care are developed and produced, including: hygienic bedding (bed sheets, mattress pads, bed pads, etc.), positioning and stabilizing devices, antidecubitus devices, anatomic

pillows and other products. The aim is to provide users with fully-fledged functional products, meaning solutions with no compromise which are 100 % reliable. Therefore, we develop our own constructions and designs and we use and combine special functional breathable but impermeable materials with modern technologies for connecting them. VITAPUR, www.vitapur.cz

PHYSIOTHERAPY

Czech products specialized for use in the field of physical therapy boast a modern design and the high-quality equipment of each product. In this field, the Czech market offers a complete range of products for magnetotherapy, ultrasound, electrotherapy etc.

One of the Parabel divisions specializes in the development, design, production and maintenance of medical products according to customer wishes. Its added value is the ability to prepare and produce an optimum offer for tailor-made products to the client, where Parabel takes over the complete contract implementation from the inquiry to the delivery to the place of destination. Currently, the company is for example engaged in the development of a rehabilitation system enabling efficient locomotion therapy performed in rehabilitation centers or at home. All types of medical products are made in compliance with European regulations and are CE certified as most products are intended for export.

Parabel, www.parabel.cz



EMBITRON® Ltd. is a recognized producer and supplier of medical devices for physiotherapy, medical rehabilitation, and other medical fields.

Over the more than twenty years of its operation, EMBITRON® Ltd. has become one of the major suppliers of equipment for the

treatment of musculoskeletal and blood circulation disorders, stagnant metabolism and trophical changes in limbs, thereby contributing to significantly improving the quality of life of patients suffering from a given disease.

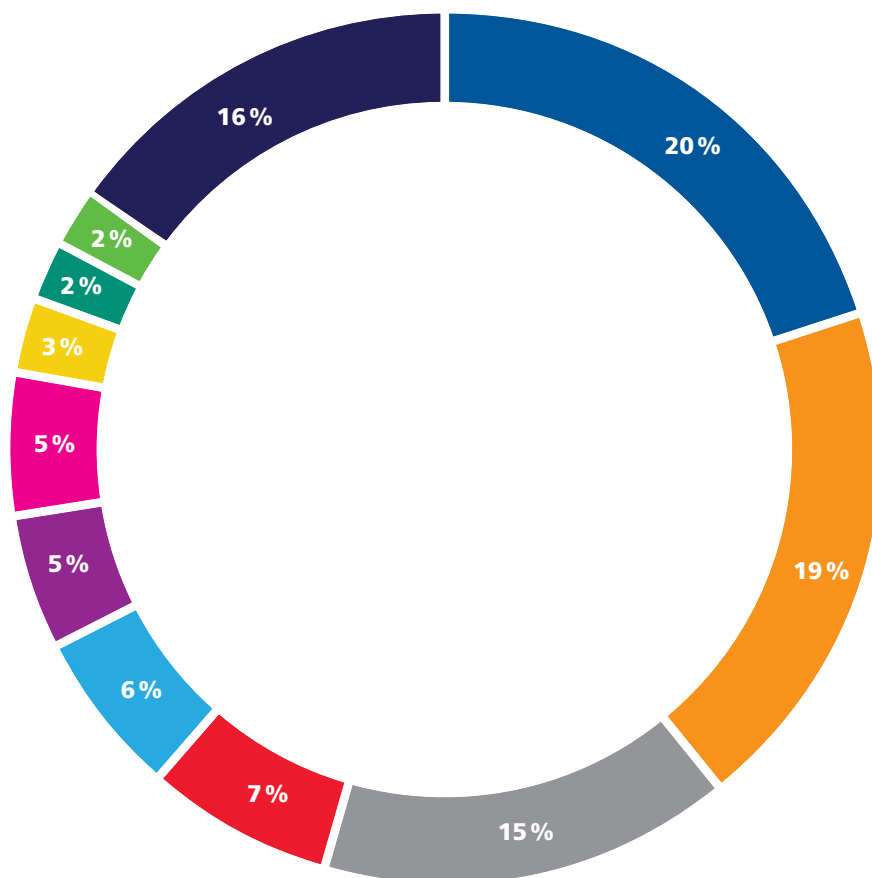
EMBITRON, www.embitron.cz

EXPORTS OF MICROSCOPES FROM THE CZECH REPUBLIC IN 2016 BY COUNTRY

8 OPTICS

The Czech Republic is competitive on a world-class level in the field of the development and production of optical devices. This area is currently experiencing very rapid development, with the Czech Republic being one of the centers investing a lot in the research and improvement of the world of optics. For example, the technological agency supports the ALFA program, which focuses on the preparation of the system of methods for the production of multi-layer optical systems. These can be used for example in security optical devices.

Czech optics are exported to the whole world:



- The United States
- China
- Korea
- Taiwan
- The Netherlands
- Germany

- Japan
- India
- The United Kingdom
- Switzerland
- Other

Meomed is one of the four companies in the world to especially deal with the production of X-ray amplifiers of images for X-ray devices of the C-arc type

It has four basic products in its portfolio

The X-ray image amplifier is a key element in the imaging chain of the X-ray device enabling the minimizing of the intensity of radiation. Therefore, the X-ray device is used in demanding operations, examinations and diagnostics of patients. The requirements placed on cleanliness, sharpness and the resolution of the final image are of course high, to which the production premises and technological procedures and company equipment correspond. The imaging unit (chain) – this is a complete X-ray imaging unit intended specifically for health care. This chain consists of the X-ray image amplifier, an X-ray lens and integrated CCD camera. X-ray radiation beams are transferred in the X-ray amplifier to visible light beams carrying the required information and furthermore an optical chain consisting of the X-ray lens and the CCD camera transferred to the PC. Thus, these are not classical X-ray images; it is on-line imaging using a low dose of X-ray. Industrial X-ray detector – this is

an industrial digital X-ray detector, which transfers the X-rays to a 3D image in the PC. This product is supplied to producers of industrial X-ray emitters. In the first place, it is used for the non-destructive inspection of products, such as wheel discs, turbine blades etc., where there is a strict inspection of the perfect internal integrity of the checked product. This product is taken over from the license owner, i.e. the Fraunhofer Institute with its registered office in Munich. The Meomed product has a high resolution, quick image on-line processing, very long service life and permanent operation, which makes it suitable also for flow production.

Parts for the medicine laboratory diagnostics – these are mechanical components equipped with electronics, which are completed in Meomed and supplied to customers. It consequently builds them into the final product, i.e. diagnostic devices enabling mass analyses of blood and tissue samples etc.

Meomed, www.meomed.cz

DID YOU KNOW?

Czech optics were already successful in past centuries. The invention of soft contact lenses by the Czech researcher and scientist Otto Wichterle in 1965 was a historical moment in the world's history.



World unique products

DELONG INSTRUMENTS products are used in biological applications, histology, pathology, and diagnostics, material science, and nanotechnology. The LVEM25 revolutionizes electron microscopy by also offering ease of use and accessibility to non-expert users. The activities of the company are comprised of research, development and fabrication in a field of unique solutions of electron-optical devices, electron guns, and low voltage electron microscopes. The main product in this area is the transmission electron microscope (TEM) LVEM 25. This versatile TEM is small in contrast to traditional electron microscopy, easy to operate and can be placed in any standard laboratory setting without any need for a dark room or cooling water. It combines the TEM and STEM modes. It operates with low accelerating voltage (25 kV) which brings enhanced contrast on light elements. Imaging of samples both with and without staining is possible.

DELONG INSTRUMENTS,
www.dicomps.com



The multimodal holographic microscope was developed by a research team led by Radim Chmelík in the Czech Republic

The microscope is now patented on the European, American and Eurasian markets. The technology is exceptional because just an ordinary light bulb is needed for lighting (in previous types of commercially available microscopes in which live cells can be watched, it is necessary to use a laser or laser diode, which has undesirable effects - the resulting image may not be clear and it is often spoiled by ripples or stripes). This new technology enables biologists and physicians to watch live cells without contrast influencing the behavior and properties of the cells. The holder of the license for the commercial production is a Tescan Orsay holding.

DID YOU KNOW?

Professor Armin Delong (Czech scientist, world-renowned physicist) introduced the first electron microscope into production already in 1949. At that time, only five countries in the world achieved it. Prof. Eng. Armin Delong and his colleagues developed a desk transmission electron microscope and introduced it into production in Tesla Brno in 1955. This desk electron microscope was very successful and in 1958 won a gold medal at the World Exhibition in Brussels Expo 58. Prof. Delong was the founder of electron microscopy in the former Czechoslovakia.

9 TEXTILES

Companies specializing in health care textiles, clothing and bed clothes are also represented in the Czech Republic. The companies use high quality materials for production such as Nylon 6.6, Lycra®, microfibers or CLIPSO material.

ARIES is an important Czech company, which has been successfully growing for 25 years thanks to its own research and the use of the best materials, even on foreign markets. The production is divided into health compression goods and socks for diabetics (Avicenum), sports compression products (ROYAL BAY®) and fashion hosiery with health

benefits (ARIES Intelligent Body Care). Customers appreciate not only the design of the products – such as flat loose fit tops, fine toes, top-grade laces, and comfortable materials (microfiber, cotton) – but also other health benefits of our products, including Sanitized® antimicrobial silver.

ARIES, www.aries.eu



Research and development has also been crucial for ORTEX. ORTEX is a Czech family company, a producer and distributor of series production braces and bandages. Its program is based on the development, series production and sales of braces for postoperative, conservative treatment and rehabilitation of damaged joints and ligaments. In its development, the company has been steadily cooperating with clinics in the Czech Republic and also with respective institutions abroad and all the products have clinical certificates.

ORTEX, www.ortexzlin.cz



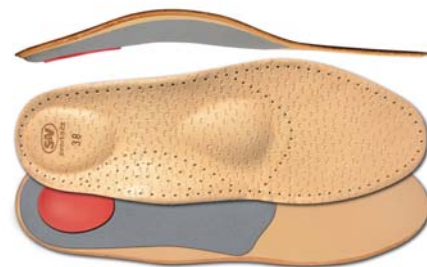
The company CLINITEX is a Czech producer and distributor of medical clothes and clothing suitable for the health care environment, surgical gowns and bedlinen with close up at renting the textile to the industrial laundries market and the end consumption. Its clothing range is a result of long-time experience, constant progression and precise testing of used materials and its components including the cut performance and also the ability of the clothing to withstand demanding maintenance processes. Main commodities of CLINITEX production include medical clothes

and textile; reusable surgical gowns, clothes and drapes for clean air rooms used as medical devices for patients, hospital staff and equipment according to EN 13795+A1; functional clothes with high visibility for paramedics according to EN ISO 20471; incontinence pads and absorbent aids as medical devices; rental linen and textile for commercial laundries and the rental system; patient clothing; bedlinen and textile for the health care system and the hotel environment.

CLINITEX, www.clinitex.cz

Orthopedic shoes: Svorto.cz has been engaged in the production of orthopedic shoes for a long time – actually since the World War II period. The main activity of the company is the production and distribution of orthopedic, sports and series insoles.

Furthermore, the company focuses on the production and distribution of orthopedic aids, insoles, orthopedic insoles, health care liners specifically intended for flatfeet, heel spurs, correctors, heels, bandages, hearts, gel inserts, anti-slippery inserts, heels, massage gel and silicone inserts. The company product range also includes semi-products for orthotics and accessories for healthy and comfortable walking. The products are distributed to most health care facilities and apothecaries in the Czech Republic. A part of the production is exported to several European and other countries. Svorto.cz, www.svorto.com





ERGON is an important player on the health care textiles market; it is the leading producer of orthopedic shoes in the Czech Republic dating back to 1918, which means it is a company with a long-term tradition in this branch.
ERGON, www.ergon.cz



Development and production of non-woven textiles DINA - HITEX is one of the leading producers and distributors of medical material in the Czech Republic – it mainly specializes in the development and production of expendable supplies made of non-woven textiles. A specially developed barrier system consists of a wide spectrum of

products from simple facecloths to special single purpose procedural sets. These are tailor made to the needs of individual customers. It mostly concerns production which is realized by manual work to a great extent.

DINA - HITEX,
www.dina-hitex.com

10 IMPLANTS AND IMPLANTABLE DEVICES



The production of implants, namely those for bone surgery, has had a long tradition in the Czech Republic dating back to the 20th century. Currently, Czech companies produce endoprosthesis, internal backbone and external fixators as well as individual oncological prostheses of all parts of bones and joints of the human body. The quality of these products is at a global level and that is why a significant portion of them are exported. Czech companies have been intensifying their research and development and specializing their production, thanks to which they are able to respond to the most specific requirements from abroad, to offer unique solutions unmatched abroad such as in the case of the development and production of stents. Unlike competing multinational corporations, Czech companies are able to better satisfy tailor made requirements and, thanks to their own production, Czech producers are able to quickly and precisely respond to the requirements of doctors.

Uniquely patented traumatology implants from Bohemia!

Traumatology implants and tools developed by MEDIN are intended for surgery treatment. The product range namely includes nails, plates, bone screws, external fixators and small implants. All products are developed and produced in the Czech Republic in compliance with the certified procedures, impact on the quality and the customer requirements. Patented

products form an important part of the product range, namely the calcaneal nail C-NAIL and pelvic plate OMEGA. The heel nail C-NAIL by MEDIN has been awarded in the Czech innovation competition in the innovative company category. It has been developed in the cooperation with the traumatology workplace of the Pardubice Regional Hospital and the accident department of the University Hospital Carl Gustav Carus in Dresden.

MEDIN, www.medin.eu

DID YOU KNOW?

BEZNOSKA is also able to print a tailor made joint prosthesis in the 3D printing machine for individual clients. The 3D scanning and print technology is also used in development and production in the field of orthosis and prosthetics by the ING corporation.

DID YOU KNOW?

The biodegradable stent produced by the Czech company ELLA-CS is inserted into damaged tissue, where unlike previously used metal braces, it falls apart. It is quite unique even in global terms. Braces are inserted into the mouth, colon, small intestine or biliary tract. ELLA-CS has a number of Czech and international patents and has been represented in almost 70 countries of the world, where it cooperates with leading experts, professional workplaces, doctors and hospitals.

Implant systems and regenerative solutions

LASAK focuses on the development and manufacture of innovative healthcare products, particularly bone regeneration materials and dental and spinal implants used in dental and maxillofacial surgery, orthopaedics and neurosurgery. The company was established 1991 in Prague, Czech Republic. LASAK has developed a new surface treatment of titanium which exhibits unique properties enabling faster, safer and more predictable implant

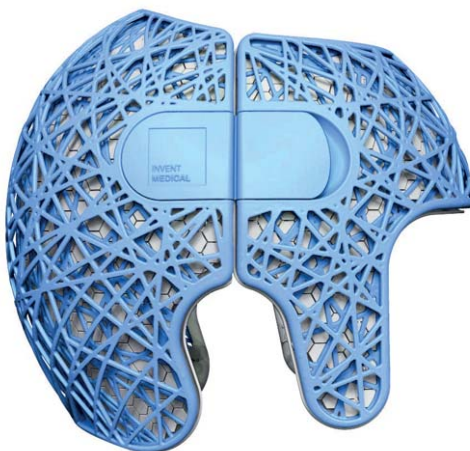
healing. The first hydrophilic, bioactive surface was launched to the European market by LASAK in 2000. Based on more than 20 years of experience and following the latest trends in implantology, LASAK launched a new dental implant system, BioniQ, in 2013. LASAK produces several types of advanced bioactive materials for bone regeneration, under the brands, PORESORB-TCP and OssaBase-HA. LASAK products are appreciated in many countries worldwide, in Western as well as in Eastern Europe, Scandinavia, Southern Asia etc. LASAK, www.lasak.com



Utilization of Direct Digital Manufacturing advanced technology

Invent Medical Group is a high-tech medicine start-up with its registered office in Ostrava. The company focuses on the utilization of the synergy of Direct Digital Manufacturing advanced technology (3D scanning, computer modelling and 3D print) and integrated systems for online diagnostics with order-made orthotic and prosthetic aids. The company objective is product innovation (smart products), innovation of processes (a fully

digital process) and business model innovation (the global application of order made products and services) in orthotics and prosthetics. The company is also building its own interdisciplinary innovation incubator (Innovation Lab) in cooperation with academic, clinical and industrial partners from the Czech Republic and abroad. Invent Medical Group, www.inventmedical.com



The most innovative technologies in prosthetics

The research and development of the ING corporation is focused on the application of modern digital technologies (3D scanning, CAD design, CNC machining, 3D print, biomechanical movement analyses) of advanced materials (carbon composites, silicon materials) and clinical-technical procedures in orthotics and prosthetics. The company results are also applied in Ortopedická protetika Frýdek-Místek, which was established in 2010 from the clinical division of ING corporation. The company is involved in research and development projects together with important university, clinical and industrial partners both from the Czech Republic and abroad. In the field of sales and distribution of medical devices, it has cooperated with leading domestic and foreign companies active in the fields of orthotics and prosthetics. ING corporation, www.ingcorporation.cz

Orthopedic implants and instruments

BEZNOSKA manufactures orthopedic implants and instruments.

The company is also dedicating a huge amount of its time and resources for the research and development of a new range of products. A separate line of BEZNOSKA's production is targeted on custom-made replacements. This is a highly-specialized area of activity requiring the application of CT/MRI. The implants thus made are designated for patients with extreme

damage (congenital, tumorous etc.) to a joint, where customized implants are the only chance how to solve the patient's problem. The whole procedure – from preparation through manufacture to the surgery performance itself – is realized in tight collaboration with the designers and attending physicians.

BEZNOSKA,

www.beznoska.com

www.oncologicalimplants.com



Development and production of tools and implants for orthopedy, surgery and traumatology

ProSpon deals with the development, production and distribution of orthopedic and traumatology implants, tools and other health care devices. In addition, it has recently extended its product range with the complete assortment of orthopaedical implants. Due to the intense cooperation with universities and research institutes, the company has succeeded abroad thanks to such patents as the patent for the non-invasive growing replacement of the knee joint intended for children. Thanks to this, the company currently exports 50 % of its production to EU countries and the whole world. ProSpon, www.prospon.cz

Research and manufacturing of stents

ELLA-CS is dedicated to the research and manufacturing of stents for the gastrointestinal tract, peripheral arteries and airways. The ELLA-CS portfolio covers worldwide unique medical devices, such as: Biodegradable Stent, enabling the new treatment of esophageal benign refractory strictures; Danis Stent, designed for the stopping of acute esophageal variceal bleeding; and Extractor, the original device for easy and atraumatic extraction of nitinol esophageal ELLA-CS stents. Except for the standard product line, the company offers custom

made braided stents to suit each patient. The company is a holder of eminent awards and follows the principles of good manufacturing practice according to the Czech and European standards.

ELLA-CS, www.ellacs.eu



11 OTHER MEDICAL TECHNOLOGIES



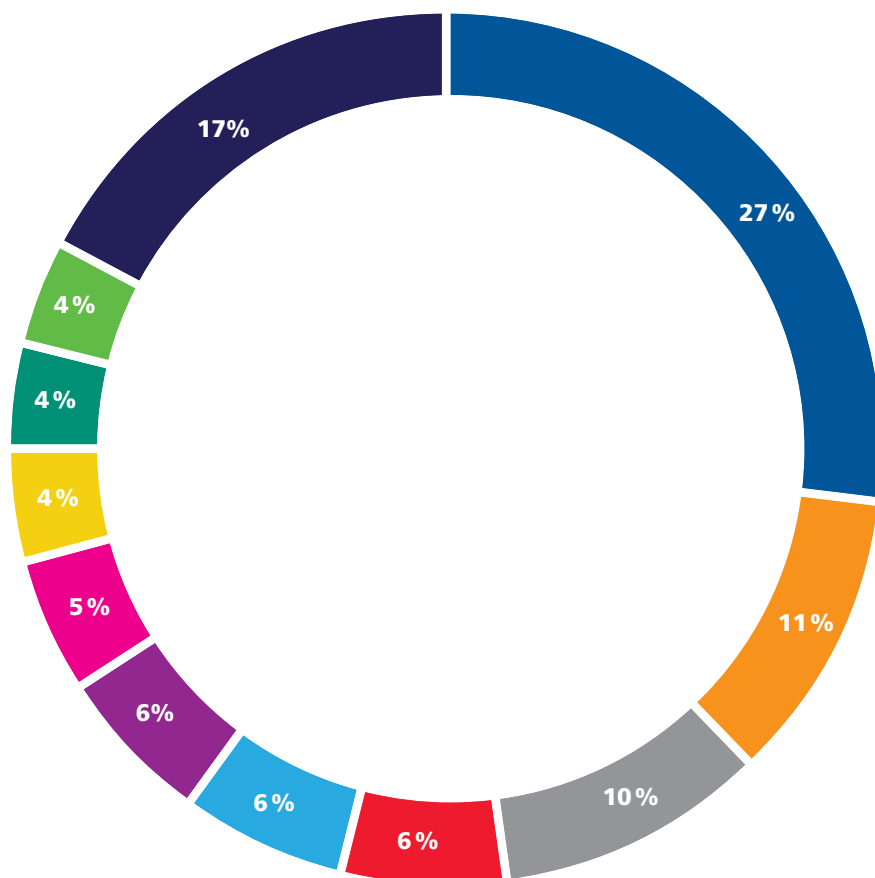
One of the largest European manufacturers of medical instruments is based in the Czech Republic

MEDIN, a.s., is a Czech company with a head office in Nové Město na Moravě focusing on the production and distribution of medical instruments and implants. The company tradition started with the production of dental instruments over seventy years ago. Currently, the portfolio is comprised of four main product groups – traumatology, surgery, orthopedics, and dentistry. MEDIN ranks amongst the largest European manufacturers of medical instruments as regards the product range. Over one half of the turnover results from export, in particular to European countries, Latin America and the Near East. In addition to strategic business partners, the company has two subsidiaries – in Russia and in Slovakia. The development of the company's products includes

close cooperation with recognized Czech and foreign physicians as the products' users and customers, as well as with research employees at recognized universities. The result of this collaboration is new unique products, such as calcaneal nail C-NAIL and pelvic plate OMEGA, furthermore an innovative line of products in the field of traumatology, surgery and traumatology. In 2014, the company won the Czech innovation competition in the category of Innovative Company. The award is connected with the calcaneal nail C-NAIL. In addition to its own high quality research and development base, the crucial prerequisite of the company innovating approach and successful application of the products within the demanding market conditions is the ability to provide high quality auxiliary services. The services the company

focuses on successfully include the provision of professional training, practical workshops, and seminars, particularly for young physicians and other employees within medicine. Such education takes place within the lifelong education of employees in medicine by means of teaching the surgical procedures with new or innovating company products. Professional seminars are lectured by leading and highly recognized physicians within traumatology, orthopedics, and surgery. The company managed to commence a successful and long lasting cooperation with them. The training is performed in the new constructed training center directly on the MEDIN premises. MEDIN, www.medin.eu

EXPORTS OF MEDICAL, SURGERY AND STOMATOLOGY DEVICES FROM THE CZECH REPUBLIC IN 2016 BY COUNTRY



- Germany
- Belgium
- The Netherlands
- Slovakia
- Austria
- China

- Russia
- France
- Italy
- Ukraine
- Other

Anesthetic and sucrose apparatus known for their quality around the world

CHEIRON is a leading company in the development, production, import, distribution, export and service of medical equipment and it is well known in more than 55 countries. The company's product portfolio consists of product lines of international award winning electrical suction units VICTORIA, portable suction units DYNAMIC, QUICK VAC TRANSPORT, a complete range of jet suction sets and accessories, aerosol and oxygen therapy devices. The company's policy focuses especially on high quality and the 100% safety of the delivered products and services. To ensure maximum availability of products and services, CHEIRON is creating a powerful network of international distributors worldwide.

CHEIRON, www.cheiron.eu





Innovative electrosurgery units and cryo-surgery systems

Speciální Medicínská Technologie is a producer of cryosurgery and electro-surgery devices and accessories with its own development and maintenance support. The products are suitable for most medical fields such as: dermatology, ophthalmology, surgery, ORL, gynecology, stomatology, endoscopy, veterinary medicine etc. The innovative electro-surgery unit is SMT BM M PF, allowing for operations both in endoscopy and open surgery. In addition, the cryosurgical system SMT KCH 450 AMD serves for the efficient treatment of malign tumors. Speciální Medicínská Technologie regularly exhibits at international fairs such as MEDICA, Arab Health and the Indonesian Hospital Expo. Thanks to this, the company successfully exports its products to more than 50 countries in the world. Speciální Medicínská Technologie, www.smt-praha.com

In-house development of dental sets

CHIRASTAR KDT has developed and produces its own KADET turbine extensions and dental sets under the registered brand BOHEMIA. It currently produces sets carried by an armchair, stationary with upper and lower hose distribution as well as sets for orthodontics and maxillofacial surgery. Since 2005, the company has been producing in its own plant and thanks to the

increasing production volume, it has managed to keep the prices of sets very low, which has been increasing the demand for its products on the market. Exports form a very important part of company business activities. Products are certified on the Czech market, in the EU as well as in Russia, Belarus, Indonesia and Saudi Arabia.

Chirastar KDT, www.chirastar.com





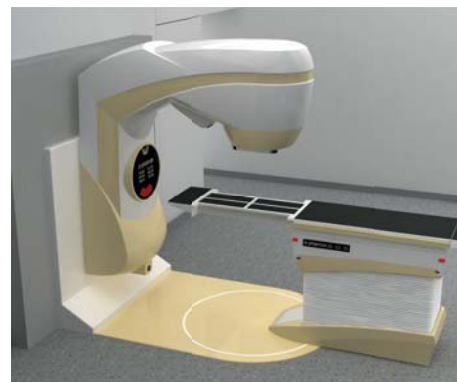
BMT Medical Technology develops, produces, sells and services medical, laboratory and pharmaceutical technology

Steam, hot-air and low-temperature sterilizers; Pressure vessels for sterilization, steam generators; Washer disinfectors; Laboratory driers and incubators for the drying of various materials, cultivation and tempering in all kinds of laboratories; Washer disinfectors; Stainless steel furniture for medical facilities. More than 90 % of production is exported to all world continents; satisfying customers in more than 100 world countries. The company has been optimizing

its device properties with the aim to provide its customers with the maximum possible utility value. The company delivers devices that are subject uncompromisingly to its customer's wishes. BMT Medical Technology has been a supplier of thousands of its own products to important and top-quality worksites all over the world for many decades already. BMT Medical Tehnology, www.sterilizers-bmt.com

Research and development in the field of radiotherapy

The product portfolio of UJP PRAHA in this area is based on the radiotherapeutic irradiator TERABALT, the X-ray simulator TERASIX intended for the exact planning of radiotherapy and the TPS planning system guaranteeing sophisticated support for the treatment of patients by irradiation. The Polish subsidiary UJP Hitec Systems completes the range of irradiating technology intended for medical purposes and the radiotherapeutic equipment which works on the principle of the linear accelerator. An important part of the company is the research, development and service in the material area. UJP PRAHA, www.ujp.cz



12 ASSOCIATIONS

Association of producers and suppliers of medical devices

www.medtechnik.cz

Currently, the association mainly focuses on the development of the sector and supports the innovations of the products and services of its members. The association places emphasis on research leading to achieving high technical parameters. The association also places emphasis on the importance of design, which helps in selling products, and the quality as an indicator of the product reliability.

CzechMed – The Czech Association of suppliers of medical devices

www.czechmed.cz

CzechMed, the Czech association of suppliers of medical devices was established in 1998 as an interest grouping of legal entities. The association Czech Med focuses on increasing the share of expenses for medical devices and technologies in total health care costs, as it considers them crucial for the progress

in medicine and the guarantee of improving health care (diagnostics and treatment of diseases, extending and improving the quality of the patient's life).

National telemedicine center

www.ntmc.cz

The National telemedicine center (NTMC) was established as a coordination and education center with e-health (or telemedicine, as the case may be). The objective of NTMC is both the provision of the current telemedicine care and the active working on the development and scientific verification of new telemedicine procedures, acquiring top know-how from foreign entities and experts and its distribution to expert workplaces across the Czech Republic, educating new experts in the field of telemedicine and the utilization of modern methods in teaching medical and non-medical branches.

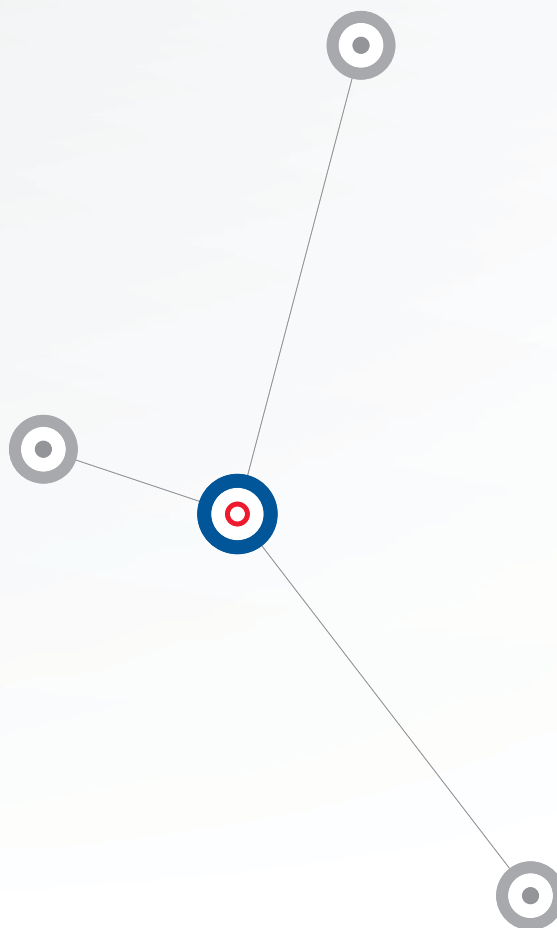
Czechma – Czech Association of suppliers of „in vitro” medical devices CZEDMA

www.czedma.cz

The Association was established in 2001 as an interest grouping of legal entities. The goal of the association is to enable its members to deliver to the market such products, which guarantee the highest health care quality, the most effective health protection and the most effective diagnostics. The association encourages a high ethical standard in the field of in vitro medical devices, it provides information for health care staff and participates in proposing processes and expertise in issues related to medical technology devices including harmonization with the EU principles.







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