

# **WATER MANAGEMENT**





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**Czech Trade Promotion Agency is proud to present the Czech Water Management in the new sector guide.**

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 organisations and interest groups.



**CzechTrade network contains 50 offices.**

**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 water management production 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](mailto: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
- ◉ access 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
- ◉ presentation of Czech companies 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](http://www.czechtradeoffices.com)**

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### **DID YOU KNOW?**

CzechTrade has an extensive network of foreign offices in 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.



# CZECH WATER ALLIANCE

The Czech Water Alliance (CWA) was established in 2004 with the help of CzechTrade Promotion Agency.

The aim of the CWA is:

- ◉ to publicise and promote CWA members, their products, services and technologies to foreign customers
- ◉ to improve the position of Czech companies in the field of export of services and technologies in water management

Together with the cooperating companies, alliance members are able to provide a comprehensive set of services from presentation, project development to delivery and implementation.

The Czech Water Association continually cooperates with and addresses more than 300 companies on the Czech market and currently boasts a prestigious portfolio of companies specialising in investment construction, design and plans for constructions of water projects, hydroelectric power stations, dams and reservoirs, water resource recovery, analysis and cleaning all kinds of water, construction and reconstruction of technical networks of municipalities and local territories, geology and hydrogeology, wasteless technologies and software with an impact on the environment.

The basic export strategy is to increase the export share of services and technologies of companies associated in the alliance. It also involves the

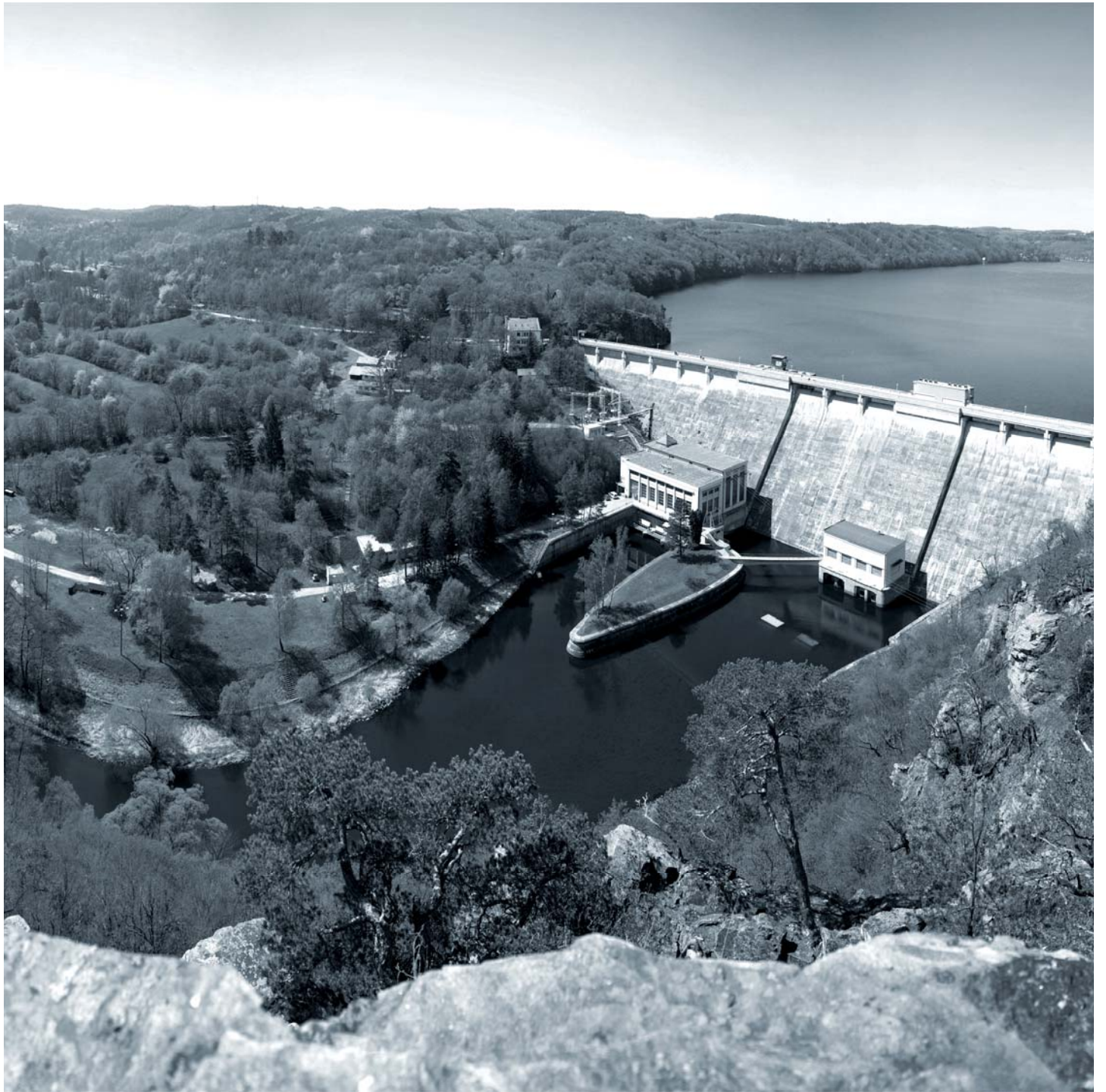
provision of services to potential foreign clients and a support service for Czech exporters for the effective use of European funds to support companies in the field of water management. The alliance is committed to helping foreign partners find a suitable supplier. Each member is continuously offered current field-related overviews of demands and public procurements. The alliance also organises foreign trade missions, conferences, exhibitions and export seminars. It cooperates in the use of EU grant programmes and funds.

The activity is consulted and implemented in cooperation with the Ministry of Industry and Trade, Ministry of Foreign Affairs, CzechTrade Promotion Agency and other state institutions.

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# 1 CZECH REPUBLIC: EXPERIENCE BUILT ON TRADITION

The field of water treatment has historically ranked among the most important industrial branches in the Czech Republic with a long and rich tradition. This is also attributed to the fact that only a few countries can boast such diverse and extensive sources of natural mineral and spring waters as the Czech Republic.

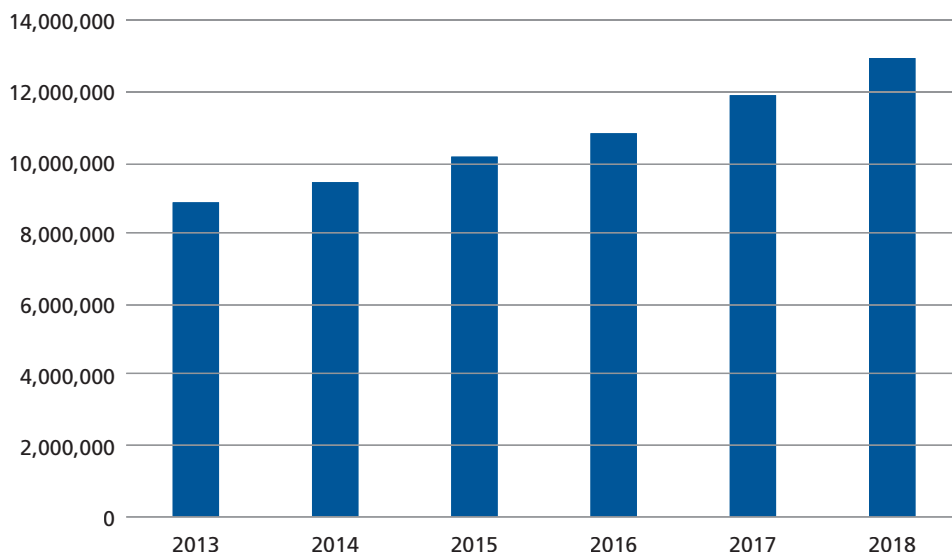
## UNIQUE KNOWLEDGE OF TECHNOLOGIES THANKS TO A WATER MANAGEMENT TRADITION

The water management tradition in the Czech Republic got under way in the 14<sup>th</sup> century, when the level of water management was even above the



European standard. The famous pond systems based on sophisticated water management plans built in the 14<sup>th</sup> century under the reign of Emperor and King Charles IV are comparable to the canals of the French Sun King Louis XIV. They were, however, built two hundred years later.

## EXPORT OF PRODUCTS RELATED TO WATER MANAGEMENT (IN THOUSANDS OF EUR)

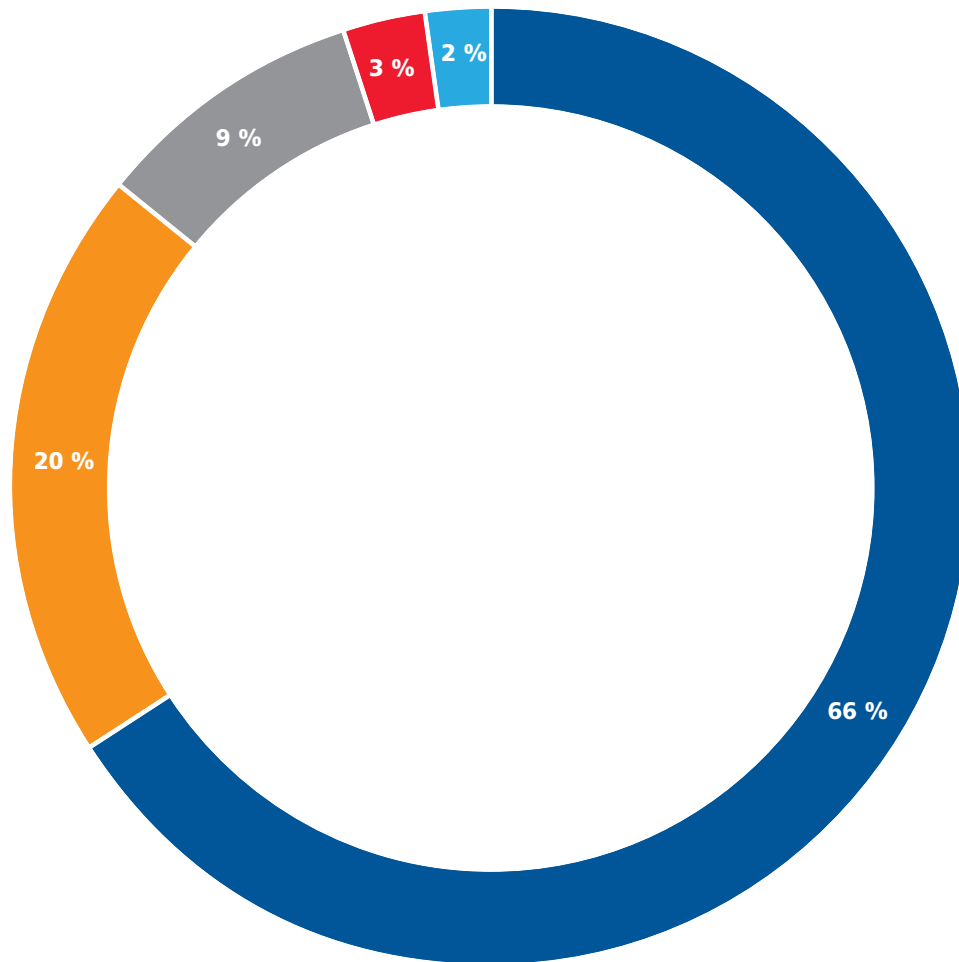


Source: The Czech Statistical Office, selected HS4 codes, calculations by CzechTrade

Since the 20<sup>th</sup> century, the Czech Republic has also excelled in technology, becoming a leader in hydroelectric power plants already at this time. Thanks to this, the Czech Republic currently ranks among countries that are above the average in the area of water collection and transport, wastewater purification and treatment. There are about 330 companies in the Czech Republic. Therefore, the Czech Republic has a high proportion of households connected to drinking water (94.7 %) and sewerage (85.5 %), and it also expands abroad with its technologies.



## CZECH EXPORT OF PRODUCTS FOR WATER MANAGEMENT BY INDUSTRY (2018)



● Engineering

● Electronics

● Plastics and plastic products

● Textiles

● Machined components and structures made of metals

## DID YOU KNOW?

The Kaplan turbine is an overpressure-axial turbine with very good regulation capability. This is mainly used where it is not possible to ensure a steady flow or gradient. The turbine was invented by Viktor Kaplan, a professor from Brno University of Technology, in 1919. Compared to its predecessor, the Francis turbine, it mainly differs in terms of the smaller number of blades, the shape of the impeller and, above all, the possibility of regulating the tilt of the blades in the impeller and the guide wheel. Kaplan was the first to consider the viscosity of water when creating a theoretical turbine design. This led, in 1910-1912, to the creation of a new impeller shape. After tests it turned out that the turbine achieved an excellent mechanical efficiency of up to 86 %. Another prototype was successfully tested at the power plant in Poděbrady.

Once Kaplan's students managed to resolve the cavitation problems, this turbine went on to become the most important type of turbine used in large hydropower plants around the world. The success story got under way with the installation of the largest turbine at that time in Lilla Edet, Sweden in 1925. Today, it is produced by a number of companies in the Czech Republic with various modifications of regulation and layout.



## WATER QUALITY IS A PILLAR OF WATER MANAGEMENT THANKS TO RICH MINERAL WATER RESOURCES

The Czech Republic is renowned for its plentiful sources of quality mineral water, as well as medicinal springs. This explains why maintaining and improving the quality of drinking water has been an important pillar of water management since the 19<sup>th</sup> century.

A great treasure is the underground springs, which are greatly protected from polluted external influences.

Owing to their purity and the content of minerals and trace elements, these spring and mineral waters have positive effects on human organism.

There are currently eight large mineral deposits in the Czech Republic, four of them in Western Bohemia - Mnichov near Mariánské Lázně, Kyselka near Karlovy Vary, Stráž nad Ohří and Chodová Planá near Byňov in South Bohemia, Poděbrady-Velké zboží in Central Bohemia and two localities in Moravia - Sedm Dvorů and Horní Moštěnice.

Most underground sources in the Czech Republic are located in protected areas and declared protection zones. The natural cycle is also protected, thanks to

which the reservoirs of underground springs are continuously replenished. Natural mineral and spring waters are pumped from deep depths through tightly controlled and protected wells and are thus isolated from contamination by layers of rock. By law, this water must not be chemically modified.

Mineral waters are also the main symbol of Czech spas. They are characterised by an extraordinary diversity of chemical composition and physical parameters. There are all existing types of mineral waters in the Czech Republic: thermal, high and low mineralised, carbon dioxide-free as well as carbonated. Furthermore, there are also worldwide unique, specific mineral waters characterised by an increased content of some components with healing properties.



## DID YOU KNOW?

The beginnings of mineral water export from the area of the West Bohemian spas date back to the 15<sup>th</sup> century. Systematic export of acidulous mineral waters got under way only three hundred years later. They were initially filled into clay, stoneware or wooden mugs. In the 19<sup>th</sup> century, mineral waters were already being exported to Vienna and Budapest, but the trade did not prosper. Change came with Heinrich Mattoni, a native of Karlovy Vary, who, with his friend Fritz Knoll, rented a license for the exports of Karlovy Vary mineral waters from the town of Karlovy Vary in 1856. Within ten years, both businessmen managed to triple their exports. Karlovy Vary mineral waters, known for its Mattoni brand, have a turnover of more than CZK 7 billion and export to more than 20 countries. Expansion is mainly to China.

Important medicinal waters include VINCENTKA, a mineral water from the natural healing spring of the source in Luhačovice, which was first mentioned in the written form in 1669. Starting from 1780, VINCENTKA was exported to Vienna, where it sold well in pharmacies, restaurants and wine-shops. 40 years later, nearly 160,000 bottles were exported abroad. In the 1950s, 2,000,000 bottles were produced per year.

The next oldest traditional mineral water, already since 1664, is BILINER (BÍLINSKÁ KYSELKA). Important visitors to the BÍLINA Spa included J. W. Goethe and Alexander von Humboldt. In 1904, the acidulous mineral water won the gold medal at the World Expo in Paris for the best dietetic drink, and four years later, it was represented worldwide. The most remote country where it is sold is Brazil.

There are now over 24 mineral waters in the Czech Republic, which also have infant water parameters.



Teco has been building on the tradition of electrical engineering established in Kolín in 1919 for 25 years. For 42 years, it has been developing and manufacturing universal Programmable Logic Controllers (PLCs) according to IEC 61131. The systems are used for automation and telemetry as well as remote control of industrial processes. Working alongside the proprietary companies Geovap and Proteco, Teco boasts outstanding development, engineering, application and service capabilities with long-term technical know-how for the implementation of challenging industrial automation processes and regulatory tasks. This includes work for water supply projects to tight deadlines and at the highest calibre, both in the Czech Republic and abroad. Teco,

**[www.tecomat.com](http://www.tecomat.com)**

## NUMBER ONE IN WATER MANAGEMENT SINCE BAŤA

The history of CENTROPROJEKT, one of the most important Czech water management companies, dates back to 1925 and the foundation of the Baťa shoe company's project department, where the CENTROPROJEKT GROUP had its roots. At present, water management specialists are involved in water management problems of

towns and municipalities, including water management in landscape and flood control measures, as well as in water management in industry, whether it is new construction or intensification or reconstruction of water management facilities of existing plants. State-of-the-art technologies and procedures are priorities, placing an emphasis on environmental ties.

CENTROPROJEKT GROUP,  
**[www.centroprojekt.cz/en](http://www.centroprojekt.cz/en)**





# 2 CUTTING-EDGE TECHNOLOGY AND INNOVATION

## COOPERATION OF SUCCESSFUL FIRMS WITH UNIVERSITIES AND EMPHASIS ON RESEARCH OFFERS A COMPETITIVE EDGE

The Czech Republic ranks as above average in the representation of technical professions in total employment, which is one of its competitive advantages, while also making it a big player of economic and technological development in the field of water management technologies. The success of Czech companies abroad involves high-level research, its link with business and the rapid application of innovations in practice. The Czech Republic boasts a number of top scientific and research centres working in the field of water management technologies with commercial companies. They offer a comprehensive service from consulting to coming up with solutions to specific research tasks. At present, R&D is largely funded from private sources.

The continuous and progressive prosperity of IN - EKO TEAM is closely linked to continuous innovation of manufactured equipment and the development of new products which respect the higher level of requirements for sewage cleanliness and environmental quality. These innovations, development and consistent technical development of the company are associated with the introduction of new production technologies allowing production of equipment which takes into account considerably higher criteria for both quality and efficiency and

to avert negative environmental developments and the related requirements of the European Union.

As part of the technical development of IN - EKO TEAM, detailed analyses of current and future criteria are being carried out in the most studied area - clean water. These criteria indicate the direction of further development, which can only include products with the highest technological capabilities, long service life and minimal maintenance requirements.

IN - EKO TEAM,  
[www.in-eko.com](http://www.in-eko.com)



Highly specialised scientific and development centres as well as science and technology parks are being continuously established in the Czech Republic, where tailor-made research and development are being intensively developed and a rapid transfer of innovation is provided, which provides Czech companies with a high level of competitive advantage.



## INNOVATION AS THE NUMBER FIRST PRIORITY

Several basic directions for innovation in the field of water management are currently under way in the Czech Republic. One of them is changing materials, especially in terms of protection against corrosion. In addition, new drinking water treatment technologies are being introduced to ensure the ever-increasing quality of drinking water. For example, continuous ion exchange and separation, UV oxidation and UV disinfection, i.e. physical (in the case of UV oxidation physicochemical) methods for the treatment of drinking, waste and industrial water, which complement the classic water treatment methods, are being introduced.

Czech technological improvements are often truly unique, not only from the perspective of Czech companies, but also when compared to the situation abroad. The results of science and research, but also new products are qualitatively at the level of advanced Western European countries. This is evidenced by the growing interest of foreign companies and institutions in cooperating with Czech companies.

### CENTRE OF SCIENTIFIC EXCELLENCE IN THE FIELD OF WATER MANAGEMENT AND HYDRO TECHNOLOGIES IN THE CZECH REPUBLIC SINCE THE BEGINNING OF THE 20<sup>th</sup> CENTURY

The first scientific centre on the territory of the Czech Republic to take on the task of integrating research and development to such an extent was the T.G. Masaryk Water Research Institute, founded in 1919. Several companies, such as AQUA PLUS, which among others, is committed to the development

of ultra clean water technology and special water treatment and disinfection technologies, were created from the institute. T.G. Masaryk Water Research Institute, Public Research Institution, [www.vuv.cz/index.php/en](http://www.vuv.cz/index.php/en) AQUA PLUS, [www.aquapluscz.eu](http://www.aquapluscz.eu)



## DID YOU KNOW?

The Czech scientist Miroslav Sedláček invented the so-called rolling bladeless fluid turbine, which allows electricity generation even on very slow watercourses and streams. Sedláček's rolling turbine is an alternative to classic water turbines which have been used to generate electricity for many decades. This turbine uses a physical phenomenon in which the ball, cone or other curved body located in the stator at a narrowed flow site are attracted to its walls. The faster the water flows between the body and the walls, the stronger the attraction gets. Thanks to the angled suspension of the curved body, the water flows faster in the place of the narrowed flow, the body presses against the wall and begins to roll over it. The rotation of the resiliently suspended shaft can then be used to drive the electric generator.



## SIGNIFICANT POSITION IN THE GLOBAL MARKET THANKS TO PATENTS

ENVI-PUR, with its long-term conceptual work, is one of the strongest Czech companies involved in the development, production and supply of ecological equipment, especially in the field of water and air purification and treatment. With its high level of expertise, it has earned itself a dominant position not only on the Czech market, but also abroad where ENVI-PUR products are valued. Development assumes an important position - the company works with a highly robust development department and cooperates with universities and significant experts in the field of water purification and treatment. For this reason, most products are also protected by patents. An example is the unique AMAYA 5.2 NEW GENERATION, a technology based on the principle of ceramic membrane microfiltration with a pre-coagulation step. This single-stage membrane filtration system is a reliable barrier method for removing organic matter, opacity, colour, micro-organisms and other micro-pollutants. ENVI-PUR, [www.envi-pur.cz/en](http://www.envi-pur.cz/en)



## APPLICATION OF INNOVATIVE ENVIRONMENTAL METHODS

G-servis Praha offers complete turnkey technologies, as well as the individual stages which can be used to complement or modify existing plants to achieve the most efficient use of resources, often accompanied by a significant reduction in the cost of treated water. The company has already

carried out more than 1,000 orders for more than 400 customers around the world. Due to the continuous development and improvement of the construction materials, membrane processes (especially ultra filtration and reverse osmosis) have recently come to the fore. The company is committed to water treatment using innovative techniques as well as mobile water treatment plants.

G-servis Praha,  
[www.g-servis.cz/en](http://www.g-servis.cz/en)



## OWN DEVELOPMENT AS THE FOUNDATION

ENVITES deliveries hail from their own production base. It mainly specialises in the development and production of cloth filter presses, so-called filter presses, which have been delivered to many countries around the world in several hundreds of pieces. Their products thus serve many European countries, but also in Asia, Africa and America. Several processes in technology practice consist of the separation of solid and liquid phases, with ENVITES offer primarily including know-how and a comprehensive range of products and services

for the efficient and economically beneficial separation of various suspension types. The main focus is on sludge dewatering and pressure filtration of industrial suspensions. To optimise the drainage process, it also manufactures and offers slurry treatment facilities. For wastewater treatment technological units, it manufactures chemical preparation and dosing units, reaction tanks, storage tanks, settling tanks with and without lamella pack cassettes, as well as a number of various built-in parts of tanks.

ENVITES,  
[www.envites.cz/en](http://www.envites.cz/en)



## LOW-EMISSION VEHICLE FOR WATER MANAGEMENT OBJECTS

ZEBRA GROUP is the youngest Czech car manufacturer with its own Czech product. It manufactures series-produced multipurpose utility vehicles – swap body carriers and structures with a loading capacity of up to 3.5 – 5.6 tonnes, which can be driven with a B type license produced in the Czech Republic. ZEBRA not only rides at speeds from 0.6 km/h to 80 km/h but can also offer a cabin for one or two co-drivers, supporting all the usual swap bodies expected by all users from a municipal vehicle with a 4x4 or 4x2 drive. Since the end of 2018, ZEBRA has been offering a special low-emission vehicle suitable for city centres and traffic. Water managers and managers of water areas will be able to use the multipurpose vehicle without the risk of water pollution with oil and diesel, which will certainly increase the efficiency and prestige of each water manager.

ZEBRA GROUP,  
[www.uzitkove-vozy-zebra.cz](http://www.uzitkove-vozy-zebra.cz)

JSP Industrial Controls is a top Czech supplier and manufacturer in the field of measurement and control technologies. JSP provides a comprehensive range of products and services for energetics, chemistry, metallurgy, water supply, glass production and other fields of industry. JSP's main products are: temperature sensors with accessories, digital transmitters, pressure sensors, manifolds, orifices, nozzles and systems for sample conditioning and analysis. JSP's key

services are: manufacturing of own products, complete I&C services and integrated deliveries for investment units, including: projects, delivery, installation, commissioning and service. JSP is currently celebrating its 25<sup>th</sup> anniversary - having successfully completed a great many projects in the Czech Republic and abroad (Austria, China, Egypt, Russia and United Kingdom) during this time.

JSP,  
[www.jsp.cz](http://www.jsp.cz)



## DID YOU KNOW?

PRESSKAN System founded a subsidiary in Russia 10 years ago. It specialises in the design and implementation of pressure sewerages. The company has designed systems for several private projects, such as development projects near Moscow. These are three areas of 400 family houses, from which special pumps divert used water to a public sewerage network or directly to a sewage treatment plant. The run-time of the contract is scheduled for 4 years.



## PRESSURE SEWERAGE SYSTEM

For more than 20 years, PRESSKAN has been a supplier of PRESSKAN® pumping technology for pressure sewerage. It is a technology that contains materials exclusively designed for sewage works, which are corrosion-free, testified by operating more than 30 thousand installations.

The PRESSKAN® pressure sewerage is suitable for drainage of individual objects as well as for sewage disposal of entire municipalities. It is used in cases where there is a poor gradient, a high level of ground water or other unsuitable soil. It is based on drainage of sewage through a low-profile pipeline through a pump with a dirt separator located in a pumping shaft into which the sewage is diverted from individual properties. The main advantages of PRESSKAN® technology include low investment costs, unattended operation and the possibility of draining problematic objects.

PRESSKAN system,  
[www.presskansystem.cz](http://www.presskansystem.cz)

# 3 WATER TREATMENT AND DISINFECTION

Since the 1990s, Czech manufacturers have been specialising in the production and development of various water treatment and disinfection segments. These include a number of technological processes for conditioning the physical, chemical, biological and microbiological properties of water for various purposes. The most common is the production of water for supplying

the population with drinking water, as well as for the needs of industry, agriculture, etc. The principle and complexity of a water treatment plant are dependent on the type and quality of raw (unprocessed) water. In 2017, there were 2,504 water treatment plants in the Czech Republic, which produced almost 603,750,000 m<sup>3</sup> of water.



## DID YOU KNOW?

GEOtest has implemented several interesting foreign projects, including a contract for the Mongolian city of Murun. This was a \$0.84 million water supply system. Another project took place in the small Ethiopian towns of Sidama region, where a sustainable drinking water supply system was available for the same amount. For the Kurdistan region, the company has developed a feasibility study and the Bawanur Dam project and irrigation system in Garmian province in Iraq for \$1.68 million.

GEOtest,  
[www.geotest.cz/en](http://www.geotest.cz/en)

## INNOVATIONS BRING COMPREHENSIVE WATER TREATMENT SOLUTIONS

BKG - úprava vody delivers comprehensive water treatment solutions which includes employing the most demanding technologies, which are both maximally ecological and cost-effective. The offer includes filtration, membrane, ion and disinfection technologies. The water treatment technologies are delivered within a large scope of performance ranges, focusing on filtration, desalination, softening, disinfection, sea and brackish water treatment, reverse osmosis and mobile container units. In

addition to supplying filtration and ionex applications for water softening, decarbonisation, water desalination, etc., such as softening and decarbonisation stations, full desalination stations, including neutralisation, chemical management and process automation, the company predominantly specialises in membrane applications of process and drinking water treatment. Over the last 20 years, BKG technology has been operating on 4 continents. These are hundreds of small, medium and high-level industrial applications specialising in drinking and process water treatment.

BKG - úprava vody, [www.bkg.cz/en](http://www.bkg.cz/en)

## COMPLETE SERVICE EVEN FOR THE MOST DEMANDING OPERATIONS

Complete service in the field of water treatment is provided by Laurich. The services include everything from consultancy and diagnostics, delivery and installation of technology to follow-up servicing and monitoring, especially for power engineering (softening, demineralisation, boiler water treatment and cooling circuits), chemical industry (modification of process water, modification of cooling circuits), textile industry (softening, demineralisation), cosmetics (softening, ultra-pure water production), the pharmaceutical industry (softening, ultra-pure water production), water disinfection (chlorination, UV), electrotechnics (ultra-pure water production), glass industry (softening, demineralisation), brewing industry (decarbonisation, denitrification, softening), engineering (ultra-pure water for electroerosive machining of metals), electroplating (removal of heavy metals from rinsing water), bakeries (softening, water treatment for steam generators) and laundries (filtration, softening).

Laurich, [www.laurich.cz](http://www.laurich.cz)

## DID YOU KNOW?

In certain countries, there are insufficient sources of fresh water to serve the needs of people, industry and agriculture. These areas are mainly reliant on the use of seawater. If the water contains more than 2,000 mg/l of solutes, it is called saline water and is therefore unsuitable for drinking. The salt content of solutes in salt water averages between 33,000 and 37,000 mg/l. In order to be suitable for drinking, the content of dissolved substances in the water should be reduced to less than 1,000 mg/l. Using membrane processes, saltwater substances can be removed and the water can be further used for drinking, industrial or agricultural use. The most common method for saltwater treatment is reverse osmosis, which provides the highest efficiency in terms of energy consumption.



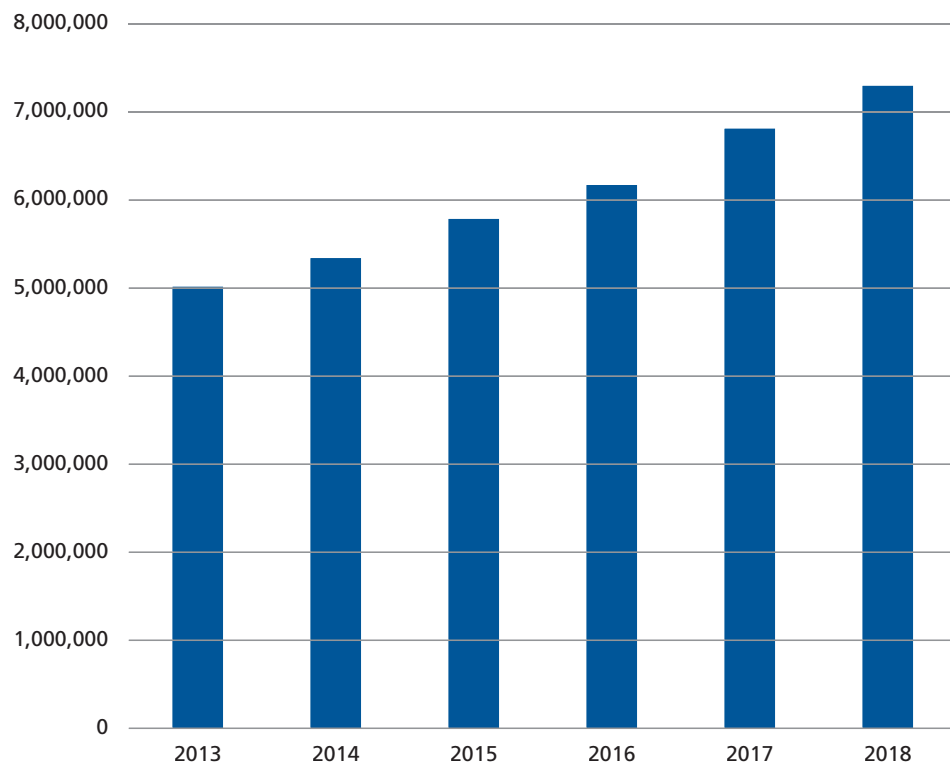
# 4 WATER TRANSPORT AND MINIMISING LOSSES

Trenchless technologies, i.e. the reconstruction of utility networks and minimisation to population impact, are currently at the fore. An innovative

trend is evident in the reconstruction of water and sewerage networks of trenchless technologies which are environmentally friendly. These

technologies are the domain of several Czech companies.

## EXPORT OF PRODUCTS ASSOCIATED WITH WATER TRANSPORT AND MINIMISING LOSSES (IN THOUSANDS OF EUR)



Source: The Czech Statistical Office, calculations by CzechTrade, selected HS4 codes



## SPECIALISED SOFTWARE ALLOWING FOR EFFICIENT MONITORING

Part of a comprehensive solution which allows for sustainable water loss reduction also includes efficient monitoring. The leader in this area is EG - Expert, which develops its own software, dozens of projects have already been implemented mainly for power engineering. The other direction is the water management segment, including all related activities such as water billing, facility management and maintenance, production planning and monitoring. EG - Expert, [www.egexpert.cz](http://www.egexpert.cz)

## TRENCHLESS TECHNOLOGIES

WOMBAT, which predominantly focuses on rehabilitation of pipelines with trenchless technologies, has been operating on the Czech market for nearly 30 years. It is also dynamically developing on foreign markets and is one of the leaders in this field. In building work, emphasis is primarily placed on environmental protection. At present, the company offers a comprehensive service in

the field of diagnostics of rehabilitation of pipelines for sewerage, water and gas piping systems. WOMBAT performs rehabilitation of pipelines from DN 80 to profiled sections of all kinds of materials and shapes. WOMBAT has a range of rehabilitation technologies. Using KAWO technology, hundreds of interesting buildings have been built. It is worth mentioning the Rehabilitation Project of the Centre Sewerage in Bielsko-Biala, Poland and the reconstruction of the technological sewerage in the Hungarian power plant

MOL near Budapest. WOMBAT also cooperates with Russian companies, especially in Moscow, where interesting buildings were built in the centre of Moscow. Other projects in Russia include reconstruction of the steel pressure pipeline DN 1400 in the Kutuzov Prospectus at a length of over 1,600 m and the rehabilitation of the existing sewerage shrouds DN 1400 under the Moskva River in Strogino.

WOMBAT,

[www.wombat.cz](http://www.wombat.cz)



Czech water companies are experts in the field of water loss reduction. This is evidenced by the fact that, during the period between 1994 and 2015, there was a systematic decrease in water losses in pipelines in the Czech Republic by almost 190 million m<sup>3</sup>. The expansion of new technologies (GSM, GPRS, GIS, forecasting of development and modelling) has had a big impact. The goal is to meet the European Commission's limit and reduce water losses in the pipeline network to 10 % by 2030.



## WATER SUPPLY MANAGEMENT IN NUMBER

78,584<sub>km</sub>

Length of water supply systems in the Czech Republic

94.7<sub>%</sub>

Share of population supplied with water from water supply systems

85.5<sub>%</sub>

Share of population permanently living in houses connected to sewerage systems

Source: The Czech Statistical Office, Water supply management, 2017

## DID YOU KNOW?

SIGMA is involved in the production of irrigation systems and pumps, including pump leakage water from the foundations and masonry of dams and hydroelectric power plants. The company has 50 stations in Egypt's Nile Delta, which are used for irrigation. The water from the Nile rises to a height of 10 metres and then flows through the channel by gravity and irrigates the farming fields. As such, SIGMA manages to get Nile water up to 50 km inland. The company has supplied a drinking water pumping station and a bottling line to Iran. The big market is India, where the Czech pump manufacturer has implemented a pumping station for water from a dam which has been irrigating agricultural land through pipelines up to 300 kilometres over the last four years.

SIGMA GROUP, [www.sigmagroup.cz/en](http://www.sigmagroup.cz/en)

# 5 WASTEWATER TREATMENT



The Czech Republic is one of the most developed countries regarding water management in the European Union. Almost 85 % of the population is connected to a sewerage system and 97 % of waste water is cleaned. This is a number that is not achieved even by some of the largest member states within the EU. The Czech Republic has an exceptionally good starting position, since wastewater treatment has a long tradition there. The first



wastewater treatment plant (WWTP) in Prague began its operations as far back as 1905. Wastewater management is skyrocketing thanks to the growing interest in environmental protection and development of environmental technologies. The number of WWTPs has more than doubled in the Czech Republic since 2000.

## WASTEWATER TREATMENT FOR INDUSTRIAL AND MUNICIPAL OPERATIONS

EKOSYSTEM has developed a comprehensive solution to water management issues. It offers solutions in the deliveries of new units and reconstructions of existing buildings. In addition to industrial and municipal wastewater it also comes up with solutions for treating drinking and process water. When resolving water management issues, professional and highly specialised workers at the company provide customers with comprehensive

services in the field (making studies, projects, implementation of partial and complex deliveries). The company contributes to effectively resolving ecological problems relating to water management at industrial enterprises with development and application of modern technologies. The services also include solutions for water management related to wastewater management in order to ensure requirements set by waste water producers are met for their

treatment and re-use and to ensure wastewater discharge is compliant with legislation. Many years of experience in the industry and the use of appropriate, reliable and proven technologies enable the company to design and reconfigure an optimal solution in terms of technology used, investments, operational costs and environmental protection. EKOSYSTEM, [en.ekosystem.cz](http://en.ekosystem.cz)



## **WATER CLEANING AND TREATMENT FOR FAMILY HOUSES / TOWNS AND MUNICIPALITIES / INDUSTRIAL OPERATIONS**

ASIO is a Czech engineering and contractor company with international scope founded in 1993. Today it is represented in 32 countries with a wide network of its subsidiaries and representatives. In addition to a good manufacturing base, it has a network of sales and service centres established not only throughout the Czech Republic but also in many European countries.

All such closely cooperating companies are brought together within the ASIOgroup. Within the framework of development, it cooperates with many academic institutions and universities, such as civil engineering and chemical-technological faculties. This is how the vision of a company expressing internationality, innovation, sustainability, expertise, trust and responsibility is fulfilled. The ASIO

portfolio offers a comprehensive range of products to meet both standard and non-standard requirements in the field of wastewater treatment, air purification, water treatment and rainwater management. There are sewage treatment plants for towns and villages, wastewater treatment units for households, plastic tanks - septic tanks, drainage systems (infiltration tunnels) and other water and air treatment units.

ASIO, [www.asio.cz/en](http://www.asio.cz/en)



## NEW TECHNOLOGY PROCESSES, PATENT-PROTECTED TECHNOLOGIES AND TRENDS

With its long-lasting conceptual work, ENVI-PUR makes up one of the strongest Czech companies involved in developing, producing and delivering ecological equipment, with a particular focus on the branch of water, air purification and treatment. Thanks to its high level of expertise, it is establishing a dominant position for itself abroad, where it successfully exports and is represented in more than 20 countries. A unique level

of technology is ensured through close collaboration with research - the company cooperates with a very strong development department, universities and prominent experts in water purification and treatment. Therefore, most products are also patent-protected. ENVI-PUR has a number of patents, particularly in the field of wastewater treatment. BioCleaner® technology is patent-protected. Major products include BioCleaner® Sewage Treatment

Plant (WWTP); biological wastewater treatment plants, fat separators, petroleum product separators, MBR; water treatment plants (WTPs) for the treatment of drinking, technological and industrial water; components for WWTPs and WTPs; tanks, pumping stations, aeration systems, closing and regulating elements; industrial ventilation, engineering production and metal production.

ENVI-PUR, [www.envi-pur.cz/en](http://www.envi-pur.cz/en)

## WASTEWATER TREATMENT PLANTS ALL AROUND THE WORLD

FORTEX - AGS is an innovative company with 50 years of tradition and experience in the field, focusing on building construction, development and delivery of wastewater treatment technology. It has implemented more than 2,300 projects and expanded its portfolio by offering container technology for drinking water treatment, which is mainly used in developing countries. In addition, it also offers its own patented sludge hygienisation and stabilisation technology, which can then be used for direct application on farmland.

FORTEX - AGS exports its production to and outside of the EU, FORTEX – UPEC Ekaterinburg joint venture delivers products in Russia. This recently included 15 wastewater treatment plants, the largest of which is for 130,000 inhabitants. Success abroad is also illustrated by the fact that around half of production is exported. The company makes a great effort to constantly innovate its production programme and water treatment and purification technology, resulting in excellent drainage parameters for the treatment plant while at the same time minimising operating costs. It not only deals with implementation, but also project preparation and consultancy. FORTEX - AGS, [www.fortex.cz/en](http://www.fortex.cz/en)





## EKOPROGRES HRANICE

The company was founded in 1990 and its staff are continuing more than a hundred year old tradition in the production of water management facilities in Hranice. They also collaborate with universities, especially Brno University of Technology, VSB-TU of Ostrava and PU Olomouc. The main form is delivery of investment units in water management. It ensures

design, delivery and commissioning of both their own machinery and motor installations and control systems. Their own products include various systems of sedimentation tanks, where sliding bridges are used as their own products and where traversing bridges are used to clear sediments. Functionally, the equipment is designed to clear tanks for primary and secondary sedimentation of insoluble substances from waste water, such as rain tanks, sedimentation tanks, settlement tanks, thickening tanks, etc.

For bridges, they use their own gear rack system mounted on the tank periphery and a pinion drive mounted on the bridge. The drive enables trouble-free operation of the equipment in all weather and operating conditions. The company has also developed the KOMBIBLOK biological system for small sources of pollution, with long-term references and validation since 1970. EKOPROGRES HRANICE, [www.ekoprogres.cz](http://www.ekoprogres.cz)



## WATER MANAGEMENT EQUIPMENT FOR THE WORLD

IN - EKO TEAM manufactures stainless steel water management equipment used in municipal wastewater treatment plants, as well as many other industries. The equipment can also be used on fish farms, KOI lakes, the ZOO, in slaughterhouses, dairies, paper mills and wherever water needs to be cleaned or recirculated for keeping production costs down. This is a global company and one of the most prominent manufacturers of microfiltration equipment, especially in the markets of Central and Eastern Europe.

All knowledge and experience in the field of water filtration are used to develop efficient and innovative technologies, resulting in a portfolio

of products including microfiltration and filtration, sand separation and washing, flotation, fine and coarse pre-treatment, integrated pre-treatment, transport and pressing.

The company's longest-produced and best-selling equipment includes a Microscreen drum filter with a maximum capacity of 68 l/s and a filtration fineness of 20 µm. Over the years, the company has developed a Disc filter, which has a larger filter surface than Microscreen drum filters and even finer filtering from 5 µm. IN - EKO TEAM is the first producer of these filters on the domestic market.

IN - EKO TEAM,  
[www.in-eko.com](http://www.in-eko.com)

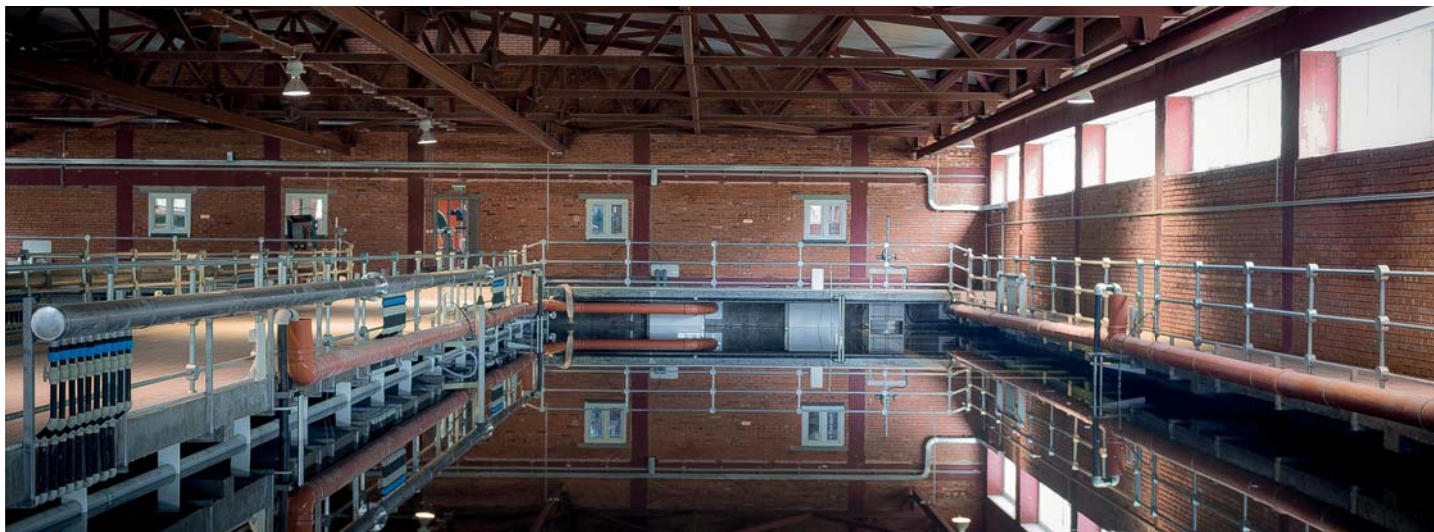
## WWTP OWN CONSTRUCTION AND PROJECT DESIGNS

MICo manufactures technological equipment for ADN type wastewater treatment plants, including its own design and design proposals for incorporating equipment into a whole building project. Biological cleaning technology adopts the so-called sludge blanket effect – a fluid filter, which separates the suspension of biological activated sludge from purified water. The use of this technology is highly promising in the reconstruction of existing WWTPs with the aim of intensifying these, both in terms of increasing their efficiency and improving the quality of cleaning without the need to expand stations. It represents a low-cost investment and simple solution for the modernisation of existing technological equipment.

MICo,  
[www.mico.cz/en](http://www.mico.cz/en)







## **PATENTED SOLUTIONS FOR DOMESTIC AND INDUSTRIAL WWTPS**

TopolWater specialises exclusively in waste water treatment. It is certified according to EN ISO 9001. All the technologies provided are the result of their own research and development and are patent-protected in most developed countries of the world. TopolWater's products represent unique technical solutions that are the exclusive property of the company and cannot be delivered by another company. The company deals with waste water treatment in a comprehensive way: from research, development and verification of structures, patent

protection, design and construction activities to the production of container wastewater treatment plants and separate deliveries of water treatment technologies. Special TOPAS container wastewater treatment plants meet the requirements of the European standard EN 12566-3 and represent a unique application of the latest state-of-the-art technologies with fully automatic control even for the smallest wastewater treatment units for households. The company's technology is sought after all over the world, especially in France, Sweden, Russia, Romania and Poland, serving for instance on an oil platform in Azerbaijan. TopolWater, [www.topolwater.com/english](http://www.topolwater.com/english)

## **BIOLOGICAL WASTEWATER TREATMENT PLANTS**

EKONA - a traditional Czech producer of wastewater treatment plants, plastic tanks, hydrometric and pumping shafts and light liquids separators. Other products and industrial applications include wastewater treatment plants for small breweries, skimmer collector of petroleum products Ropák, gravel and sieve screens, piping, pumping equipment and water treatment plants. The company boasts its own water management projections. The competitive advantage of the company is its operability, flexibility and fair prices. The company was founded in 1992. EKONA, [www.ekona.cz](http://www.ekona.cz)

## INNOVATIVE TECHNOLOGIES FOR ENVIRONMENTAL PROTECTION

ABESS provides engineering services, supplies of equipment and technologies for environmental protection in the fields of water, soil, air and hazardous waste. ABESS applies modern solutions and efficient technologies that provide highly effective results. In the field of wastewater treatment, it is mainly technologies that allow the purification of highly contaminated municipal and especially industrial wastewater to achieve high quality treated water. ABESS provides supplies of wastewater and process water treatment plants that minimise water consumption in

various industries and purify highly polluted industrial waste water. The concept of industrial water treatment allows for long-lasting recirculation of water in a closed circuit. The company also offers deliveries of compact container wastewater treatment plants and domestic WWTPs, which enable rapid installation and high efficiency of water purification. To protect the air, it delivers biofilters, which ensure efficient removal of odours and organic compounds from the air in various operations.

ABESS,  
[www.abess.cz/en](http://www.abess.cz/en)

## MECHANICAL, PHYSICAL AND BIOCHEMICAL WASTEWATER TREATMENT

### EQUIPMENT FOR WASTE WATER TREATMENT PLANT

Fontana R specialises in equipment for wastewater treatment plants. It designs all its products, which constantly reflect the knowledge and experience of operators and designers. The company has its own production and assembly capacities including service. More than 80 % of orders are atypical with their solution for a specific application case, with no price increases for custom manufacturing. Short delivery times, along with modern features and a clear business development strategy, allow for export to even the most demanding of Western markets. The company has positive references from a wide field of application, from mechanical pre-treatment, sand separation and washing, tertiary treatment, through flow control and measurement to sludge transport and sanitation.

Fontana R, [www.fontanar.cz/en](http://www.fontanar.cz/en)



# WASTE WATER AS AN UNUSED SOURCE AND RECYCLING

The current trend is not only ecology and the most efficient wastewater treatment, but also reuse of waste water and its recycling. This topic becomes more acute when enough water ceases to be a given. More than 80 % of the world's waste water

is released into the environment without treatment. Once waste water is discharged into the water bodies, it is either conveyed downstream in diluted form or infiltrated into waterborne layers where it can affect the quality (and hence availability) of

drinking water supplies. The final site of waste water discharged into rivers and lakes is often ocean, where it has negative consequences for the marine environment.

## DID YOU KNOW?

LESS THAN ONE PERCENT OF THE TOTAL VOLUME OF WATER ON EARTH IS DRINKING WATER

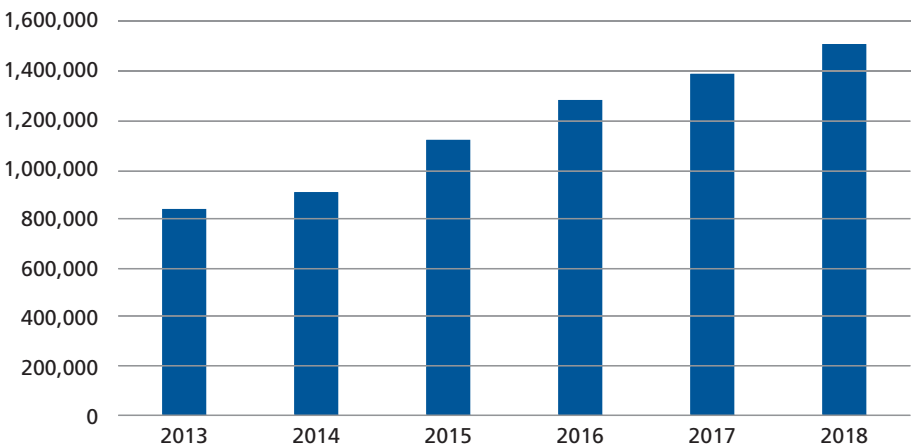
Drinking water supplies on Earth are decreasing every year. It is reported that one-fifth of humanity has no access to safe water and three million people per year die from contaminated water. A unique filtration system has been created in the Czech Republic. It can turn any polluted water into drinking water. Výzkumný Technologický Institut (VTI), [www.vti-cz.com](http://www.vti-cz.com)

## GLOBAL SOLUTIONS FOR FILTERING AND WATER TREATMENT

Czech companies have also been successful in this area. For example, Power Plastics, which specialises in wastewater treatment and filtration and process water treatment for industry, agriculture and the community sphere. In the field of filtration and treatment, the company not only offers

individual components, but also, in cooperation with its engineers and experts, designs and installs complete systems for filtration and treatment of drinking and industrial water. It always results in high water quality, regardless of its source. Power Plastics, [www.powerplastics.cz/en](http://www.powerplastics.cz/en)

## EXPORT OF PRODUCTS RELATED WITH WASTEWATER TREATMENT (IN THOUSANDS OF EUR)



Source: The Czech Statistical Office, calculations by CzechTrade, selected HS4 codes



## GREYWATER RECYCLATION

This kind of water is characterised by low pollution, accounting for about 50 % of the total volume of household wastewater. Complete technologies for the treatment of greywater into utility water, which can fit into a small cellar room of a family house, have been on the Czech market for several years. Recycling of greywater is increasingly being applied in hospitals, apartment buildings, wellness centres, sporting facilities and commercial buildings. Major applications include recycling of greywater at the 4\* Galant Hotel in Mikulov, where 3,000 litres of water is

cleaned daily with biological treatment technology and membrane filtration and treated water is used to flush toilets. Another example is the Botanika development project in Prague, where the construction of a block of flats with a complete solution of greywater recycling and rainwater accumulation is being finished. Other innovations in the field of greywater use include, for example, the use of waste water heat, the combination of greywater recycling and heat utilisation and irrigation with whitewater.



### GREYWATER RECYCLATION SPECIALIST

One of the specialists in this field is ASIO, which can offer its customers expert advice, consultancy, studies and projects, audits, elaboration of operational regulations for optimisation of water management, design of economically suitable technology for cleaning of greywater, economic evaluation of a proposed greywater treatment technology, detailed processing of operational costs, design of rational solutions, technological designs, operating parameters and operating modes or assessments to gauge the suitability of installing different types of objects.

ASIO, [www.asio.cz/en](http://www.asio.cz/en)

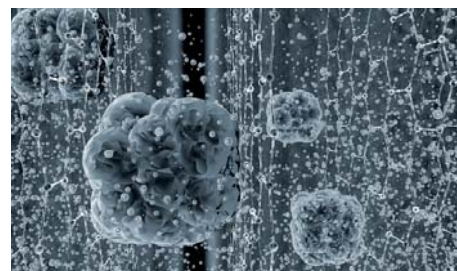




# NANOTECHNOLOGIES IN WATER TREATMENT

Czech nanotechnologists have developed a unique cleaning system that will transform any contaminated water into drinking water. Cleaning works purely on physical principles, without the addition of chemical additives. Water purification uses low pressure, separation, ionisation and filtration up to the level of nanofiltration. Cleaned and oxygenated water contains, after passing through the device, desirable ions, selected minerals such as calcium, magnesium and rare salts, to be ideally suited to the needs of the human body. Final drinking water is also suitable for infants. A unique purification method also removes the dead bodies of bacteria, viruses, spores and moulds, but also pharmaceutical toxins, trace elements of antibiotics and hormonal contraceptives. Conventional water purifiers do not even deal with this pollution at all and release them in water supply line of households. In order for Czech nanotechnologists to prove that their water purification technology is economically advantageous and that they are able to clean contaminated water from any pollutants, including hormones and other pharmaceutical

substances, they have prepared the project "Drinking water and pellets from pig manure" for pig breeders. The investments in the necessary technology returns to breeders within six years. The water can be purified nanotechnologically with respect to the specific conditions and the required quality level for technological, drinking or irrigation water. Nanotechnology equipment purifying water at the technological level consumes only 35 watts per hour, which is comparable to the consumption of energy saving light bulb. Each impurity is filtered off one hundred percent; the concentrate is dried up and disposed of by two-stage combustion. Thanks to this, nobody needs to burden the environment with new wastes when cleaning water.



## LESS THAN ONE PERCENT OF THE TOTAL VOLUME OF WATER ON EARTH IS DRINKING WATER

Drinking water reserves on Earth are decreasing every year. It is reported that one-fifth of world's population has no access to safe water, and three million people per year die from contaminated water. In the Czech Republic, a unique filtration system has emerged that promises to turn any polluted water into drinking water.

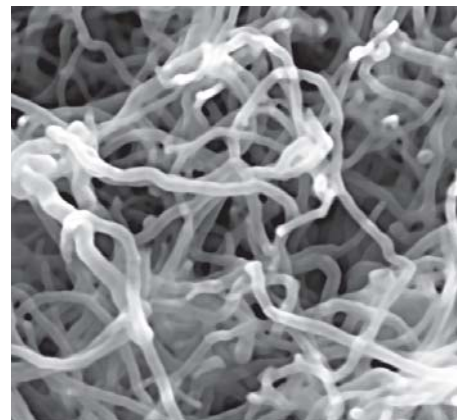
Výzkumný Technologický Institut,  
[www.vti-cz.com](http://www.vti-cz.com)



## TECHNOLOGICAL AND MANUFACTURING KNOW-HOW APPLICATION FOR WATER FILTERING IS IN THE CZECH REPUBLIC

NAFIGATE Corporation brings to the global market projects focusing on the development and production of a new energy-efficient generation of nanofibrous membranes for water and air purification technologies, textile industry and cosmetics. NAFIGATE Corporation know-how for the development of nanofibrous applications for water filtration has been emerging since 2006. During this time, comprehensive know-know has emerged that includes a formula for producing a fourth generation nanofibrous microfiltration membrane for water filtration; a formula for producing a nanofibrous filter membrane for Forward Osmosis and a prototype filtering device for water filtration without the use of electrical energy. NAFIGATE Corporation, [www.nafigate.com](http://www.nafigate.com)

Another key activity of NAFIGATE Corporation is transfer biotechnology called Hydal, which is the world's first to use used frying oil in the industrial scale of 100 % waste – to produce PHA biopolymer. The first pilot factory is being built in Suzhou, China. Hydal Biotech acquired the Frost and Sullivan Technology Innovation Award in 2015 with an excellent technology and business strategy rating.



## WATER PURIFICATION USING UNIQUE MATERIALS

By using the fibre-forming process in the electrostatic field, the company SPUR Zlín produces nanofibrous structures fixed on breathable, synthetic, mostly textile materials commercialised under the trade name of SpurTex<sup>®</sup>. The materials are made on an electrospinning line of the company's own design, SpinLine 120 (the electrospinning line is in the below picture), equipped with fibre-

forming nozzles. Nanostructured SpurTex<sup>®</sup> materials are offered as microfiltration membranes for water filtration and as highly efficient filtration materials for air filtration, characterised by the latest EN779 and EN1822 standards. The surface of the nanofibres is usually modified advantageously by antibacterial agents limiting biofilm formation. SPUR, [www.spur-nanotechnologies.cz](http://www.spur-nanotechnologies.cz)

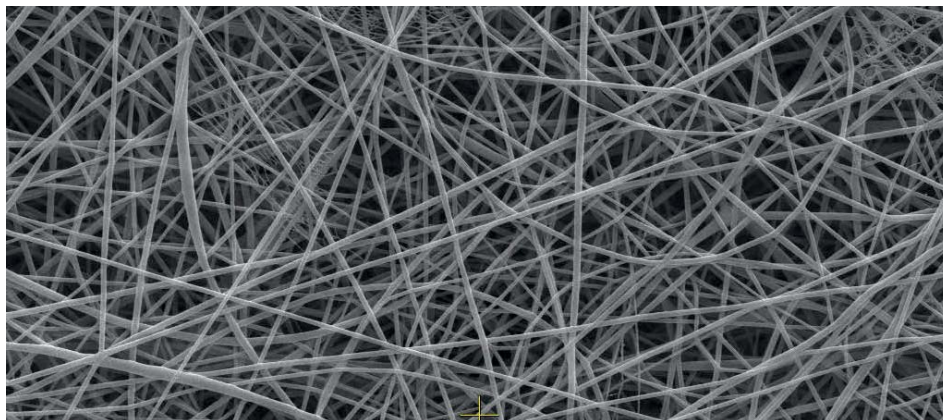


## NANOFIBRES APPLICATION

Nanospider™ technology is an affordable industrial technology capable of producing a miniature nanofibrous layer with the exact properties and dimensions of the nanofibres. The nanofibres made with this needle-free electrospinning technology excel in their high homogeneity and have contributed many times to improving the final products in various industries. Homogeneous layers of nanofibres are particularly suited to the needs of the filtration industry, and their properties in most cases outweigh the materials used so far. Nanofibres bring key features such as high porosity, small dimensions of fibres and pores, together with a high specific surface area. Combinations of these features bring benefits in a number of areas, in addition to filtration, it is medicine, acoustic materials, battery separators or membranes for performance apparel.

Elmarco,

[www.elmarco.com](http://www.elmarco.com)



## NANOTECHNOLOGY APPLICATIONS IN WATER MANAGEMENT

The application of nanotechnologies in water management can be seen primarily in purification and remediation, sensing and detection and protection against pollution. Among the most interesting areas of nanotechnology applications in the field of water purification are nanofiltration, the application of nanofibrous structures to water filtration, the use of antimicrobial materials to remove undesirable microbial life in waters and the use of advanced nanomaterials for potable and waste water treatment. An important representative in the field of research, development and application in practice is the Czech company ASIO, which deals with the application of nanofibrous structures and nanomaterials for

potable water and wastewater treatment and the elimination of microbial contamination from water. Another area of research is nanofibre filtration materials and elements for air purification for applications in water management. It cooperates on development and application of these materials and technologies with SPUR company, which provides development and production of nanofibrous layers and with a number of leading research and university departments (Palacký University in Olomouc, Mendel University, Brno University of Technology, Technical University of Ostrava, Centre of Organic Chemistry and others). ASIO, [www.asio.cz](http://www.asio.cz)

## IN CZECH REPUBLIC WE CAN PRODUCE DRINKING WATER EVEN FROM PIG MANURE

Even pig manure may be a source of drinking water after appropriate technological modifications. The company Research Technology Institute – Výzkumný Technologický Institut (VTI) deals with the development and production of devices for modification of drinking water from contaminated water sources in this example has shown the high efficiency of its method. The technology removes hormones, contraceptives, antibiotics, heavy metals, but also toxic and synthetic

substances from contaminated water. Separation of water and pellets from pig excrement is just one example of how this technology can be used. After centrifugation, by a filtration cascade through ultrafiltration, nanofiltration, ozonisation and mineralisation, drinking water can be obtained and after drying of the concentrate also non-smelling pellets for heating and electricity generation. Drinking water that flows out of the system is sterilised by ionisation, free from any chemicals and bacteria. VTI further mineralises water

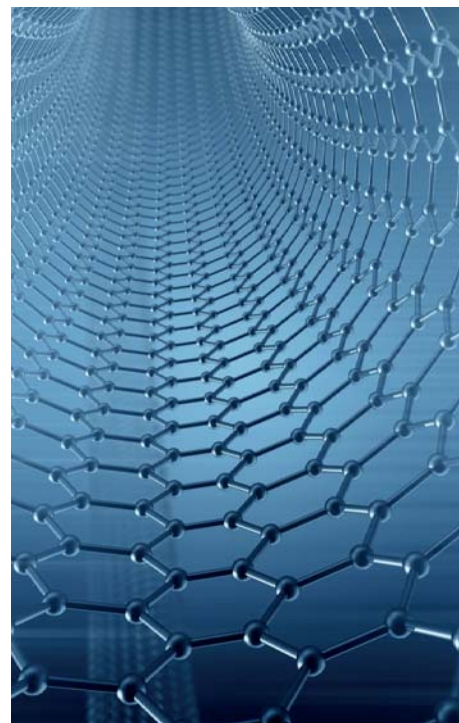
to mineral levels that are optimal for the human body. The technology for contaminated water purification and power generation supplied by VTI company has a wide range of uses. It can be bought in a small version by an owner of a family house for the use of rainwater and waste, as well as in larger scale, for example, a whole city for a wastewater treatment plant.

Výzkumný Technologický Institut,  
**[www.vti-cz.com](http://www.vti-cz.com)**

## CZECH NANOFIBRE MEMBRANE FOR WINE FILTERING SETS OUT TO CONQUER THE WORLD

The Nanotechnology Company P A R D A M in cooperation with the Czech food filter manufacturer FILTREX developed a unique RIFTELEN N15 membrane for filtration of oil, spirits and pharmaceutical products. After successful tests and food certification, nanomembrane from P A R D A M sets out to conquer world markets. Target customers are mainly food companies. The nanofibre membrane has a lower pressure drop, can be regenerated, does not have to be rinsed before filtering,

and increases the performance of the filter. The advantage is financial savings for cellulose plates. The Czech company FILTREX has been producing filters with high reliability and performance for 21 years already. The filters differ from conventional ones by the fact that filtration is ensured by flow instead of one straight by two inlet and outlet ducts. This reduces the pressure drop in the filter device and generates energy savings. FILTREX, **[www.filtrex.cz](http://www.filtrex.cz)**





## NEW NANOFIBRE MATERIALS AND STRUCTURES FOR EFFICIENT FILTRATION

The company P A R D A M is engaged in research and production of nanofibrous materials. Thanks to its unique centrifugal spinning technology and its own know-how, it is the only one in the world to produce a wide range of both inorganic and polymeric nanofibres on an industrial scale. Due to the many years of practice of nanotechnology specialists, P A R D A M company has a large portfolio of products. In the field of filtration, these are mainly NnF MBRANE polymer nanofibres, which are the main application in the filtration of both liquids and air. PUR, PA6, PAN, PVB, PVDF, PET and PCL can be found in the standard offer. Nanofibres are applied to the carrier fabric and can be laminated to prevent breakage. Unique technology also

makes it the world's only production of polymer nanofibres in 3D wool structure. As a commercial product in the current offer, there is RIFTELEN N15 – a nanofibrous membrane with a food contact certificate. The membrane is widely used for plate filtration of food oils, distillates, liqueurs, sweetened beverages, etc. Due to the thin structure of nanofibres, a fast transfer of matter with high filtration efficiency is achieved. Compared to commonly used cellulose plates, the RIFTELEN N15 membrane increases the filtration performance by from 100 up to 200 %. In addition, filtration runs at lower operating pressures, which ensures its gentler process and reduces energy costs. In addition to that during filtration, no particles are released from the membrane and there is no unpleasant taste as it is when using cellulose plates. The RIFTELEN N15

membrane can be easily washed and reused for several cycles. The membrane is also available in a sleeve design and in a stacked star-shaped, respirator BreaSAFE. Nanofibre respirators are another product that uses high breathability of nanofibres together with effective particle capture in different filter classes. Respirators manufactured by P A R D A M company are breathable throughout their entire area and the air does not pass only through the valve as with competing products. Antimicrobial modifications ensure that moulds or bacterial and viral colonies are not formed on the respirator surface. In addition, the versions available include activated carbon for odour absorption. P A R D A M,  
[www.pardam.cz](http://www.pardam.cz)  
[www.riftelen.com](http://www.riftelen.com)



# SPECIALISED COMPONENTS FOR WATER MANAGEMENT

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

Czech manufacturers put their production at high technical added value. This is the case with VAPO and MIVALT, which are actively investing in new technologies and are continuously expanding their production programmes. The development of new materials is based on the strategy of another successful Czech company PolyPLASTY. The development centre itself is the foundation of the current business for Kubiček VHS or MemBrain.



## THANKS TO ITS INVESTMENTS IN NEW TECHNOLOGIES, IT EXPORTS TO MORE THAN 30 COUNTRIES

VAPO offers a production programme focusing on two areas. These are rubber-textile products and industrial moulded rubber. Rubber-textile products are divided into pipe stoppers, lifting bags, leak sealing bags, sealing wedges, sealing bandages and rehabilitation packers. Other rubber-textile products are manufactured according to specific customer requirements. More than 20 years of knowledge and experience in the industry, investments in new technologies and collaboration with business partners allow them to develop existing and new products and expand the production

programme. All products are certified according to ISO 9001. As a result, VAPO products guarantee maximum functionality and safety even in extreme conditions. Since more than 80 % of the product range consists of pneumatic products, such as pipe stoppers and rehabilitation packers, their customers mainly involve water and sewerage managers, construction companies and fire and rescue departments. Export accounts for 70 % of production in more than 30 countries. The largest buyers are Germany, Great Britain, France, Poland, Spain and China. VAPO, [www.vapo-sro.cz/en](http://www.vapo-sro.cz/en)



## PROCESSING AND DEVELOPMENT OF POLYAMIDE AND POLYURETHANE PRODUCTS BASED ON DEVELOPMENT OF NEW MATERIALS

PolyPLASTY is a traditional Czech producer of technical plastics with over 50 years of experience. It has been producing plastics sewer grating and covers of ROVASCO material since 2005. This highly resistant products bear up from high load, class D400, C250 according to EN124 Norm. There are various types of gratings and covers in the current product range. Its own design department is responsible for the development of new products promptly and cost-effectively.

PolyPLASTY is currently the sole Czech manufacturer of gratings and covers eligible use the CE mark on its products and issue the Declaration of Performance, which allows them to sell Rovasco products without further certification throughout the EU.

ROVASCO is the name of the material, a unique polymeric system with built-in structure additives, developed by PolyPLASTY.

Contribution of the ROVASCO concept:

- easy to transport and moving around
  - low weight - fast installation
  - weather resistant (stainless)
  - chemical resistant
  - easy to dismount from the frame (after extended periods of use)
  - design flexibility (shape, cover and colour type)
  - no noise from the grate or cover when traffic passes by
  - high toughness of material (at low temperatures from  $-30^{\circ}\text{C}$  up to  $+120^{\circ}\text{C}$ )
  - high abrasion resistance
- PolyPLASTY,

[www.polyplasty.cz](http://www.polyplasty.cz)





## THE BIGGEST CZECH MANUFACTURER OF AIR BLOWERS, VACCUM AND CUSTOMISED BLOWER UNITS FOR TRANSPORTING OF EXPLOSIVE GAS

KUBÍČEK VHS is the leading Czech producer and supplier of special air blowers and equipment for the extraction and transport of explosive gases. KUBÍČEK VHS has been operating on the Czech market and increasingly on foreign markets for more than 25 years. It can guarantee both its domestic and international partners a degree of professionalism, which have been improving over the years in all aspects of the services

provided. The proof that such approach to clients is successful is the positive references of Czech and foreign clients and long-term cooperation. This has also led to continued development of the company, the offer of new models, expansion of production capacities and an increase in the number of jobs. In addition to technologically superior production, sales and highly flexible service, KUBÍČEK VHS also boasts its own development department capable of coming up

with design solutions to meet the requirements of all individual customers. The specialists are able to provide clients with technologically advanced, sophisticated equipment which are more efficient, economical, with significantly lower noise levels and a high level of security. Blowers and blower units have only minimal requirements for maintenance and operation.

KUBÍČEK VHS, [www.kubicekvhs.cz/en](http://www.kubicekvhs.cz/en)

## PRODUCTION OF SLUDGE DEWATERING MACHINES

The dewatering screw press is used for efficient thickening and dewatering of sludge water. Sludge water is a composite designation for water containing a certain amount of solid (dissolved) substances. The water may come from wastewater treatment plants, the food processing industry, chemical industry or other branches of human activity. Their plant is designed to treat sludge water with a dry matter content of 0.5 to 5 %. By passing through the device, the liquid and solid states are separated.

The solid state at the exit of the machine has a dry matter content of approximately 20 %. The device qualitatively overcomes conventional dewatering technologies due to very low power consumption and rinsing water, low requirements for maintenance and replacement of spare parts, small installation dimensions and easy operation. The machine is made of stainless steel, is supplied with a switchboard with a control system for automatic operation of the entire dewatering line, sludge feed pump and polymer dosing pump. The MP-DW is made in its entirety in the Czech Republic. MIVALT, [www.mivalt.cz/en](http://www.mivalt.cz/en)







## INNOVATIVE MEMBRANE TECHNOLOGIES

MemBrain is a research, engineering and technology company primarily focusing on research and innovation activities in the field of membrane processes. The main processes are Electrodialysis for desalination and concentration of different kind of liquid (e.g. aqueous solutions, whey, oligosaccharides, antifreeze,

waste water or other waste media) and Electrodeionisation for the production of ultra-pure water. In the field of gas membrane separation, they focus on biogas processing and bioCNG production.

To customers they offer design and verification of technical solution in laboratory and pilot scales. MemBrain

provide comprehensive services from analytics to engineering design. In cooperation with their parent company MEGA, they also supply industrial technologies.

MemBrain,  
**[www.membrain.cz/en](http://www.membrain.cz/en)**

# 8 ICT IN WATER MANAGEMENT

## ELECTRONICS FOR ECOLOGY

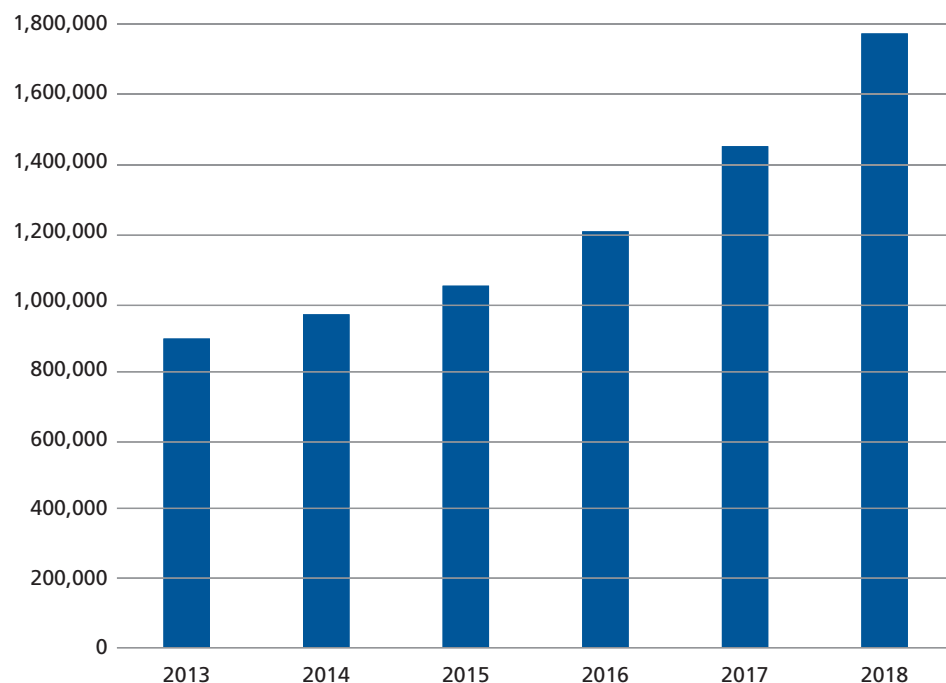
Czech companies in the field of IT and electronics for ecology have become major players on foreign markets thanks to unique and innovative solutions,

which are always one step ahead of the competition. The efficiency of the Czech technology industry is growing, as evidenced by more than 13 %

year-on-year growth in sales of the most successful Czech ICT companies.



## EXPORT OF WATER MANAGEMENT ELECTRONIC EQUIPMENT (IN THOUSANDS OF EUR)



Source: The Czech Statistical Office, calculations by CzechTrade, selected HS4 codes

## OPTIMISATION OF TECHNOLOGICAL PROCESSES WITH TECOMAT SYSTEMS

These days water management technologies cannot work without automation as well as without the internet and cloud based telemetry. The automation controllers ensure the right processing of technology as well as saving and optimisation of energy and maintenance costs. Teco produces the general purpose universal control system TECOMAT, compliant with the international industrial standard IEC 61131. In addition to other industrial branches, TECOMAT family controllers are frequently used for water and wastewater treatment processes as well as for telemetry projects. They are adaptable for big centralised installation projects with thousands of measured and controlled points,

as well as for small technological nodes, such as wells, pumping stations, metering points, etc. which are spread over the city or a larger geographical area. TECOMAT systems work autonomously connected to local or wireless networks on both the internet and cloud. The structure and elements of the TECOMAT and its communication are compatible with Internet of Things and Industry 4.0 standards. Low power consumption and a built-in WEB server enable integration with all remote stations. The comprehensive control system TECOMAT is usually completed with the traditional powerful SCADA system RELIANCE 4 or with web-based workflow system SprintFlow, both for operator workstations of complex dispatching centres as well as authorised access of maintenance staff from mobile devices from anywhere in the field. Teco, [www.tecomat.com](http://www.tecomat.com)



## DEVELOPMENT OF OWN SPECIALISED SOFTWARE

HSI com operates in the information technology market and is engaged in the development of application CAD software. It is also focused on complex ICT customer services, especially in the field of GIS and CAX applications and implementation

of DMS systems. HSI com Plzeň is an authorised partner of Hexagon Safety & Infrastructure (formerly INTERGRAPH) for customer support in the deployment of geographic information systems, a partner of AXIOM TECH in Zlín, specialising in supplying CAX/PLM technologies and a partner of Siemens PLM Software for their deliveries of CAX and PLM systems. Since 1999, HSI com

has been expanding its services to implement electronic archiving systems. In the new millennium, it completed the development of its own products for electronic archiving of e-ARSYS documents, for e-SD document management and for work with e-Schránka data boxes. HSI com Plzeň, [www.hsicom.cz/en](http://www.hsicom.cz/en)



## AUTOMATION OF TECHNOLOGICAL UNITS

Marves' main business activity is the automation of technological units, mainly in the field of water management, power engineering and heat. Automation of the technological unit is complex starting from the project, modifications to machine parts and heavy electrical equipment, through measurement and

regulation to superstructure control. This corresponds to both staff qualifications and the company's authority to operate. It mainly supplies and assembles the following technological units: wastewater treatment plants; wastewater pumping stations; water treatment plants; clean water pumping stations and reservoirs; boiler rooms and exchanger stations. If necessary, it is possible to group these technological units into groups with dispatching control with communication

over the line, radio modem or GSM. Dispatch and radio points are implemented this way. To implement the above, the company is able to provide documentation; low-voltage switchboards; field instrumentation; frequency inverters; mixing and control components; control systems (Schneider Electric, SAIA, Amit, Teco, Allen-Bradley), visualisation tools; application software. MARVES, [www.marves.cz](http://www.marves.cz)

## SMART INFRASTRUCTURE FOR MONITORING AND CHECKING ENVIRONMENT QUALITY

FIEDLER focuses on developing complete systems for collecting and visualising data from a sensor to the cloud. It produces own smart metering devices, IoT sensors, data loggers, controllers, SCADA systems and cloud software. These clusters of hardware and software unleash a remote control of monitored values in almost real time. FIEDLER is being used for supervising small to mid size WWTPs, water consumption readings, weather stations and local warning systems. Its portfolio includes flowmeters, smart meters, pH meters, limnigraphic stations,

rain gauges, oximeters, conductivity meters, controllers and other devices and systems. All products are designed to operate under extreme conditions and with unattended battery operation. Interestingly, FIEDLER'S applications include an extensive network of water level gauge and precipitation stations available to the general public at [www.envimonitoring.com](http://www.envimonitoring.com).

Foreign projects:

- one of the world's highest working weather stations with regular automatic transmission (2017) at 5,280 m above sea level in Peru
- installations in Antarctica, Dubai/ UAE, Kenya, Kyrgyzstan

FIEDLER AMS,

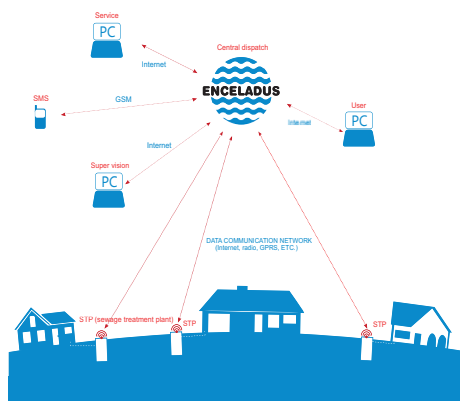
[www.fiedler.company](http://www.fiedler.company)



**FIEDLER**  
ELECTRONICS FOR ECOLOGY



## MONITORING SYSTEMS AND INNOVATION



### SYSTEM TELEMETRY

#### SATTURN HOLEŠOV

ensures perfect control and management of the cleaning process by means of system telemetry installed in individual WWTPs. It represents an innovative solution in municipal wastewater treatment. It is suitable in locations where it is not technically or economically feasible to use central treatment with one municipal WWTP. In addition, the system reduces total investment costs, which are up to 50 % lower than the central solution in agglomerations or municipalities with less than 2,000 inhabitants. SATTURN HOLEŠOV, [www.enceladus.cz](http://www.enceladus.cz)

### UNIQUE OPTICAL INSPECTION SYSTEMS

Zikmund electronics is a leading manufacturer of optical inspection systems for controlling sewers, hot-water pipes, earth drillings and other inaccessible sites. Clients include water supply and sewerage companies, heating plants, breweries, hydrogeological exploration companies. The company holds the lead in the development of unique features, such as identifying hidden water infiltration. The company has been developing and producing sewerage survey cameras since 1991. The systems have been tested through several independent partner companies to create a comprehensive, versatile and special feature unique series for complete sewer network

diagnostics. The system is modular - it is possible to start working with the basic configuration and gradually supplement other devices and components which are fully compatible with it. A built-in system can be easily removed from the vehicle and used as portable at any time. The company has developed a global format function - ballast water penetration measurement, which, by identifying hidden water infiltration, optimises the water influx to a wastewater treatment plant. Systems also include proprietary software for importing data to the GIS system. Zikmund electronics camera systems are also used by the Pilsner Urquell brewery and the French multinational Veolia group.

Zikmund electronics,  
[www.e-zikmund.cz](http://www.e-zikmund.cz)



## INNOVATIVE SEWERAGE MONITORING SYSTEMS

IBOS deals with the production and sales of technologies for treating, monitoring, milling and repairing sewers. The company continues to come up with new technical approaches, methods and solutions which relate to the company's production programme and services. IBOS actively monitors and responds to technological developments in order to continuously improve and be more responsive towards customers. Innovation, development and a customer-centric approach are company priorities which greatly

determine the portfolio of products and services offered. The company manufactures and sells high-pressure cleaning equipment, sewage suction, combined and recycling vehicles (including FFG recycling vehicles), self-propelled and pushrod cameras for pipeline monitoring including software equipment, Prokasro sewer robots, pipeline pressure testing systems, Brandenburger and Brawoliner liners for trenchless sewerage repairs and other accessories necessary for sewerage management. IBOS is successfully expanding abroad. It is currently represented in fifteen countries. IBOS, [www.ibos.cz](http://www.ibos.cz)



## OWN DEVELOPMENT OF SPECIALISED WATER MANAGEMENT SOFTWARE

EG - Expert develops specialised solutions for power engineering, water management and the public sector as well as economic systems for businesses. The solutions are designed to support the management of energy processes. Its products are modular and easily parameterised. At the minimum cost, it offers a solution designed for a particular customer.

EG - Expert, [www.egexpert.cz](http://www.egexpert.cz)



# USE OF WATER IN THE ENERGY INDUSTRY

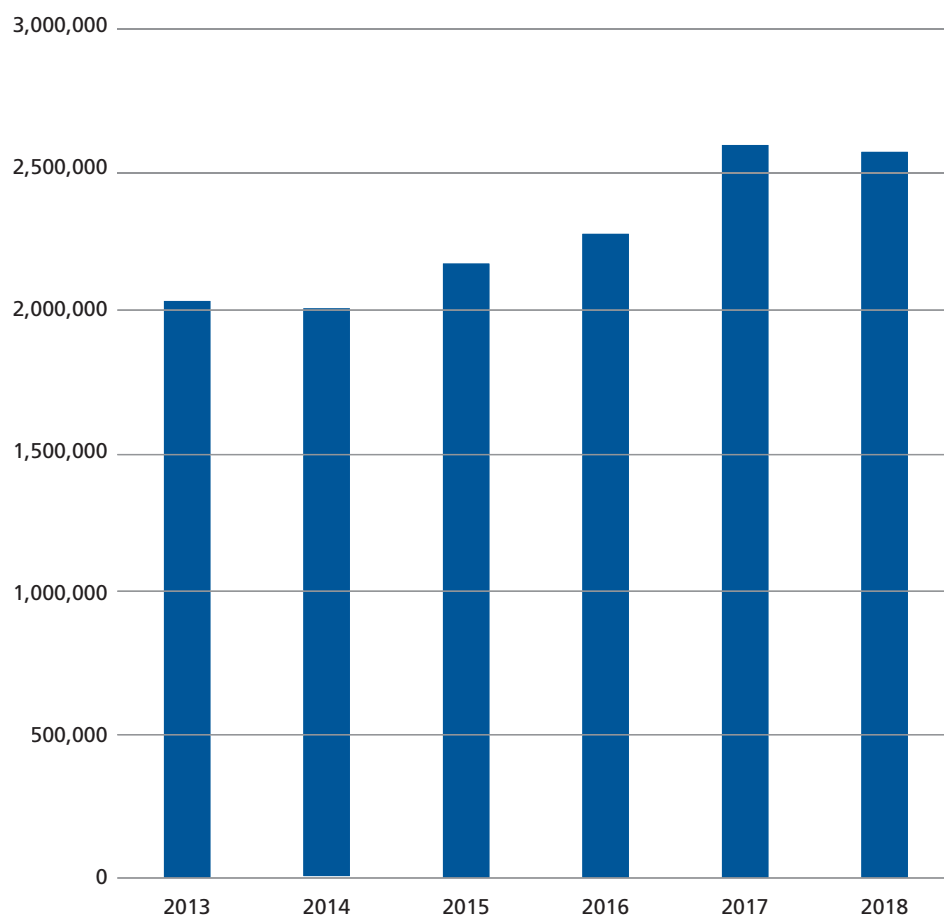


## HYDROENERGY LEADERS SINCE THE BEGINNING OF THE 20<sup>TH</sup> CENTURY

The development of hydroenergetics has spurred first and foremost, technological advances based on the production of suitable and efficient water turbines and the possibility of production and transmission of electricity. Hydroenergetics has gradually helped electrification of municipalities and further development of production. Development was on such a huge scale that in 1930 almost 17 thousand power stations, mills and other hydroelectric installations were registered in what was then Czechoslovakia. At present, 1,572 small hydropower plants with power from 1 kW to 10 MW are registered in the Czech Republic. Overall installed capacity amounts to 348 MW, annually generating around one terawatt-hour of electricity.

Thanks to this, the Czech Republic offers a number of innovative solutions built on their own development.

## EXPORT OF PRODUCTS RELATED TO HYDRONERGETICS (IN THOUSANDS OF EUR)



Source: The Czech Statistical Office, calculations by CzechTrade, selected HS4 codes: 8410: Water turbines, 8502: Electric generator sets, 8503: Parts for electric generator motor, 8507: Electric accumulators, including separators, 8537: Boards, panels, switchboards, counters, cabinets.



## CKD BLANSKO

CKD Blansko is an industrial company on the market now for more than 320 years. This is proof of innovation, competitiveness and, in particular, high calibre human resources. The first water turbine was built here more than 110 years ago in 1904. Their customers can be found in 55 countries, with a total installed capacity of more than 21,000 MW.

CKD Blansko delivers state-of-the-art electromechanical equipment and

services - water-to-wire - from small hydroelectric power plants to the largest ones. They use all types of turbines - Kaplan, Francis, Francis Reverse, Pelton and Deriaz as well as butterfly and spherical valves, lock-gates, stoplogs, weir shutters, segmented closures, etc.

They have their own water research institute and educational facilities for welders churning out more than 100 graduates per year.

CKD BLANSKO Holding,

[www.ckdblansko.cz](http://www.ckdblansko.cz)







## PUMPED STORAGE HYDROELECTRIC POWER PLANTS

The highest pumped storage hydroelectric power plant in the Czech Republic called Dlouhé Stráně is at an altitude of 1,350 m in the Jeseníky Mountains. Its task is to perform static and dynamic services for the Czech Republic's electricity system with its power of 650 MW. Static service means an efficient conversion of surplus energy in the system to peak energy. This process is carried out by pumping water from the bottom tank

into the upper one at the time of its surplus and vice versa - generation of electricity by turbine operation. Dynamic services particularly include the proportion of the pumped storage hydroelectric power plant to regulate power and frequency in the system and the capability of an available reserve in the system. For ecological reasons, the power plant itself with two Francis turbines was built in a cavern underground. The cavern is connected to the upper tank by two feeders, to the lower tank and to two tunnels.

The water from the top tank is led by two pressure feeders with a diameter of 3.6 m and a length of 1.5 km to the turbines. The transition from standby to maximum power takes up to 100 seconds. Ingstav was the main supplier, Energotis was the supplier of engineering investment activities, underground work was carried out by Subterra. The basic technology was produced by ČKD Blansko, transformers were supplied by Škoda Plzeň, the armour of the conveyors was manufactured by Hutní montáže Ostrava.

### **The power plant prides itself on being the largest in 3 ways:**

- ⦿ the largest reverse water turbine in Europe - 325 MW
- ⦿ the largest gradient in the Czech Republic - 510.7 m
- ⦿ the largest installed power in the Czech Republic - 2x 325 MW

Dalešice hydraulic structure is also worth mentioning. It was built in connection with the construction of the Dukovany nuclear power plant. Dalešice provides it with technological water.

Furthermore, it reduces downstream flood peaks and sedimentation of impurities from upstream and waste water from the nuclear power plant. Besides fulfilling the classical function of the energy accumulator, i.e. power production at peak points and energy absorption at the time of its surplus, with its power and speed of 60 seconds to full power, it assumes an irreplaceable role in controlling the performance of the nationwide power system as well as an immediate failure reserve. For this purpose, the

plant is fully automated and remotely controlled from a central dispatching centre in Prague. In the pumped storage hydroelectric power plant 4 sets are installed with reverse Francis turbines for a 90 m head installed by ČKD Blansko. Both 13.8 kV synchronous generators and bi-directional spin from ŠKODA Transportation are used for power generation as a propulsion pump. Block transformers serve to transform the voltage of generators to the voltage of the 420 kV outlets.

## **CINK HYDRO - ENERGY**

CINK Hydro - Energy specialises in the production of micro, mini and small hydropower plants up to 7 MW per unit. As one of the few companies in the world, it has the necessary know-how to implement technically flawless deliveries of all major types of turbines; Crossflow, Kaplan, Pelton and Francis. All the equipment is manufactured exclusively in Europe. Since its modernisation in 2005, the company has produced, delivered and installed over 330 turbines in more than 35 countries worldwide, bringing the total installed capacity to more than 300 MW. In addition, CINK Hydro - Energy focuses on installing hydropower plants not

only as run-of-the-river projects, but also in drinking water systems, irrigation canals and wastewater treatment plants. Services provided also include: supervision of turbine installation, commissioning, online technical support, training of power plant personnel, maintenance and perfect warranty and post-warranty care ensured, among other things, by ISO 9001:2016 and 14001:2016 certification.

CINK Hydro - Energy,  
[www.cink-hydro-energy.com](http://www.cink-hydro-energy.com)



## HYDROELECTRIC POWER PLANT TECHNOLOGIES

M a v e l has been a leading global manufacturing and engineering company specialising in turbines and related equipment and technology for hydroelectric power plants from 30 kW to 30 MW per unit, since 1990. M a v e l is able to implement complete hydroelectric power plant units as so-called turnkey projects. M a v e l owns more than 100 designs of Kaplan, Francis, Pelton and micro turbines. M a v e l's turbines produce energy in

over 42 countries across more than 300 locations. In 2018, the company delivered among others one Kaplan vertical turbine with a runner diameter of 4,250 mm and total power 4.4 MW to North Bala hydroelectric power plant in Canada. At present, the company mainly supplies water turbines to the USA and Canada. Apart from export abroad, the company is also currently restoring the two Štvanice and Veletov hydroelectric power plants in the Czech Republic.

M a v e l,

**[www.mavel.com](http://www.mavel.com)**



## COMPLEX SOLUTIONS FOR USING WATER ENERGY

HYDROHROM is a manufacturer and supplier of complete equipment for small hydroelectric power plants:

- complete supplies of Kaplan, Francis and Pelton turbines including accessories and control system
- fine-spacing screen and inflow equipment
- cleaning machines for screens
- butterfly and spherical valves including controlling
- fishbelly flaps

The company also provides consultations, design work and installation in accordance with customer specifications. HYDROHROM turbines are successfully exported to many countries thanks to their full competitiveness. For the last period, exports amounted to the majority of the total volume of production.

HYDROHROM,

**[www.hydrohrom.cz/en](http://www.hydrohrom.cz/en)**



ZIROMONT is committed to designing, manufacturing and supplying water turbines, water microsources and accessories for small hydroelectric power plants (SHPP). Specifically, the company has mainly focused on the development and production of tubular water turbines designed especially for low heads. These turbines are characterised by high discharge, smaller installation dimensions and a range of possible flow control variants. The turbine body, including a shield for mounting the generator together with the diagonal distributor wheel chamber and the imparted compartment of the impeller, is designed as a compact rigid unit. Its shape is designed so that hydraulic losses are kept to a minimum. To hold the weight of the entire turbine, including the generator, the body is provided

at the bottom with a rigid base. The whole system is controlled by a programmable control system which also allows the operator to use remote access and remote communication for controlling using the internet network, as well as possible servicing of the equipment. The equipment is designed to drive asynchronous generators operating in parallel to the public electricity grid, or to drive synchronous generators even in island mode. ZIROMONT focuses on developing new solutions as well as improving existing solutions leading to the most efficient use of water potential in the relevant SHPP throughout the year. For this purpose, it also works closely with a number of renowned partners in the field. It also offers construction and projection work in the field of SHPP. ZIROMONT, [www.ziromont.cz](http://www.ziromont.cz)



Ševčík HYDRO has been specialising in the production of technology and its installation and repairs of water management facilities and buildings since 2003. It exploits the knowledge and expertise of workers with extensive experience in water management. The company provides complete supplies of technological units as well as the manufacturing of individual equipment, repairs, maintenance and reconstruction of existing equipment. Ševčík HYDRO, [www.sevcik-hydro.cz/en](http://www.sevcik-hydro.cz/en)





## EXMONT-ENERGO

EXMONT-Energo provides comprehensive services in the production and installation of small hydroelectric power plants (power plants of installed capacity up to 10 MW). It is renowned for producing clean “green” energy. For this activity, it has the necessary designers, technical facilities and, last but not least, experienced workers in production. Thanks to many years of experience and a background in production, the company has successfully completed the

construction of several hydroelectric power plants, mostly abroad. All implemented projects are equipped with generators from EXMONT-Energo. Important products also include a swirl turbine for small heads, for the production of which Brno Technical University was also involved. The swirl turbine can be used in locations with a head of 1 to 5 metres and a flow rate of 0.2 m<sup>3</sup>/s. Other types of turbines include the Kaplan turbine, Francis turbine, Pelton turbine and Bánki turbine. EXMONT-Energo,  
[www.exmontenergo.com](http://www.exmontenergo.com)



G&Em is a young company of dynamic designers who manufacture electric machines - specialising in generators for small hydroelectric power plants up to 7 MVA. The technicians have extensive knowledge gained from longstanding professional experience in the field of hydropower engineering and they possess more than 40 years of proven technical competences in designing generators and electric motors. The generators are manufactured with modern equipment including a test room for horizontal as well as vertical machines.

G&Em, [www.gaem.cz](http://www.gaem.cz)

# 10 REMEDATION

Czech companies have experience in implementing soil and groundwater remediation in removal of old environmental burdens. Depending on the type of pollution and nature of the site, they are able to choose the appropriate remediation process and technology and provide comprehensive services from designing exploration work to installing and operating remediation equipment. Monitoring during remediation as well as post-remediation monitoring is offered as a matter of course.



## SPECIALIST IN ENVIRONMENTAL BURDENS

Old environmental burdens, i.e. pollution of rock environment and groundwater by pollutants of predominantly industrial origin, presently represent a still serious threat to the environment, the removal of which is often difficult and requires special procedures and technologies. Remediation of such polluted sites also falls within one of EKOSYSTEM'S programmes. It provides comprehensive services in this field from designing exploration work to installation and operation of remediation equipment. Remediation work is provided in such a way as to avoid any disturbance of the operation in industrial buildings. For these reasons, non-invasive remediation technologies placing an emphasis on in situ technologies are preferred. Where necessary, the extraction of contaminated soils to the required extent is carried out. In coordination with other companies

and institutions, EKOSYSTEM is able to ensure rock steaming, thermal desorption, reaction barrier building and other special methods. The company contributes to the research and development of progressive remediation technologies and their verification in practice by means of pilot tests. At present, it is mainly the application of an aqueous solution of nano iron, bioslurping, chemical oxidation by potassium permanganate, the purification of underground and waste water by reverse osmosis and sulphide precipitation of heavy metals. The remediation equipment used involves its own construction and production. All design, evaluation and management of work are carried out by specialists in the field of hydrogeology and geochemistry with a focus on remediation work. EKOSYSTEM,  
**[en.ekosystem.cz](http://en.ekosystem.cz)**

## GEOTEST

GEOtest is an experienced company established on the market for more than 50 years. In addition to the Czech Republic and the Slovak Republic, it implements projects in more than 35 countries worldwide, in particular in the sectors of the environment (sustainable management of natural resources), integrated water resource management (including water management, hydrogeology, irrigation), agriculture, disaster risk management, energetics, remediation, waste management, engineering geology and geophysics. These are projects covering all phases of the project cycle - identification, formulation, implementation and evaluation. GEOtest not only provides technical consultations but also gets involved in projects which build capacities and humanitarian aid projects. Since January 2018, GEOtest has been a member of the INOGEN ENVIRONMENTAL ALLIANCE. GEOtest, [www.geotest.cz/en](http://www.geotest.cz/en)



Vodní zdroje Ekomonitor has been an active player in the field of environmental protection since 1991. The company is one of the major and renowned suppliers in the market with a comprehensive range of services. In the framework of water management services in the field of drinking and waste water, it provides the processing of operating rules for public water pipelines and sewerages, water quality assessment and operational management of water pipelines and water treatment facilities in accordance with current legislation. We also prepare water management studies of a technical solution or technological design, variant technical and economic

studies with an assessment of investment and operational demands for water treatment and distribution, wastewater treatment and flow adjustment. The company also focuses on building new sources for individual as well as collective water supply (drilling and digging wells) and on regeneration of older sources, while cooperating with reliable drilling companies and an accredited laboratory in the actual implementation of these orders. In the field of water management, the company also organises a number of expert conferences and seminars. Vodní zdroje Ekomonitor, [www.ekomonitor.eu](http://www.ekomonitor.eu)



# CONTACTS

## CZECH WATER ALLIANCE, [www.czechwateralliance.com](http://www.czechwateralliance.com)

The aim of the alliance is to develop and promote Czech companies, their products and technologies to international customers. CWA seeks to improve the position of Czech firms in the export of services and technologies in water management.

## ABESS, s.r.o., [www.abess.cz/en](http://www.abess.cz/en)

It provides engineering services, supply of equipment and technologies for environmental protection and in the fields of water, soil, air and hazardous waste.

## AQUA PLUS s.r.o., [www.aquapluscz.eu](http://www.aquapluscz.eu)

The company works with the development of water treatment technologies, water disinfection and sets manufacturing and water treatment equipment designing, installation and servicing.

## ASIO, spol. s r.o., [www.asio.cz/en](http://www.asio.cz/en)

The company is involved in the development, production, and delivery of technologies for wastewater treatment, water treatment and air treatment, which are employed in the treatment of wastewater from family houses, villages, towns, hospitals, and in various branches of industry.



## BKG - úprava vody, s.r.o., [www.bkg.cz/en](http://www.bkg.cz/en)

The company focuses on design, production and delivery of complete water treatment facilities – the processing of drinking water, process water and waste water.

## CENTROPROJEKT GROUP a.s., [www.centroprojekt.cz/en](http://www.centroprojekt.cz/en)

The company offers customers comprehensive services for the planning and execution of construction projects on a turnkey basis.

## CINK Hydro - Energy k.s., [www.cink-hydro-energy.com](http://www.cink-hydro-energy.com)

CINK Hydro - Energy is a manufacturer of micro, mini and small hydro power plants up to 7 MW per unit.

## CKD Blansko Holding, a.s., [www.ckdblansko.cz](http://www.ckdblansko.cz)

CKD Blansko has been an industrial company for more than 300 years, mainly thanks to innovation, competitiveness and, above all, high calibre human resources.

## EG - Expert, s.r.o., [www.egexpert.cz](http://www.egexpert.cz)

EG - Expert implemented dozens of SW projects, especially for energetics. The mission is to provide IT services in an efficient and guaranteed way.

## EKONA, spol. s r.o., [www.ekona.cz](http://www.ekona.cz)

EKONA is a traditional Czech producer of wastewater treatment plants.



EKOPROGRES HRANICE, a.s., **[www.ekoprogres.cz](http://www.ekoprogres.cz)**

This company provides a full range of water treatment and distribution installations.

EKOSYSTEM spol. s r.o., **[en.ekosystem.cz](http://en.ekosystem.cz)**

EKOSYSTEM is strategically focused on products in the fields of ecology and water management, with supplementary production of plastic welded parts and locksmithery.

ELMARCO s.r.o., **[www.elmarco.com](http://www.elmarco.com)**

ELMARCO is the first company in the world to manufacture and sell devices for manufacture of nanofibre material on industrial scale. The company has its headquarters in Liberec and uses its North Carolina branch to support the US market.

ENVI-PUR, s.r.o., **[www.envi-pur.cz/en](http://www.envi-pur.cz/en)**

ENVI-PUR makes up one of the strongest Czech companies that is concerned with the development, production and the delivery of ecological equipment, focused on the branch of wastewater treatment and water treatment.

ENVITES, spol. s r.o., **[www.envites.cz/en](http://www.envites.cz/en)**

The company primarily focuses on sludge dewatering and pressure filtration of industrial suspensions. Equipment made by ENVITES is successfully used in many countries of the world, whereby the share of export in the total sales of the company amounts to 80 %.

EXMONT-Energo a.s., **[www.exmontenergo.com](http://www.exmontenergo.com)**

EXMONT-Energo provides complete services in the production and installation of small hydroelectric power plants. The company works in the field of producing clean "green" energy.

FIEDLER AMS s.r.o., **[www.fiedler.company](http://www.fiedler.company)**

FIEDLER AMS has been a pioneer in developing whole system solutions for data collection, telemetry, data analysis and process control. Their devices are applied in highly diverse industries.

FILTREX s.r.o., **[www.filtrex.cz/en.html](http://www.filtrex.cz/en.html)**

The Czech company FILTREX has been manufacturing filters with high reliability and performance. At present, the company supplies filters for production of wine, beer, spirits, beverages, food, pharmacy, biotechnology, cosmetics and oils.

FONTANA R, s.r.o., **[www.fontanar.cz/en](http://www.fontanar.cz/en)**

Fontana R focuses on development, production and service of equipment for wastewater treatment plants. 80 % of orders deal with specific solutions which meet customer requirements.

FORTEX - AGS, a.s., **[www.fortex.cz/en](http://www.fortex.cz/en)**

This company focuses on the building industry, waste- and drinking water treatment technologies, metal production, sales and services of VW and Škoda cars.

G-servis Praha spol. s r.o., **[www.g-servis.cz/en](http://www.g-servis.cz/en)**

The company provides design and delivery of water treatment plants for municipal and industrial subjects. More than 25 years of experience mostly in difficult territories such as Syria, Yemen, Afghanistan and Ethiopia.

G&Em s. r. o., **[www.gaem.cz](http://www.gaem.cz)**

This is a young company of dynamic designers who manufacture electric machines – specialising in generators for small hydroelectric power plants.

GEOtest, a.s., **[www.geotest.cz/en](http://www.geotest.cz/en)**

The company is one of the largest and most important Czech firms dealing with environmental protection through geology and environmental remediation, as well as in geotechnical and hydrogeological research.

HSI com s.r.o., **[www.hsicom.cz/en](http://www.hsicom.cz/en)**

HSI com successfully operates on the information technology market specialising in developing CAD software, as well as comprehensive ICT customer operation primarily in the GIS area and CAX application and implementation of DMS systems.

HYDROHROM s.r.o., **[www.hydrohrom.cz/en](http://www.hydrohrom.cz/en)**

HYDROHROM is a producer of devices for small hydro power plants. It provides consultation, projection work and installation to customers as required.

IBOS a.s., **[www.ibos.cz](http://www.ibos.cz)**

The company deals with manufacturing and sales of high-pressure cleaning equipment, combined and recycling sewer vehicles, self-propelled and pushrod camera systems for monitoring pipelines including software devices. Progress and customer-centric approach - these are the priorities of the company.

IN - EKO TEAM s.r.o., **[www.in-eko.com](http://www.in-eko.com)**

IN - EKO TEAM is a longstanding manufacturer of water management equipment from stainless steel, which is used not only in municipal wastewater treatment plants but also in many areas of industry.

JSP, s.r.o., **[www.jsp.cz](http://www.jsp.cz)**

JSP Industrial Controls is a top Czech supplier and manufacturer in the field of measurement and control technologies.

KUBÍČEK VHS, s.r.o., **[www.kubicekvhs.cz/en](http://www.kubicekvhs.cz/en)**

Producer of ROOTs blowers for pressure, vacuum, ATEX and customised applications.

Laurich s.r.o., **[www.laurich.cz](http://www.laurich.cz)**

This company provides a comprehensive service in the field of water treatment.

MARVES v.o.s., **[www.marves.cz](http://www.marves.cz)**

The company's main activity is automation of technological units, mainly in the field of water management, power engineering and heat.

M a v e l, a.s., **[www.mavel.com](http://www.mavel.com)**

M a v e l is a global leader in the provision of water-to-wire equipment for hydroelectric power plants utilising turbines with installed capacity of 30 kW to 30 MW.

MemBrain s.r.o., **[www.membrain.cz](http://www.membrain.cz)**

MemBrain is a research, engineering and technology company predominantly focusing on research and innovation activities in the field of membrane processes, particularly the transfer of research results into commercial practice.

MICo, spol. s r.o., **[www.mico.cz/en](http://www.mico.cz/en)**

The company specialises in designing and manufacturing heat exchangers, condensers, pressure vessels, tanks, steel structures, technology equipment for the nuclear and conventional power generation industries, chemical and food industry and gaskets for special application.

MIVALT s.r.o., **[www.mivalt.cz/en](http://www.mivalt.cz/en)**

A manufacturer of dewatering machines and other mechanical equipment for wastewater treatment, distributor of products for water and air flow - pumps, blowers, valves.

NAFIGATE Corporation a.s., **[www.nafigate.com/en](http://www.nafigate.com/en)**

NAFIGATE brings projects to the global market focused on the development and production of a new energy-saving generation of nanofibrous membranes for water and air purification technologies, textile industry and cosmetics.

P A R D A M, s.r.o., **[www.pardam.cz](http://www.pardam.cz)**

P A R D A M is a Czech company that has been engaged in the development of nanofibre materials and their subsequent production and functionalisation for the needs of specific products and applications since 2009.

PolyPLASTY s.r.o., **[www.polyplasty.cz](http://www.polyplasty.cz)**

The company boasts over 50 years' experience in producing alkaline polyamide and cast polyurethane elastomer. Besides the materials mentioned, the company processes and delivers other plastics such as POM, PE, PTFE, etc.

Power Plastics s.r.o., **[www.powerplastics.cz/en](http://www.powerplastics.cz/en)**

The company designs, manufactures and installs systems for treatments and filtration of drinking and technological water in a wide range of use.

PRESSKAN system, a.s., **[www.presskansystem.cz](http://www.presskansystem.cz)**

The main and minor aim of the company is to design sewerage systems including hydraulic calculation or assembly and construction of other utility networks.

REKUPER SYCHROV, s.r.o., **[www.rekuper.cz](http://www.rekuper.cz)**

The main business purpose of the company is production and commercial activities supporting and introducing green and energy-saving products and equipment.

SATTURN HOLEŠOV s.r.o., **[www.enceladus.cz](http://www.enceladus.cz)**

ENCELADUS is a unique complex technology for remote system monitoring and control of (domestic) wastewater treatment plants (WWTPs).

SIGMA GROUP a.s., **[www.sigmagroup.cz/en](http://www.sigmagroup.cz/en)**

A traditional Czech manufacturer of pumps and pumping sets for industrial use.

SPUR a.s., **[www.spur-nanotechnologies.cz](http://www.spur-nanotechnologies.cz)**

The SPUR company has been engaged in research in the field of nanotechnologies since 2006. In 2011, a trial production of filtering materials with nanofibres on their own electrospinning production device was launched.

Ševčík HYDRO s.r.o., **[www.sevcik-hydro.cz/en](http://www.sevcik-hydro.cz/en)**

The company specialises in the production of technology and its assembly and repairs of water management, equipment and buildings.

Teco a.s., **[www.tecomat.com](http://www.tecomat.com)**

Teco is one of the leading manufacturers of regulation and control systems in the PLC category. They are widely used to control the process of water treatment, drinking water purification, transport of water or telemetry of water meters.

TopolWater, s.r.o., **[www.topolwater.com](http://www.topolwater.com)**

TopolWater's main area of activity at present is the production and sale of facilities for the treatment of domestic, municipal and industrial wastewater.

VAPO, spol. s r.o., **[www.vapo-sro.cz/en](http://www.vapo-sro.cz/en)**

The company specialises in rubberized-fabric products and moulded mechanical-rubber parts.

Vodní zdroje Ekomonitor spol. s r.o., **[www.ekomonitor.eu](http://www.ekomonitor.eu)**

In the framework of water management services in the field of drinking and wastewater, it provides the processing of operating rules for public water pipelines and sewerages, water quality assessment and operational management of water pipelines and water treatment facilities in accordance with current legislation.

Výzkumný Technologický Institut s.r.o. (VTI),

**[www.vti-cz.com/en](http://www.vti-cz.com/en)**

The company deals with the development and production of devices for drinking and technological water treatment from any contaminated water source. The device is based on hybrid asymmetric selective membrane separation technology (THASMS).

WOMBAT, s.r.o., **[www.wombat.cz](http://www.wombat.cz)**

Wombat has various technologies in their portfolio capable of being used to renovate a wide range of diverse pipe systems such as sewers, drinking water pipes and gas pipes.

Zikmund electronics, s.r.o., **[www.e-zikmund.cz](http://www.e-zikmund.cz)**

Zikmund electronics is a leading manufacturer of unique optical inspection systems for sewer systems, hot water systems, underground wells and other inaccessible locations.

ZEBRA GROUP s.r.o., **[uzitkove-vozy-zebra.cz](http://uzitkove-vozy-zebra.cz)**

ZEBRA GROUP is the youngest Czech vehicle company focusing on production of small utility carriers of flexible all season superstructures (more than 45 types) and offers diesel and also EL (emission low) vehicles. ZG is also a member of the AutoSAP, CWA and VAK e.V.

ZIROMONT spol. s.r.o., **[www.ziromont.cz](http://www.ziromont.cz)**

ZIROMONT is involved in designing, manufacturing and supplying water turbines, water microsources and accessories for small hydroelectric power plants (SHPP). It also offers construction and project work in the field of SHPP.

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