

Pražské vodovody a kanalizace, a.s.

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Snapshot

COMPANY NAME:

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INCORPORATED:

1 April 1998

BACKGROUND:

Pražské vodovody a kanalizace, a public company limited by shares (PVK), is the legal successor of the state-owned enterprises Pražské vodárny and Pražská kanalizace a vodní toky to the extent specified in the privatisation proposal.

LEGAL FORM:

Public limited company (akciová společnosť)

REGISTERED OFFICE:

Ke Kablu 971/1, Hostivař, 102 00 Praha 10

COMPANY NUMBER:

25656635

SHARE CAPITAL:

CZK 483,288,000

SHAREHOLDER:

VEOLIA CENTRAL & EASTERN EUROPE S.A. 100%

The Company has no organisational units outside the Czech Republic.

Bodies of the Company as at 31 December 2017

BOARD OF DIRECTORS

Philippe Guitard, Chairman Rostislav Čáp, Vice-Chairman Miluše Poláková Eva Kučerová Milan Kuchař Petr Mrkos Martin Bernard

SUPERVISORY BOARD

Květoslava Kořínková, Chairwoman Ivo Sušický, Vice-Chairman Marcela Dvořáková Josef Šverma Marek Dřevo Alena Březinová

EXECUTIVE MANAGEMENT

Petr Mrkos, CEO Petr Slezák, Deputy CEO, Chief Personnel Officer Pavel Novotný, CFO and Sales Director Petr Kocourek, Chief Operating Officer Radka Hušková, Chief Technology Officer Marcela Dvořáková, Chief Communications and Marketing Officer

Key figures

The Company's turnover: CZK 7.118 billion

Profit: CZK 488,699,000

Number of people supplied: 1.29 million in Prague and 205,000 in the Central Bohemian Region

Number of employees: 1,014

Water supplied to the water supply network: 98,098,000 m³

Total wastewater treated: 117,734,000 m³

Length of the water supply network operated, including supply pipes: 4,396 km

Length of the sewerage network operated, including drain pipes: 4,678 km

Number of contract customers: 90,712

Highlights of 2017

New customer portal and mobile applications

This easy-to-survey and user-friendly customer portal offers customers a quick overview of their consumption, billing, and advance payments and the parameters of their customer contract, and also efficient communication via an electronic interface without the need for telephoning or visiting a customer service centre. A new mobile application enabling access to the customer account and required information from anywhere and at any time is also a useful helper.

The Packaged Water project extended to eight Prague boroughs

Another four Prague boroughs, Praha 3, Praha 13, Praha 16, and Praha 14, joined the Packaged Water project in 2017. Together with Praha 2, Praha 6, and Praha 15 and Březiněves, eight Prague boroughs are already involved in the project, which is primarily intended for disabled people registered with PVK. PVK also uses packaged water in emergencies as a substitute source of drinking water supply.

Water losses kept at a low level

In 2017, water losses were maintained at 15%, having stood at more than 34% as recently as 2000. These modest losses can be put down to the continuous water supply network monitoring, including running evaluations of water losses in supply zones, and regular water system diagnostics.

SWiM extended to include Smart Energy

The SWiM (Smart Water integrated Management) system, which provides a modern way for controlling and monitoring water services, has been extended to include, among other things, the Smart Energy system. Smart Energy helps to manage the distribution of drinking water and service water (the industrial water supply line) by pumping at the time of low energy prices at the spot market and has necessitated a modification of the modes of water distribution by pumping.

Cooperation with ČEZ going forward

In the first quarter of 2017, PVK and its partner, MARTIA a.s., won the tendering process and acquired the contract for the maintenance and repair of water and sludge systems for 2017 to 2021.

PVK implements additional smart technologies

PVK and Veolia Energie, a.s. contribute to the energy optimisation of the V Tower residential complex. There, water from the water supply pipe is the source of heat, while in the adjacent office building heat is recovered from waste water using a unique spiral exchanger. This is the first such project in the Czech Republic.

These projects also include on-line water metering called Smart Metering, the digitalisation of the installation reports, etc. In 2017, two of PVK's projects, SWiM and the use of thermal energy in drinking water for heating, were included in Smart Prague, a programme deploying the latest technologies for transforming the city using innovative technologies.

Pilot testing of Misting

In Hostivař, the Company has installed a facility that produces water mist (misting equipment) and so helps to reduce air temperature on hot days, and dust concentrations. PVK wants to offer the facility to Prague for use in public areas, and also to industrial companies.

PVK presents its operations

In addition to the Prague Water Management Museum, in 2017 the Company opened the sewerage network for the public at a point called Foreigners' Entrance under the Old Town Square, the wastewater treatment plant in Horní Počernice – Čertousy, and PVK laboratories to which customers could bring their water samples for analysis free of charge; during the Káranský vodovodník sports event, excursions to the Káraný water treatment plant were also organised.

Developments expected in 2018

In 2018, PVK will continue to forge ahead with new projects. The Company plans to expand the packaged water project, smart technologies, and SWiM (Smart Water integrated Management), primarily Smart Energy deployment at all 19 distribution pumping stations for drinking and service (industrial) water.

In respect of customers, the Company will focus on improving services, above all in digitalising and in the development of mobile technologies. PVK plans to develop and improve the customer portal so that it gradually becomes the main communication channel for customers.

In its financial management, the Company will work towards the adoption of additional austerity and environmental measures, thereby improving the efficiency of its operations.

In 2018, an agreement will be signed with the City of Prague on a joint approach during the preparations for the sale of a minority equity stake in PVK to the city.

EDITORIAL BY THE CHAIRMAN OF THE BOARD OF DIRECTORS

The year 2017 was marked by a stabilisation and calming down of the relationships with our key partner, the City of Prague, a year of economic prosperity for the whole country that we also felt, and also a year of considerable political changes that ultimately also have an impact on us. Our Company is an efficiently operating entity able to effectively resist external turbulences, and also flexible enough to respond to them.

I regard the talks on City of Prague potentially buying into PVK as a minority partner as a crucial development. Such cooperation with our key account would significantly intensify our strategic partnership and be very beneficial for PVK. I firmly believe that the talks will continue in the constructive spirit as up to now and result in a mutually beneficial agreement.

I am very proud that PVK is also able to find the time and capacities for reflecting on innovations and new projects. The mere fact that I cannot name all the projects here is evidence that we have a number of colleagues who want to find new paths and opportunities for development and for improving our efficiency. I would refer to at least a few projects that are crucial for us. In 2017, a new customer portal and new mobile applications were launched; they will offer our customers better access to our Company and our services. We have already involved eight Prague boroughs in the packaged water project, and so offer this unique service to their residents.

In the technical and operating area, SWiM continues to be expanded; its greatest success in 2017 was the Smart Energy module that strongly supports electricity cost savings. I also greatly appreciate the cooperation with Operator ICT, the company that implements the Smart City project in the City of Prague. PVK has registered four projects in Smart Prague and we are one of the leaders in this project as regards privately-held companies operating in Prague. Our good work is borne out by the recurring excellent results in reducing water losses and in maintaining the high quality of drinking water in Prague.

We continue to place great emphasis on occupational health and safety. The OHS Week is a well established tradition at PVK and we continuously raise work safety standards. A long-term OHS objective for employee care is the smallest possible number of injuries at work and no fatal accidents. PVK maintains its leadership in water services. Our employees' high professionalism translates into the high quality of our work and a high level of our services. I extend thanks to all colleagues for the great job they are doing and I am confident that we will keep our high standards in the coming years.

Philippe Guitard Chairman the Board of Directors

OUR SERVICES

Pražské vodovody a kanalizace, a.s. (PVK) is a leading water supplier. Reliable **supply of highquality drinking water and the drainage and treatment of wastewater** constitute the Company's core business. PVK also offers numerous other services that are linked to its core business and keeps expanding the range of its customer services, including on-line information about water consumption and incidents, the pinpointing of any hidden glitches, official water measurements, sewerage network surveys, laboratory analyses, services downstream of the water meter and a slew of further services for individuals, housing cooperatives, municipalities and industry.

PVK is part of Veolia Group, which is the 100% shareholder of the Company. Veolia is a supplier of water, heat, cooling and electricity in the Czech Republic and elsewhere in the world. It provides its subsidiaries with know-how in water infrastructure, with which its experience is more than 160 years long.

PVK observes the fundamental values of its shareholder, Veolia: a customer focus, responsibility, solidarity, respect, and innovation. PVK, much like other Veolia Group companies, follows a code of ethics, a code of conduct for managers, an environmental code and an OSH code.

The Company delivers **an all-embracing water service** to its customers and is committed to the provision of premium customer services. Every year, it comes up with innovations to improve its services, and it also seeks to protect the environment.

PVK holds internationally recognised certificates for its integrated management system. The integrated management system was implemented throughout PVK in 2006 when the Company received a certificate for its quality management system and OHS management system. In the following years, the requirements of environmental management and energy management systems were gradually implemented in the integrated system. The prestigious Diamond Certificate for our integrated management system is a commitment for us to continuously improve in all certified areas of our business.

Drinking water supply and distribution

PVK supplies drinking water to 1.29 million Prague residents and another 205,000 people in the Central Bohemian Region. PVK operates the water infrastructure in Prague and in the town of Radonice. Here, it is responsible for 4,396 km of water supply networks, including supply pipes, 49 pumping stations, 66 water reservoirs and 112,511 water meters. Water infrastructure is rented from the owner, the City of Prague.

The Company supplies the Prague water supply network with water produced at the water treatment plant the Company operates in Káraný. The Company also purchases drinking water from the water treatment plants in Želivka (operated by Želivská provozní a.s.) and Sojovice (operated by Vodárna Káraný, a.s.), known as "bought-in water", which it distributes in Prague.

The Podolí water treatment plant is a back-up facility in case of emergency. In 2017, 71% of drinking water from the Želivka plant was supplied into the Prague water supply network, and the figures were 17% from the Káraný plant and 12% from the Sojovice plant.

Water supplied to the water supply network in 2017

	Indicator	Quantity [m ³]
Drinking water	Drinking water produced by PVK	18,857,523
	Water bought in from the Želivka and Sojovice plants	91,423,007
	Total drinking water	110,280,530
	Water transferred (drinking water supplied into a	13,228,585
	public water supply network managed by another	
	entity)	
Industrial water	Water produced – industrial water mains	1,045,649
Drinking +	Drinking water and industrial water	19,903,172
industrial	Water for sale supplied to the network	98,097,594

In 2017, PVK delivered 98,098,000 m³ of water to the water supply network, 3% more than in the previous year. Average per capita water consumption was 109 litres per day.

Water supplied to the water supply network between 2013 and 2017 (in thousands of m³)



Water billed and unbilled between 2013 and 2017 (on thousands of m³)



Water losses (%) between 2013 and 2017



Water losses

In 2017, water losses were maintained at 15%. Although they did not reach the all-time low from the preceding year, the results are very good. Water losses stood at more than 34% as recently as 2000. These modest losses can be put down to the continuous water supply network monitoring, including running evaluations of water losses in supply zones, and regular water system diagnostics.

In 2017, PVK employees examined 2,711 km of the water supply network, discovering 328 hidden water leaks, which are essential for reducing water losses.

Length of water supply network	3,539
Length of supply pipes	857
Number of supply pipes	114,235
Number of water meters	112,511
Number of reservoirs	68
Volume of reservoirs	753,894 m ³
Number of pumping stations	51

Water meters

As at 31 December 2017, **112,216** water meters were installed in Prague and 295 in Radonice to measure drinking water consumption. In 2017, **18,197** water meters were replaced, mostly because the period of the validity of their verification had expired. The repair and verification of 8,111 water meters, **1,365** customer-requested official water meter tests and **111** on-the-spot official tests were outsourced to an external supplier.

Remote reading is in place for **5,501** water meters. Meter readings are radio-transmitted to a concentrator, from where all data are transmitted directly to end users via the internet. Readings are taken online and the data are stored on a server and immediately presented in the web environment accessible at <u>https://veolia.unimonitor.eu/</u> or in the Veolia CEM mobile application.

Remote radio-transmitted readings offer greater user convenience and lower costs per reading, as well as the possibility of monitoring water consumption online and promptly detecting malfunctioning meters. They also guarantee accuracy and help to provide for occupational health and safety.



In remote readings, PVK works with Pražská teplárenská, a.s., Pražská plynárenská, a.s. and PRE měření.

Water supply network incidents

In 2017, PVK handled 4,959 water supply network incidents, up by 459 incidents, or 10.2% on the previous year. Despite the growth in the number of incidents the average water supply interruption time declined to 9 hours and 32 minutes, down by 50 minutes on the previous year, which helped to minimise direct impacts of incidents on residents.

Of the total number of incidents, 48 were category 1 incidents, where more than 1,000 inhabitants or health or other important facilities are left without a water supply. Compared with the preceding year the number of these incidents declined by 11, i.e. 18.6%. The number of category 2 incidents increased only by 3 to 142 and category 3 incidents increased by 11% to 4,769.

The leading cause of the incidents was corrosion (70.9%), followed by land movement (23.2%) triggered, for example, by frost. These two causes were responsible for 94% of the cases.

It is Company policy to provide maximum information on each incident while minimising the impact on the consumer. Incidents are reported online on the PVK website. This information clarifies whether drinking water supplies are affected at a particular site, where water wagons have been deployed, whether water (including packaged water) has been distributed for emergency supply, and the estimated time it will take to complete the repair and restore normal water supply. All this information is also available via Google Maps. Prague residents who have registered with the text message service also receive news about outages and incidents on their mobile devices.



WASTEWATER COLLECTION AND TREATMENT

Total length of the sewerage network	3,689
Length of drainage pipes	979
Number of drainage pipes	122,056
Number of pumping stations	337
Number of wastewater treatment facilities	The Central WWTP + 20 branch WWTPs

In 2017, almost 1.27 million inhabitants were connected to the sewerage system in Prague.

Including drainage pipes, it runs for a total length of 4,668 km. The central part of the city has a combined sewerage system in place to drain sewage together with rainwater to the Central Wastewater Treatment Plant (CWWTP). The outskirts of Prague are served by separate sewer networks that drain rainwater separately.

In 2017, PVK also operated 20 branch wastewater treatment plants (BWWTPs) in addition to the CWWTP: in Březiněves, Horní Počernice - Čertousy, Dolní Chabry, Holyně, Kbely, Koloděje, Kolovraty, Klánovice, Královice, Lochkov, Miškovice, Nebušice, Nedvězí, Sobín, Svépravice, Uhříněves - Dubeč, Újezd nad Lesy, Újezd u Průhonic, Vinoř and Zbraslav.

In 2017, PVK treated 117,734,000 m³ of wastewater, 1.4% more than in the previous year; of this volume, 109,602,000 m³, i.e. 93%, was treated by the Central Wastewater Treatment Plant (CWWTP).

Following 2015 and 2016, this was the third smallest inflow into the CWWTP since it was put into operation. The low value of the inflow testifies to the persisting trend of drinking water savings in Prague and to a rather dry year in terms of precipitation. These were also some of the reasons for the relatively high concentrations of pollution in the inflowing wastewater.

During the year, the CWWTP had to cope with several cases of pollutant inflows contrary to the Sewerage Operating Rules. **Despite all the pitfalls, the CWWTP was operated without having to pay charges for discharged wastewater.**

The treatment of Prague wastewater at the CWWTP produced 2,700 tonnes of grit (gravel and sand) in total, 4,000 tonnes of screenings, and 88,000 tonnes of dewatered sanitised sludge in 2017. 89% of sanitised sludge was deposited on farmland, 7% was processed in a composting plant and 4% went to the energy use and solidification of waste, all of this in line with the applicable provisions of the Waste Act. The use of sewage sludge gas in cogeneration units made the CWWTP 100% self-sufficient in terms of the heat used in its operations again. Cogeneration units also generated 56% of the overall demand for electricity in the operations here.

Quantity of wastewater treated in 2017 (m³)



Incidents in the sewerage network

In 2017, PVK addressed 3,643 incidents in the sewerage network, including those on covers and blockages, down by 270, i.e. 6.9%, on the previous year. The lion's share of incidents involved drainage pipes. The most common sewerage network incidents, in terms of the type of damage, involved blockages and sediment, accounting for 77.7%, or 2,831, of the incidents. The number of blockage and sediment incidents was down by 155, or 5.2%, year on year.

Other causes of incidents included missing or damaged manhole covers, damaged restoration liners, surfaces and masonry, and destruction.

Number of sewerage network incidents by type of facility in 2017

Type of facility	Number of	%
	incidents	
Sewers	1,157	31.8
Drainage pipes	1,770	48.6
Shafts, chambers, reservoirs,		
spillways	529	14.5
Other	187	5.1
Total	3,643	100.0



Equipment breakdowns

PVK tackled 807 equipment breakdowns in total in 2017, i.e. 59 or 6.8% less than in the preceding year.



Sewerage network surveys

Preventive surveying of the sewerage network with cameras and an inspection system helps to check on sewers that cannot be entered physically. In 2017, PVK employees surveyed **152 km of sewers and inspected 1,980 access shafts** and other installations in the sewerage network. They detected 37 defects in the sewerage system during their inspections. To repair the defects detected in the sewerage system, they drew up 99 defect repair proposals and submitted them for inclusion in the repair and investment plan.

Sewerage network surveys continued to include inspections of sewers at risk of high-velocity water drainage. Surveys were also carried out when tramlines or road surfaces were being repaired to check whether foul water was draining into rainfall sewers and to reduce the stress on branch wastewater treatment plants and pumping stations caused by ballast water. On the outskirts of Prague, 21.1 km of the sewer system were smoke-tested. A new vehicle to carry a camera and a Quick camera were bought for quick visual inspection of sewers from access shafts.

Water quality

PVK's accredited laboratories carry out regular checks on drinking water and wastewater quality. The accreditation covers the entire range of the laboratories' activities: sampling and analysis of drinking, hot, packaged, surface, raw, ground and waste water, water from intermediary process stages (interstage water) and sludge, and bathing water, including waste sampling and analyses of process chemicals used in water treatment and purification.

Drinking water

Drinking water throughout Prague is safe. In its physical, chemical, microbiological and biological properties, it complies fully with Czech and European standards. The quality is checked throughout the production and distribution of drinking water, all the way to the consumer's tap.

Drinking water quality is regularly monitored in accordance with Implementing Decree No 252/2004 laying down requirements for drinking and hot water and the scope and frequency of drinking water checks, as amended. EU drinking water requirements are satisfied in this respect. Water quality checking also comes into play after water supply network incidents, repairs and other similar works.

Under Implementing Decree No 252/2004, the metabolites of pesticides, specifically desphenylchloridazon and chloridazon-methyl-desphenyl, in water from the Káraný water treatment plant and metazachlor ESA in water from the Želivka plant are also regularly tracked in water quality monitoring. The above cases involve non-relevant metabolites of pesticides, for which individual hygienic limits are in place in relation to the evaluation of health risks. Other pesticides and their metabolites and other risky pollutants are also screened to confirm that drinking water is free of other extraneous matter.

Under the Drinking Water Quality Monitoring Programme, in 2017 the distribution network was checked at delivery points to the distribution system, along the distribution routes and also at consumers. A major parameter of the distribution network samples failing to comply with the No 252/2004 regulation is iron, and the related colour and turbidity. In 2017, 3.21% of the distribution network samples failed to comply with the Programme in terms of iron, which implies a slight improvement compared with 2016. Responding to these unsatisfactory results, the water supply networks are subjected to purging and documents for its renovation are submitted.

In cooperation with the water treatment plants, in 2017 a total of 7,869 samples were taken from the drinking water supplied into the Prague water supply network, and 202,215 analyses were made on them. 391 samples were taken for post-incident water quality checks. In those samples, 10,290 parameters were determined, 99.2% of which complied with the Implementing Decree's drinking water requirements. Scheduled repairs were followed by the taking of 353 samples. In those samples, 7,789 parameters were determined, 99% of which were found to be compliant.

The laboratory has introduced and is now using alternative microbiological methods on a regular basis for determining faecal contamination of drinking water. They are very important for checking consumers' concerns that their health complications and digestive difficulties may be caused by water.

Wastewater

The PVK laboratory regularly monitors wastewater quality throughout the wastewater treatment process. Wastewater samples taken from the CWWTP and its process equipment, including sludge and sewage sludge gas, and wastewater from BWWTPs, industrial producers, the sewerage network, and the discharge points operated by PVK were analysed.

Liquid waste delivered to the CWWTP and BWWTPs by outside entities was also checked. The range and frequency of checks complies with the applicable legislation on wastewater. The main reason for checking wastewater quality is to ensure compliance with the prescribed limits for wastewater discharge to prevent contaminated wastewater from discharging and, in turn, environmental damage.

In response to the rising number of wastewater samples, in 2017 the wastewater laboratory was refurbished and enlarged, including a replacement of analysers and procurement of new modern analysers. The new instruments mainly include automatic analysers, which can process large numbers of samples, thereby accelerating the water quality monitoring process (for example, a robotic analyser

for determining COD-Cr, a continuous flow analyser for determining nitrogen forms, an analyser for determining adsorbable organic halogens and an extractor for determining fats and oils).

In 2017, 16,501 samples were processed in the PVK wastewater laboratory, and 117,154 parameters were determined, i.e. 9% more of the determined parameters than in 2016.

Other services

Besides its core business, PVK offers customers other services. Outside contracts account for a major share of the Company's total sales.

Cooperation with ČEZ

In the first quarter of 2017, PVK and its partner, MARTIA a.s., won the tendering process and acquired the contract for the maintenance and repair of water and sludge systems for 2017 to 2021. Thus, PVK can continue in the long-standing successful cooperation with ČEZ, a.s. The portfolio of the power stations where these services are being provided include Mělník sites (including those of Energotrans, a.s.), Tušimice, Prunéřov, Ledvice, and Počerady (coal-fired and combined-cycle units).

In this project, PVK continues to work with its key supplier in mechanical equipment maintenance, Česká voda – Czech Water, a.s. MARTIA a.s., our main partner, provides services in electrical engineering and I&C. Thanks to this partnership, PVK carries out most of the activities using its inhouse capacities.

In 2017, the turnover in maintenance activities amounted to CZK 45.2 million. Outside the above contract, a major contract for the Refurbishment of Gravity Aqueducts from the Inflow Structure into the Ohře Pumping Station, valued CZK 39.8 million, was carried out. This contract entailed the rehabilitation of a DN 1000 concrete pipe using the relining method. In this area, the turnover totalled CZK 89.3 million and 2017 can therefore be regarded as one of the most successful years.

Official water flow measurements

The main services offered in urbanised catchment hydrology and hydraulics include official measurements and assessments of the serviceability of water flow measurement systems. Other services comprise the measurement of hydraulic variables in the sewerage and water supply networks, precipitation measurements and mathematical modelling in order to draw up documentation such as general drainage plans, general water supply plans, precipitation-runoff studies, measurement of hydraulic variables on hydraulic paths of wastewater treatment plants, water treatment plants and pumping stations, review of facilities and assessment of their hydraulic functions.

In 2017, measurement of hydraulic and hydrological variables was carried out under numerous projects such as The Update and Management of the Prague General Water Drainage Plan, Part 5, the Re-calculation of the Catchment of the Solidarita and CXII Collector, The Prague General Water Drainage Plan – the Second Detailed Stage in the Podolí and Braník cadastral areas and a part of Krč and Michle, and also measurements at 33 overflows in the district of Cheb, at pumping stations in the Prague sewer network, at BWWTPs, and in sewers and many more sites.

Pest control

In 2017, 13,790 sewer entry points in Prague were treated, entailing the use of 13,790 kg of rodent control bait.

Besides this across-the-board disinfestation in the Prague sewerage network, we carried out disinfestation at 60 facilities and disinsectisation at 41 facilities for our external customers.

Technological supervision

In 2017, PVK's water engineers were responsible for supervision or guidance and the incorporation of water management agendas at the CWWTP, the 20 branch WWTPs operated by PVK, and 69 sewage treatment plants of 1. SčV (which PVK operates or services). They are paying ever increasing attention to issues surrounding the CWWTP's new water treatment line and the coordination of this line's operation with that of the existing line.

As for drinking water technology, PVK engineers contributed to water quality checks in water abstraction, treatment and infiltration in Vodárna Káraný, a.s. and water quality checks in water treatment and transport for Želivská provozní a.s. They also contributed to the evaluation of the model GAC (granular active carbon) at the Želivka water treatment plant; the tests will be the basis for validating the investment strategy for including sorption to GAC as part of the Želivka water treatment technology and the operation of a mobile water treatment unit in the Podolí water treatment plant for testing the sorption stage. It is one of the three mobile water treatment units held by Správa státních hmotných rezerv (Administration of National Strategic Reserves) and is intended for drinking water production when an emergency water supply for the population is required.

Cooperation in remote readings

PVK's metrology-related services include the repair and verification of 'meters obligatorily verified under Czech legislation', and the design and delivery of devices for remote readings of both billing and subsidiary meters. In 2017, the Company carried out remote readings of billing water meters for VOSS s.r.o. in the town of Rokycany, for CHEVAK Cheb a.s., in Hradec Králové, Kaufland, and for Frýdlantská vodárenská společnost, a.s.

Hydrant standpipe rentals

Customers rented two different-sized hydrant standpipes from PVK to pump water from hydrants. In 2017, 303 small and 220 large hydrant standpipes were rented.

Testing of flood control pumps

In 2017, maintenance was carried out on mobile pumps in accordance with relevant regulations. Annual preventive checks of all 11 gensets was carried out. Operating tests were carried out at pumping sites during the year. PVK is responsible for the performance of pumping tests on mobile pumps at the reservoir in Hostivař. All mobile pumping sets were subjected to regular technical inspections at a technical inspection station. Over and above standard tests, at the Hergetova cihelna mobile pumping station water was pumped from the Čertovka stream to test the flood gate in July 2017.

Downstream of the Water Meter services

In 2017, PVK carried out 112 repairs on the internal water supply and sewage draining plumbing of connected structures and fixed 107 incidents involving domestic distribution systems. In cooperation with Česká voda - Czech Water, a.s., a further 1,495 repairs were carried out on the internal water supply fixtures at our customers.

Laboratory services

The PVK laboratory is responsible for taking and analysing samples both for PVK's internal requirements and for external customers on the basis of contracts or purchase orders. In 2017, it carried out 16,348 analyses for external customers.

	Želivská provozní a.s.	Vodárna Káraný, a.s.	Veolia	PVS	Other	Total
Drinking water	8,003	1,546	2,171	0	2,620	14,340
Wastewater	352	30	817	594	215	2,008
Total in the water quality monitoring unit	8,355	1,576	2,988	594	2,835	16,348

Sewerage network servicing

PVK provided customers with a range of sewerage network services, including the emptying of grease traps, sewage tanks, sumps and septic tanks, the inspection of sewer pipes with TV cameras, the creation of new access points for public requirements, the construction of manholes and drainage pipes, and technical consulting. In 2017, PVK emptied sumps and disposed of the waste in 381 cases, emptied grease traps and disposed of the waste in 322 cases, and built 244 sewer access points.

Domestic wastewater treatment plants

In cooperation with 1. SčV, a.s., PVK arranges for sales of domestic wastewater treatment plants from the Czech company ENVI-PUR. This is a solution for customers who are unable to connect to the sewerage network. We are able to offer customers a presale service (the selection of a type of plant, suggestions on where to locate it, assistance with designs, etc.) and an after-sale service, including inspections and further advice. Compared with the preceding year when four complete domestic water treatment plants were completed, this activity was broadened last year: in 2017 we supplied seven domestic water treatment plants and provided services to improve the operation of another eight plants.

CUSTOMERS

PVK has long been building its customer relationships based on mutual trust and a proactive approach to their issues. PVK continuously develops and improves its customer services and enhances the convenience of services. This is why it offers modern and convenient communication channels to its contract customers. The new customer portal and the Moje Veolia application now offer registered customers overviews of their contracts in place, data on their water consumption in real time, and a broad range of online service options, including amendments to contracts and changes in payments of the water and drainage rates.

Since 2010, PVK has adhered to its Customer Service Commitments, which help to maintain the high standard of the services enjoyed by customers. PVK also seeks to apply the principle of corporate social responsibility, warning customers of any increase in their water consumption and assisting them when they find themselves in difficulty. In mid-2018, new commitments will be issued to help improve customer services even more.

Since 2003, our customer services have been certified under the international standard ČSN EN ISO 9001:2001. PVK again retained this certification in the 2017 annual re-audit, testifying to its highly professional, utmost-possible customer care.

Between 1 September and 10 October 2017, the Company ran its traditional satisfaction survey. The poll was conducted for PVK over the phone by IBRS - International Business and Research Services s.r.o., an independent research agency. In all, 92% of respondents said they were happy with the services offered by PVK. Over 95% of respondents are satisfied with the professionalism of the Company's frontline employees. Some 96% of respondents are happy with the continuity of drinking water supply; 90% are happy with the quality of the water supplied. The research involved the participation of 700 customers from Prague, comprising a mix of single-family building owners, multifamily residential building managers, housing cooperatives, industrial customers and corporates.

Contract customers and billing

PVK provides services to **90,712 customers**, supplying them with drinking water and draining and treating their wastewater contractually. Contract customers include individual customers (66,671), multi-family residential buildings and cooperatives (16,181), and corporates (other, 7,860). As certain customers may have more than one contract in place, PVK recorded 114,235 supply points at the end of 2017.

More than 30,000 PVK customers had their **bills emailed** to them in 2017. PVK also offered to send their receipts via e-mail. This means that legal entities, after paying an advance, receive a tax document promptly and in advance, so they have problem-free VAT check reports. These customers were also able to make **online payments** via their VISA or MasterCard or, alternatively, a payment button, i.e. a link to internet banking with a pre-filled order. Contract customers who opt for the payment button simply select the bank where they have their online account. Since January 2016, the following financial institutions have been involved in this project: Česká spořitelna, a.s., Komerční banka, a.s., Raiffeisen Bank, a.s., mBank S.A., Era and Československá obchodní banka, a.s.

Customers also paid their bills via the **terminals of Sazka sázková kancelář, a.s.** On the bill, they find a barcode, and the terminal can read the payment information contained in the code and issue a receipt confirming the customer's cash payment. The far-reaching terminal network (at newsagents, petrol stations, convenience stores, etc.) and extended opening hours allow customers to pay their bill as it suits them. A uniform fee of CZK 15 is charged for this service regardless of the amount paid. In 2017, more than CZK 50 million (a total of 15,546 payments were received) was paid in water and sewage rates via Sazka terminals.

Since 2013, another cashless avenue open to customers has been **QR-based mobile payments**. This involves a special QR payment code for banking applications on smart phones, printed by PVK on its billing documents. The relevant bank's application installed in a device simply reads the information contained in the QR code shown on the bill and the payment order in the banking application is automatically completed with the correct data. All the customer has to do is confirm the

payment. This way, customers avoid the errors that could crop up were they to fill in their bank's payment order manually. Even customers who do not own a smart phone with a banking application can use the QR code. This option is available with Česká spořitelna, a.s. Customers who bank with Česká spořitelna, a.s., can use all payment ATMs of Česká spořitelna, a.s. for paying using the QR code. In 2017, customers paid more than CZK 22 million for services using a QR code, up by CZK 8 million on 2016.

PVK contract customers



Contact centres

The call centre

In 2017, PVK's customer service line handled 91,967 calls with a 93.7% service level. Enquiries tended to centre on drinking water supply. Customer service line operators also respond to customers' emails. In 2017, they handled 43,458 customer emails and processed 4,982 active forms. Besides handling customers' calls and emails, operators also help to promote service provision, register customers for the SMS INFO service, and offer email billing, insurance to cover emergency situations, and the activation of the customer portal, the Moje voda mobile application and other services.

The PVK contact centre's organisation is in the hands of Solutions & Services, a.s. (the provider of ICT services within Veolia Group). In addition to its contact centre management, Solutions & Services, a.s. has also taken over the reins of billing and debt recovery.

	2014	2015	2016	2017
Number of calls	79,753	95,674	93,252	91,967
Service level	84.6%	93.8%	93.4%	93.7%
Number of customer emails handled	30,244	37,625	44,573	43,458

Customer service centre

The customer service centre in Dykova Street, in Prague's Vinohrady district, had 21,037 visitors in 2017, 3,472 fewer than in 2016. They primarily tackled their contracts or paid their water and sewage bills there. At the customer service centre, customers can pay water and sewage bills and for water analyses, hydrants, etc., over the counter. More than CZK 38.4 million was received there. At the centre, visitors were able to sort out everything to do with their contractual relationships and tackle all of their technical requirements, including technical documentation.

Modern customer services

New customer portal and mobile application

In May 2017, PVK offered its customers a new, clear and user-friendly customer portal, and also a new mobile application for all customers and consumers. Via the portal or app, they can arrange certain requirements online, including changes in the payment settings, amendments to contracts, making online payments for water and sewage draining, and reporting water meter self-readings as at

the required billing date. They also have an online overview of bills and water consumption, including the history. The option of making online payments via the portal or app is a highly superior service in the water industry. In 2017, almost 8,000 contract customers registered in the portal.

Information on incidents and shutdowns, and the Company's nearest contact points, will be available to users who have not signed in. The mobile app is geared not only towards customers, but also towards consumers, and is available for download to Android and iOS user interfaces.

Home assistance and refunds in case of water leaks for contract customers

In late 2015, PVK arranged for its contract customers insurance cover for emergencies related to water leakages downstream of the water meter. The service is provided by UNITED ASSISTANCE, a.s., and is provided free of charge to the customers.

The assistance service is on hand round the clock. The assistance service crew visit the customer in case of an emergency and carry out two hours' technical work. Clients do not pay anything for the vehicle operation and the necessary work. A PVK customer is entitled to make use of three such assistance services per supply point free of charge every year. Customers can call the assistance service at 212 812 212. In 2017, 873 PVK customers called this line. On the whole, 119 assistance interventions were carried out and fully paid for by UNITED ASSISTANCE, a.s. The most frequent causes of emergencies included a ruptured rising pipe or a pipe right downstream of the water meter.

Assistance services also include refunds for water leaks. This is partial compensation for any outlay on water supply caused by a water leak stemming from a demonstrable emergency, provided that the customer's share of the water leak is 10 m³, which is the minimum limit for refunds; the maximum water leak refund limit is CZK 15,000 per supply point per year.

SMS INFO

To date, 31,607 (30%) PVK customers have signed up for the SMS INFO service to receive text messages about incidents, shutdowns, the estimated downtime, etc. As such, registered customers receive, free of charge, important information about water via text messages transmitted to their handsets. In 2017, 21,406 text messages about incidents and outages were sent to the registered customers.

Number of contract customers	90,712
Number of supply points	114,235
Number of customers registered for SMS INFO	31,607
Number of SMS INFO text messages sent	875,000
Number of justified complaints and claims	231

A total of 874,406 text messages have been sent since the service was launched. In 2017, PVK received and handled 290 complaints, but only 20% of them, i.e. 57, were justified. There were 573 claims, of which 30% (174) were upheld.

Website

The PVK website (<u>www.pvk.cz</u>) has emerged as one of the Company's main information channels. On average, it attracts **more than 62,000 visitors per month**. The website has been optimised for the whole gamut of various devices (mobiles, notebooks, tablets, etc.), enabling customers to find the information they need anywhere, any time. News on incidents and water supply shutdowns generates some of the highest traffic. The people of Prague can find all the important information about water supply disruptions online here. In the "water incidents" section, they can find out about the incident site, the implications for water supply, the availability of substitute water sources and the estimated repair completion time. All of this, along with scheduled shutdowns, is also shown on Google Maps. This is the go-to place for Prague residents who need to know exactly where they can find emergency drinking water supplies.

Another subject that is frequently looked up is the quality of water supply. In addition to complete monthly summaries of all water quality parameters, PVK's website offers overviews of certain indicators in supply zones. People can therefore find their street in the map and find the water hardness, the iron, nitrate and chlorine content in the water, and the water pH for this location. Customers can also use the website for making appointments at the customer service centre concerning contract and technical matters.

Those seeking information about the existence of utility networks can submit their request electronically. This service simplifies communication between the person making the request and PVK employees and shortens the time it takes to provide information on the existence of networks. The online request can be found on the PVK website. A person sending a request is emailed an automatically processed document, including a map plotting out the utility networks.

PVK service promotion

In 2017, PVK published a series of informational materials and brochures for customers and the general public. Towards the end of the year, the **Voda pro Vás** (**Water for You**) customer magazine was published (450,000 copies) and distributed together with all the major daily newspapers. The Company also produced a desk calendar to be handed out at the customer service centre in Dykova Street. PR and advertising campaigns on the radio, in the printed media and on news websites also helped to promote PVK's services.

RESPONSIBILITY

Responsibility towards employees

PVK seeks to create an environment for its employees, which will help them to gear their energy and abilities towards achieving shared objectives, thereby achieving the best possible level of customer satisfaction.

The Company's strategy incorporates adherence to a code of ethics and a code of conduct for managers, compliance with ISO and OSH standards, and environmental development. PVK nurtures exceptional working conditions for its employees, provides interesting benefits, and prioritises professional advancement, employee training and occupational safety.

As open social dialogue and cooperation with the trade unions and the team as a whole are essential factors for PVK. Collaboration and respect between Company management and the trade unions is crowned by the conclusion of a collective agreement every year.

Human resources

As at 31 December 2017, 1,014 employees worked for PVK. The average full-time equivalent number of employees (FTE) in 2017 was 1,001. During the year, a total of 55 employees left and 75 joined. Turnover therefore stood at 5.5%.

The number of employees rose again, this time by 20 year-on-year. This increase was prompted in particular by developments associated with the rollout of new technology. At the end of the year, PVK employed 739 men (73%) and 275 women (27%). The Company employed 20 part-timers, 55 temporary staff, 17 persons with disabilities (1.7%) and 65 pensionable staff (6.4%).

Of the total number of employees, 225 were degree-holders (21%) and 400 had attained full secondary education (39%). The proportion of degree-holders has been increasing in recent years.

The average employee age was 46, the same as in the previous year. The relative ageing of the workforce is an important aspect for the Company to tackle, in particular in connection with the transfer of operating know-how. Despite the low inflation rate, average wages went up by 4%.

Despite the high demand for service provision outside operating hours, the overtime hours of 23,081 remained on a par with the previous year. This implies an average of 23 hours' overtime per employee per year.

Employee benefits

Personal pension plans and life assurance are an important part of employee benefits and are used by 80% of employees. The employer's average monthly contribution to these policies amounted to CZK 1,400, with the Company contributing almost CZK 13.5 million altogether. One of the important employee benefits is contributions to meals. Beginning in October 2017, employees receive this benefit through electronic meal cards to which the value of the meal vouchers for the respective month is credited.

In 2017, the Company spent CZK 30.9 million, i.e. 4.2% of total personnel costs, on social expenditure for employees. A part of this amount was spent on the trade union's activities, sport and cultural events, and personal and professional milestones and anniversaries. Funds were also used for social assistance and loans to employees.

Employee training

Improving employees' qualifications and training is integral to corporate culture. A systematic approach to education brings a number of advantages and enhances employees' motivation and stability. PVK's training costs totalled CZK 6.5 million. The largest share (87%) of these expenses was spent on increasing professional qualifications, and the balance was earmarked for mandatory training and improving employees' language proficiency.

Training for employees is mainly provided by the Group's own company, **Institut environmentálních služeb, a.s**. (IES), with its broad-ranging courses and training programmes. IES is an important part of the international network of Veolia Group training centres, known as Veolia Campuses.

Occupational safety

The Company holds an occupational health and safety management system certificate. Occupational safety stands alongside employee training as a strategic element established internationally for the entire Veolia Group, including PVK. The Veolia Group is committed to guaranteeing a healthy and safe working environment. OSH ground rules contained in the Labour Code, applicable legislation and technical OHS standards are also conveyed by the internal Code of Occupational Safety. Above and beyond their mandatory training, all employees take a hands-on **first-aid course** once every two years.

One of the long-term objectives pursued in occupational health and safety is to bring down the number of occupational accidents. The prevention has kept the occupational accident rate at an encouraging level. In 2017, there were five minor occupational accidents resulting in only 89 working days of incapacity, i.e. 80 days less than in the previous year. The occupational accident rate was a mere 0.5%. Long-term OHS targets are to drive down accidents at work to a minimum and eliminate fatalities altogether.

In September, PVK – much like other Veolia Group companies – was involved in the International Safety Week, underpinned by the motto Always Safely. A number of documents, materials and measures were prepared to implement and support the No More rules, the IES education portal opened an OHS Library encompassing all training, brochures, films, etc. on OSH, and all employees were given a first-aid kit.

Occupational medicine services

In 2017, the staff sickness rate was maintained at a low level of 1.8%.

This was helped by the fact that PVK arranges for employees to undergo periodic medical examinations beyond the scope of mandatory checks. In cooperation with SALUBRA s.r.o., medical examinations were arranged for employees, including the vaccinations set out in the collective agreement and other statutory examinations.

Regular medical surveillance of workplaces were arranged to reduce risk factors. To help improve employees' health and as part of preventive care, every employee received Benu pharmacy vouchers for health-promoting products.



Employee structure by length of service











Internal communications

Mutual awareness and sound relations in the workplace between the Company's management and employees is the basis for good internal communication in the Company. Good relations within the Company are also fostered by various informal social gatherings and sports events.

In addition to working meetings, the **intranet**, which is regularly updated and provides operating, technical, financial and other data and reports in real time, continues to be the main communication channel.

In 2017, the implementation of the central reporting system continued with a view to creating a unified database for the efficient steering of the Company and for the needs of external and internal financial reporting. The external technical and personnel reporting functionality was implemented.

In-house magazines are an important internal communication tool. The *Pévékáčko* in-house magazine is published five times a year and includes information on important PVK events also for those who have no access to the intranet. The *Naše Veolia* and *Planeta* magazines regularly report on the latest news within the Veolia Group.

2017 saw **excursions for employees**, the purpose of which was to raise awareness of the operation of PVK's sites and see the colleagues' work. As usual, there was great interest in the sewerage under the Old Town Hall, the Foreigners' Entrance. For the first time, a trip to the Water House on the Želivka was organised, which included a tour of the Švihov water supply reservoir and the Želivka water treatment plant. In the spring, employees also visited the Central Wastewater Treatment Plant on Trojský ostrov.

Social gatherings and sport events have a long tradition at PVK and many employees attend them. More than 150 employees participated in the 20th edition of the PVK Sports Games in Želivka, hikers and cyclists pitted their strength against each other at the Water 50 event, teams of athletes also attended the Česká voda – Czech Water badminton tournament, the Gigacup, i.e. a five-a-side football tournament of Veolia Energie ČR, and the Dragon Boat Regatta, while tennis players regularly participate in the Jan Vrána Memorial. A new event was former PVK employees' participation in the Seniors' Sports Games. Several times a year, social gatherings, trips for employees and events for their children are organised.

PVK also regularly holds **corporate volunteering days** as an opportunity for employees to help the needy during normal working hours. In 2017, PVK offered help and organised a trip for disabled people to the Water House on the Želivka, which took place in cooperation with the Asistence charity. In the autumn, employees helped seniors in the Chodov Home for the Elderly in Prague. As usual, volunteers were also involved in Clean Up the Czech Republic. In 2017, rubbish was cleared from the valley around Černá rokle in Radotín and the banks of the river Berounka. The employees collected tonnes of waste from nature, which testifies to the importance of environmental protection for society at large and for individuals.

Corporate social responsibility and environmental protection

PVK and its shareholder, Veolia, pursue environmental protection, corporate social responsibility, and support for interesting projects. An integral part of PVK's corporate culture is active participation in the shaping of the Prague region as a place for a high quality of life and satisfaction, and also support for socially beneficial projects and organisations. This also includes public awareness raising, education, tap water promotion, biodiversity protection and wastewater reuse, economical treatment of water resources, reduction in water consumption and other activities that contribute to sustainable development and are among the major values in the Company's corporate strategy.

Support for projects

PVK also sponsors a large number of cultural, social and sports events in the capital (e.g. the Primátorky (Mayoralty) regatta and the Ladronkafest leisure festival in Praha 6, the reSITE conference, the Architecture Days, etc.). Welfare projects include, e.g., Křesadlo (Flint) – a volunteering award organised by Hestia, donations to help purchase social-good cars for the disabled, support for Asistence, o.p.s., etc.

The Company laid on a water bar and fresh drinking water in tanks at dozens of events held in Prague, such as Microclimate, Bike Prague, Kašpárkohraní, Running for Paraple, Summer Letná and many others, where drinking water from the tap was served to refresh visitors.

The Company is a partner for the Water House on the Želivka near the Švihov reservoir, and uses it for its educational events. The Water House is a visitor centre that promotes water as the habitat for aqueous fauna and flora and also as the vital precondition for life.

Education

In early 2017, PVK devised an **educational system for pupils of the primary schools** with which PVK cooperates on a long-term basis. The target group was first-level pupils, for whom lectures in the Prague Water Management Museum were specially adjusted, while for the second-level pupils the Horní Počernice – Čertousy WWTP was opened and the number of lectures directly in schools was increased and cooperation on projects on water was expanded.

Since 2000, PVK has been organising **Klub vodních strážců [Water Guards Club]**, which brings together children aged 6 to 16. The club has 600 members at present.

The members receive a magazine two times per year. It enlightens them on water management issues, water and water resources, environmental protection and other interesting issues of water management. The year saw two club gatherings: in the spring at the Káranský vodovodník event and in the autumn a meeting with Jakub Vágner at the Katlov lake. In addition to the magazine, children also receive information at <u>www.vodnistrazci.cz</u>, on which new contributions, games and other attractive content is posted on a regular basis.

In 2017, PVK illustrated its activities at several events. The sewerage network was opened for the public – the Foreigners' Entrance under the Old Town Hall, as was the Horní Počernice – Čertousy WWTP, PVK laboratories made it possible for customers to bring samples of well water and made simple analyses of the samples for them free of charge. On the occasion of Káranský vodovodník, a sports and benefit event, the Káraný water treatment plant was opened for the public. There was great demand for the events and hundreds of people joined.

Fresh Tap Water?

In 2017, PVK continued its Fresh Tap Water? project. Suffice to say, the aim is to promote the drinking of tap water in restaurants as this reduces the waste caused by plastic bottles and hence cuts down on emissions from the transportation of drinks. Restaurants involved in the project receive free water carafes. The list of restaurants and hotels in the project is posted at <u>www.kohoutkova.cz</u>. In addition, there is a mobile app to direct users to the nearest restaurants offering tap water.

Prague Water Management Museum

In 2017, bathroom items from the 1920s were added to the museum's collections. The panels informing visitors about the authors of the Podolí waterworks, Antonín Engel and Bedřich Hacar, and showing the documents on the construction and refurbishment of the plant were redesigned, extended, and installed again.

The Museum was opened for the public on open days, in the spring on the occasion of the World Water Day and in the autumn, and also as part of the Architecture Days and the Neighbours Festival in Podolí and on the occasion of an international water management conference. The Museum attracted 13,117 visitors from the Czech Republic and abroad: France, Slovakia, Turkey, Germany, South Korea, Japan, and Russia. More than half of them were schoolchildren. In 2017, the Museum was again involved in experiential travel, attracting 522 visitors. The Museum also hosts various educational and social events organised by Veolia ČR, IES and PVK.



Conservation of biodiversity at PVK complexes

The Company has long supported a biodiversity project aimed at bringing nature back to cities. The project represents the Company's commitment to biodiversity promotion and renewal and draws the public's attention to care for the environment as an inseparable part of sustainable development. In the past few years PVK has installed insect hotels and nest boxes at more than 20 points on its water management sites in Prague, soft landscaped the area above the Flora water reservoir, where animal diversity has increased, and sowed a flowery meadow at the Ovčín water reservoir, and prepared additional sites for sowing flowery meadows rich in biodiversity.

In 2017, the Company carried out measures on the Káraný site to enhance biodiversity; for example, it set up permanent biomass stockpiles and built stone walls and mounted a nest box for kestrel. It sowed flowery meadows on additional sites following careful preparation of the areas.

Environmental management and energy management

PVK's operations are closely tied with the environment, wastewater treatment is the greatest contribution to environmental protection. The Company takes a responsible approach to environmental issues. In practice this means that it consistently follows applicable legislation and keeps developing new processes for waste reduction and recycling and for efficient energy use.

Waste management

PVK is an operator of water supply and sewerage networks. As such, it not only produces waste, but certain kinds of wastes can also be processed (used) at some of its wastewater treatment plants.

In 2017, PVK produced **183,200 tonnes of waste**. More than 50% of this amount was made up of sludge from the treatment of municipal wastewater; approximately 45% was construction site spoil produced in repair and incidents in the Prague water supply network, and only about **0.01% was hazardous waste**. The share of hazardous waste at the Company has long been negligible. PVK is very particular about environmentally-friendly waste disposal and cooperates, as much as possible, with entities that prefer waste recovery to waste disposal.

Sludge from wastewater treatment is applied to farmland while meeting all the principles and requirements of applicable legislation regulating waste management and farmland protection. Sanitised sludge is a resource rich in organic matter, basic nutrients, and trace elements for the exhausted soil in the Czech Republic.

The application of this sludge helps to improve the physical, chemical and biological properties of soil, which then better retains water in the landscape, with the soil erosion risk mitigated, etc. Farmland fertility is enhanced by WWTP sludge. For the cooperating farming businesses, sludge fills the gap left by the lower output of farm fertilisers from animal production; the farming businesses also have lower requirements for artificial fertilisers. In 2017, PVK cooperated with 30 farm businesses near Prague.

With regard to the future expected development of legislation on the disposal of sludge from wastewater treatment plants, PVK and an external partner organised a test of co-firing sludge from the treatment of municipal wastewater and brown coal at the Mělník Power Station (EMě II), which also generates heat in addition to electric energy. EMě II supplies heat through a heating pipeline to Mělník and Horní Počáply and to customers in and near the power station and it also has the capacity to supply heat to as far as Prague.

The test has confirmed the possibility of recovering energy from WWTP sludge through its co-firing without any adverse environmental impacts. The firing tests clearly indicate that a part of the brown coal can be replaced with stabilised sludge from WWTP. Our Company expects to continue in the tests it has started and in identifying additional options for sludge use in the coming years.

PVK is not only a producer of waste, but also operates a facility to process selected types of biodegradable waste. It offers the city and businesses a service where this waste is handled transparently and passed on to them for reuse. In 2017, the CWWTP processed approximately 10,600 tonnes.

PVK also runs the mobile collection of waste from grease traps at schools and nurseries, hospitals and other institutions.

Carbon footprint

The carbon footprint is one of the gauges of the impact of human activity on the environment and the climate. Most of the carbon footprint comprises electricity consumption (typically 70-80%), followed by the consumption of thermal energy, represented by natural gas, light fuel oil and coal. Energy and heat produced from biogas reduce the carbon footprint because CO_2 emissions released during biogas combustion are not fossil-based and therefore do not contribute to the globally increasing concentration of CO_2 in the atmosphere.

Projects targeting electricity and thermal energy savings, an increase in the generation of energy from renewable sources, greater plant self-sufficiency, and the optimisation of chemical and fuel consumption have triggered a progressive reduction in the overall carbon footprint.

PVK's overall carbon footprint for 2017 was **38,200** tonnes of CO₂ equivalent. Total direct and indirect greenhouse gas emissions (electricity and heat) for the collection and treatment of wastewater at PVK amounted to **15,920** tonnes of CO₂ equivalent and emissions associated with drinking water production and distribution were **21,730** tonnes of CO₂ equivalent. Ratios, potentially carrying greater informative value, indicate that, at PVK, **585.61 g of CO₂ equivalent** was generated per cubic metre of drinking water produced and **123.86** g of CO₂ equivalent was generated per cubic metre of water discharged.

In 2017, CO₂ emissions related to drinking water production and distribution were reduced from 22,060 tonnes of CO₂ equivalent to the above 21,730 tonnes of CO₂ equivalent. The specific parameter related to the volume of water produced dropped by 2% in 2017.

On the other hand, the same trend has not been preserved in wastewater collection and treatment. In 2017, the operation of the CWWTP experienced several serious technological situations, some of them related to the bad disrepair of the digesters. These situations were compensated by a higher consumption of chemicals and electricity, with a negative impact on the carbon footprint.

The continuously increasing requirements for the quality of treated wastewater are bound to necessitate higher consumption of chemicals and energy, and the carbon footprint therefore cannot be reduced *ad infinitum*.

The practical examples of carbon footprint reduction at PVK include:

Remote readings, which bring tremendous time savings and also – very important from the perspective of the carbon footprint – considerable savings of the motor fuels that would otherwise be burnt in the case of manual readings.

Electricity savings, which we seek to achieve across our operations.

Motor fuel savings: A new car sharing system was launched in 2015. A car booking system was installed in the Helios Green internal system. Work continued on installing GPS to monitor journeys and automatically import data on vehicle operation. The data so obtained is systematically analysed and fuel consumption and utilisation of each and every vehicle are checked. In 2017, PVK spared another 12,000 I of diesel, while 2016 already saw savings compared with 2015.

Thermal energy savings: A specific example is the installation of pumps for the V Tower residential building.



Cooperation with the Veolia Foundation

As a donor, PVK has long worked with the Veolia Foundation, through which it grants financial support for a number of social-minded projects.

MiNiGrants

PVK allows its employees to obtain, under the **MiNiGrants programme**, financial support for projects that benefit the community and are carried out in their spare time. In the tenth year of the scheme, CZK 680,000 was split among 27 volunteer projects. The largest number of selected projects helps disadvantaged groups of the population (elderly citizens, children growing up outside the conventional family, physically and mentally disabled people). A large group of projects includes those geared towards leisure activities for children and young people and environmental protection, including beekeepers and tree planting. Within the entire Veolia Group, the Veolia Foundation contributed CZK 3,798,000 to 144 projects in 2017. Since MiNiGrants started in 2008 it has supported 1,159 projects, contributing more than CZK 30 million.

Making life better for seniors in the Always with a Smile programme

Always with a Smile promotes positive ageing, intergenerational cohabitation and conditions for seniors to live in their home environment. The key objective of the programme is to raise the quality of life for seniors, focusing on elderly people's education and communication, sports activities, and hobbies. In 2017 the following projects in Prague were supported: Moudrá sovička (The Little Wise Owl), which entails support for information technology, 'the IT guy for an hour', and geocaching for seniors, workshops promoting a healthy lifestyle called Bud' fit seniore (Be Fit, Senior) and support of training courses organised by the foundation of Mr and Mrs Václav and Livia Klaus. Additional supported projects include Křesadlo (Flint) organised by Hestia's volunteering centre, Old Age with an Active Face, Diaconia of the Evangelical Church of Czech Brethren, Protěž (Edelweiss), and the Welfare Services Centre in Praha 1.

Water for Africa

Sale of design carafes raises money for the Foundation to repair and build drinking water sources in Ethiopian villages. In late 2017, it launched an edition of design water carafes made of Czech crystal glass and produced other gift items. **Proceeds from the sale raised CZK 811,888 for the Water for Africa project**, which is being run in cooperation with Člověk v tísni (People in Need). Over the past eight years, the Veolia Foundation has funnelled CZK 4.8 million into Water for Africa. This has resulted in safe drinking water sources for 37,000 people in poverty-stricken rural Ethiopia.

The fundraise proceeds helped to co-finance a project in the Sidama area, which will provide 10,000 people with clean and safe water. In two villages, a whole new water distribution system has been built, including a large-capacity water reservoir from which water is piped to public taps.

Support for Domov na půl cesty "Maják" [The Lighthouse Halfway House]

PVK has been working with Maják for eleven years. This Halfway House provides social prevention services for young people aged 18 to 26, who are leaving or have left a facility such as institutional upbringing homes or foster care or malfunctioning families. Maják accompanies them on their way to emancipation, offering them temporary lodging (for up to two years), assistance with job seeking and with arrangements for personal matters with authorities and other institutions (banks, operators, doctors, etc.) and accompaniment in everyday situations in life.

The financial assistance provided by PVK and the Veolia Foundation is mainly used for the active development of people and meaningful spending of leisure time (educational courses, resocialisation retreats outside Maják, sport, culture, ...).

Helping nature

2017 was the seventh year of The Trout's Path, a project aimed at releasing trout back into wildlife. Its objective is to return to Czech and Moravian rivers the fishes that had lived in them in the past. In this programme, the Veolia Foundation cooperates with Jakub Vágner, a well-known sport angler and nature conservationist. A tonne of trout was released into the river Dřevnice in Zlín in eastern Moravia. The whole event was organised in cooperation with the local Zlín branch of Moravský rybářský svaz (Moravian Angling Association). Since the beginning of this project, 14 tonnes of salmonid fishes have been released into rivers.

INNOVATION

PVK is working hard to prepare, and is progressively deploying, new smart technologies in practice.

Technological improvements, retrofits, and new solutions improve the performance and efficiency at work, enhance reliability, bring energy savings and have positive impacts on the environment, thereby also raising the convenience of customer service.

SWiM – Smart Energy

In 2017, PVK expanded the SWiM (Smart Water integrated Management) system to include, among other things, the Smart Energy scheme, which is being implemented in cooperation with Veolia Komodity ČR, s.r.o. The principle of Smart Energy consists in controlling the distribution of drinking water and service water (the industrial water supply line) by pumping at times of low energy prices at the spot market. Smart Energy deployment at PVK necessitated modifications to the profiles of water distribution by pumping.

In practice, the above entailed, first of all, analysing the pumping out and emptying of each particular water reservoir over time for a specified period and the profile of water consumption at consumption centres. On this basis, the time required to pump in a specific quantity of water was determined, the operation of the water reservoir was modified and the main part of pumping was moved into the time band of low energy prices at the spot market.

This system is now operated at 14 pumping stations. For additional pumping stations, where the distribution conditions do not make it possible to adjust the pumping profile, the Smart Energy system will predict consumption on the basis of operating values, and the quantity of purchased electricity will therefore be optimised better.

The purpose of Smart Energy is to cut the overall costs of electricity taken by each particular pumping station while maintaining its quantity.

Demand for packaged water on the rise

Another four municipal districts, Praha 3, Praha 13, Praha 16 and Praha 14, joined the packaged water project in 2017. Together with Praha 2, Praha 6, and Praha 15 and Březiněves, eight boroughs are now involved in the project, which consists in substitute supply of drinking water in two-litre sachets. Packaged water supply is intended for people who hold the OZP card (disability card) and are registered with PVK for home delivery of packaged water, but it is also used in response to incidents and outages. In 2017, PVK registered a total of 230 people in Prague for this service. Last year, PVK produced 275 containers of packaged water. These were used in dozens of incidents in the water supply network.

In 2017, all containers were chipped to track the route of the container from the manufacturing line via storage points to distribution. This move has markedly simplified the keeping of records of manufactured containers; going forward, the system will be interconnected so that the public can also see the position of a container on Google Maps in the same way as water wagons are displayed.

A packaging line has been installed at the Káraný water treatment plant. The entire process of packaging water in sachets, including the plastic foil used, is consistent with Act No 258/2000 on public health protection and amending certain related laws. The requisite details on the quality of the drinking water, including the use-by date, can be found on the packaging. The quality of the water in sachets is checked on an ongoing basis by an accredited laboratory.

Pilot testing of Misting

In Hostivař, the Company installed a facility that produces water mist (misting equipment) and so helps to reduce air temperature on hot days by up to two degrees, or cut the costs of air conditioning, and

dust concentrations. PVK wants to offer the facility to Prague for use in public areas, and also to industrial companies.

Digitisation of water meter installation sheets

Under the Installation Sheet Digitisation project, installation sheet digitisation was analysed, and the attributes were defined, together with their links to the other information systems (USYS, GIS, and TIS). In 2017, high-resistance mobile phones were tested in order to define the specifications of the mobile device to be used by engineers when replacing, installing and uninstalling water meters. The project will mainly focus on consistency in personal data protection and in data warehouses of Veolia Česká republika.

System tools for recording and planning remote readings

A new mobile application, Signal Strength Measurement, supports the efficient collection of data on the strength of the signal of gateway collection units in the field, which is transmitted to the GIS by the application. They help to optimise the planning of the locations for deploying remote readings and the planning of the suitable locations for installing gateway collection units.

Development of a metering trough for discharge measurements

The development of a metering trough for measuring water flow rate and discharge volume in open channels was completed. The discharge curve was determined at the Water Management Research Laboratory of the Brno University of Technology and the Ž–PVK–1 metering trough can be used as a working (indicative) measuring instrument for billing and charging purpose at outflows from wastewater treatment plants. Four installations were completed in 2017.

Using new stainless steel pipes for repair on the water supply network

In 2017 was the first time that PVK used in Prague, for repair in the water supply network, stainless steel pipes with an additionally made groove on both ends for connecting by a stainless steel joint. The occasion was the repair of a DN 150 water supply line running through the utility tunnel in Stodůlky. It was a fully-fledged substitute for an end-of-life steel pipe in tunnels without the need to use flanged or even secured spigot and socket joints.

Compared with the cast iron pipes being used, the advantage is swift assembly and dismantling without the need for welding or using a cutter, the low weight of stainless steel pipes, the speed of assembly, and easily dismantled joints in which only two bolts are used, there are no residuals of pipes and the entire piping is joined without the need to install any conductors. Savings of material, work and costs have therefore been achieved.

Refurbishment of water supply and sewerage installations

In 2017, PVK carried out an overall refurbishment and automation of the **drinking water pumping station** (PS) in Nebušice; this PS supplies water for the borough of Nebušice. The refurbishment encompassed the transformer station and all electrical wiring and piping. New pumps were also installed. The electric boiler room was also refurbished and windows were replaced in the operating part of the PS building.

At the Uhříněves PS, the construction of the second accumulation chamber was completed, which marked the finalisation of the overall refurbishment of the PS and water reservoir, and the completed project was approved for use.

Both accumulation chambers of the Modřany Sever I reservoir and the reservoir on the premises of the PS and the Kopanina reservoir were also overhauled. The overhaul of the Hrdlořezy PS was completed in technical terms (the transformer station and all electrical wiring, replacement of the pumps and piping). Minor construction work has to be completed and the control system has to be optimised in 2018. Thereupon the pumping station will be fully automated and unmanned.

In respect of **branch wastewater treatment plants** (BWWTP), PVK completely refurbished the Chvalka retention tanks that provide the Svépravice BWWTP with hydraulic protection by accumulating water from the combined sewerage network in the case of rainfall. The tanks were completely rehabilitated and fitted with covers. Water pumping into the Svépravice WWTP was automated; pumping is controlled in relation to the quantity of wastewater flowing into the plant.

The Miškovice BWWTP: full-scale refurbishment was completed, and the plant's capacity was reinforced by building a new sludge system, with excessive sludge drained, building new pre-treatment and an inlet pumping station, and new secondary settlement tanks, and by rehabilitating the preserved activated tanks. Following the overhaul of the Nedvězí WWTP, its trial operation was started.

At the Okenská and Rožmitálská **wastewater pumping stations** the distribution boards and telemetry installations were renovated.

In 2017, the Káraný water treatment plant underwent several systematic renovations and refurbishments: replacement of the main pump, including all the related pieces of equipment such as the motor, the frequency converter and the transformer; in the main engine room the roof cover was repaired, including roof lights and lighting conductor. On the route of the third main water pipeline (operated under pressure) from Káraný to Prague, the air separator shafts were refurbished, including the replacement of fittings, and on the AO6 fittings structure two gate valves were replaced and the related fittings and pipes were restored.

At the **Podolí water treatment plant** the refurbishment of clarifiers 5 and 6 was completed and they were then tested during the test operation of the Podolí plant. The machine that cleans the fine screens in the basement of the raw water pumping station was also restored.

Refurbishment and reconstruction of the CWWTP

The CWWTP experienced a number of major events in 2017. The construction of back-up storage facilities was started as the plant had been missing a modern storage facility in recent years. The construction of a new wet pit for sludge from the new water treatment line and a stationary car wash for emptier trucks and flushing trucks was also started. In front of the screen building, an area for containers for screenings and sand was completed. The renovation of regeneration blowers also approached completion. Last year also saw continued refurbishment of the VN 9 and 10 digesters started in 2016.

The construction of the new wastewater treatment line and the main pumping station, which is part of the inflow into the CWWTP, continued at a fast pace. The Company wants to meet the key milestone, i.e. the start of the trial operation of the whole facility, at the beginning of August 2018. Under the agreement, PVK is setting up a project team, because it is to be in charge of the trial operation of the new line for 15 months.

New information technology

In 2017, PVK continued its cooperation with Solutions & Services, which provides PVK with most information technology services. The core PVK information systems, Helios Green (economic information system) and ZIS is-USYS®.net (customer information system), underwent routine maintenance and development.

The Reporting project for collecting and working with PVK data from all areas and also a joint project with Veolia ČR, HERP (Harmonised Economic Information System) continued. The customer information system was successfully migrated to Veolia's data centre.

During the year, three main data links were replaced and the capacity of several other PVK data links was reinforced. PVK started to replace the technology for media management and monitoring with MyQ, which will bring cost savings compared with the old system.

IT security experienced massive development. For example, the Company implemented SIEM (Security Information and Event Management). It also started to implement the ITIL methodology (best practice, the standard in IT service provision) in IT.

In respect of **economic processes** the implementation of harmonised processes in ERP Helios Green continued in finances, controlling and logistics. The key objective in finances was to put in place the system of triple-code accounting, where, in addition to accounting under Czech standards, a new accounting perimeter for accounting under Veolia's corporate rules and an accounting perimeter for accounting under the IFRS international accounting standards were introduced. In controlling, effort was geared towards setting up a new reporting system in a new controlling tool, HGI, and towards accounting based on a new harmonised dimension under the corporate rules. In respect of logistics, mid-2017 saw all the required changes in processes completed and the work will now focus on optimising the entire buying process under the E-procurement project.

In 2017, the implementation of the central reporting system continued with a view to creating a unified database for the efficient steering of the Company and for the needs of external and internal financial reporting. The external technical and personnel reporting functionality was implemented.

The other major projects that were running in 2017 and will continue in 2018 include, in particular, the Smart Metering project; in addition to extended services for customers, it will result in a more efficient process of consumption evaluation and planning and the detection of water leakages and illegal consumption.

The energy management project, focused on energy savings, was launched in 2017; emergency water supply using packaged water, the optimisation of vehicle fleet operation, and other projects also continued.

Institut environmentálních služeb (IES)

IES shareholder structure:

Campus Veolia France 40% Pražské vodovody a kanalizace, a.s. 30% Veolia Energie Česká republika, a.s. 30%

Highlights for 2017

Sales: CZK 37,168,000 Number of employees: 13, most of them part-time Number of educational events held: 1,198 Number of training sessions: 8,187 Number of training hours: 130,843 Number of lessons (of 60 minutes each): 30,617 Number of participants in educational events: 15,853

In 2017, compared to the previous year IES increased sales again, this time by 10.2%, and there was an increase in the number of participants in educational events by 12% and in the number of training hours by 20%, and the number of training sessions increased by 2.4%. The distinctly positive financial performance reported by IES was helped by the fact that it kept a firm lid on costs in addition to the efficient corporate strategy.

The year 2017 vindicated the decision to change the provider of the e-learning portal, eCampus. Users appreciate not only the new graphics, a user-friendly environment and new functionalities but also new e-learning courses such as the new induction training for MOVO, SčVK, PVK and Česká voda – Czech Water (CVCW). The Business Writing language course and a management course on hot issues of Leadership, Work with Feedback, How to Introduce Changes in Practice, and Conflict Resolution were posted on eCampus. New e-learning courses, also posted on eCampus in 2017, treat dozens of technical topics in hydraulics, hydrology and 'small-scale water management' as part of the blended learning approach under the Water and Sewage Network Operator study programme.

The Veolia Santé project continued successfully in 2017. E-learning courses on the prevention of breast cancer, cervical cancer, prostate cancer, and colorectal cancer were successfully attended by 5,306 of Veolia Group employees, of whom 427 from PVK and 180 from CVCW. The e-learning course on balance diets was attended by 4,218 of Veolia Group employees, of whom 390 from PVK.

The OHS electronic library was expanded to include current posters, brochures, internal materials and films produced as part of the OHS Week Veolia 2017. In the eCampus electronic library, documents on ethics and compliance – guarding against criminal liability – were updated and supplemented. In 2017, IES, as an authorised entity under Act No 179/2006, having the right to organise examinations to check whether candidates for professional qualification certificates have really acquired all of the required competences (IES has the right to verify 29 qualifications), organised the first examinations and issued the first certificates.

Since 2003, an integral part of Veolia Santé has been a running project of practical training in first aid, with ten human lives saved thanks to this; in 2017, it was attended by 1,160 employees, of whom 939 from PVK.

In September 2017, IES again organised the very popular Veolia Induction Programme (VIP), which was attended by 76 selected Veolia employees from the Czech Republic and Slovakia.

In 2017, IES arranged, for The Water Supply and Sewerage Association of the Czech Republic (SOVAK) and the Veolia Group itself, an innovated study programme, Water and Sewage Network

Operator, currently attended by 34 people. The programme comprises a total of 13 two-day schooling retreats with a major share of e-learning and is rounded off by the school leaving examination [*maturita*] in the subject of Waterworks at the College of Construction and the Secondary School of Construction in Vysoké Mýto. The graduates also meet the qualification requirements under Act No 274/2001 on Water Supply and Sewerage Networks.

IES responded flexibly to the training needs of each company in the Veolia Group. For example, 284 PVK and CVCW employees went through training in underground work and in work over open spaces without protection. In 2017, basic and advanced training related to the implementation of Google Apps continued, attended by a total of 120 employees.

In 2017, IES delivered all aspects of corporate training for Veolia Energia Slovensko, a.s. One of the major and comprehensive projects is the study programme Veolia in Motion II, which is intended for middle and higher management. A total of 32 participants go through topics such as Leadership, Work with Feedback, and How to Implement Changes in Practice. The programme is complete with 360° feedback.

In its Prague educational centre, IES hosted an international seminar intended for Veolia Group's IT managers from all over the world, held under the name ACCELERATE training (Go faster and farther with Accelerate! training), together with the implementation team from France-based Veolia Campus and the Group Information Systems and Technology unit.