



# 2017 ANNUAL REPORT

# TABLE OF CONTENTS

<i>FOREWORD BY THE CEO</i>	3
<i>PUBLIC SERVICE CONTRACT</i>	4
<i>CONTROL SYSTEMS</i>	5
<i>INVESTMENTS, DEVELOPMENTS</i>	6
<i>BUS AND TROLLEYBUS OPERATIONS DIRECTORATE</i>	14
<i>RAILWAY OPERATIONS DIRECTORATE</i>	17
<i>HUMAN RESOURCES</i>	24
<i>SECURITY DIRECTORATE</i>	27
<i>COMPANY RELATIONS OFFICE</i>	28
<i>TOURISM DIVISION</i>	30
<i>BALANCE SHEET</i>	32

## FOREWORD BY THE CEO



*The true success of a service is not only measured by growth or positive financial balance. The sign of true success is an increase in the number and satisfaction of customers using the service.*

*According to Eurostat's 2017 yearbook, the number of people relying on public transportation in the Hungarian capital increases year by year, and we are already fifth in Europe in this regard.*

*Eurostat also measures satisfaction in public transportation in the continent's major cities, and their most recent survey reported a significant improvement in Budapest in this field. In essence, these trends have been reinforced by this year's Greenpeace survey focusing primarily on environmental considerations. The consistent work that has been carried out year after year has thus yielded results.*

*Let's take a look at the tasks, vehicle purchases and improvements in 2017. Last year we 31 articulated and 46 solo Mercedes Conecto buses entered service, all of them belong to the EURO 6 emission category, with low floor and air-conditioning, thereby significantly improving the quality of Budapest public transportation. In addition, we acquired a 40 vehicle fleet of used Volvo buses hybrid drive, which also improves environmental performance as*

*well as the quality of life for passengers and the residents of Budapest.*

*Following the good practice of previous years, developments continued in the tram sector. These included upgrading the powertrain of the T5C5 and KCSV7 trams, where the energy saved provides a return on investment of this modernization in 7 years. Furthermore, renovation of the TW6000 trams extended their service life.*

*New technologies is in the focus not only for our fleet, but also for our infrastructure. In order to reduce the cost of energy consumption, we included other locations in our programme of heating reconstruction, modernization of lighting systems and the installation of solar panels. All this results in significant and "tangible" energy and cost savings in a short ROI period.*

*It was an important milestone when the first refurbished metro train entered service in March last year, soon followed by more.*

*It was a huge success that in November, when the northern section of the M3 line was closed, parallel to the start of the renovation works, service by replacement buses started smoothly.*

*Let's not forget that the M3 metro transports nearly half a million passengers each day, and its renovation together with the vehicle modernization is a huge investment, so I think my colleagues who prepared the project and the metro replacement service deserve recognition..*

*The Company today operates four major sectors after the suburban train service (HÉV) became a separate entity in 2016: tram, metro, bus / trolleybus, and the fourth is the funicular / chair lift / cogwheel railway and boat traffic on the Danube tourism segment. Budapest is a beautiful and unique city for many of us, and we are able to demonstrate that to you with our unique tourist fleet. That is why we further developed this sector and continued our harbour reconstruction programme, for example.*

*There is a shortage of trained drivers at an international level, including Hungary.*

*That is why we launched an extensive campaign to recruit new colleagues to increase the number of bus, trolleybuses and tram drivers.*

*At the same time, we managed to increase salaries to an extent that it improved the living situation of even the lowest paid colleagues by an order of magnitude and helped retain staff working in positions suffering from workforce shortage.*

*With our efforts we plan to settle the issue of wages in the longer term; therefore, we have also introduced a wage tariff system in order to overcome the wage gap.*

*2017 was a diverse, eventful and successful year in the life of our Company, but also difficult financially: in the preparation of the annual business plan we had to face a loss of HUF 11 billion due to the lack of capital resources by the municipality of Budapest.*

*Significant increases in wage costs and preparatory tasks related to the M3 reconstruction meant serious efficiency pressures, as our spending grew while our overall performance decreased. Nonetheless, our profit before tax in 2017 was still in the green.*

*Last year again nearly 10,000 employees of BKV Zrt. worked hard to ensure that passengers in Budapest could travel from any point in the city to another point at any time. Our vehicles can transport more than a hundred thousand passengers at the same time, delivering state-of-the-art and state services.*

*I thank all my colleagues that we were able to close a successful year and I hope that we have a new and even more successful year ahead of us!*

**Bolla Tibor**  
CEO  
BKV Zrt.

# PUBLIC SERVICE CONTRACT



The Company performs the timetable-based public transportation service based on the Public Service Contract concluded by the Budapest Transport Privately Held Corporation (hereinafter: BKV Zrt.) and the Centre for Budapest Transport (hereinafter: BKK Zrt.) on 28 April 2012 and as amended later.

Within the context of the Public Service Contract, BKK Zrt. orders the timetable-based public transportation service as required for the specific sectors by stating the quantitative and qualitative requirements as well as the detailed rules pertaining to the public service, including the rules applicable to the compensation for the costs of public service.

The Public Service Contract was last amended by the parties in July 2017, necessitated by the separation of the HÉV business line from BKV Zrt., the transition from the schedule-based annual period to the calendar-based system, and as a consequence, the conclusion of the Annual Agreement, changes in the contractual terms of reporting and accounting, as well as the decisions by the Budapest Metropolitan Government and Government regarding the Budapest regional and suburban traffic.

The customer requirements for the given period and the related financing conditions are included in the Annual Agreement as part of the Public Service Contract, which, as a result of the modifi-

In 2017, the amount of penalties accepted or acknowledged by BKV Zrt. fell significantly (by 45.8%) compared to the figures for the previous year.

cation of the Public Service Contract, includes the public service evaluation and the related financial accounting for the period between 1 January and 31 December 2017.

Rendering public transportation services in the appropriate quality is encouraged by the expectations define by BKK Zrt. and the application of the relevant incentives/sanctions. Among these indicators, the service outage indicator was in the 0 range in all sectors. Traffic safety (accident) indicators in the bus and trolleybus sectors are poorer. This is due to the fact that in 2017, just like in 2016, there were also negative factors affecting the employment characteristics of bus and trolleybus drivers (staff shortages, overtime, higher number of beginner drivers). How-

ever, one significant achievement is that the tram sector has been entitled to a bonus rating in terms of traffic safety.

In 2017, the amount of penalties accepted or acknowledged by BKV Zrt. fell significantly (by 45.8%) compared to the figures for the previous year. This was mainly due to a reduction in the amount of penalties due to "unscheduled vehicle issues".

The Company complied with its reporting obligation pursuant to the provisions of the Public Service Contract. In the monthly, quarterly and annual public service reports as well as the quarterly and annual Service Reports, BKV Zrt. reported on the provisioning of the public service ordered by BKK Zrt. and the related economic issues.



## Quality control systems according to the MSZ EN ISO 9001:2015 standard

The ISO 9001 standard changed in September 2015. Certified companies had a deadline of 15 September 2018 to move to the new standard. BKV Zrt.'s management's commitment to quality is reflected in the successful 2017 transition of the quality management system in accordance with MSZ EN ISO 9001:2015 before the expiry of the deadline with regards to "investment processes; educational processes; bus and trolley bus transport, and related traffic and technical processes, including maintenance, repair and spare parts refurbishment activities, as well as periodic technical examinations of testing stations". Compliance with this standard was evaluated by the independent certification body on 7 April 2017 as compliant, for which a certificate was issued.



## Quality control systems according to the MSZ EN ISO 9001:2009 standard

The second annual supervisory audit of BKV Zrt.'s quality management system for energy management processes has been successfully completed. Based on the decision of the Board of Directors in December 2017, the maintenance of this system is no longer necessary because in 2016 the Company introduced an energy management system according to MSZ EN ISO 50001:2012.



## Environment-focused control system according to the MSZ EN ISO 14001:2005 standard

The operation of an environment-focused control system („KIR”) by BKV Zrt.'s M2 Towing Service Rail Yard — besides the need for an environmentally friendly operation — was also necessitated by a requirement of the financing bank connected to the purchase of ALSTOM metro cars. The second supervisory audit carried out by the external, independent accredited organization was successfully completed in June 2017. In the last quarter of 2017, preparations for switching to MSZ EN ISO 14001:2015 began, and in the spring of 2018, operation based on the new standard was introduced, the certification of which is scheduled for June.



## Energy control systems according to the MSZ EN ISO 50001:2012 standard

In 2016, BKV Zrt. introduced an energy management system in accordance with standard MSZ EN ISO 50001:2012 for all its activities and registered offices listed in its Articles of Association. Its first annual supervisory audit was successfully completed in November 2017, based on which the Company's certificate relevant to the system remains valid.

# INVESTMENTS, DEVELOPMENTS

## Vehicle purchases, renovation and modernisation

### Bus sector

At the end of 2016, there were still 225 high-floor units in the company's bus fleet, whose average age was around 25 years. In order to improve the quality of service, reduce the average vehicle age and lower maintenance needs, the modernization and replacement of the bus fleet continued in 2017. Altogether 46 new and 55 used buses were purchased.

#### Mercedes-Benz Conecto purchase

The 15 new solo buses ordered in December 2016 were delivered and entered service in June 2017.

In order to prepare for the upcoming M3 metro replacement bus project, we ordered additional 30 buses to be delivered, exhausting the full optional quantity of the framework contract concluded in 2014. The buses were delivered by the manufacturer's representative in Hungary at the end of October 2017, so all the new buses entered service for metro replacement in the first days of November.

Due to the slight delay of the 15 buses ordered in 2016, the manufacturer delivered one more bus as compensation, so the total number of buses delivered in 2017 was 46, thereby increasing the number of units of this make in the Cinkota Division to 76.

#### The appearance of hybrid operation

At the end of 2016, a demand for a fleet of possible large number of used vehicles was formulated. In the course of the procedure, we were offered to purchase 40 hybrid, low-floor Volvo 7700 and 7900 solo buses. Following the signing of the contract, we immediately started the technical inspection of the buses and then their acceptance process. Given that the technical parameters of these vehicles are different from those of previous ones and the special needs of the hybrid technology, the localization of vehicles took more time than in the case of an average diesel bus with similar parameters.

For the proper operation of the buses at the Cinkota Division, certain infrastructure conditions have to be met, and until those were realized, the vehicles already passed localization were entered into service by an authorized dealership. Training with the new buses for drivers and maintenance staff began at the end of 2017.

#### Procurement of used buses

At the beginning of the year, we had a tender for the purchase of four used articulated buses, and even though the procedure was successfully completed, finally only one Volvo 7000A bus was de-

livered. This vehicle comes from Geneva, where the other buses that previously entered service originated from where. The contract partner paid for failure penalty for the three undelivered buses.

Due to delays in the delivery of the 22 CNG powered Mercedes buses in 2016, a new Volvo 7000A articulated bus from Geneva, and a Van Hool A330 solo bus were delivered to the Company by way of compensation.

The localization of these two Volvo articulated buses could only be started at the end of the year.



# INVESTMENTS, DEVELOPMENTS

However, the localization of the solo Van Hool was carried out by the South Pest Division together with the investment division, and the bus entered service in October.

With the help of our subsidiary VJSz Ltd., we managed to purchase two additional Van Hool A330s and one Solaris Urbino 10 midi bus.

For the purpose of mitigating loads on the Company, the localization and their entering into service of the buses were carried out together with the investment division. As a result, the Solaris entered service at the beginning of October on the lines served by the Kelenföld Division. There could also be an increase in the number of this model, which met the long-time expectations of BKK as the customer. The two Van Hool buses were localized in the South Pest Division.

On the basis of the positive experience gained from the rental of used solo buses, we concluded rental contract no. T-16/17, on the basis of which 6 used air-conditioned Mercedes-Benz Citaro G articulated buses entered service at the Óbuda Division.

In the second half of summer, 5 solo and 4 articulated Mercedes Citaro buses were also purchased. So this was the first time that our Company purchased used vehicles that, at least in part, passed localization. Buses with polished, built-in closed cabs received their specific BKK and BKK technical and visual elements at VJSz Kft.

Due to the VanHool NEW AG 300 buses halted due to chassis problems, to alleviate the temporary shortage of vehicles, we prepared a tender procedure for renting new used vehicles, this time with stricter expectations regarding the age

and emission categories of the vehicles. Within the framework of this contract, 5 low-floor, articulated vehicles may enter service.

## Modernisation

The extreme cold weather of the first days of the year demonstrated how sensitive the CNG fueled CNG buses that entered service the previous year were to extreme conditions, partly due to the CNG technology. Therefore, in order to avoid further such faults, the parking heating equipment were replaced throughout the entire 22-unit fleet. The planning and financing aspect of the procedure was carried out by the investment division and the actual installation and commissioning by the ATÜI South Pest Division.

## Tram sector

### Procurement

The TW6100 tram that was procured and delivered to Hungary in 2017 and then damaged in an accident is scheduled for renovation in 2018 and then be used as a test vehicle.

At the end of the year, our Company purchased 4 undamaged and 2 accident-damaged but still operating TW6100 trams from the Üstra company in Hanover. Delivery of the vehicles started in the last days of the year. Four of the 6 purchased vehicles are planned to enter service and the remaining two will be used for spare parts replacement. The localization of trams will take place in 2018.

### Modernisation

Launched in 2014, the T5C5 - Tatra modernization program continued in 2017 with a powertrain upgrade combined with renovation on yet another 36 T5C5 vehicles. With this, the number of refurbished vehicles increased to 114. Thanks to the refurbishment, the regenerative system results in significant energy savings, thus reducing the environmental load.

As part of the modernization, the vehicles' passenger compartment was also renewed and the door-operating system was also changed (single-door opening).

Also, within the framework of the previously launched program, the modernization of the Ganz KCsV-7 trams continued, with another 4 vehicles finished in 2017.

As an option of the framework agreement concluded in 2014, the renovation of 8 TW6000 trams and aesthetic improvements of their passenger compartments were completed.

The appropriate operating conditions of the special-purpose machines assisting operations are essential, so in 2017 one electric power train was refurbished and one snow-sweeper was renovated and modernized. In the context of modernization, the entire old sweeping structure was replaced by an adapter-type solution interchangeable with other special tools (e.g. snowplough), and the powertrain was also modernized. The snow sweeper also received a completely new, fresh design in its exterior appearance.



# INVESTMENTS, DEVELOPMENTS

## Modernisation of the scheduled BKV boats

In 2012 our Company began a modernisation programme of its boats involved in public transportation, and as a result the following tasks were implemented in 2017.

Two water buses with an open top deck were provided, based on operational ex-

perience, with an upper deck tarp that protects against sunlight and precipitation.

Within the context of the Danube boat project, doors and windows on 6 boats were replaced. The new doors and windows improve travel comfort and lend a better

aesthetic look. The double-layered, non-reflective, insulated doors and windows significantly reduce humidity and draft, and the efficient closing improves the efficiency of heating and cooling.



## Track reconstructions

### Reconstruction of the Húvösvölgy retaining walls

Originally built in 1900 with an average height of 3 m and 6.5 m respectively, the retaining walls separating the tracks of tram 61 from Ördögárok, have become critical due to their age and the roots of the trees, and already compromised traffic safety. On-site construction works requiring track obstruction started on May 27, 2017, and were completed by 27 August during the summer school break.

### Reconstruction of retaining wall no. 1

The bridge at Riadó utca divides the retaining wall so the walls was to be repaired 17 m long before the bridge and 161 m after the bridge. In these sections the superstructure of the retaining wall had to be completely dismantled, only the concrete foundations remained. The new retaining wall was rebuilt from prefabricated reinforced concrete angular bulkheads.

The tracks had to be disassembled in 515 meters long and then rebuilt.

### Renovation of retaining wall No. 2

The height of the existing 135.50 m long retaining wall was increased using a GABION wall. Based on the strength calculations made, it was also necessary to renovate the remaining retaining walls. The interior structure of the masonry limestone set in lime mortar was too loose, and especially the unbound load-bearing parts were not suitable for their jobs. The internal renovation was solved by injection, and on the external, visible surfaces, grouting work was done. Along retaining wall 2, the right track had to be demolished 152 m long and then rebuilt after restoring the retaining wall.

### Renovation of the Zsókavár utca terminal on the 69 tram line

Due to the deteriorated technical condition of the turnout at the Zsókavár utca termi-

nal of the 69 tram line, several residential requests have been sent to our Company. As part of this intervention, we replaced the dual track connection of the terminal, and we installed new rails into the tracks of the terminal. The work was carried out with a track obstruction between 5–19 August 2017. Thanks to the electric point adjustment equipment installed after the renovation, drivers are now able to adjust the point by passing through the sensor elements installed in certain parts of the railway track without any manual adjustment as needed before.

### Installation of a turnout connection on the line of the no. 14 tram

BKV Zrt. established a simple track connection on tram line 14 at the Szent István tér stop, which allows for the retaining and reversal of the trams. The integration of the track connection was necessary to facilitate the overall organization of traffic.

# INVESTMENTS, DEVELOPMENTS

## Partial renovation of a ballast-bed track on the line of the 56/59/61 trams at the corner of Nyéki utca and Ötvös utca

In the course of the project, 362 track meters with an open superstructure tram track, a pedestrian crossing, and a passenger car entry were renovated. During the change of the superstructure, 6 meters of glued-bed transitional section was built on both ends to provide a flexible transition. We have also improved the faults of the drainage facilities and the edge surfaces.

## Elimination of defects on ballast-bed track sections on tram line 56/59/61 at Vadaskerti út

In the course of construction, we built a tram track with an open superstructure at a length of 350 meters, a road level crossing and a retaining wall next to the track at a length of 110 meters.

When joining the large-panel open rails, we implemented 6 meters of glued-bed transitional section on both ends. The road level crossing now has an asphalt pavement.

## Large-panel track renovations

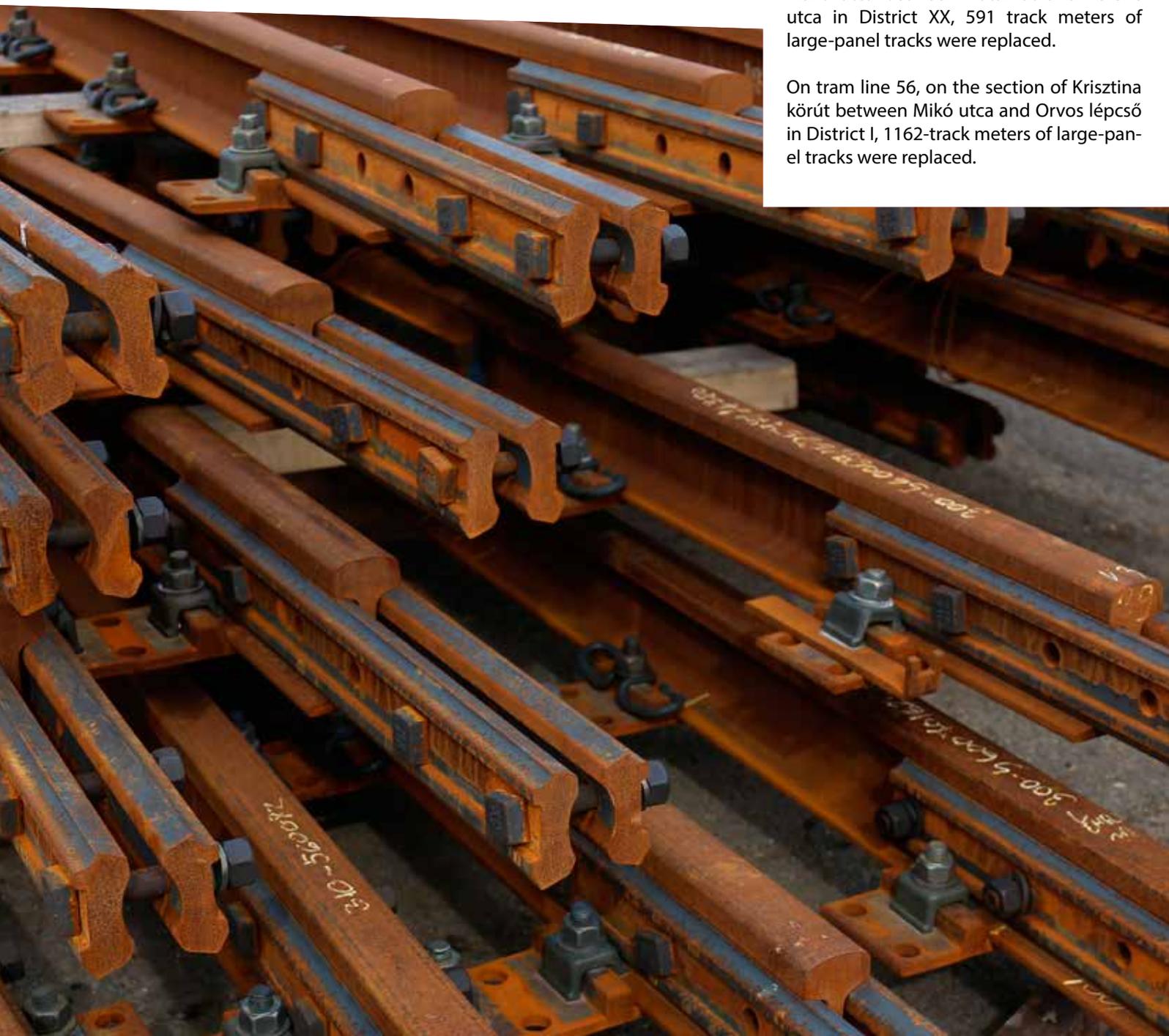
On tram line 2, at Bem rakpart and Március 15-e tér in District 5, a total of 400 track meter large-panel tracks were replaced.

On tram lines 12, 14, at the intersection of István út and Árpád út in District IV, 60 track meters of large-panel tracks were replaced.

On tram line no. 42, on the section of Ady Endre út between Hunyadi utca and Kosuth utca in District XIX, 1338 track meters of large-panel tracks were replaced.

On tram line no. 52, on the section of Török Flóris utca between Határ út and Ferenc utca in District XX, 591 track meters of large-panel tracks were replaced.

On tram line 56, on the section of Krisztina körút between Mikó utca and Orvos lépcső in District I, 1162-track meters of large-panel tracks were replaced.



# INVESTMENTS, DEVELOPMENTS

## Metro line M3

The strategic objective of the infrastructural reconstruction is to improve the competitiveness of the north-south metro as part of the rapid railway network over individual means of transportation for the residents of Budapest and those in the agglomeration. Another objective is to provide high quality support and assistance for cooperation and communication between the functional areas of the city. The starting date of the renovation of metro line M3 has been delayed compared to the date planned; therefore, in order to maintain reliable operations of the line, an Action Plan was prepared. The Action Plan includes instructions and pro-

visions relevant to the infrastructure and vehicle maintenance, as well as measures taken to ensure uninterrupted transportation of passengers. The measures have fully ensured the proper operation of the entire line until the reconstruction began and the operating conditions of the operating section during the reconstruction. The operators have completed the preparatory tasks related to the preparation of the reconstruction, which resulted in the beginning of the reconstruction of Phase 1 on 4 November 2017.

Dismantling works started on the closed

northern section (Újpest-Központ, Újpest-Városkapu, Gyöngyösi utca, Forgách utca, Árpád híd, Dózsa György út stations). Various technical equipment, tools, pavement elements and equipment have been dismantled in the area. Prior to handover of the workspace, the premises of the 6 stations of the M3 metro line affected by Phase 1 of the reconstruction (workshops, waiting rooms, warehouses, etc.) have been moved. The Metro Infrastructure Chief Engineering provides technical on-call presence at all stations of the M3 metro line to ensure the smooth operation of the reconstruction works.

## Further works on the metro lines

### M1 metro line

- roof and the staircase shielding/repairing works at the Mexikói út station
- installation of digital clocks displaying the waiting time in seconds in the tunnel and at the Oktogon station

### M2 metro line

• Kossuth tér  
A decision of the Government on the demolition of the Kossuth tér MTESZ headquarters and construction of a new office building for the Office of the Parliament also involved the exit of the Kossuth tér metro station of metro line M2. The final permit plans were approved in December 2016, which means the following construction and implementation tasks related to BKV:

1. Works related to the Kossuth tér metro station during the reconstruction of the HQ (e.g. metro protection zone, support structure test, building engineering, heat pumps, ventilators issues, etc.).
2. The construction of a pedestrian tunnel under the tram line providing interconnection with the Parliament building (the complete demolition of the tramway and related infrastructure facilities, e.g. the overhead cable posts, on a short stretch, then its full rebuilding and restoration).
3. During the construction of the new

transformer house, the jacking works of the wire under the tram line.

Due to the planned new office building, the implementation of the surface operating spaces of the metro station has also become necessary. The lighting of the upper passenger distribution hall of the Kossuth tér metro station received new luminaries with LED light sources. Thanks to modernization, the energy efficiency of the light sources improved, and the biggest disadvantage of the compact fluorescence lamp system so far has also been remedied. The high level of light current loss to cold weather is now a thing of the past.

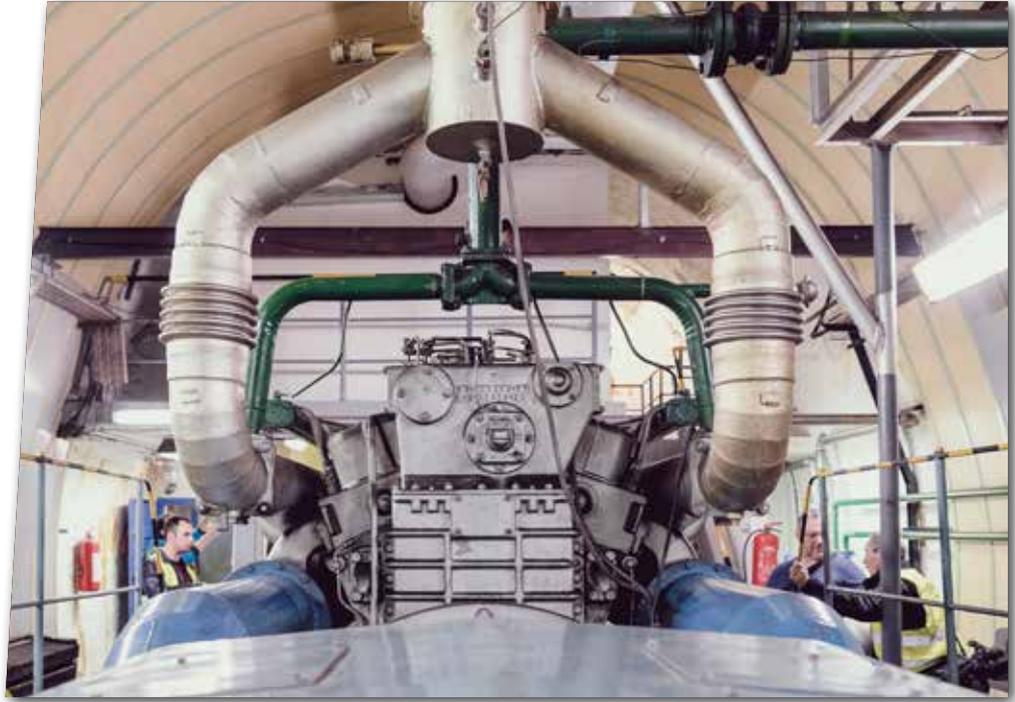
In Kossuth tér, we established communication systems in the new traffic duty premises, we installed the related additional systems, we created the conditions necessary for regular operation, such as the delivery of the new air supply and waterworks equipment. Due to the demolition of the headquarters, metro trains passed Kossuth tér without stopping between 3 December 2016 and 13 May 2017, until the work phases were completed. During the 1-month track obstruction between 1-31 August 2017, the pedestrian tunnelling tunnel between Parliament and the buildings at Kossuth Lajos tér 6-8. was completed during (complete disassembly and rebuilding of the tram line).

- Rebuilding and repairing the platform edges at the Pillangó utca and the Örs Vezér tere stations.
- Installation of a protective fence on the surface section between the Pillangó utca and the Örs Vezér tere stations.
- Recurring oil leaks in the main engine is a known issue with the over 40-year-old escalators. As an experiment, we use the liquid grease Interflon Grease MP00 that already proved successful with power units of the metro motor cars. New lubricant was added to the escalator at Kossuth tér and to rail and worm gearboxes of the Blaha Lujza tér OK-RTHD M5 escalator. The tests concluded that this method successfully eliminated oil leaks in the specific equipment. Due to positive past experience, the increase in the expected lifespan of the powertrain and the longer lubrication periods, we are going to use this new lubricant with other power units in the future, which will result in cost reductions.
- Injecting concreted sleepers in the turnout zone of the M2 metro line at Déli Pályaudvar.
- Rail change and injection on the M2 line between the 9 and 9/1 turnouts.
- Migration of the Central Traffic Router M2 metro line began.

# INVESTMENTS, DEVELOPMENTS

## Metro line M3

- Construction of a life protection fence at Kőbánya-Kispest (NATO net).
- In order to ensure the wartime availability of civil protection equipment, the renewal of the 40-year-old and already worn radiators began in the diesel engine rooms. These ensure the constant temperature of the engine room during the operation of diesel engines. On the M3 line there were two units replaced at the Pöttyös utca machine room, and four more at the Deák tér engine room.
- We have completed the development of operational radio on the traffic duty premises of the underground stations.
- Construction of the track monitoring camera system at the Kőér utca vehicle park was completed.
- The M3 line interlocking system and the remote control as well as the automatic train control system are being upgraded.



## Metro line M4

- Incorporation of vibration damping rubber elements in the tunnel sections.
- In parallel with the operating tasks, we performed the integrated fire safety tests required under the National Fire Protection Rules and the operating tests of the ventilation system of the battery spaces.
- In order to maintain uninterrupted operation of the escalators, we made a number of technical modifications in agreement with the manufacturer,
- which reduced the number of malfunctions.
- We have prepared the emergency camera imaging program, which in emergency, i.e. in case of the loss of the station camera image, can be launched by the specialists of the Communications Service to maintain traffic.
- In order to modernize existing IT system management activities, we have created a new, innovative system management/administrator group
- that examines the functioning of the IT systems on the line and intervenes immediately in the event of any disruption, thereby effectively reducing the traffic disruption due to the failure of the IT system.
- We have also developed a new network management system, which simultaneously monitors a number of different subsystems, and with which a more efficient monitoring of the IT network was realized.



# INVESTMENTS, DEVELOPMENTS

## Other infrastructure-related projects:



### Upgrading the Margitsziget Cennáriumi harbour and the Óbudai-sziget harbour

The two harbours are involved in day-to-day boat services. In addition, the first was going to be a part of the water sports events to be held in 2017, and the second was going to service Sziget Festival, so we planned for the modernization of both harbours. We construct a 26 m access bridge with the appropriate supporting and fixing elements, at both harbours the bollards were refurbished, and passenger waiting station and bicycle storage were built.

### Installation of rail lubricating equipment

Recently, the need to reduce the noise

and vibration of rail traffic in urban environments and reduce rail wear have been a constant and recurring issue. The high level of residential demand for noise and vibration dampening is also indicated by the number of complaints submitted to the Company by the residents concerned. One of the tools to deal with this problem is to operate photovoltaic (solar) energy rail lubricating equipment installed next to (actually in) the track. By the end of the first quarter of 2017, rail lubricating equipment were installed at the following locations:

- Tram line 3, Vg48 bends in the delta track at IX. Határ út - Nagykőrösi út
- Tram line 37, Vg48 bends with concrete-cast sleepers between X. Pongrác híd and Órház station

- Tram line 59, XI. Márton Áron tér
- Tram line 59, XII. Németvölgyi út
- Tram line 59, XII. Apor Vilmos tér
- Tram line 61, XII. Szilágyi E. fasor - Káplár utca
- Tram line 69, Bánkút u. – Páskomliget u.
- 41/47 tram line, Budafoki elágazás
- Tram line 18, Savoya park (Entrance Road)
- Tram line 2, Közraktár u. counter bends

In the near future, our Company plans to use rail conditioning equipment at other locations as well.

### Purchase and installation of low-rise escalators

At the M2 and M3 metro stations, low-lift escalators (type: LP-6I and PSTV-1000) have been in operation for more than 30 years. The technical solutions of the escalators have become obsolete, and despite the continuous and regular renovations they have been worn out, their structural elements have aged, so their replacement has become necessary. Getting the parts was cumbersome and very costly, which also increased operating costs. When planning to replace these escalators, the primary goal was to install and operate cost-effective escalators that comply with today's standards. As a result of the purchase, 10 low-lift escalators of CNIM E-Premium type were installed at the M2 Deák Ferenc tér (3 units), the M2 Bathány Square (3 units), and the M3 Nyugati pályaudvar (4 units) metro stations.

The new escalators' operating speed increased to 0.75 m/s, so the equipment now have increased transport capacity compared to the previous ones.

### Renovation of Lorenz SEL 700-H point drive gears

On metro line M3 we renovated 20 pieces of Lorenz SEL 700-H point drive gears. In order to maintain the safety of train traffic, during this investment the point drive gear that passed the setting numbers guaranteed by the manufacturer will be able to perform 500,000 settings in a reliable manner after the overhaul.

# BERUHÁZÁSOK, FEJLESZTÉSEK

## Baross garage boiler room and heat centre reconstruction

The FÉG-VESTALE module boiler plant at the Baross tram garage installed in 1983 with a total output of 3.84 MW operated with low reliability. The emergency incidents of the most recent period demonstrated that replacement of the boiler plant providing heating and hot water for the garage could not be delayed any longer. During the reconstruction, two REMEHA GAS 610 Eco Pro type condensing gas boilers were installed with a total capacity of 2.6 MW, which are sufficient to supply the system with upgraded equipment and optimum connectivity.

## Eliminating shock protection defects in garages

Eliminating the degraded condition and non-standard lighting of the service pits in the service halls of the tram garages for better and safer working conditions at the Angyalföld, Kelenföld, Baross, Zugló, Száva garages. A total of

2261 double-insulated IP66 assemblies were installed with some additional work.

## Implementation of a technological fibre optic cable between the M4 Kelenföld railway and the dispatcher house at M3 Szabó Ervin tér

Within the project, 10 km of standard mono-modal 2x96 fibre optic cables and 3 km of fire resistant mono-modal 2x96 fibre optic cables were laid with patch cables and brackets.

## Centralisation of the remote control of transformers

The designed central control system (SCADA) was implemented in Vaskapu utca. In the Zugló remote control centre an independent, new control centre was installed as a cold reserve. Instead of the poor quality and costly wired data connection, the power transformers are now accessible through GSM data connectivity.

## In 2017, the following machines and equipment were purchased:

- 2 portable, temporary overhead cable posts
- EHC 7838 vulcanizing tool for the baking of the rubber handrails for escalators
- Giuliano S 557 commercial vehicle tire service machine to accelerate large-scale assembly and to reduce costs
- Hi-Target V100 GNSS RTK geodetic receiver to launch the company's geospatial registration system and to perform business geodetic tasks faster and in a more advanced manner.



# BUS AND TROLLEYBUS OPERATIONS DIRECTORATE

## New vehicles entering service

The option for vehicle was drawn to the contract with the Inter TanKer City Consortium, so besides the 23 Mercedes-Benz Conecto G articulated buses already operating in the framework of the contract, in Q2 of 2017 another 31 new articulated buses entered service. The vehicles will be released from the Óbuda Division's site and will be involved in both the metro replacement and other scheduled passenger articulated bus services operated on a timetable basis.

In 2017 VOLÁNBUSZ Zrt. entered into a contract with IKARUS Egyedi Autóbusz Gyártó Kft. for the delivery of 180 Modulo M168d buses. Based on the decision of Nemzeti Autóbusz Beszerzési Bizottság of 17 July 2017, BKV Zrt. planned to pur-

chase 30 buses from VOLÁNBUSZ Zrt. The ATÜI Kelenföld Division of BKV Zrt. also participated in the construction and final assembly of vehicles.

## Vehicle refurbishing

In order to meet the needs of the M3 metro line replacement project and other replacement and reallocation needs during this period, while taking into account any higher demand, a total of 36 Ikarus 280 and 435 buses were refurbished, partly from own capacities and partly with external partners.

With its own capacity and with the help of our contract partners, we are continuously refurbishing the Volvo 7700A buses procured between 2004 and 2006 and having already high mileage. By the end

of 2017, 31 vehicles were finished based on the framework contract, of which 24 were completed with own resources. Refurbishing works will continue in 2018.

Four of the low-floor MAN NGE 152 trolleybuses purchased in 2012 had to be prepared for technical inspection, and therefore received premium maintenance, including aesthetic and technical reconditioning.

On the Ganz-Solaris Trollino 12A trolleybuses procured in 2006, we started aesthetic repairs and replacement of the worn-out traction batteries.



# BUS AND TROLLEYBUS OPERATIONS DIRECTORATE

## Changes in the vehicle portfolio

During the preparation for the metro replacement, the fleet increased from 928 to 1002 units. Thanks to the developments, the proportion of low-floor buses increased from 75.8% to 78.3%.

As a result of the newly purchased units, the average age of buses decreased slightly from 13.88 to 13.65 years. No new trolleybuses were purchased in 2017, but stabilization of the availability indicators allowed the withdrawal of the 5 most worn vehicles, so the average age increase did not reach one year, and moved only from 16.55 to 17.33 years.

Parallel to the renewal of the vehicle fleet, the number of buses fitted with passenger air conditioning systems increased from 652 to 735. The share of vehicles fitted with climate control will continue to increase in 2018 with the 40 hybrid buses entering service.

## Vehicle tests

In Q3 2017, our company tested a Mercedes-Benz Conecto NGT low-floor solo bus for a week. The vehicle is an advanced version of the diesel Conecto buses already known to our company, now equipped with a compressed natural gas powertrain. The purpose of vehicle tests is to collect information about the traffic and technical properties of the models currently available on the market and to utilize the collected data when preparing and specifying new procurement tenders and when operating the vehicles.

## Operation-related measures

January 2017 produced extreme and persistent cold weather unseen in previous years, which caused disruption in transport services. Subsequently, our Company started an investigation about the winter operating conditions of buses and trolleybuses in the winter, analysing the extreme weather conditions of 2016/2017, and elaborated plans for troubleshooting and formulated suggestions for the future.

The 2017/2018 winter preparations and operations plan was completed based on the experiences from the beginning of

2017 and the plan entered into force on 1 September 2017. During the 2017/2018 winter there was no major disruption in service.

## Developments implemented on vehicles

In the second half of the year a tender procedure for the equipment of a total of 80 buses with fire extinguishers took place, which resulted in a framework agreement with the winning bidder. On the basis of the framework contract, implementation started at the end of 2017 and 56 automated fire extinguishing systems were installed.

The Van Hool New A330 CNG buses, already equipped with the camera system, were fitted with front cameras to support the reconstruction of road traffic incidents. To provide additional vehicles with a security camera system, we are preparing a new procurement procedure. The framework agreement to be concluded also has an option to upgrade the existing camera systems in vehicles.

With the development of the fleet, the number and proportion of personal and property security equipment also increased. Thus, now 500 buses have automatic fire extinguishers, which means an increase from 30.4% in January 2017 to 50%. The number of vehicles equipped with security camera systems is currently 338, and their share increased from 21% to 34% in 2017.

We have installed 12 new passenger compartment security systems for the security of travellers with large packages, specifically for the 200E airport buses. In connection with the system, a test system for remote access was also set up for recordings of the camera system and data captured by the data acquisition equipment, which test will end in the summer of 2018.

In Q4 2017, the test period for capacitive fuel probe systems was completed, and a report on the experience was prepared. We have found that these systems provide a full-fledged alternative to the previously operated flow-rate systems at a lower price level and with higher accuracy.

In addition, they have other functions that make it easier and more economical to operate the vehicles, which can also be used to increase availability and the quality of service.

## Preparations for M3 metro replacement

After long planning and preparation, the reconstruction of the M3 metro line began on 4 November 2017 between Lehel tér and Újpest-központ in the north. However, the need to build the metro replacement lines and the infrastructure required for replacement emerged along the entire line, as according to the planned schedule, buses on workdays during the day would replace the metro only between the Lehel tér and the Újpest stations but would run on the entire M3 line on workdays during the night and over the weekend.

The bus operations division of our Company participated in the coordination since preparations began. By providing test services, it assisted in several places to designate stops and test traffic engineering plans made on the design table under real-world conditions. During these runs, several changes were proposed at a number of junctions that have made bus traffic more efficient and transport safer. For example, it was a southbound diversion of traffic at the Népliget junction, where motorists making a right turn from Üllői út crossed the bus route to Népliget at an angle barely visible to bus drivers. Therefore, with the removal of the accelerating lane here, a stop and yield traffic sign was installed for motorists turning right. To the south of Nyugati Pályaudvar, a traffic mirror was installed to improve visibility of the bus stop in the bend.

The Company will provide for the vehicle need, totalling close to 90 vehicles on weekdays including alternative services and approximately 80 vehicles on weekends, by obtaining new buses calling the available options of the existing master agreements and by procuring and localizing used vehicles and even reactivating its older Ikarus articulated buses.

# BUS AND TROLLEYBUS OPERATIONS DIRECTORATE

BKK Zrt. has also called for its still open option from its service contract with VT-Arriva Kft. in order to provide high quality service in its metro replacement extra tasks. The 45 solo buses entering service means long-term performance drop for BKV Zrt.

Metro replacement also presents a significant challenge from the drivers' side, in which BKV Zrt. also played an important role.

The drivers of the sites participating in the metro replacement project received route and traffic training in the weeks before the project started so that all drivers involved can provide quality services to our passengers with adequate information and line knowledge. A total of approx. 400 drivers attended the 8 3-hour training sessions, and viewed the route, the critical junctions, terminals, stops, and received illustrated documentation of the training. The success of the training and preparation was confirmed by the smooth start of the replacement project.

It is clear that for the purpose of fulfilling the bus replacement tasks of the metro reconstruction project, the number of drivers is the bottleneck and determines the maximum performance to be planned.



# RAILWAY OPERATIONS DIRECTORATE

In 2017, the Railway Operations Directorate operated the metropolitan metro, Millennium Underground, tram and funicular transport in Budapest.

Based on the Public Service Contract, the Directorate maintained the vehicles and the operating infrastructure (maintenance and repair) for the purpose of continuous and safe service, and, if required, participated in the preparation of the investment projects affecting public transportation. In addition to the contractual obligations, in the railway sectors (at the Railway Operations Directorate), pursuant to Act CLXXXIII of 2005 on railway transport, the National Railway Regulations and other laws, the railway license holder shall, among other things, ensure the establishment and smooth operation of the appropriate operating order, provide the conditions for life, property and operational safety, the maintenance, the operability and technical supervision of railway structures and vehicles when using such structures and vehicles.

In addition to the full accomplishment of their tasks in the field of railway operations, the railway operations divisions performed several additional tasks of utmost importance. By implementing these, they facilitated compliance with the changing environmental needs of public transportation, the implementation of ongoing developments and the preparation of planned developments.

The Railway Safety Office began its operation in June 2017. Its main task is to carry out the professional supervision of the sectoral railway safety teams and to conduct inspections ordered by the Transport Safety Organization of the Ministry of National Development. With regards to the foregoing, the Railway Safety Office began updating the internal regulations concerning the order and rules of the incident investigations and effectively represented the interests of BKV Zrt. and other regional companies operating city railways during the preparation of the "Workshop Decree" published in December 2017, i.e. the NFM Decree 24/2016 (VII.18.) on workshops for the maintenance, repair and periodic inspection of railway vehicles. In 2017, 16 inspections were conducted, resulting in 16 preliminary recommendations to the relevant organizational units. At the same

time, it also began to develop a system for recording and efficient analysis of railway events, which will be able to carry out long-term analyses and evaluations as a result of rising test numbers.

## Operations performance

In terms of BKK, in 2017 the metro sector performed 4,884,690 thousand useful (active) place-km, which was a 6.43% drop compared to 2016. The decline in performance was mainly due to the M3 metro line as reconstruction of the north section started in November 2017.

In July 2017, during the events of the FINA World Aquatics Championships, in response to increased passenger traffic, extraordinary, more condensed timetables were introduced on all four metro lines.

In 2017, the number of trams did not decrease compared to 2016, which was justified, among other things, that lines 12 and 14 are currently involved in the M3 metro replacement project.

In order to ensure the traffic performance ordered by the BKK, we continued fast-track training of tram drivers in 2017 as well. Every two months, we launched a total of six basic training courses where more than 100 people secured their driver's licence for trams.

The total number of full-time tram drivers at the end of the year was 933, and with fluctuation their overall number grew by 69 in 2017.

By increasing the efficiency of vehicle maintenance work, we managed to reduce the amount of technical service outages, which, noticeable to our passengers as well, further improved the quality of the services provided by the Tram Operations Directorate.

Based on the bonus/malus rating defined in the 2017 Annual Agreement concluded with the BKK, the service outage index improved compared to the previous year (rating "0"), while the accident index, mainly due to a decrease in the number of accidents caused by our own drivers, reached the rating "0.5" bonus.

In 2017, to improve troubleshooting ac-



# RAILWAY OPERATIONS DIRECTORATE

tivities on tram lines, a large emergency vehicle equipped with troubleshooting and rescue tools entered service, and another expected to be added to the fleet in 2018. The commissioning of these two emergency offered the opportunity to retire a total of three old, outdated trucks that could be kept operable only at high cost.

## Changes and achievements in the railway vehicle portfolio

During the year a number of activities were undertaken to improve the technical condition of the railway vehicle fleet and to increase the level of quality. These contributed to meeting expectations generated by the environment, and provided for the conditions required for fulfilling such expectations.

The passenger traffic in the 34 tram routes operated in 2017 was served by 9 differ-

ent types of tram vehicles totalling 588, while the passenger traffic in the cog-wheel railway, popular amongst tourists, was served by 14 funicular trains of 7 motor and 7 trailer cars.

Low-floor vehicles (Combino and CAF) make up 15% of the vehicle fleet, yet in terms of useful seat kilometres they account for 40% in the performance of the operations directorate. In addition to tram line 4-6, we were able to provide continuous low-floor service also on tram line no. 1 with the CAF URBOS 3/9 tram trains and the Combino trams. The traffic performance of the 40 Combino vehicles represents a significant, almost 20% share of Budapest's tramway transport.

In connection with the tram fleet exceeding 600, it is of paramount importance that we started phase II of the procurement of the CAF trams operated by our

Company. According to the concluded funding agreement, the new vehicles (26 in total) are expected to arrive in Budapest on a continuous basis starting from 2019, and can enter service after they pass the prescribed test runs and examinations.

To ensure the expected quality service levels, in 2017 we completed the 8th year major overhaul of the Combino trams, and started the 10th year major repairs which we carry out with our own resources in a modular system in the Hungária garage, with the scheduling of each refurbishment work, without retiring the vehicle from service. In addition to these works, we continued to participate in fitting the Combino trams with the FUTÁR system.

All Tatra trams servicing the hillside lines now fully support the transportation of bicycles.

## Metro

The highlight of the year as far as the 450-unit metro fleet was the continuation of the reconstruction of metro line M3 coupled with the modernisation of the vehicles servicing the line.

Basic quantity included in the contract:

- renovation and modernisation of 222 motor cars (74 front cars and 148 intermediate cars),
- renovation of the Automatic Train Operating System (ATO) for the 74 front cars,
- delivery of the special equipment for lifting and rescuing in the tunnel, maintaining and repairing vehicles,
- delivery of the starting spare parts kit and training simulator needed for maintenance and repair.

The basic quantity may be increased with a special order for another 14 front cars and 28 intermediate cars to be modernised and renovated, renovation of 6 ATO onboard units, and the contract also allows for the procurement of another 10 new ATO onboard units.

The increased quantity would be available upon the extension of the metro line M3.

Key technical content of the renovation coupled with M3 vehicle modernisation

- installation of a new powertrain capable of recharging;
- modern appearance of the vehicle from the outside and the interior, fan-based ventilation and monitoring and image recording system installed in the passenger area.
- implementation spots to allow safe transportation of disabled passengers;
- implementation of high-level fire protection, automatic fire alarm and fire extinguisher system, escape doors installed on the front end of the front cars.

The on-going roll-out of refurbished vehicles throughout the year was initially hampered by the large number of serial errors and the related negative press coverage. However, in cooperation with the manufacturer, the operator fixed the various types of problems initially encountered in a short period time so that by the end of the year the number of such incidents and their impacts dropped significantly, which was reinforced by the

positive feedback from passengers. During 2017, the number of refurbished vehicles increased significantly, reaching a total of 126 vehicles, i.e. 21 trains by the end of the year.

Another major change in the operation of the metro system is that the maintenance tasks of Alstom vehicles, in respect of the vehicle fleets of both affected lines, were taken over by our company in 2016, so now we also carry out these tasks entirely within our own competence. At the end of 2017, the first vehicles reached their first overhaul cycle, so a complete train, that is, repairs on 5 vehicles began and was completed.

The 23 unique, three-piece articulated vehicles servicing the Millennium Underground line in 2017 were manufactured by Ganz-MÁVAG and Ganz Villamossági Művek. M2 was operated with a total of 22 ALTSOM metro trains of 5 cars built of three different types. On the M3 line, the Russian-type EV and the 81 model family metro cars operated beyond the designed service life, as well as the refurbished Russian vehicles performed pas-

# RAILWAY OPERATIONS DIRECTORATE

senger transport. In 2017, 126 vehicles were refurbished. In addition, on the M4 line, 15 ALSTOM metro trains of 4 cars of two different types carried passengers.

In light of the above, we can state that the vehicle portfolio of the railway sectors is very diverse. Our business lines operate COMBINO, CAF trams and ALSTOM metro vehicles that fully meet the requirement of our age, with high passenger comfort, with fully interconnected and wheelchair-accessible carriages with low floor and air conditioning, as well as the more aged metro, tram, funicular and Millennium Underground vehicles providing much less comfort, but guaranteeing fully adequate safety levels. With the remaining trams of the CAF fleet entering service in 2017, the ratio of air-conditioned vehicles improved considerably, reaching 14.45% in the tram sector. This ratio did

not change over the reporting year in the case of metro vehicles but remained 37.2%.

The CAF fleet entering service slightly improved the technical quality of railway vehicles operated by our Company: the average age of the electric passenger transport vehicles is 33.79 years, which, despite the positive changes, still exceeds the designed service life by 3.79 years.

The average age of the metro passenger transport vehicles is 19.79 years, which, as a result of the launch of metro line M4 and the vehicle replacements and the modernisation of the Russian vehicles on the M2 line paints a more favourable overall picture compared than the data from the previous years.

With regards to metro trains, without

the favourable impact of the young age of the ALSTOM vehicles, the 35.19-year average age of the Russian-made vehicles (as of 31 December 2017) was above the designed service life. However, due to the refurbishment coupled with the modernisation of the vehicles currently in progress, a significant improvement is expected in terms of technical quality in the near future. The average age being 43.69 years, the vehicles of the Millennium Underground are way past their designed service life.



## Metering tram

In 2016, the Tram Infrastructure Chief Engineering started to set up a moving measuring vehicle by equipping a Ganz articulated electric vehicle retired from service with measuring instruments. Its goal is to measure the technical state characteristics in an objective way, to as-

sess the technical condition of the track and overhead line network in a precise and dynamic manner, and to facilitate planning of maintenance and renovation works. In the spring of 2017, analyses of the results of the surveyed sections were prepared, which provided an

opportunity to determine the type and size of the inferred errors. The results of the first measurement series can be compared in the future with additional measurement data, so it is possible to track state changes.



## Changes and achievements in the railway infrastructural assets in 2017

Based on date as of 31 December 2017, every day railway traffic occurs on a total railway network of 475.2 km, and power to the vehicles is supplied by 85 transformers. The vehicles get the electricity required for their movement via 652.5 thousand km long contact wire, and via 1,115.5 thousand km long towing cable network. Of course safe operation is provided by, in addition to the above listed infrastructure elements, also further elements (signalling equipment, line lighting device, engineering equipment, escalators, ventilation systems, etc.), the number of which is above several hundred thousand.

Some of the infrastructural equipment and devices are in a state that the limitations due to the occurrence of the failures are persistent, and their elimination by maintenance methods is difficult. In the tram sector, as a result of the renovations carried out on tram lines no. 1 and 3, the combined technical condition of the infrastructural equipment and tools improved over the previous years. This performance indicator was further improved by the reconstruction carried out when creating the interconnecting tram network in Buda, as a result of which the combined technical condition of the infrastructural equipment and tools is currently at 45.2%.

The types, numbers and conditions of the infrastructural elements within the railway sector are extremely diverse. They play an important role as railway traffic could not happen without them. In order to improve the technical condition of the assets, and to maintain their current quality or even increase slightly, a number of activities took place in 2017.

Extension of tram line 1 has begun. As a result of the project, there is a connection between Etele tér and the Kelenföld railway station. The aim of the project is to effectively link the Etele tér junction with the Kelenföld district and South Pest to enable those arriving from the agglomeration to travel faster to these parts of the city and to enable residents in the area to quickly reach the metro and tram lines to the inner city.

The accessibility works and refurbishment of trams in South Buda was completed, and the new stop platforms are now aligned with the floor height and the length of the CAF vehicles. During the works started in the summer of 2016, the tram stops were modernized in Alkotás utca, Béla Bartók út, Fehérvári út and Villányi út in order to provide wheelchair accessible transport. During the renova-

tions, a total of 55 platforms were rebuilt along tram lines 17, 19, 41, 47, 48, 49, 56, 56A and 61. In part of the tram line sections involved, the implementation works combined with the platform building also included the needed maintenance of rail and contact wire as well as earth cable installation to improve tram operational safety.

In connection with the acquisition of the new CAF trams, the modernization of the Budafok garage also had to be modernized to ensure up-to-date repair of trams and to fully guarantee service requirements in daily traffic. During the reconstruction and renovation, the track connections were simplified and the delta rail of Forgalmi utca (the former terminal of tram line 41) was connected to the rail network of the garage, thus making it possible to use the site as an assembly line: the technological equipment are located on a looped track where the trams can move without directional change and can enter service without changing direction. Reconstruction of the garage began in May 2016 and was completed in the autumn of 2017. Technical delivery and acceptance processes were completed at the end of 2017.

## Other activities

Decree No 63/2004. (VII.26.) ESzCsM of the Minister of Health, Social and Family Affairs "on the threshold limit values of electric, magnetic and electromagnetic fields in the 0 Hz to 300 GHz frequency range as relating to the general public" requires the Owner (operator, investor, etc.) and Decree 33/2016. (XI.29.) EMMI "on the regulation of the minimum health and safety requirements for workers exposed to physical factors (electromagnetic fields)" requires the employer to carry out (or have a third party carry out) measurements and evaluations and make a risk assessment on the basis of the measurements. This risk assessment was carried out on the metro lines in 2017 on the basis of instrumental measurements carried out by a third party.

In 2017, 2 civilian protection sector tests were held in section IX of metro line M3 in sector II of metro line M2. Both sector tests were rated excellent.

In addition to the basic training courses and compulsory continued education trainings, we continued the various vehicle type and line trainings (CAF, Combino, T5C5K, etc.) related to different projects and the extension of the low-floor service throughout the year. Due to the rebuilding of the Budafok garage, and in preparation for its commissioning in 2018, we also completed the pre-training of the trams of the Buda traffic division.

In order to increase ride comfort and reduce noise, in 2017 a significant amount of rail grinding was carried out thanks to the recently acquired rail grinding vehicle of BKV Zrt. In total, 30,855 rail metre of metro and 48,155 rail metre of tram lines were grinded. The activity was carried out based on the annual planned schedule. During the autumn and winter rainy season, works were completed in the metro, while from spring to late autumn rails in the tram network were grinded.

In 2017, the rail lubricating installation program started the previous year was completed. Its purpose is to reduce the noise caused by the trams in the bends and to reduce rail wear. Up to now, there have been 46 rail lubricating equipment installed at 23 locations.

*The best drivers in the Company's driver competition participated in the European tram driver championship in Spain, where they further strengthened the reputation of our company.*

## Yellow Book

BKV Zrt. commissioned FŐMTERV Zrt. with the compilation and updating of a new edition of the technical data and regulations of railway track construction and maintenance. The planned volumes are as follows:

- Road Rail Design Guidelines (national general guideline);
- P.1. Railroad track construction and maintenance technical data and regulations, volume I (national general guideline);
- P.1. Railway track construction and maintenance technical data and regulations, volume ii (local INSTRUCTION - in this case BKV Zrt.);
- P.2. Railway traffic supervision and track maintenance instructions (Local instruction - in this case BKV Zrt.).

In the second half of 2017, following the various work group discussions, the Road Rail Design Guidelines were finalized. The completed material was also reviewed by the transportation companies of the rural towns, the experts of the BME and the SZE and the authority. Discussions regarding volumes P.1 and P.2 and the commenting of the working copies also began.



## METRO LINE 4

### Closing the KÖZOP project

On 7-8 November 2016, NFM completed the audit of the final financial and closing project required for the complete closing of the M4 major project. The large KÖZOP project was also closed by the Sponsor, the 5-year maintenance period started with 12 April 2017.

State funding for the project was provided under the existing sponsorship agreement until 31 December 2017. Considering that it may take several years to close the lawsuits and that during the five-year maintenance period of the EU project parts there may be tasks, the parties agreed to extend the funding period until 31 December 2019 and at the same time to review the state funding budget.

Amendment 5 of the Unified Grant Agreement on the extension of the funding period of the project until 31 December 2019 and the reduction of the budget was approved by the Budapest General Assembly at its meeting of 6 December 2017 and supported by the Government. Within the context of the KÖZOP closing,



a KÖZOP provision of HUF 199.34 billion was approved. The two small projects separated from the large project had been rearranged, and approval was given in the amounts of HUF 8.2 billion for the M1-M7 project and HUF 2 billion for the P+R project. Funding intensity is 100% instead of 89% of the major project.

In 2017 a total of HUF 1,021 million was paid according to the Supplementary Financing Procedure of the Standard Grant Agreement. Still in 2017, a project cost of HUF 2,123 million was accounted for from the 2015-2016 payments (HUF 1.4 billion), the majority of which was the purchase price of real estate purchased by the Municipality. In 2017 the amount of government subsidies received by the capital amounted to HUF 2,422 million.

### Accounting for IKOP projects

The IKOP subsidy contracts for the two small projects were signed by the parties on 3 May 2016.

On the basis of the financial progress and in order to utilize the funding budget, HUF 160 million was transferred to the M1-M7 project from the budging budget of the P+R project. The amendment of the IKOP Grant Agreements were signed by the Parties on 7 June 2017.

The final accounts of the MOPI M1-M7 project and the closing professional report were submitted on 26 June 2017, and NFM approved the closing documents on 16 October 2017.

The final documentation of the P + R project was submitted on 26 September 2017. Final accounts and related payment applications were approved on 15 November 2017.

### ACTIVATION

By the 30 June 2017 deadline of the MÁV 8-track P+R parking construction project, DBR compiled the package in accordance with the earlier needs of the Municipality and handed it over to the BKV in its final form, which then sent it to the Municipality. The Budapest General Assembly

accepted the material, and the process was closed.

In the last quarter of 2017, we completed the technical and financial assessment of the last packages included in the unfinished investment. These assets, pursuant to Section 4 (1) (h) of Act CXCVI of 2011 on National Assets (Nvtv.) may only be owned by the Hungarian State as they are part of the trans-European rail freight network listed in Annex 1 to the Nvtv. In view of this, these assets cannot be activated either at the BKV or the Municipal side.

### Internal installation

The interior contractor carried out only the required repairs under the guarantee at the specific stops.

Warranty reports are investigated and are repaired on a continuous basis, the results of which are regularly checked at the site visits by the representatives of the Operator, DBR, the Engineer and the Contractor.

### Systems, power supply

The status of performing the tasks specified in the occupancy permit no. UVH/VF/3429/50/2015 for the "Budapest M4 metro line, Phase I: trunk tunnel and vehicle train safety device and automatic train control system" based on the list of defects, version no.: V15:

- number of closed items: 28,
- number of open items: 4.

One of the open points can be closed by software modification and in two the documentation needs to be modified, and 1 item, the PPE life signal repair software, was uploaded for a four-month monitoring period.

The TCS system warranty expires on 27 November 2017, and fixes to the bugs reported to the call centre are in progress. The engineer will issue a certificate of performance when the defects have been corrected. The Contractor extended its performance bank guarantee for 3 months until the expected completion date of the repairs.

## *Related investments (construction of P+R parking lots)*

The construction of the fourth P+R parking lot built in connection with the M4 metro construction was also completed in Kelenföld, so nearly 1,500 new parking spaces are now available for motorists.

The four parking lots were built in about two years, with nearly 100% EU funding intensity. The most important objective of the construction of the new metro line was to reduce the heavy load on the city centre and reduce surface road traffic, primarily passenger car traffic. There is a significant role to play by the P+R parking lots, where some of the motorists coming from the agglomeration or the outside districts can park their vehicles and continue their journey by metro, tram, bus or

bicycle. The fulfilment of this objective is demonstrated by the fact that the three P+R parking lots delivered earlier have been used at full capacity.

In fact, the last investment element was much more than the traditional construction of a parking lot, as significant road construction, waterworks, public works, structural and construction works were also carried out under the contract. A complete public lighting network and a surveillance system were built for the parking lot, green areas were developed, and trees were planted by the entrepreneur. The task involved building a staircase and a lift from the parking lot. Their

aim is to provide a direct pedestrian link to the Kelenföld pedestrian underpass.

The construction of the four parking lots also available for cyclists and disabled persons, including the demolition work of the MÁV tracks, was a HUF 3 billion investment of BKV Zrt. DBR Metro Project Directorate. Including planning, design, administrative and other associated costs, the European Union's KÖZOP funds for the project and the IKOP funds for the delayed project elements provided HUF 4.32 billion, representing a nearly 100% funding intensity.



# HUMAN RESOURCES

## Introduction of a new job system and a wage tariff system based on it

As a corporate objective, BKV Zrt.'s employees income was compared with market benchmark data and a wage tariff system was introduced.

The basis for the wage tariff system and the market benchmark included the assessment and classification of jobs, the tasks to be performed in each job and the relative weight of the various jobs in comparison with each other.

The introduction of the new job system offers opportunities:

- implementation of a more transparent organizational structure (same job = same conditions);
- implementation of transparent workforce and wage management (planning and analysis);
- performance assessment, clear definition of professional and accountability requirements;
- In the absence of state professional railway training, it is necessary to strengthen internal trainings; for this purpose vocational development paths can be defined, which provides a basis for the preparation and implementation of the professional succession plan;
- accurately identify employee training needs;
- monitoring of the training and educational obligations compliant with legal requirements (periodic, recurrent training);
- establishing a classification system based on a job assessment in alignment with the contribution to the operations of the organization.

Assessment and classification of jobs is based on the Hay methodology, similarly to most major companies in Hungary. The positions of BKV Zrt. were classified for the 7-20 + HAY reference levels. Similar or the same jobs in different professional fields have different wages, so the job classification was done in job families as well.

In all professional areas of our company,

we have identified all jobs and the job descriptions have been prepared with content that allowed us to evaluate jobs and classify employees into new jobs.

The transition to the new job system, and the reclassification of employees to new jobs occurred in October 2017.

Following the introduction of the job system, the wage tariff system could be introduced.

Considering that the job system is based on the HAY methodology, we built up the wage tariff system on these foundations as ranking the level of each job has made it possible to determine the HAY level for the employees occupying those positions, thus assigning individual wage data allowed to measure and compare employee wage data.

Based on this wage data, it was agreed together with the Company's trade unions and divisions that the wage tariff system was based on personal basic wages, on the basis of which the minimum and maximum personal wage limits for HAY levels 7-16 were identified.

Since the divisions' wage resources did not offer to close the gap between the minimum limits and those wages below those, it was also agreed that the wage agreements are in place would ensure that the system is introduced and the gaps are closed.

Based on these principles, as a part of the 2018 Wage Agreement, the initial version of the wage bargaining system will be introduced starting from 1 January 2018, under the condition that a gradual approach and the experience gained during the actual operation will be taken into account and full introduction (i.e. closing the wage gaps) will be completed based on the resources provided by the wage agreements to be concluded in the next three years.

5% of the average 12% of the 2018 Wage Agreement is paid to all employees,

and 7% is spent on wage adjustments, mainly for jobs suffering from shortages (drivers, skilled workers, engineers). In addition, within the framework of the newly introduced wage tariff system, it was possible to raise the monthly basic salary of 1,000 workers earning less than their job level by a maximum of HUF 30,000.



# HUMAN RESOURCES

## Human strategy

Our Company's 2017-2020 Human Strategy became effective in the summer, which was prepared because the labour market has radically changed over the past one or two years. Labour shortage has become increasingly pronounced, leading to a massive shortages in certain jobs, increasing fluctuations and difficulties in new hiring.

The change also has a negative impact on us, and managers more frequently report on their negative experiences in the worsening job market and the wage market situation every day.

The main problem stems from the fact that the number of market-ready workers has significantly dropped (developing economy, retirements, half a million Hungarian workers living abroad), so competition for labour has become increasingly fierce over the course of a year, resulting in a significant increase in wages at the national level.

Our company must stand firm in a labour market where, in addition to the capital-intensive multinational companies and specialist services, we also have to compete with other transportation providers and the public sector paying increasingly higher wages.

Summarizing the circumstances described above, one of the main objectives of the Human Strategy spanning over a four-year period, is to maintain operational capabilities, reduce increased fluctuation due to low wages, and fill up the ranks of the missing workforce. However, it is still important to focus our attention on the training, motivation and efficiency increase of our existing employees in the midst of this "struggle".

To achieve the goals, the following 8 human strategic guidelines:

- Introduction of the Wage Tariff Scheme;
- Improving of recruiting and the selection system;
- Modernization of training and junior

training;

- Optimization of remuneration systems;
  - Identify, develop, and encourage key people;
  - Junior management training programme;
  - Development of human organizations, improvement of working conditions;
- assigned to these we determined 29 operative programs.

When concluding the 2017 and 2018 Wage Arrangements, it was important to ensure the financial resources for the goals, recommendations and programmes set out in the Human Strategy, and the implementation of several other important programmes has begun.

On the basis of practical experience, it can be concluded that, thanks to wage increases and the closely related human strategy programmes, this year workforce fluctuation declined, employee satisfaction increased and the supply of workforce became more and more smooth.



## Training

### Externally organised trainings

The external organisation of trainings means participation in trainings organised by educational institutions, training providers, event organisers other than the company, on the basis of preliminary planning.

Externally organised trainings:

- courses providing a professional qualification (trainings listed in the National Training Register and other trainings): 764 people
- continuing training for professional trainees: 1 person
- professional conferences: 418 people
- trainings for targeted preparation: 407 people
- Management and junior management training: 25 people
- trainings in secondary education (subject to student relation): education in preparation for the secondary school leaving exam, technician training, vocational adult training (free OKJ trainings): 3 people
- trainings in tertiary education (subject to a student relation): 52 people
- continuing vocational training (post-graduate trainings): 3 people
- foreign language trainings: individual: 10 people, group: 13 people.

### Internally organised trainings

Our company also organizes internal trainings to increase employees' knowledge. A total of 73 employees attended the 3-day vocational continuing training course (6 courses), while 611 people attended the IT courses organized in various subjects.

This year, for the first time, basic training was provided to workers directly involved in the energy management system. 57 people attended the training course (and successfully passed the exam), and 13 students received the course material electronically and passed the exam online.

In order to increase management competencies and efficiency, employees exercising the company's employers rights and other middle management staff participated in the one-day lecture series entitled "Professional event for middle managers of BKV Zrt.". The event organized 4 times was attended by a total of 182 employees.

BKV Zrt's Training Department as a training organization held category and special trainings for 183 people in category D and 53 people in category TR in 2017.

369 people were certified for the GKI-T category and 156 for the GKI-A category after completing the Motor Vehicle Driver Certificate training. In 2017 a total of 185 participants took the Company's vehicle driver tests, and a total of 834 people took the bus and trolleybus driver qualification exam.

Our employees completed a total of 8,180 exam sessions of the railway authority.

Railway instructor training attended by 26 people.

156 people attended the correctional traffic conduct training, including employees not complying with the expectations of the Company and those prone to be involved in accidents.

A total of 72 workers completed the crane operator training.

3 new notes were made for internal trainings, while 3704 notes were issued during the course training.

### Library

There are altogether 47,000 books at HQ and at the library in Kőér utca, of which 32,000 are literary and 15,000 are technical works. Number of registered readers: 957 people.



# SECURITY DIRECTORATE

## Enterprise security

For the purpose of uninterrupted operation of the Company, enterprise security includes background checks of business associations with economic relations with the Company, as well as risk assessments and evaluations related to other businesses. Discovering risks and ensuring risk-free operations offers key background information to specific procurement or competitive procedures and preparation for decisions. In 2017 background checks on business partners and related risk analyses were performed in 170 cases. Risk factors were identified in six cases of the companies undergone enterprise security checks. As a result, one enterprise was identified as high-risk, two as medium-risk, and three as low-risk companies.

## Cable thefts

BKV Zrt. had a total of 1566 km cable sections on public property in 2017. On the tram, trolleybus and metro lines, the material damage caused by the theft of the overhead cables had been significant for year,

averaging over HUF 100 million per year up to the end of 2013. Fortunately, in recent years, a downward trend is observed in this area. Cable theft occurred in 17 cases in 2015, only in 2 cases in 2016 and only in one case in 2017. Thus, in 2017 losses resulting from cable thefts were HUF 1.7 less than in 2016, and HUF 16 million less than in 2015. In 2017 there was no cancellation of service due to cable theft.

## Occupational accidents

The number of occupational accident has steadily decreased over the past four years.

## Fire incidents

The number of fire incidents has steadily decreased over the past five years with a 37% drop compared to 2013 and 26% to 2016. No personal injuries were reported in relation to these fire incidents.



# COMPANY RELATIONS OFFICE

## Major traffic and community events

2017 was an eventful year for the Company Relations Office.

Like every year, our goal is to focus on the Company being introduced to passengers, to promote the various sectors, and to further improve BKV's image. The results show that we are on the right track, and based on the feedback, we can safely say that the company's communication efficiency is steadily improving, and with the expansion of our communication channels, our messages reach an ever wider public. The Facebook page of the Company has been updated with up-to-date content. It allows us to reach groups, typically the younger generation, who use traditional interfaces less frequently.

In 2017 our office also paid special attention to the interests of BKV Zrt. in the field of its

press activities. In addition to managing the full range of media coverage in consultation with the divisions concerned, organization of interviews was also assigned to the specific field of expertise. The requests were always answered within the deadline set by law.

The photographic and film production licensing applications we received were handled according to the regulations. When writing and publishing announcements, our guiding principle was to ensure that we communicate a long-term and professionally credible image of BKV.

Reconstruction of the M3 metro line and the bus replacement project received priority spot in our 2017 communication and will have the same in 2018. The reconstruction that has a major impact on Budapest's public transportation required a level of communication that enabled us to introduce the BKV

as a professionally competent and credible company. Coordination of the modernization project that generated increased press attention as well as many civilian inquiries was done to the satisfaction of our partners (the Municipality as owner, BKK and NGOs).

## Museum

Our museums, the Szentendre Urban Public Transport Museum and the Deák tér Underground Railway Museum participated in a number of national museum and cultural programmes and events in 2017 as well, and a number of temporary exhibitions were on display.

Joining the programme of the International Tourist Guide Day, we welcomed visitors at guided exhibitions and in only four days we showed around hundreds of people at the Deák tér exhibition. In connection with the programme, we could also introduce our institutions to the visitors in Bálna.

Following the tradition of the past years, we participated at the Summering of Museums moving tens of thousands of people at the garden of the Hungarian National Museum. We kept the Underground Railway Museum open until midnight during the Night of Museums. We awaited our visitors with our new exhibition "Traces" with its international theme, and about 15,000 visitors attending the event.

At the weekend of the Cultural Heritage Days, we focused on the monument buildings of our museums but the Ferenc transformer station was also opened to the public. About 1200 people were interested in the programme. Within the context of the Autumn Festival of Museums, we held for the seventh time the transport history quiz of the BKV museums for grade 7 and 8 pupils. The two-round competition was attended primarily by schools in Budapest with a total of 50 teams. The final was held at the Underground Railway Museum.

In addition to our permanent exhibitions, we had a number of new temporary exhibitions awaiting visitors.

In the joint exhibition with BKK entitled "Building Blocks", we made miniature copies of the typical vehicles of Budapest's public transportation, displaying the most beautiful works of several generations. The exhibition



## COMPANY RELATIONS OFFICE

was viewed by over 3,000.

At the fifth BAM 5 exhibition of BKV's amateur artists, we displayed a selection of arts pieces by BKV employees. More than two thousand people were interested in the exhibition.

Our exhibition entitled "Kérényomok – Külföldi Közlekedési Kitekintő" focused on preserving the values of public transportation. At the exhibition opened before the Night of the Museums, 16 institutions of 14 cities from 11 countries presented their material. The exhibit was seen by about 15,000.

Our museum at Deák tér underwent significant development as we introduced new IT tools (info counters, projectors) that make the exhibitions more colourful and vivid.

### Open days, major events

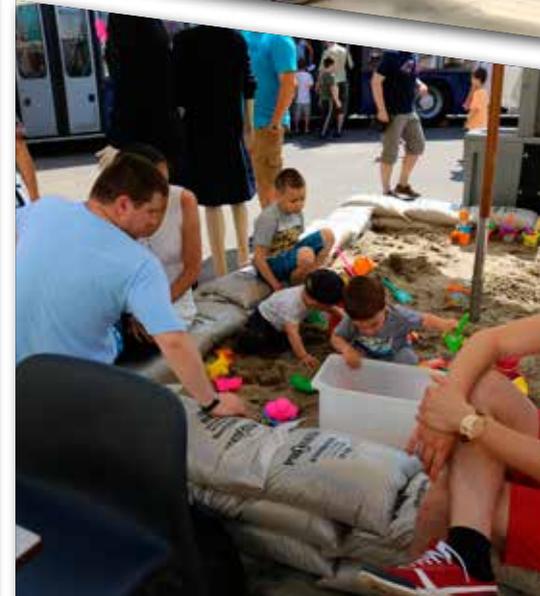
The most popular events for transportation fans and the travelling public were held this year as well: we had an open day at the Óbuda Bus Garage, paying special attention to the professional visitors with a bus and party exhibition, articulated bus presentations and bus test drives. Visitors were able to gain access to the closed areas of the bus garage on board of an UAZ and an IK620 sightseeing tour service. On the International Children's Day we joined

the Family Festival programme where we offered colourful programmes.

Each year since 2002, our company has participated in the European Mobility Week weekend organized on Andrásy Avenue.

130 years ago, the first tram in Europe entered service in Budapest: the one-kilometre long tram line was opened be-

tween Nyugati pályaudvar and Király utca in November 1887. In the spirit of the jubilee we organized a nostalgic tram parade: many special trams serviced the tram line from Bécsi út to the Szépileona garage, where an open day welcomed all age groups to widen their knowledge about trams. In the afternoon we celebrated the festive events with the launch of the Melody Tram.



# TOURISM DIVISION

The Tourism Division of BKV Zrt. has been offering continuously developing services to tourists from Hungary and from abroad since March 2013. Whether it is the spectacular funicular ride up to the Buda Castle Quarter or chair-lift service to János-hegy

and Normafa, a scheduled boat trip on the Danube surrounded by world heritage sites or the nostalgic rides offering a sort of time travel. The palette is also enriched by the special services offered by the four Volvo coach buses.

From the start we continually increased passenger traffic, sales revenues, and implemented a number of improvements. This process continued in 2017 so that we can continually increase our service levels.

## Chairlift tracks

### Zugliget Chair Lift

We launched a group ticket in March, which promotes more efficient and environmentally conscious paper consumption. Ticket sales were expanded with a ticket printer in the valley station, making it even more comfortable to buy a ticket at the lower station.

In order to increase passenger flow, student staff help passengers in making their ticket purchases at weekends and on holidays between March and November. The IT backend system provides accurate passenger traffic data and contributes to the later electronic ticketing.

Since the beginning of the year, the employees of our company get a discount as they can use the chair lift for the price of a child ticket.

On the monitors in the passenger waiting rooms of Zugligeti Libegő, you will find the clip entitled "What does Budapest mean to you?" and a series of other films to promote the chair lift and the János-hegy region.

### Budapest Castle Hill Funicular

In the coming years the focus at the Budapest Castle Hill Funicular will be on the improvement of passenger service. The new cash registers to be installed at the lower station and the passenger platforms will be covered with a glass roof structure whose designs have already been completed.

Implementation is expected for 2018 or 2019. The cooperation agreements with the hop-on hop-off companies to sell tickets to the Budapest Castle Hill Funicular continue to generate significant traffic. The appeal of the funicular is still unbroken, despite the emergence of alternative services to get to the Castle. As a result of the unchanged ticket prices for many years, the number of domestic passengers has also increased. Cashiers successfully encourage passengers to buy return tickets, which is why



# TURISZTIKAI DIVÍZIÓ

the number of return tickets has increased significantly in recent years. In order to improve the comfort of passengers and staff, we operate a mist cooling gate at the lower station of the Budapest Castle Hill Funicular and at the Zugliget chair lift stations on hot summer days, which passengers enjoyed immensely.

## Special service and period traffic

A unique special service is the Budapest Castle Hill Funicular, which is an emblematic venue for film productions. Occasionally, larger groups also used the vehicles as

venues for their events. Nostalgia transport underwent some significant changes in 2017. Within public services, a separate group was planned for state holidays, regular weekend period rides and the recently introduced 'Hófehérke' (Snow White), a boat built in 1895. The expansion of the nostalgia fleet both on water and on land is popular among passengers as evidenced by increasing ticket sales.

Refurbishment of old vehicles is ongoing. Our IK 630 (cabrio) vehicle is extremely

popular: bought in the spring, it runs in the weekend's nostalgia traffic, and also has an increasing number of special orders.

In 2017, the following vehicles were refurbished:

- the MÁVAG TR5 and the IK 55 were restored to their original state but are essentially available only for promotional purposes,
- the IK 260T and the IK 280T trolleybuses have already entered service,
- the IK 284 type bus operates according to programme.

## Boat traffic on the Danube

During the Sziget Festival we once again ran the public service boat line between Óbuda-sziget and Jászai Mari tér. Relying on the experience of previous years, we successfully accomplished this task. During the festival, we installed a new access bridge and a pontoon at the Óbuda-sziget harbour, and the area was equipped with new passenger information elements and a passenger waiting area..

Under the name MŰPA-Nemzeti Színház we installed a new port, thus expanding the opportunities for people arriving at the theatre or a concert using public transportation.

In order to expand our fleet, we bought the Révfülöp water bus from the BAHART Lake Balaton shipping company. Renovation begins in 2018.

From the Advent season, we once again decorated our scheduled boats cruising along the Budapest section of the Danube with light bulbs.

The complete replacement of the equipment of the FUTAR system has also been carried out, so these equipment are now operating more reliably on our boats.

The development of the software background



## Tourism in numbers:

### Budapest Castle Hill Funicular:

Revenue (net): HUF 898.5 million,  
Number of tickets sold: 822.1 thousand pieces,  
Profit/loss before tax: HUF 692.6 million  
Trip no.: 1.168 thousand trips

### Zugliget Chair Lift:

Revenue (net): HUF 195.6 million,  
Number of tickets sold: 230.8 thousand pieces,  
Trip no.: 359 thousand trips  
Profit/loss before tax: HUF 43.2 million

### Boat service:

BKK public service charge: HUF 435.2 million  
Profit/loss before tax: HUF 1.34 million  
Special service:  
Revenue (net): HUF 102.6 thousand  
Nostalgia rides:  
Revenue (net): HUF 5.83 thousand

## „A” MÉRLEG Eszközök (aktívák)

(M Ft)

Sor- szám	A tétel megnevezése	2016.12.31	2017.12.31
<b>A.</b>	<b>Befektetett eszközök</b>	<b>567 823</b>	<b>625 755</b>
<b>I.</b>	<b>Immateriális javak</b>	<b>233</b>	<b>220</b>
1.	Vagyoni értékű jogok	233	220
2.	Szellemi termékek	0	0
<b>II.</b>	<b>Tárgyi eszközök</b>	<b>566 178</b>	<b>624 131</b>
1.	Ingatlanok és a kapcsolódó vagyoni értékű jogok	348 875	345 220
2.	Műszaki berendezések, gépek, járművek	202 028	228 965
3.	Egyéb berendezések, felszerelések, járművek	1 489	2 091
4.	Beruházások, felújítások	13 478	10 947
5.	Beruházásokra adott előlegek	308	36 908
<b>III.</b>	<b>Befektetett pénzügyi eszközök</b>	<b>1 412</b>	<b>1 404</b>
1.	Tartós részesedés kapcsolt vállalkozásban	1 264	1 267
2.	Tartós jelentős tulajdoni részesedés	0	0
3.	Egyéb tartós részesedés	19	19
4.	Egyéb tartósan adott kölcsön	129	118
<b>B.</b>	<b>Forgóeszközök</b>	<b>29 465</b>	<b>26 816</b>
<b>I.</b>	<b>Készletek</b>	<b>5 912</b>	<b>9 376</b>
1.	Anyagok	5 675	9 153
2.	Befejezetlen termelés és félkész termékek	38	34
3.	Áruk	199	189
<b>II.</b>	<b>Követelések</b>	<b>5 119</b>	<b>4 672</b>
1.	Követelések áruszállításból és szolgáltatásból (vevők)	359	330
2.	Követelések kapcsolt vállalkozással szemben	322	313
3.	Követelések jelentős tulajdoni részesedési viszonyban lévő vállalkozással szemben	5	13
4.	Egyéb követelések	4 433	4 016
<b>III.</b>	<b>Értékpapírok</b>	<b>0</b>	<b>3 000</b>
1.	Forgatási célú hitelviszonyt megtestesítő értékpapírok	0	3 000
<b>IV.</b>	<b>Pénzeszközök</b>	<b>18 434</b>	<b>9 768</b>
1.	Pénztár, csekkek	72	84
2.	Bankbetétek	18 362	9 684

# MÉRLEG

<b>C.</b>	<b>Aktív időbeli elhatárolások</b>	<b>3 893</b>	<b>9 548</b>
1.	Bevételek aktív időbeli elhatárolása	3 642	9 250
2.	Költségek, ráfordítások aktív időbeli elhatárolása	251	298
<b>ESZKÖZÖK ÖSSZESEN</b>		<b>601 181</b>	<b>662 119</b>

## „A” MÉRLEG Eszközök (passzívák)

(M Ft)

Sor-szám	A tétel megnevezése	2016.12.31	2017.12.31
<b>D.</b>	<b>Saját tőke</b>	<b>178 202</b>	<b>212 519</b>
I.	Jegyzett tőke	116 000	116 000
	ebből: visszavásárolt tulajdoni részesedés névértéken	0	0
II.	Jegyzett, de még be nem fizetett tőke (-)	0	0
III.	Tőketartalék	12 870	47 077
IV.	Eredménytartalék	45 433	49 332
V.	Lekötött tartalék	0	0
VI.	Értékelési tartalék	0	0
VII.	Adózott eredmény	3 899	110
<b>E.</b>	<b>Céltartalékok</b>	<b>1 979</b>	<b>1 829</b>
1.	Céltartalék a várható kötelezettségekre	1 979	1 829
<b>F.</b>	<b>Kötelezettségek</b>	<b>53 432</b>	<b>89 234</b>
I.	Hátrasorolt kötelezettségek	0	0
II.	Hosszú lejáratú kötelezettségek	0	0
III.	Rövid lejáratú kötelezettségek	53 432	89 234
1.	Vevőktől kapott előlegek	31	0
2.	Kötelezettségek áruszállításból és szolgáltatásból (szállítók)	43 728	41 707
3.	Rövid lejáratú kötelezettségek kapcsolt vállalkozással szemben	1 313	1 668
4.	Rövid lejáratú kötelezettségek egyéb részesedési viszonyban lévő vállalkozással	179	429
5.	Egyéb rövid lejáratú kötelezettségek	8 181	45 430
<b>G.</b>	<b>Passzív időbeli elhatárolások</b>	<b>367 568</b>	<b>358 537</b>
1.	Bevételek passzív időbeli elhatárolása	191	447
2.	Költségek, ráfordítások passzív időbeli elhatárolása	1 067	1 319
3.	Halasztott bevételek	366 310	356 771
<b>FORRÁSOK ÖSSZESEN</b>		<b>601 181</b>	<b>662 119</b>

## „A” Eredménykimutatás (Összköltségeljárással)

(M Ft)

Sor- szám	A tétel megnevezése	2016	2017
1.	Belföldi értékesítés nettó árbevétele	126 582	120 272
2.	Exportértékesítés nettó árbevétele	63	781
<b>I.</b>	<b>Értékesítés nettó árbevétele</b>	<b>126 645</b>	<b>121 053</b>
3.	Saját termelésű készletek állományváltozása	4	-4
4.	Saját előállítású eszközök aktivált értéke	1 369	1 019
<b>II.</b>	<b>Aktivált saját teljesítmények értéke</b>	<b>1 373</b>	<b>1 015</b>
<b>III.</b>	<b>Egyéb bevételek</b>	<b>57 472</b>	<b>16 042</b>
	ebből: visszaírt értékvesztés	40	13
5.	Anyagköltség	30 747	25 957
6.	Igénybe vett szolgáltatások értéke	21 297	23 270
7.	Egyéb szolgáltatások értéke	1 047	906
8.	Eladott áruk beszerzési értéke	156	358
9.	Eladott (közvetített) szolgáltatások értéke	1 879	1 995
<b>IV.</b>	<b>Anyagjellegű ráfordítások</b>	<b>55 126</b>	<b>52 486</b>
10.	Béreköltség	40 762	43 346
11.	Személyi jellegű egyéb kifizetések	3 130	3 297
12.	Bérbírlások	11 759	10 452
V.	Személyi jellegű ráfordítások	55 651	57 095
<b>VI.</b>	<b>Értékcsökkenési leírás</b>	<b>30 761</b>	<b>24 879</b>
<b>VII.</b>	<b>Egyéb ráfordítások</b>	<b>40 153</b>	<b>3 529</b>
	ebből: értékvesztés	79	59
<b>A</b>	<b>ÜZEMI (ÜZLETI) TEVÉKENYSÉG EREDMÉNYE</b>	<b>3 799</b>	<b>121</b>
13.	Kapott (járó) osztalék és részesedés	11	12
	- ebből: kapcsolt vállalkozástól kapott	0	0
14.	Egyéb kapott (járó) kamatok és kamatjellegű bevételek	140	20
	- ebből: kapcsolt vállalkozástól kapott	1	1
15.	Pénzügyi műveletek egyéb bevételei	61	18
<b>VIII.</b>	<b>Pénzügyi műveletek bevételei</b>	<b>212</b>	<b>50</b>
16.	Fizetendő (fizetett) kamatok és kamatjellegű ráfordítások	5	1
	- ebből: kapcsolt vállalkozásnak adott	0	0
17.	Részesedések, értékpapírok, tartósan adott kölcsönök, bankbetétek értékvesztése	3	-3

**MÉRLEG**

18.	Pénzügyi műveletek egyéb ráfordításai	104	63
<b>IX.</b>	<b>Pénzügyi műveletek ráfordításai</b>	<b>112</b>	<b>61</b>
<b>B.</b>	<b>PÉNZÜGYI MŰVELETEK EREDMÉNYE</b>	<b>100</b>	<b>-11</b>
<b>C.</b>	<b>ADÓZÁS ELŐTTI EREDMÉNY</b>	<b>3 899</b>	<b>110</b>
<b>X.</b>	<b>Adófizetési kötelezettség</b>	<b>0</b>	<b>0</b>
<b>D.</b>	<b>ADÓZOTT EREDMÉNY</b>	<b>3 899</b>	<b>110</b>

