MÁV-START
Vasúti Személyszállító Zrt.




Railway Passenger Transport Company

The Flagship of MÁV-GROUP

MÁV-START
Vasúti Személyszállító Zrt.



Dear Visitor,

This publication presents in brief the passenger transportation subsidiary company of the largest Hungarian holding, the Hungarian Railways. You can have a look of the company's organizational structure, operation, and its activities related to the repairing, maintenance and production of rolling stock. For most people, the MÁV-START Railway Passenger Transport Co. means only the trains and conductors, however, much more is at stake!

Our company holds all those vehicles, passenger transporting coaches, diesel and electric locomotives, diesel and electric railcars and DMUs, which are necessary for providing the Hungarian railway transportation service. All of these vehicles are fully maintained, repaired and refurbished by the MÁV-START Co. But that is not all! Our company has produced it's brand new IC+ railway coaches, and presents here at the G/4-1 area of the InnoTrans 2014 Exhibition in Berlin. The IC+ coach was fully planned and produced by the company's own resources, it is capable to operate on speed of 200 km/h also in international traffic, the NoBo certification under High Speed TSI is currently in progress.

Over 16 thousand employees of our company is working day-by-day to transport 142.5 million of passengers to their destinations with 950,000 trains. Our aim is to serve the passengers with comfortable, punctual and safe trains, but also effectively and cost-efficiently.

We believe, that on the next few pages you will find useful information about our company, you will be interested in, and maybe this will contribute to make business with each other tomorrow. If you have any questions, our colleagues are ready at your disposal.

Ilona DÁVID
Chairman and CEO
MÁV Co.

Csaba UNGVÁRI
Chief Executive Officer
MÁV-START Co.

György ZARÁND
Sales Director
MÁV-START Co.

András CSÉPKE
Operational Director
MÁV-START Co.

MÁV-START

Railway Passenger Transport Company

I. The Company

Key Characteristics

MÁV-START Co. is a subsidiary of MÁV Co. Its primary activity is railway passenger transportation. This main activity is supported by other basic functions, like Rolling Stock Maintenance and Repair as well as Traction Services. Around fifteen thousand employees are working for successful operation of the Company, which is the market leader in rail passenger public transportation segment, considered as the most dominant Passenger Railway Operator in Hungary. This Operator manages to run average 3 000 trains / day, almost one million trains a year. Integrated Period Timetable is implemented on the whole network. Passenger trains' punctuality statistics show an average of 83%.

Rail public transportation services are used by 140 million domestic passengers / year, corresponds to more than 7 billion pkm. This number in international trains is 2.8 million passengers, linked to 440 million pkm.

The Company has a valid mid-term Public Service Contract with the Hungarian Government.

MÁV-START has a vehicle fleet stock in total of 2 700 units of passenger vehicles, from which the operationally available units are 68-71% of the total fleet.

420 vehicles are multiple units and railcars and 2 290 units are passenger couches. The average age of the fleet is around 33 years.

Company Strategic Goals

One of the most important objectives of MÁV-START Co. is to attract more individual traveler to choose the sustainable track-based public transportation, and that satisfied customers become regular users of its services of increasing quality.

Company Tools & Tasks Toward Realization of the Corporate Strategy

- Use of EU development resources
- Renewal of ticketing system
- Improve onboard passenger information
- Renewal of rolling stock

Improvement Plans of Domestic Passenger Transportation

Brand new suburban service is key to be delivered step by step. Using EU development financial resources new infrastructure is to be built between Budapest and Székesfehérvár. As a result of this development journey time can be reduced, trains can depart more frequently, in peak hours even in 15 minutes instead of one hour. More competitive service is in implementation, targeting less journey time by 50 minutes cut on relation Budapest-Vienna-Munich.

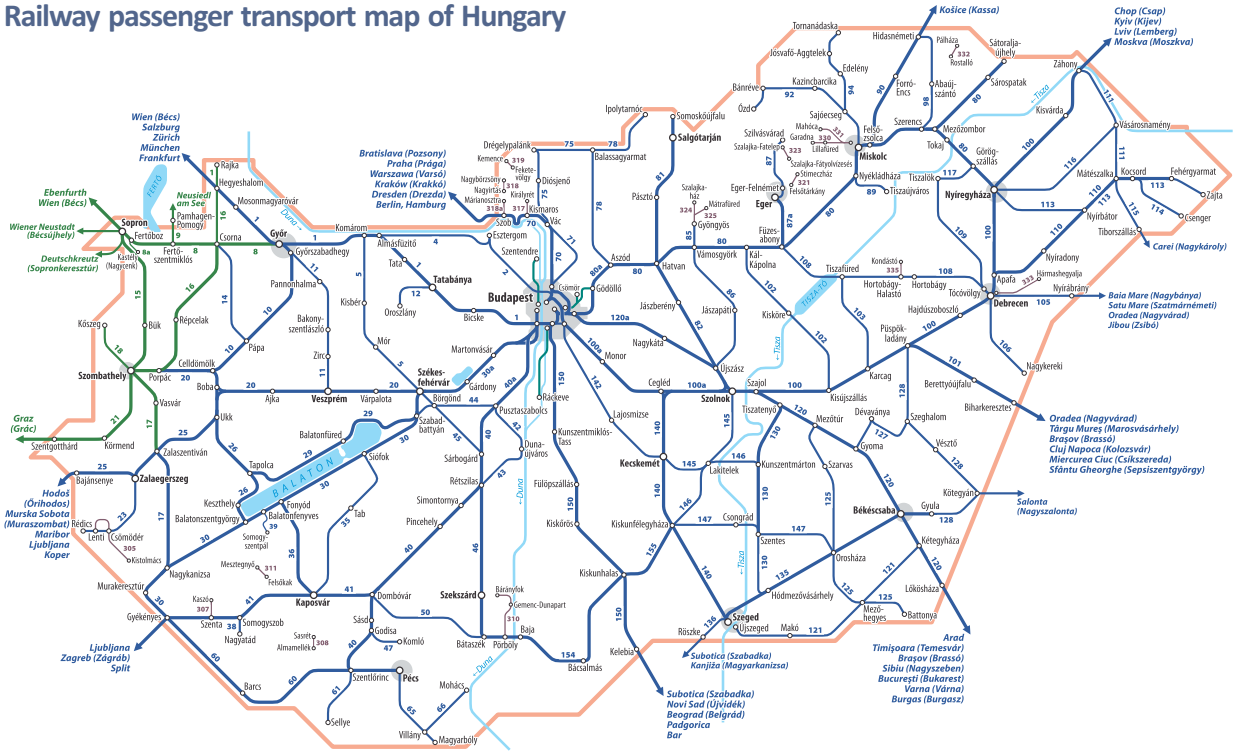
In nationwide, 42 new EMUs will start operation in 2014 and another 50 EMUs are planned to be put in operation in 2015. New IC+ coaches (200 km/h) designed by Hungarian experts will be built in Hungary from 2014 onwards.

Rolling Stock Renewal Program was launched in 2013, which involved suburban, long-distance and international coaches, bicycle transport coaches, luggage-van and restaurant cars. Special trips by train are popular and can be chartered from MÁV-START.

New ticket vending machines were placed to several important railways stations in the beginning of 2014.

Onboard free Internet access is one of the key elements of the service to be provided in Hungary. Among European railway companies on-board Internet is not part of the basic service, most railway companies have no such offer for the public. MÁV-START targets the leading role in Central-Europe and a high-ranking position in the whole Europe concerning free Internet service provided on trains. The ultimate goal is to provide free WiFi on 900 coaches starting from 2014.

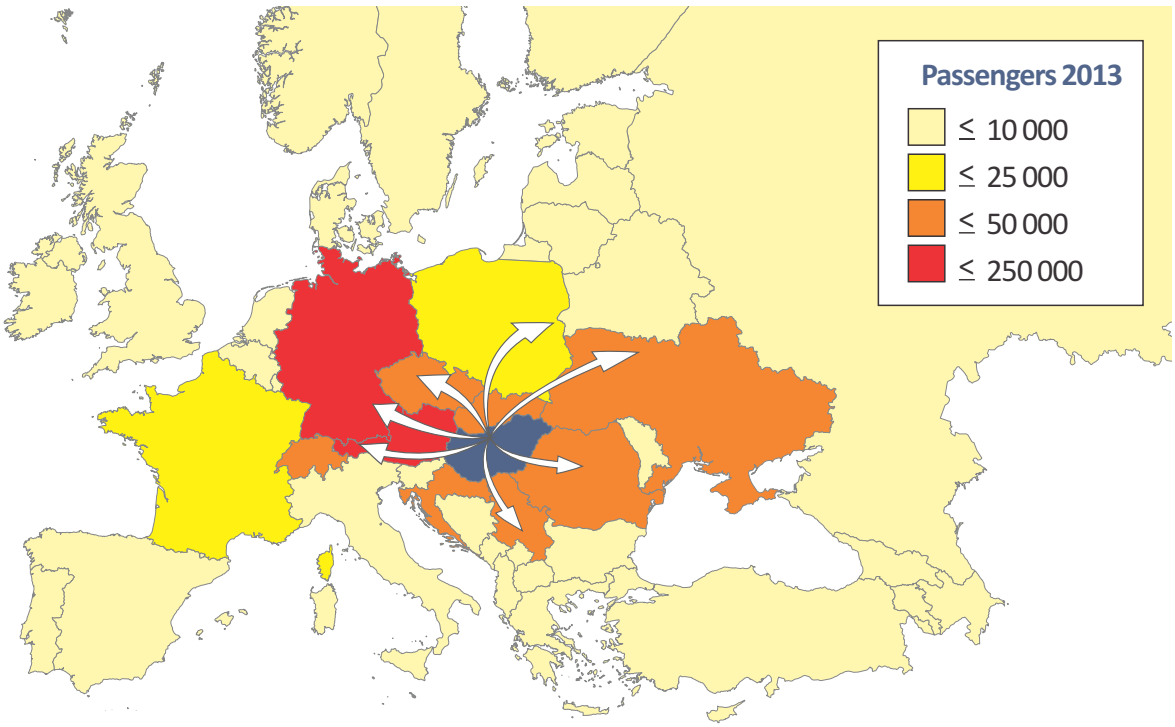
Railway passenger transport map of Hungary



Therefore, developing the timetable, improving the rolling stocks' comfort level, the service quality of the Business Lounge at Budapest-Keleti station, as well as the on-line ticket sales services provided by the e-ticket system are strongly required.

Most important direct daytime destinations are: Austria, Germany, Slovakia, Romania, Czech Republic, Serbia, Croatia, Slovenia. Furthermore, important direct destinations should be developed by night trains: Germany, Switzerland, Romania, Poland, Ukraine, Russia, Bulgaria, Montenegro and Croatia.

In order to put irrevocably Budapest the most important hub between West and East (Balkan) new strategic destinations are targeted to Frankfurt-Köln-Düsseldorf, Istanbul, Venice and Sarajevo.



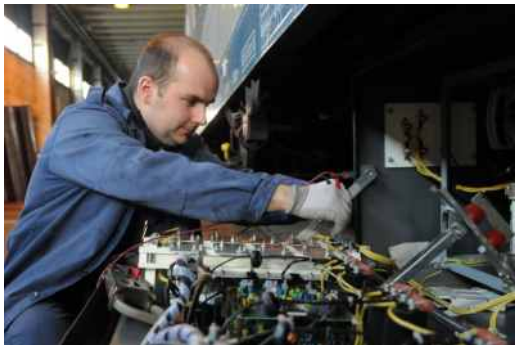
II. Rolling Stock Maintenance Operation of MÁV-START Co.

The reliable daily operation of the rolling stock is ensured by the specific vehicle maintenance and repair division of the Company. This activity includes wide range of workshop activities from the routine daily inspections to the very complex full vehicle refurbishing jobs. As an extension of the core workshop operation, the Company runs an IC+ Demo Passenger Car Production Project in order to establish future series production and new rail passenger coach sales. The design and engineering was created by the employed developing team of the Company. These engineers are prepared to be challenged by other new Engineering and Technology Projects in the future.

Maintenance

Based on the standardized schedules all rolling stock units may visit any workshops of more than thirty maintenance network locations. Maintenance jobs may include small repairs as well, on demand.

Due to the technological upgrades and the strong demand of cost reduction within MÁV Group, the Company implemented a brand new Vehicle Availability Based Maintenance System. The operational availability of the rail vehicles' group as a stock is in the core of the new system and not the individual vehicle's availability factor, which used to be very common in traditional approach that puts the single vehicle real-time operability on the rail in the efficiency focus.



From operational reliability point of view an individual vehicle can never eliminate fully the risk of failure during its operation. Even if a very accurate maintenance schedule is applied. With the availability based system a stock of vehicles are ready for operation and the risk of an individual vehicle failure does not affect significantly on the overall stock operational performance. Actually, with a well prepared selection of best reliable vehicles the total operational reliability can be stabilized almost at the 100% efficiency level.

Traction Vehicle Repairs, Overhauls

All home market specific electric and diesel-electric locomotives are repaired and overhauled in the Company owned Main Repair Centre. During the last couple of years remotorization and modernization projects were completed involving more than 100 – 100 diesel-electric and electric locos. In each case a driver's cab modernization subproject was applied as well. With such extensive job the lifetime of a renewed loco can be lengthened by another 20-25 years.



Rail Passenger Car Repairs, Traffic Authority Tests and Modernization

Passenger coaches are inspected in the maintenance workshops, including small repair jobs. However after performing a running interval of 0.6 – 1.2 million km (or two – four years) the passenger cars are extensively reconditioned and prepared for traffic authority test. During such a job the entire rail car is fully disassembled, subcomponents and parts are checked for wear, dimensions, etc. This job requires many-many hundreds of labour hours to carry out such an extensive reconditioning. The exact date for overhaul of passenger cars is defined during the earlier maintenance visits. The mileage interval of long distance rail couches operated in international service is closer to 1.2 million km. The domestic operated shuttle InterCity cars authority test interval is shorter. In certain cases units are upgraded with newly installed A/C system, other with elements, like installation for onboard services and / or improve passenger comfort by changing to vacuum WC.


Selected rail passenger coaches with average conditions are involved in a special Reconditioning Program in order to improve their comfort features level. The Program is affected on more than one third of the total coach stock. These rail passenger cars are not scheduled in the next four-five years to withdraw them from the traffic and the aim of this 'life extension' is to gain immediate success in passenger comfort level improvement that passengers recognize quickly.

These reconditioning elements are small but attractive steps for travelers, like fabric seat covers instead of artificial leather, heat protector layer on windows, new colors in painting, etc.

Freight Wagons

The Company has no significant stock of freight wagons, such repair jobs are carried out for other home and foreign freight wagon operators. This activity primarily involves either small repairs or more complex traffic authority tests related workshop jobs, performed by dedicated Maintenance Network Outlets that are well-equipped workshops with skilled professional employees.

Should the market create strong demand, the Company is prepared for launching a New Freight Wagon Production Program establishing from its own human and technical resources. It can be based on either a complex or a kind of joint production with other companies.

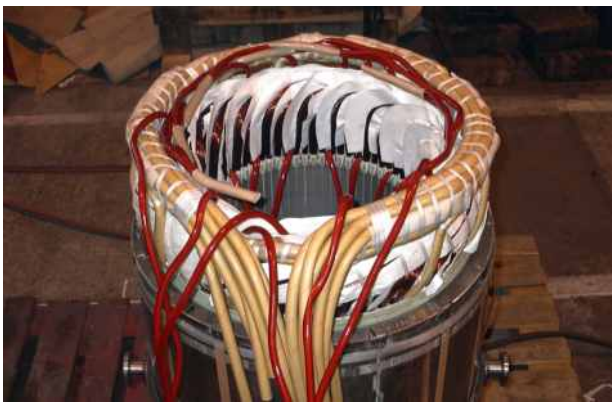
Bogie Repairs and Reconditioning

Bogies are very high priority assemblies in terms of traffic safety. The schedule for bogie overhaul is carefully prepared. The usual ratio for the frequency of bogie vs. Locomotive overhaul is 2-4 : 1. The key indicator for immediate need of bogie main repair is the extent of worn on the running surface of the rail wheel. The degree of worn is regularly inspected during the maintenance works.

Should the wear exceed the admissible measures the reconditioning process is activated. The bogie assembly is dismounted into pieces each of the individual parts are checked for wear, cracking, size, etc., and are replaced or renewed accordingly. The bogie frame itself is completely renewed, caliber arrangement holes are fully remanufactured in terms of hole sizes, diameters and positions. Driving gear set, traction electric motors are removed and shipped to the special gear machining workshop and to the electric motor factory. All brake elements, bushings, rubber parts, spring components are replaced in all cases.

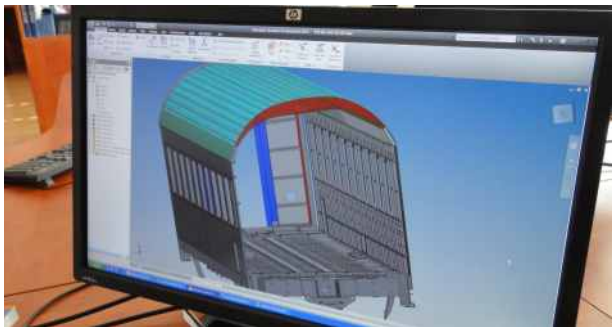
Repair of Traction & Other Electric Motors

The main activity of the Company owned electric motor factory is the overhaul and re-coiling of electric machines, repairing transformers and coils used in general the public transport industry, including urban railway sectors. The factory specialty is the general overhaul of Locomotive traction motors and main generators with relatively huge size components. Having extra capacities, the factory accept lease work orders from external parties for repairing and manufacturing parts and main parts, like rotors' polar coils, rotors' coils collectors etc.



Passenger Coach Production, the IC+ Programme

The Company produced two demo passenger coaches positioned in intercity operation. The brand new IC+ unit is designed as a four-axle, air conditioned, Intercity Plus coach; the 'Plus' reflects on the higher level of comfort. The maximum travelling speed is 200km/hour. It will offer the product range in 1st and 2nd Class comfort categories, and will include buffet and driving trailer cars.



These non-smoking intercity vehicles are expected to be operated on both international and domestic railway lines, as well as alongside the border intercity traffic with the outside temperature between -25 °C and +40 °C. Maintenance need requires less frequent inspection intervals, once in every 12 months and the traffic authority test is required after every 1.2 million km running mileage or 4 years.

The demo unit's type and functions' related tests, traffic authorities permission processes are almost fully and successfully completed and the vehicle is supposed to put in the normal passenger traffic operation later.

Vehicle basic dimensions

Traffic gauge:	EN 15273-2 G1 (G1C2)	Width:	2 825 mm
Track gauge:	1 435 mm	Height:	4 050 mm
Full length with buffers:	26 400 mm	Buffer height:	1 060 mm
Vehicle body length:	26 100 mm	Vehicle weight (empty):	47,5 tons
Bogie pivot distance:	19 000 mm	Minimum track radius:	150/80 m

Passenger comfort features

- Four-axle type intercity passenger car series including 1st & 2nd class vehicles, as well as buffet and traction control car units
- Max travelling speed: 200 km/h
- Interior: open saloon, air-conditioned, armchair type of seats
- Number of seats: 1st class cars - 58, 2nd class cars - 80
- Power supply for laptops, wireless internet (WLAN)
- Disabled passengers comfort: wheelchair lift, WC, special wheelchair fixation
- Advanced design for multifunctional spaces (large luggage racks, holders for bicycles)
- Installed interior video surveillance system

Cooperation with other Rolling Stock Maintenance Companies and / or Rail Vehicle Operators

The cost effective maintenance operation of the Company's rolling stock is carried out by highly experienced professional employees supported by workshops, well-equipped plants and strengthened with advanced maintenance technologies. This competitive advantage reinforces our aim to find alternative solutions toward other rail vehicle Maintenance / Operator companies. The Company is interested in developing various cooperation options with similarly interested companies on the areas of workshop and repair plant installation technical support, workshop staff professional training, technology transfer, joint vehicle repair and new vehicle full or shared production supported by our design and engineering development team for further adaptions, fine-tunings.

Our certifications: ISO:9001 and NKH ECM

Tanúsítvány

Szabvány **ISO 9001:2008**

Tanúsítvány jegyzéksz. **75 100 10918**

TÜV Rheinland InterCert Kft. tanúsítja:

Tanúsítvány birtokosa: **MÁV-START Vasúti Személyszállító Zrt.**
Könyves Kálmán krt. 54-60.
H - 1087 Budapest
Magyarország

a mellékletben felsorolt telephelyekkel együtt.

Alkalmazási terület: Személyszállítási szolgáltatás, üzemeltetési és e feladatokhoz kapcsolódó üzleti és adminisztratív tevékenység, vonattovábbítás, tolatás, egyéb vasúti vontatási tevékenység, vasúti vontatáshoz kapcsolódó kiegészítő tevékenységek, vasúti járművek valamint alkatrészeik javítása és karbantartása, vontatott személyszállító járművek, valamint egyéb vasútüzemi célú járművek és részegységeik tervezése és gyártása, továbbá tűzoltó készülékek karbantartása

tevékenységi területén működtetett menedzsment rendszere megfelel az ISO 9001:2008 szabvány követelményeinek.

Érvényesség időtartama: A tanúsítvány érvényes **2014.05.19**-től **2016.02.07**-ig.
Első tanúsítás: 2010.

Budapest, 2014.05.19.

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ÉS

KARBANTARTÁSÉRT FELELŐS SZERVEZETI (ECM)TANÚSÍTVÁNY

MÁV-START Vasúti Személyszállító Zártkörűen Működő Részvénytársaság

részére

Ez a vasútbiztonsági tanúsítvány megerősíti, hogy a vasúttársaság biztonságirányítási rendszere megfelel a 2004/49/EK irányelvben, a 2005. évi CLXXXIII. törvényben, a 40/2006.(VI.26.) GKM rendeletben és a 445/2011/EU RENDELETE-ben foglaltaknak.

Jogosult az UVH/VF/219/10/2013. számú határozattal kiadott vasútbiztonsági tanúsítvány alapján

magyarországi országos törzshálózati, regionális és egyéb vasúti pályán, valamint a vasúti pályákat összekötő pályahálózatokon

személyszállítási, vontatási és áruszállítási tevékenység

végzésére, a határozatban foglalt feltételek és kötelezettségek betartása mellett.

A tanúsítvány érvényessége 2015. június 30-ig tart.

Ez a tanúsítvány az A, B és karbantartásért felelős szervezeti részekkel együtt érvényes!

Kiállítás időpontja:
Budapest, 2014. március 20.

Gémesi Levente
a Vasútbiztonsági és Ellenőrzési Osztály vezetője

PH

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III. Presenting the MÁV Wagon Ltd.

The MÁV Wagon Ltd. is an individual company since 1993 with headquarter in Székesfehérvár. Currently it has 161 employees, 131 blue-collar workers and 30 white-collar workers. The main activities of the company are the production and repairing of railway vehicles, steel fabrication, metal machining (cutting, forming, machining, forging), as well as manufacturing components related to the railway industry.

The activities take place in 5 large halls with cranes, in 3 buildings are railway tracks for rail car repair. The site has a 18 meter long coach painting cabin, sandblast cabin, wheel lathe workshop (not certified by ÖBB and VPI), and a PDR 7 brake measuring equipment.

A blacksmith with counterweight hammer was implemented for metal fabrication, where are CNC, plasma cutting, bending and rolling a. equipments, welding machines (MIG, MAG, MMA) and a cutting workshop.

The MÁV Wagon Ltd. is equipped with mechanic control tools (tear, hitting, hardness), with X-ray examination apparatus and thickness measurement equipments.

Main certifications	Certification issuer
VPI freight wagon repairing	DB Schenker & VPI
Freight wagon repairing	ÖBB-TS Austria
ISO 9001:2008	TÜV Rheinland
EN 15085-2	TÜV Rheinland
DIN EN ISO 3834-2	TÜV Rheinland
RID 6.8.2.1.23	TÜV Rheinland & EBA
AD 2000	Merkblatt HP 0

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MÁV-START
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MÁV-START
Vasúti Személyszállító Zrt.

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