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TRANSMASHHOLDING, ALSTOM AND KAZAKHSTAN RAILWAYS SIGN AN AGREEMENT FOR THE CREATION OF A JOINT VENTURE TO MANUFACTURE ELECTRIC LOCOMOTIVES IN KAZAKHSTAN

Andrey Bokarev, Transmashholding Chairman of the Board of Directors, Patrick Kron, Chairman and

CEO of Alstom and Askar Mamine, Chairman of Kazakhstan Railways signed an agreement for the creation

of a joint venture to produce electric locomotives in Kazakhstan. On June 26 the foundation stone of the future plant was laid.

This agreement was signed in St-Petersburg within the framework of the XIV International Economic Forum in the presence of the Russian and French Presidents Dmitry Medvedev and Nicolas Sarkozy. The parties signed the agreement in pursuance of the terms of the Memorandum of cooperation signed on June 3, 2010 in Almaty. The project will benefit from the French government financial support.

The joint venture will manufacture the locomotives on the basis of the technologies developed by Alstom and Transmashholding and also with the application of the components purchased from the French-Russian consortium and from Alstom's Belfort factory (France). The production of components will gradually be moved to Kazakhstan.

According to the agreement, the products manufactured by the joint venture will, as a first priority, be supplied to Kazakhstan Railways. Later on they are planned to be exported to other countries.



METROWAGONMASH SIGNS AN AGREEMENT WITH THE SERBIAN RAILWAYS

OJSC Metrowagonmash has signed in Belgrad in the presence of Russia Ambassador in Serbia Alexander Konuzin a two-year delivery contract with the Serbian Railways (Zeleznice Srbije) for ten DMUs.

Two-car DMUs will be delivered to Serbia.

The bid results were announced by the Serbian Railways at the end of February. Apart from OJSC Metrowagonmash, Spanish rolling stock manufacturer CAF International, Croatian TŽV Gredelj (Tvornica željezničkih vozila Gredelj, Zagreb) and Slovak company ŽOS Vrútky a.s.(Vrutki) participated in the tender.

Alongside with the quotation, in order to select a winner, the bid committee considered the manufacturers' experience in DMU development and production.

"Transmashholding is actively searching and entering new markets and looking for new partners both in Russia and abroad. Metrowagonmash success in a bid proves great demand for Russian rail rolling stock products, and their competitive level comparable with the leading European manufacturers", commented the results of the tender Andrey Andreev, General Director of Transmashholding.

DMUs and rail buses, the company manufactured during years of its activity, operate successfully not only in Russia but also in Ukraine, Lithuania, Hungary and Czech Republic.

Since 2006 Metrowagonmash has delivered to its customers in all 62 DMUs made of two- and three-cars.



TRANSMASHHOLDING AND RZD SIGN A CONTRACT FOR THE SUPPLY OF 200 INNOVATIVE PASSENGER ELECTRIC LOCOMOTIVES

CJSC Transmashholding and OJSC RZD on May 27, 2010 concluded a contract for the supply of 200 dual-system passenger new generation EP20 locomotives to cater for the needs of the railway company in the period of 2012–2010.

The contract was concluded in Sochi within the framework of the V International Rail Business Forum “1520 Strategic Partnership”. It was signed by the President of OJSC RZD Vladimir Yakunin and the Chairman of the Board of Directors of CJSC Transmashholding Andrey Bokarev.

The locomotive is developed by a joint engineering company, established by Transmashholding and French concern Alstom Transport under the General Partnership Agreement for the development and production of the new rolling stock and railway components, signed on May 01,

2010 in Paris in the presence of the Presidents of the Russian Federation and France.

State-of-the-art and challenging engineering solutions are used in the design of the new locomotive, providing higher operational characteristics, design reliability and comfortable working conditions for the drivers compared to the locomotives of the previous generations.

Electric locomotives will be produced at Novocheboksarsk Electric Locomotive Plant.

The first EP20 sample locomotives are planned to be produced in 2011, after that they will undergo a full cycle of various tests and state certification. In 2012–2013 36 locomotives will be handed over to OJSC RZD and they will be used in passenger transport management on the route Moscow-Sochi, including the Winter Olympic Games period.

EP20 — is the first Russian electric locomotive, which is capable to haul passenger trains at a speed of 200 km/h. The locomotive will be equipped with asynchronous drive on the basis of IGBT-transistors. The applied technical solutions will allow reducing several times maintenance works, increasing the run between repairs and ensuring energy saving.

EP20 will become a basic platform for electric locomotives, on the basis of which a family of passenger and freight electric locomotives of various types will be established. The concept of a new-generation locomotives

basic platform will allow increasing units and systems unification for a new series of passenger electric locomotives EP2 and EP3 up to 85% and for the freight electric locomotives E2, E3, 2ES4, 2ES5 up to 70–75%



TRANSMASHHOLDING TOGETHER WITH WÄRTSILÄ, WILL MANUFACTURE AND DEVELOP DIESEL ENGINES

Transmashholding signed an agreement with the world leader in diesel and marine products manufacturing Wärtsilä (Finland) to set up a joint venture for the manufacture and testing of multipurpose medium-speed diesel engines for railways, marine and stationary application, and also for the production of key components.

The agreement was signed in the Finnish city of Lappeenranta. The signatures were affixed by the General Director of

CJSC Transmashholding A. Adreev and the President of Wärtsilä Ole Johansson, in the presence of the Prime Minister of the Russian Federation Vladimir Putin and the Prime Minister of Finland Matti Vanhanen.

On the vacant spaces of Penzadieselmash plant a new diesel engine production facility with the output of 350 diesel engines and diesel generators per annum will be constructed. The new production facility will have modern equipment for the assembly

and testing of the engines, machining lines for cylinder blocks, connecting rods and cylinder heads. The joint project stipulates the localization of component parts production in Russia.

The products will be supplied to Russia and abroad.

Currently the development of the new modifications of diesel generators for railway application and locomotives (production at the Bryansk Engineering Plant) is being carried out.



It is not the first experience of the partnership between Transmashholding and Wärtsilä. In 2007 a license agreement was signed with the Finnish company on the production of low speed propulsion marine diesel engines.

MWM: Recognized Leader in Subway Car Building

OJSC Metrowagonmash, being a part of CJSC Transmashholding, is one of the leading Russian enterprises, operating in the field of transport machine building and specializing in the development and design of subway cars and DMUs for railways.



Metrowagonmash — recognized leader in car building

In

BACK TO THE BEGINNING

1895 hereditary honorary citizen Savva Mamontov, nobleman Konstantin Artsybushev and the citizen of the North American United States, temporary merchant of the Moscow guild, engineer Alexander Bari presented to the Ministry of Finance a project "Moscow stock company of the car building plant". In the beginning of 1896 the Committee of

Ministers allowed to establish a company and its charter was approved by the emperor Nickolas the Second himself. The official opening of Mytishchi Car Building Plant was in May 1897. It was designated for the construction of the railway rolling stock, cars for the city horse roads and tram cars.

Production of electric cars for commuter trains for the first electric railroads started at Mytishchi plant for the

METROWAGONMASH

- Founded in 1897
- Carries out development and production of subway cars since 1943
- Over 6000 cars are operated in 16 cities of 11 countries
- Subway cars, manufactured at Metrowagonmash, transport over 10 mln passengers daily

first time in the country in 1926. In 1933 the design office of the enterprise created a project of the first subway car and as early as in 1935 a series production of the type "A" cars for the first in the country Moscow underground started.

During the Great Patriotic War in the deserted workshops of the plant, evacuated to Ust-Katav town, mainly by the forces of women and youngsters production for the needs of the front of antitank hedgehogs, gun turrets, AA mounts and repair of armored trains was set up. In 1943 a Special design office (Experimental design office-40) under the guidance

Since 1946 three manufacturing departments had been formed at the enterprise: automobile for the production of dumpers, car building for the fabrication of subway cars and series for the manufacture of military products.

In 1947 under Astrov guidance the first model of the self-propelled gun for airborne forces — ASU-57 was produced and it was recognized by the military experts as the world best in its class of the fighting vehicles. In 1950s series manufacture of all-steel light subway cars type "D" was launched at the plant and prototype models of new type "E" cars appeared. Experimental design office -40

pieces per day. Wide standardization of tracked vehicles ensured the start of manufacture of air defense gun "Shilka", surface-to — air missile systems "Cub", "Kvadrat".

In 1980-2000 Mytishchi subway cars became integral part not only of Moscow subway but also of Budapest, Prague, Sofia subways.

In the beginning of 2000s the plant mastered the brand new product for itself — rail buses for suburban passenger service on nonelectrified railroads. Domestic and foreign railmen expressed their interest in the new product. In 2002-2004 big batch of



In the assembly shop

of Nikolay Aleksandrovich Astrov was established at the plant, which designed and launched production of the famous SU-76. It became one of the symbols of the enterprise and the monument to it was erected near the plant office. Later Experimental design office -40 became one of the leading Russian developers of the tracked chassis on the basis of which effective models of military equipment were created.

created artillery caterpillar mounting SU-85, developed air defense gun "Shilka" which didn't have analogues at that time among anti-air defensive means in other countries.

In 1960-1970 subway car building gained active development at the plant — production of economy cars type "E" started, car type "D" was improved, new cars type "I" and "EZh" established. Dumper output in 70-80s reached 20

Mytishchi rail buses was supplied to Hungarian railroads, in 2003 the similar train was purchased by Czech railroads. In 2007 modern rail buses RA-2 were delivered to Ukraine and in 2008 to Lithuania.

For the mastering of manufacture of the automotive vehicles in 1971 the enterprise was awarded with an order of the October Revolution. In 1975 a family of telescopic hydraulic cylinders for →



RA-2 rail bus

dumpers was awarded a Big gold medal of the International Leipzig fair.

For the creation of the family of the high-speed tracked chassis Metrowagonmash got three state awards (1951, 1978, 1996).

Today 18 subways in different countries of the world operate Mytishchi cars.

RESPONDING TO MODERN CHALLENGES

Modern technology development and high level of competition among the producers call for constant renovation of the lineup. The result of work of the plant designers in this area was the introduction of a large variety of new rolling stock models, meeting modern standards, imposed by the customers to this type of transportation.

In these conditions the plant takes into account not only the needs of each subway but often peculiarities of the particular lines. Different lines have different car operating conditions and passenger traffic density. One line is fully underground, another comes out on the street. The third, as Butovskaya line in Moscow, fully laid along the open offstreet overhead road. Specifically for it a brand new type of cars was developed and produced, the so-called “light subway”, namely subway car “Rusich”.

«Rusichi» have combined all state-of-the-art technologies of the world subway car building — innovative design, comfortable passenger saloon,

new pulling drive on the basis of modern power semiconductor engineering, microprocessor control system ensuring safety and diagnostic operation of all car equipment with the data display to the driver, safe brake system with a back up as well as automatic system of fire detection and extinction.

In 2009 Metrowagonmash started manufacturing of modernized subway cars “Rusich” which have a range of design features. Cars saloons are equipped with the split-system of air

conditioning, ventilation and heating. Serious alterations are introduced also into the body of the new cars — the number of reclining-sliding doors is increased and it allowed reducing considerably passenger detrainment and boarding time at the stations and increasing the passenger carrying capacity of subway lines.

ACHIEVEMENTS

Current Metrowagonmash over more than a century history of its existence became one of the recognized leaders of the Russian transport machine building. The plant's products are rightfully respected both by the partners in Russia and abroad and by the ordinary public — the passengers of subways and

higher and specialized secondary education is carried out on the initiative of the employees. The enterprise organized production, technological practice and externship for students. Following its results the best get the job-offers.

IN FUTURE WITH OPTIMISM

In the conditions of the world financial crisis the enterprise managed to prevent the decline of production in 2009 compared to the previous periods. The plant achieved target figures, the volume of products sold in 2009 made 10 bln rubles.

In 2009 72 cars series 81-717/714 were produced, including 40 for the Moscow subway, 15 for Baku subway, 17 for Minsk subway. Overall repair of 45 cars series 81-717/714 was executed for Moscow subway. Manufacture of cars series 81-740/741 made 109 pieces, 9 of them were produced in export version for Sofia subway and the rest were for Moscow subway. 40 cars for rail buses were fabricated for OJSC RZD.

Today Metrowagonmash possesses strong scientific and technical and production potential, huge experience in creating innovative products, highly-qualified personnel. It allows the enterprise challenging almost any tasks connected with the creation of modern and effective rolling stock. ■

Project discussion



REQUIREMENTS TO THE QUALITY OF THE MANUFACTURED PRODUCTS CONSTANTLY INCREASE, OPERATING EQUIPMENT IS CHANGED FOR THE UP-TO-DATE ONE. AT THE SAME TIME THERE ARE NOT ENOUGH PROFESSIONALS OF THE NECESSARY QUALIFICATION IN THE MARKET. DUE TO THIS GREATER ATTENTION AT THE ENTERPRISE IS PAID TO TRAINING.

Today the enterprise is mastering the production of the new generation subway cars model 81-760/761 (see special publication on page 8).

The separate activity of the plant is manufacture of the rail buses. These vehicles were developed and mastered at the plant already in post-soviet time and are rightfully considered to be the pride of the enterprise engineering. Currently the second generation of the railway buses — model RA-2 is being produced at the plant.

One more proof of their great demand is the victory of OJSC Metrowagonmash in the tender for the delivery of rail buses for Serbian Railways, won in the complex competitive struggle with the famous foreign producers of the similar equipment (Spanish CAF International, Croatian TZV Gredelj, Slovak ZOS Vrutky a.s.). The contract for development and delivery of 10 DMUs was signed in Belgrade on April 14, 2010.

New types of products require constant renovation of production facilities. Therefore technical modernization is one of the major priorities of the plant development. CNC plasma cutting plants, lathe machining units, equipment for laser welding and hydro-abrasive metal arc cutting, axis-punching press with CNC, CNC horizontal and vertical milling machines — this is by far not a full range of high-technology equipment, purchased by the enterprise from the best world producers within the last years allowing to considerably optimize production processes.

railroads, becoming an integral part of their everyday life.

This esteem is based on the longstanding safe and practicably flawless operation of the classical subway cars model 81-717.5M/81-714.5M and their subsequent modifications. Cars of this generation, popularly known as “blue cars” or “stripped cars” today to one extent or another form the basis of the rolling stock not only of the main buyer of Metrowagonmash — Moscow subway but also of other Russian subways, including St-Petersburg and Novosibirsk. On the territory of the former USSR such cars are applied at Kiev, Baku and Minsk subways. Abroad the plant cooperates with the subways of Sofia, Budapest, Warsaw and Prague.

Today about four thousand people are employed at Metrowagonmash. Highly-qualified specialists are the base of the staff. 13 Doctors of Philosophy work at the enterprise and every fifth employee has a higher education. Large social infrastructure is created and developed around the enterprise — kindergartens, camps (also in the Crimea), hostels, medical care for the employees.

Requirements to the quality of the manufactured products constantly increase, operating equipment is changed for the up-to-date one. At the same time there are not enough professionals of the necessary qualification in the market. Due to this greater attention at the enterprise is paid to training. Training of specialists in the system of evening

New Subway Cars: Comfort and Safety

A presentation of cars series 81-760/761 stipulated for operation in the subway took place in May 2010 on the occasion of the 75 th anniversary of the Moscow subway. Full-scale manufacture of the trains is planned for this year and mass production for 2011.





JSC Metrowagonmash, producing cars for subways of all cities of the former USSR and

also for Prague, Sofia, Budapest and Warsaw, started development of 81-760 as early as in 2008. Proceeding to work, the mechanical engineers studied the condition of the rolling stock of the Russian subways and also of the countries of the CIS and Eastern Europe. The development trends and technical solutions of the leading world companies, manufacturing the rolling stock for subways as well as the results of the survey of the International association "Metro", carried out in 2005, were taken into account.

According to the authors' design 81-760 should possess high optional adaptability, allowing to create the cars for meeting special requirements of the customers, without substantial modifications. Due to this Metrowagonmash intends to considerably reduce expenditures on scientific research and experimental development. Moreover new cars should have higher safety and comfort level for passengers, ergonomics and comfort of driver's cabin, low cost of life cycle and also be competitive at the internal and external market.



The new subway car 81-760/761

- Asynchronous pulling electric drive
- System of cabin ventilation, conditioning and heating
- System of saloon ventilation, conditioning and heating (at the request of the customer)

For increasing the quality of the car systems, their after-sales service and maintenance as well as the optimization of the cost of production, allowing to

car body and cabin design. The car is created with smooth sides, to facilitate automatic washing. The frame is made of low alloy construction steel, treated with corrosion-resistant coatings.

The roof and the sides of the body are of stainless steel. In the car saloon the seats are located in the traditions of subway cars - along the walls, in the head car there are seats for the people using wheel chairs. The body itself as well as the saloon may be painted and decorated in any colors up to the wish of the customer.

SALOON

The car saloons have vandal-proof seats installed. Hand-rails are specially arranged in such a way that the floor is free (it is made to facilitate the car cleaning).

Digital information system is installed in the saloons including two "roller titles" in the centre of the car. Above entrance doors there are four information

THE CARS SERIES 81-760 ARE READY FOR OPERATION IN TUNNELS AND AT OPEN AREAS, THEIR CARRYING CAPACITY IS OVER 50 THOUSAND PASSENGERS PER HOUR. THEY POSSESS A SYSTEM OF INTERIOR AND EXTERIOR VIDEO MONITORING, VENTILATION, CONDITIONING AND HEATING SYSTEM.

The concept of creation of the perspective cars defined their technical characteristics:

- Operation in tunnels and at open areas
- Operation in moderate and tropical climate
- Carrying capacity— 50 thousand passengers per hour and over
- High optional adaptability
- Body of stainless/construction steel. Smooth side
- Pulling drive of the second or third class
- Clasp brake
- Two-level distributed microprocessor control system
- System of interior and exterior video monitoring

lead more flexible pricing policy, the development of the new trains was based on the principles of modularity, processibility and on a system-based approach.

DIGITAL INFORMATION SYSTEM IS INSTALLED IN THE SALOONS INCLUDING TWO "ROLLER TITLES" IN THE CENTRE OF THE CAR AND FOUR INFORMATION DISPLAYS WITH INTEGRATED LOUD-SPEAKERS ABOVE THE DOORS.

THE BODY

Following the principle of fabricability of the car manufacture, strict straight lines were chosen at the development of the

displays with integrated loud-speakers. They indicate the location of the train on the route. There are also two intercommunication devices →



Driver's cabin of the car 81-760/761

→ “passenger-driver” in the cabin as well as advertising panels and stands for information materials.

The car interior finishing is designed in such a way to make it proof to any spoilage and contamination including graffiti. The walls are easily cleaned with special washing agents on the basis of low-alkali fluids, which don't spoil the covering.

to the situational centre for taking the decisions. Apart from the indoor viewing cameras, the system switches on outdoor monitoring cameras, located on the head cars. The image is displayed on the screen on the main control panel of the driver. The system possesses nonvolatile memory allowing to save the information of the last 72 hours of the record.

At the buyer's option the cars

are located in the area of easy access – controller, brake valve, buttons of the car systems control, radio station. The driver can control and influence the condition of the car systems and equipment with the help of the screen of the video monitoring system, multifunctional display of the digital information complex and the display of the microprocessor-based control, diagnostic and car operation safety system installed in the cabin. Pointer-type electric and pneumatic devices are located here too.

Most up-to-date chairs with vibration absorption and pneumatic height control are installed in the cabin to ensure driver's comfort.

The chairs have vertical and horizontal adjustment with the lock in the preset position, additional tune up in the back area and swing arms.

Hardware cabinet with auxiliary console and car and train protection plates is located behind the chair in the cabin. In contrast to the previous car designs the vertical stay and blocks are made in accordance with the European standard and have 19 inch size. The access to the cabinet is from the cabin.

THE CAR MODEL 81-760 HAS MODERNIZED BOGIES WITH THE IMPROVED LOAD-BEARING UNIT OF THE BOGIE FRAME AND THE ORIGINAL BOLSTER SUSPENSION SYSTEM WITH THE WELL-PROVEN THIRD CLASS DRIVE.

The finishing materials are selected in such a way that they can be recovered anew in case of minor damages. Floor covering is made of fire-resistant materials.

The saloons are equipped with video monitoring system ensuring the monitoring of the situation inside the saloon. For these purposes 4 cameras (two end cameras and two side cameras) are installed. The information from the cameras is transferred via radio channel

can be equipped with the ventilation, conditioning and heating systems.

These systems have two roof air conditioning devices, undercar converter, temperature detectors and control and switching unit. The car saloon is completed with the system of air disinfection.

CABIN

Motion control panel is located in the cabin. Frequently used operation controls



The car 81-760/761 interior

The door between the cabin and the saloon is in the center of the baffle wall. Symmetrically to the hardware cabinet from the other side of the door there is a cabinet for tools and train team

81-760 cars are equipped with double-level microprocessor-based control, diagnostic and car operation safety system: upper level — train control on the whole, lower level – car equipment control. In

cars. With their introduction the subway passengers will get the high safety and comfort level and modern saloon interior design, high aesthetic characteristics of the cars` interior and exterior.

The buyers of the new vehicles are guaranteed considerably low operating costs and economic energy consumption. High adaptive capacity of the construction allows producing cars precisely as the customer wishes – from the economy class to VIP configuration. The high potential of the car design development allows applying them for the implementation of the programs of the complex fleet renewal. By the estimates of the designers, the applied

THE NEW CARS ARE EQUIPPED WITH DOUBLE-LEVEL MICRO-PROCESSOR-BASED CONTROL, DIAGNOSTIC AND CAR OPERATION SAFETY SYSTEM.

belongings. The cabin as well as the car saloon is equipped with the climate control system which ensures ventilation, conditioning and heating. It includes the roof conditioner with integrated converter, fan heater, control and switching unit, temperature detectors.

BOGIES

The car model 81-760 has modernized bogies. Their distinguishing features are: the improved load-bearing unit of the bogie frame and the original bolster suspension system with the well-proven third class drive. As the options offered are: the individual pulling drive of the second class and the housing of pulling speed transformer solid at the wheel set axis with labyrinth seals without hard grease, which allows increasing run between repairs and units working time.

contrast to the previous modifications, the re-created system is made a distributed one. Now many functions of the car and train control units are transferred to the remote computing units – remote regulation

THE ADVANTAGES OF THE NEW CARS CONSTRUCTED AT METROWAGONMASH WILL ALLOW THE HOLDING TO ENTER CONFIDENTLY THE DOMESTIC MARKET WITH THE NEW PRODUCTS AND TO COMPETE EQUALLY WITH THE LEADING WORLD MANUFACTURERS ABROAD.

adaptors and information transmission devices. CAN-bus is for the first time applied for the module communication.

They consider at Metrowagonmash that the basic principles of the new cars` construction as well as the established technical solutions will ensure huge competitive advantages to the new

key technical solutions will remain topical for at least 15 years.

The advantages of the new cars constructed at Metrowagonmash will allow the holding not only to enter confidently the domestic market with the new products but to compete equally with the leading world manufacturers abroad ■

STRATEGIC PARTNERSHIP

Railway Vehicles a la français

An interview with Franck Lecoq, first deputy of the CEO for operating activity





— **Franck! You participated in all vital negotiations on cooperation between Transmashholding and Alstom, held last years. How did you imagine the Russian company, working in France? Did your impression change when you saw the company's operation from the inside?**

— My first acquaintance with Transmashholding was in 2008. I have been following with insight the operation of the company for 2 years, see how the holding is built up in recent years. I could make up my own view and since then it hasn't greatly changed.

The main activity for the holding administration is defining the strategy for the development of the company and ensure effective control over its implementation. That is what we are going to do in the years coming. To become stronger, we need to create a unified culture in the company, achieve a high level of synergy in the plants operation.

— **What do you see as you main goal as a representative of Alstom in the Russian company?**

— Above all, I'm a member of Transmashholding team. In my opinion, all the members of company's administration should concentrate and work together on the solution of the missions set: ensuring stable high products quality, establishing the new rival product, reorganizing the engineering system. This is what the customers are awaiting including the holding essential partner OJSC RZD.

Neither me, nor my colleagues, who also came from France, feel ourselves as Alstom representatives. We are working in close contact with the Russians and feel that we live a single life with the whole Transmashholding.

— **How far is the real synergy between Transmashholding and**

Alstom possible in your opinion? Are Russian and French historical technical schools compatible?

— Transmashholding and Alstom produce very similar products - railway vehicles. Technical basis of the manufacture is practically identical, the key production methods - metal processing, welding, assembly are the same. The problems we have to solve are familiar: ensuring safety, high engineering level and quality of products.

If there are differences in the culture they are not greater than between any other countries having formed traditions in the field of national machine building. →

FRANCK LECOQ

- Born in 1956
- In 1980 graduated from the Graduate national Arts and Crafts school, qualification "Engineer". In 1984 – graduated from the Institute of Business administration in Paris
- In 1980–1985 worked in different divisions of the PSA Group («Peugeot-Citroen» group)
- In 1985–2002 worked in the leading positions in Faurecia: director of the factory, vice-president operations, vice-president of the division and executive vice-president of the business-group (responsible for the supply of control panels and door modules all over the world).
- In 2002–2004 occupied the position of the executive vice-president of the "Components" division in Thomson company
- From 2004 to 2007 worked in the position of the senior vice-president of the «Rolling stock» division in Alstom Transport
- In 2007–2010 headed the purchasing department of Alstom Transport. Reported directly to the President of the company
- Franck Lecoq speaks fluent French, English and Spanish.

→ The real differences between Alstom and Transmashholding are the systems of organization of production. That is why we are implementing on the Russian facilities a new production system based on the most up-to-date concepts and developments in this field. I am sure we will succeed. In Novochoerkassk Russian and French specialists are working on the new electric locomotive. If they had any differences in approaches, now they work as a single team, as if they have been living in the same country for the whole life. Professionalism and love to your occupation can overcome any cultural barriers.

— Which of the competences owned by Alstom do you find necessary to be transferred to Russia in the first instance?

— The Russian specialists are competent and know their job very well. The main problem is that the developed production system is sometimes overly cost-intensive – involves too many resources like assets, spaces, stocks or time. The primary task is to introduce such a project management system that would allow resolving all these problems.

Besides, we are launching a comprehensive quality system, intensifying our cooperation with the vendors. It will require a full mobilization of the management, the divisions in charge of the procurement and marketing. The vendors who are eager to cooperate with the holding in future also, should already at this stage exert viable efforts intended to enhance the quality of their products. In the nearest five years this field will be subject to big change. Foreign suppliers of machine building components are entering the Russian market more and more aggressively, settling down their business here, opening new enterprises. Our actual partners should keep an eye on the ongoing processes. We will do our best to support those partners who are ready to work in the fluctuating environment.

— What is your definition of the project management?

— The new products developed by us will become more and more complicated. To master the production, ensure the required rhythm of the technological processes and the forecasted product

value it is essential to pool together the efforts of lots of Alstom departments and its external suppliers. The technical level of the new products will require the involvement of the suppliers on a fairly early stage.

Several plants will be engaged in the manufacturing of each of the new products at a time, there we are planning to establish the appropriate competence centers. Practically it means that some plants will produce the bogies, some other will do the transformers, and the rest will manufacture something else; some plants will assemble the locomotives. The implementation of such projects is not feasible without a special organizational framework incorporated in order to address such issues. Management of the projects on the development and commissioning of the new products is a concept assumed in all the biggest companies. It means that for each specific project they will form a single team in charge of all the aspects related to its implementation. It will enable working on the project quickly without outsourcing too many parties in the decision taking and at the same time will allow uniting the specialists having the necessary skills in production, technology, procurement, financing, quality control etc. with a common mission.

The first project realized using this approach is a head locomotive of the new family of the Russian electric locomotives — EP20. In future the same strategy will be employed in the work on all the new samples of the products. Therefore our task is to synchronize the activity of all the divisions into a single body by setting a common goal.

— Which of Transmashholding and Alstom joint projects have bigger prospects in your opinion?

— First and foremost it is EP 20 – a new dual system passenger electric locomotive. It is a very ambitious project that will give rise to the whole family of modern locomotives. Today our task is to ensure the readiness of the first locomotives before March next year. EP20 has to undergo the certification process before the Winter Olympics in Sochi 2014; we will build as many electric locomotives as the

KEY MILESTONES IN THE DEVELOPMENT OF THE PARTNERSHIP BETWEEN ALSTOM AND TRANSMASHHOLDING

- **December 13, 2007** — reaching of the agreement on the construction of the joint ventures on the territory of the Russian Federation.
- **March 27, 2008** — signing of the agreement on the technical assistance. Commencement of the audit of the Transmashholding production capacities.
- **March 31, 2009** — signing of the agreement on the strategic partnership in the technological, production and financial fields.
- **March 1, 2009** — signing of the agreements formalizing the strategic partnership including the general agreement on the joint business in the field of the rolling stock engineering and production, sales agreement for the acquisition by Alstom of 25% +1 shares in the Transmashholding capital as well as an agreement on the relationships between the shareholders.

Olympic guests transportation needs will require.

Also we are working on the regional trains projects.

— What types of other rolling stock vehicles may emerge within the frameworks of the partnership? Is it possible that radically new products will emerge in the Transmashholding portfolio, for example the rolling stock for the systems of the urban transport?

— The main goal of our partnership is to respond to the needs of our key client, OJSC RZD.

The top priority for the rail car industry nowadays is the locomotives. However RZD is in a great need for the other types of the rolling stock as well, including the passenger vehicles. We are strongly counting on the completion of the project on the creation of a series of the double-deck passenger cars and on a high-speed regional trains` development program.



Unité photographique Elysée

Signing of the Agreements in Paris March 1, 2010

To develop a new product in the area of urban transportation it is required to make sure of the sufficiency of the order volumes. In my opinion, the practical implementation of such project is realistic

basis of the “Citadis” platform designed by our partners from Alstom.

— In your opinion what are the main obstacles for the development of

THE NEW PRODUCTS WILL BECOME MORE AND MORE COMPLICATED. TO MASTER THE PRODUCTION, ENSURE THE REQUIRED RHYTHM OF THE TECHNOLOGICAL PROCESSES AND THE FORECASTED PRODUCT VALUE IT IS ESSENTIAL TO POOL TOGETHER THE EFFORTS OF LOTS OF ALSTOM DEPARTMENTS AND ITS EXTERNAL SUPPLIERS.

given the interest of the big cities’ authorities – Moscow and St. Petersburg. If they express their interest, we will be ready to offer the product created on the

Transmashholding and its partnership with Alstom in the nearest years?

— Our main obstacle is the global economic crisis. It significantly reduces

the opportunities for investments, which affects not only us but our partners as well. We do not always have a possibility to finance our development projects in the volume we find optimal for us.

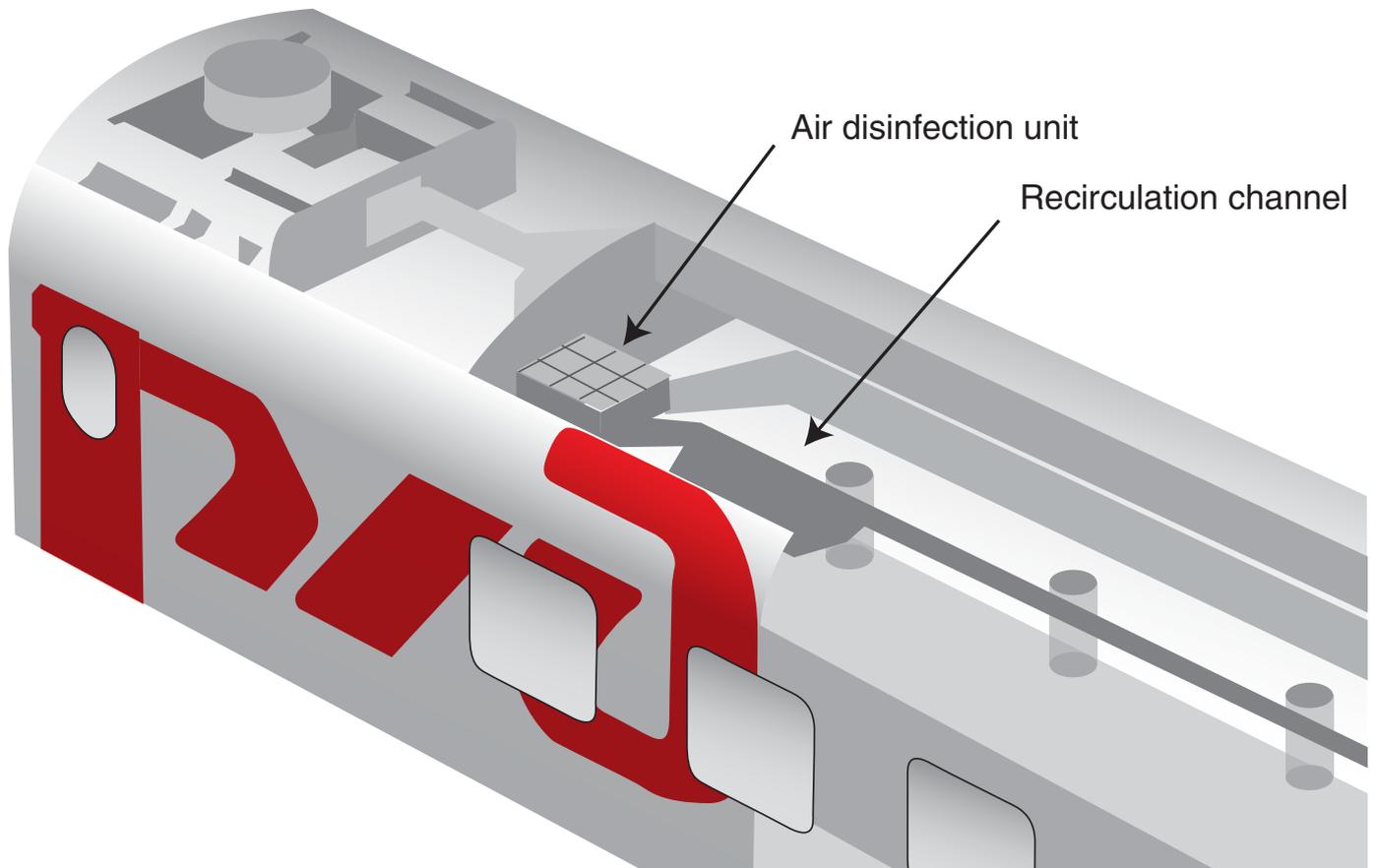
We are seriously influenced by the current situation with the certification of the products and the materials, by the requirements of the environmental authorities, norms and standards in Russia. We are facing a challenge that not all the technologies and components can be used in Russia.

However considering the overall situation we understand that Transmashholding cooperation with Alstom is a real bargaining chip, our competitive advantage. We both possess such competences that allow us offering a really better product meeting each of the consumer’s requirements. ■

Ultraviolet Against Infections

Vladislav Mironov, Deputy of CJSC Transmashholding Chief designer

Since 2010 all the cars produced at the Tver Carriage Works have been equipped with the air disinfection units. The scientists assure that from now on the passengers are reliably protected against airborne infections.



UOV MEGALIT- ZhT in the ventilation and conditioning system of the passenger car

New sanitary rules for the organization of the passenger transportation on the railway transport as of 2003 require the installation of the air conditioning system as an obligatory norm for all the newly built cars. However the purpose of installation of the air conditioner is not only comfort of the passengers. According to the world-wide

experience the use of the conditioners for example in big office premises considerably increases the risk of catching various airborne infections through the air conditioning system. Therefore the railway epidemiologists providently supplemented the Sanitary rules with a norm requiring to install the air disinfection units in the air conditioning system. The only problem was that such units designed for

operation in the passenger car were neither mastered nor in the process of engineering.

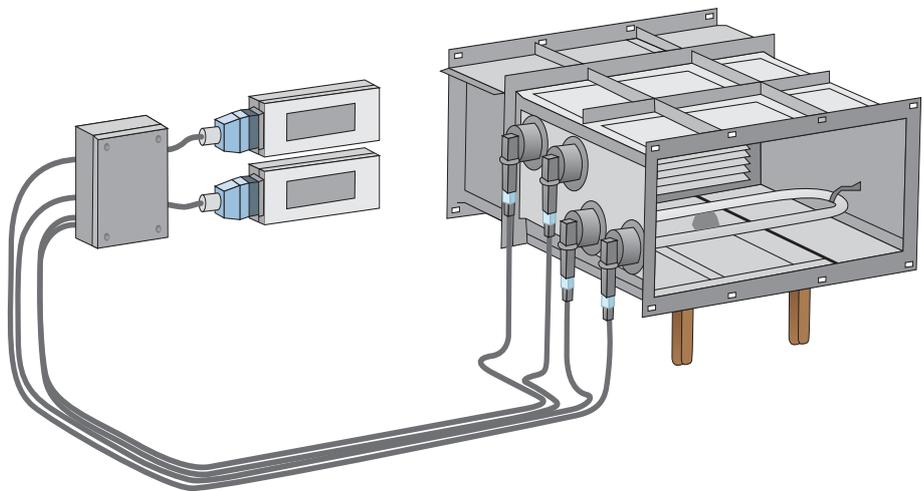
The designers of the Tver Carriage Works — flagman of the Russian car building — started searching for a potential supplier who could deal with a task of designing and putting into operation the air disinfection units for the passenger cars. There were several suppliers willing to take part

in the work, but some were lacking an engineering experience in that field, the others did not have their own production base. The most advanced proposal was submitted by LitTransService; the company was in close cooperation with a Scientific-Development and Production Center LIT (Moscow) having a wealth of experience in the design and manufacturing of various disinfection units and fluids and owning their own facility including the creation of amalgamate ultraviolet lamps.

At the beginning of 2007 the engineering of the air disinfection units for the passenger cars was started. As the planned change of the model row at the Tver Carriage Works was about to begin in two years it was decided to introduce the disinfection units in the design of the new generation cars. However the process of introduction of the air disinfection units faced a sudden obstacle — it turned out that the normative base for the unit to conform to was simply missing. That is why there were different kinds of opinion on the amount of the air to be disinfected and in which area of the car air channels to mount the disinfection units.

Following a series of trials, the VNIIZhG Rospotrebnadzor scientists worked out “Medical-biological requirements to disinfection units for the passenger cars”. The matter is that the concentration of the microorganisms in the fresh air vented from outside of the car causing human diseases is minimum and the biggest infection risk is brought about by the air vented from the passenger premises of the car and after going through a climatic unit it is supplied to the car again (so-called recirculation channel). Therefore it was evident that the disinfection units shall be installed in the recirculation channel for cleaning the recirculation air from pathogenic germs which could be brought into the car by infected passengers of the car.

The prototype of the air disinfection unit was produced at the end of 2007. Bench tests of the unit were launched. During the chamber tests to determine the unit efficiency the VNIIZhG Rospotrebnadzor scientists confirmed that the disinfection unit prototype ensures a high degree of the air cleaning



Air disinfection unit

from pathogenic germs. As one of the requirements to the disinfection units was the transport design of the unit, they held the vibration effect and the tests on the individual impacts performed on the vibration test rig of the Tver Institute of Car Building (TIV). In May 2008 the acceptance committee approved the prototype of the disinfection unit and permitted the production of the pilot batch. The conclusion of the acceptance committee allowed mounting the innovation in the car to test it in real operation conditions.

In October 2008 the Tver Carriage Works embarked on the serial production of the new generation car of the 61-4440 family. On one of the cars of the new model row they mounted the prototype of the air disinfection unit named MEGALIT 2ZhT. But the running tests were planned for summer: as the disinfection unit is actuated only together with the air conditioning system.

The running tests were very well prepared. Because they could launch the serial production only after the confirmation of the unit effectiveness in real car operation conditions. The scientific officers of two institutes — Scientific Research Institute of the Railway Hygiene and the Scientific-Research Institute of Desinfectology with the appliances for the examination of the air environment inside the car as well as the representatives of LitTransService went on a special trip. The experimental trip with a route Moscow-Adler-Moscow

took place at the beginning of July 2009. Following the analysis of the measuring results the scientists confirmed an almost a hundredfold elimination of the pathogenic germs after the air going through the disinfection unit. With the air disinfection unit the passengers are safely protected against infectious airborne diseases.

From the beginning of 2010 all the cars produced by the Tver Carriage Works are equipped with the MEGALIT 2ZhT disinfection unit. The development of this innovative appliance protecting the passengers' health was possible due to a close operation of the unit designers, Tver rail car builders, scientists of the branch institutes and specialists of the Federal passenger directorship.

At present the disinfection units similar to those that are applied in the passenger cars are being introduced in the design of the subway new generation cars of the model 81-760/761 designed at Metrowagonmash. The electrical trains produced by Demikhovskiy Engineering Plant are waiting for their turn.

Thorough check of the air disinfection appliances ensures their fail-safe and reliable operation and the application of those units in the rolling stock being a place of concentration of a large number of people including the infected ones is the demonstration of an additional care of the main clients of Transmash-holding — railway and urban transport passengers. ■

Kolomna — Minsk — Brest

TEP70BS Has Shown Itself to Good Advantage in Belorussia

E.V. Bychkova

The length of the railway network in Belorussia is 5,5 thousand kilometers and the overall fleet of the local railway operator — Belorussian Chugunka (rail road) — over 500 units of the traction rolling stock. According to the assessments of the experts the locomotive fleet of the Republic is severely worn-out. Therefore its renewal is one of the top priorities in the branch development. For that purpose 920,5 billion Belorussian rubles were invested last year, in the current year they are planning additional 1237 billion rubles.

Every year the Belorussian rail road is used by approximately 100 million passengers. On all the non-electrified lines of the rail road that make 85% of the total length of the roads the passenger transportation is carried out by the mainline passenger diesel-powered locomotives produced by the Kolomna Plant.

In 2006 Belorussia became one of the first foreign customers of the new Kolomna diesel locomotive TEP70BS that was designed and built at the Kolomna Plant between the 20th and the 21st centuries, for the first time in Russia after a prolonged intermittence in the construction of the diesel locomotives of the new models.

KOLOMNA PLANT

The Kolomna Plant, member of CJSC Transmashholding is a reliable partner of the Belorussian Railroads for more than 10 years. Several types of the Kolomna locomotives are operating in the republic — TEP60, TEP70, TEP70BS. The plant supplies diesel generators for the upgrade of the outdated freight diesel locomotives — 2TE10 and M62.



Exterior of the TEP70BS locomotive

TEP70BS is the first domestic mainline passenger diesel locomotive equipped with the train centralized energy supply unit. The use of the electric energy for the cars energy supply from the locomotive creates comfortable environment for the passengers, improves the trainmen labor conditions and diminishes the negative impact on the environment.

“The first batch of the diesel locomotives TEP07BS supplied by us to Belorussia are the machines with the sequential number №№ 6-10. The operation of the new and complicated modern vehicles definitely requires a special attention both on the part of the producer and the client. The technical issues on the improvement of the locomotive were resolved by us in joint efforts with the Belorussian party.” — says Anatoly Podoprosvetov, Chief Designer

for the locomotive building of the Kolomna Plant.

During the acceptance of the first vehicles in 2006 Vladimir Dralov, Deputy of the Minsk depot Chief said: “TEP70BS diesel locomotive is a radically new vehicle for Belorussia. So far the depot has been using the TEP60 diesel locomotives produced by Kolomna Plant that have asserted their reliability for the decades of intensive operation”.

To master the new vehicle effectively the training of several groups of the Minsk depot was organized on the plant base.

The training was held directly on the diesel locomotive where they could be familiarized with all the design features of the new vehicle in practice. Besides, they held a comprehensive training course of the locomotive and maintenance brigades with the involvement of the specialists of the main suppliers of the

assemblies and aggregates TEP70BS-OJSC Kolomna Plant, Federal State Unitary Enterprise VNIKTI (Kolomna), OJSC Holding company Privod (Lysva), Locomotive Ltd (Izhevsk).

As per the results of the TEP70BS the first batch operation starting from 2008 Belorussia annually acquires additional 4-5 sections of the TEP70BS. According to Evgeny Talako, the Minsk depot Chief Technologist, the locomotive fleet of the Belorussian Railroad now equals to 17 TEP70BS diesel locomotives that are operating in the sections Minsk-Grodno, Minsk-Vilnius, Minsk-Gomel. They are servicing the corporate trains Yantar, Belyi Aist, Neman, Vityaz.

The practical check-up of the TEP70BS operation allows the Belorussian rail car builders to confirm that the characteristics of the locomotives operation conform to the requirements of the technical documentation, the after-sales service of the Kolomna diesel locomotives is implemented pursuant the contractual terms and conditions.

The big advantage of the TEP70BS diesel locomotives is the decrease of the fuel and oil consumption. The saving of the fuel in comparison with the TEP60 and TEP70 diesel locomotives makes from 20% and 10% and therefore the savings on oil — over 65% and 25%. Such parameters are achieved due to the application on the locomotives of the improved diesel generators 2A-9DG-01 with another characteristic of high environmental indexes. The run between the repairs was increased by almost by 30% in comparison with the diesel locomotives in operation. For the design of TEP70BS the modular principal was selected for the layout which has positively proven itself in practice. Such design ensures the lowering of the production costs as well as the costs of operation and maintenance.

During the design of the TEP70BS the engineers tried to create comfortable conditions for the work of the locomotive brigades. The driver's cabin is finished with the modern construction materials, equipped with an air conditioning system and has side and front windscreen with enhanced safety characteristics with electric heating, window wipers of pantograph type with the electric drive, control panel with the improved



Photo courtesy of Belorussian Railway

TEP70BS as part of the train

ergonomic and esthetic characteristic, with the display installed in it of the micro-processor system for control and diagnostics, information panel of the complex safety device KLUB-U.

Those innovations were verified in practice by the Belorussian train drivers. Viktor Marusin, the driver with a thirty-year experience highly estimates the advantages of the driver's cabin: "Good overview is essential for the driver, especially on the curves. The window wiper and windscreen washer as well as the mirrors with a heating system ensure the cleanliness of the windows and good visibility even during the severe frost. The installed computer is very handy at work able to monitor the operation of various assemblies of the locomotive".

At present 10 locomotives are undergoing the guarantee maintenance performed by the specialists of the Kolomna Plant service division. After the expiration of the guarantee period the vehicles will be maintained by a Belorussian party. For example the technical maintenance of the diesel locomotive № 2 is carried out in the locomotive depot in Minsk, Gomel and the intermediate depot in Grodno, the technical maintenance № 3 and the running repairs № 1 are performed in the locomotive depot in Minsk. The running repairs № 2 and № 3 are

carried out in the locomotive depot in Orsha. The maintenance brigades note a clever layout of the main systems and the assemblies of the locomotive which allows to do the required repair works without any hindrance. The plant specialists assist in consulting the staff promptly if required.

Alexander Evgrafov, Chief of the department of operation and after-sales service of the OJSC Kolomna Plant accentuates the diligent attitude and a careful utilization of TEP70BS at the Belorussian railroads. "High qualification of the servicing personnel of the Belorussian railroads has a positive effect on the readiness statistics and on the basic operational indicators of the locomotives."

At present they are looking at the project of a service center establishment at the Belorussian railroads to provide direct assistance in the resolving of the problems related to TEP70BS operation both during the warranty period and throughout the whole length of the operational period.

The Kolomna Plant and the Belorussian railroads rely on the future development of the successful operation on a mutually beneficial basis. During 2010 the Belorussian railroads will receive 5 TEP70BS diesel locomotives in total. ■

Transmashholding is Establishing the Network of Corporate Service

V. P. Ivanov, Deputy General Director of CJSC Transmashholding



Kursk depot



Project on the after-sales service of the Ermak locomotives will be the pilot one for Transmashholding

CJSC Transmashholding, the largest company in Russia in the transport machine building industry is opening the first service center on the after-sales service of the vehicles. In future they will set up a network of such centers all over the country to render corporate services to the Russian railroads. Thus, the main supplier of the rolling stock in the Russian market will assume the responsibility for the after-sales service of their products till the very end of their performance period.

Transmashholding purpose to set up a network of the corporate service is to render to the customer of their product a full range of after-sales services — repairs, maintenance, provision with the spare parts, monitoring of all stages of operation by the company's specialists.

By acquiring the rolling stock products from the holding the consumer gets an opportunity to maintain the operating vehicles in a working condition, sustain a high coefficient of the fleet readiness. Previously the consumer had to solve all those problems related to the after-sales service and maintenance independently, but after the creation of the corporate

service network it will be the duty of the producer.

The first service center is to open on the basis of the Bratsk locomotive depot in Vikhorevka. (Eastern-Siberian railroad, branch leading to the Baikal Amur Mainline) and will specialize in the repair works of Ermak 2ES5K — the mainline freight AC electric locomotives. →

→ By the end of the year the service centers are expected to start working on the base of the locomotive depots of the station Smolyaninovo (in the vicinity to Nahodka) where they will provide the services for Ermak as well, Kaliningrad station for TEM18D — the diesel-locomotive shunter, as well the area of Kurbakinskaya TCh Kursk of the Moscow railway on the maintenance of the main line freight locomotives produced by the Bryansk Engineering Plant.

They are planning to organize the work of the service center in the Southern part as well — on the base of the Tuapse depot (Northern-

THE PURPOSE OF TRANSMASHHOLDING TO SET UP A NETWORK OF THE CORPORATE SERVICE IS TO RENDER TO THE CUSTOMER OF THEIR PRODUCT A FULL RANGE OF AFTER-SALES SERVICES — REPAIRS, MAINTENANCE, PROVISION WITH THE SPARE PARTS, MONITORING OF ALL STAGES OF OPERATION BY THE COMPANY'S SPECIALISTS.

Caucasian railway). The depot will specialize in the maintenance of the cargo-and-passenger electric locomotives of AC current produced by the Novosherkassk Electric Locomotive Plant. The opening of the service center in the Krasnodar region is especially relevant due to the

constant increase of the traffic flow in the route triggered by the preparatory activities for the Olympic Games in Sochi in 2014.

They are planning to create service centers specializing in the maintenance of the EP2K electric passenger locomotive of the AC current produced

TCh Kurbakinskaya



by the Kolomna Plant and the modern passenger electric locomotive EP20 produced by the Novoshekhovsk Electric Locomotive Plant.

EP20 will be produced only next year. Despite the fact that this vehicle is still on the conveyor line Transmashholding specialists together with the colleagues of the French company Alstom that participate in its construction are already searching for the base locomotive depot for maintenance of the innovated and advanced vehicle.

The holding is also analyzing the possibility of organizing the service in the new locomotive repair depot in Barabinsk (Western-Siberian mainline). The locomotive depot operating now at that station is over 110 years, it was built at the end of the 19th century. The new depot is expected to be built and equipped with all the necessary cutting-edge machinery.

The idea of organizing the service centers was studied in cooperation with the OJSC Russian Railways — owner of the Russian railroads infrastructure. Their collaboration was commenced in 2009. In joint efforts with the scientists of the All-Russian Scientific-Research Institute of the Railway transport they developed the concept of organizing the introduction of the service at RZD. At an initial phase of the corporate service network organization they are planning to focus the service centers activity on the locomotive maintenance and in future on the cars as well. The corporate service idea implementation will allow the holding to acquire significant competitive advantages. This area of the business has a growth potential due to the fact that now Transmashholding is taking part in the bid for the lease of 17 passenger car depots. They are planning to set up the service departments on the base of these depots.

By leasing the equipment and locomotive depots production premises from RZD to organize the service centers Transmashholding assumes the responsibility to fit them up with the required equipment; the depot staff will undergo a special training on the plants of the holding. The task of coordination of the work of all the service centers will be commissioned to a special department established specifically for the purpose in Transmashholding.



V.P. Ivanov, Deputy General Director on after-sales service

In future the holding is planning to enter the external markets by organizing the service centers not only in Russia but in some other countries as well. At present the company is in process of negotiations with the Ulan Bator railroads on the construction of a service center on the basis of one of the locomotive depots in Mongolia.

The corporate service network establishment will enable Transmashholding monitoring the engineering and the design, keeping track of the

operation of its product in actual operational conditions. Such supervision which will last throughout the whole life cycle of the vehicle will allow modifying the future developments and upgrading the already existing samples of the vehicles.

The company hopes that such policy in the area of product after-sales service will lead to the reduction of the life cycle cost and the upsurge of the economic returns of its operation. ■

At the Origin of Metropolitan Railway Construction

To commemorate the anniversary of construction of the first car for the Moscow subway at Metrowagonmash

B.N Smirnov, Chief of the Special design office of Metrowagonmash Plant

The Moscow subway was opened for the passengers on May 15, 1935. The construction was started four years earlier. In 1931 the mastering and the production of the rolling stock was commissioned to Mytishchi Machine Building Plant. The engineering of the first car was headed by P.I. Travin, Chief of the central design bureau. He worked

car — seats, window casing, fixation elements of the internal finishing.

The prototype of the first car made by Mytishchi was the type of the New-York subway car built in 1931 by Westinghouse company. The project of the American car was thoroughly investigated and it was decided to develop its own improved design with due consideration of the foreign experience. However the model

Inside the side, end walls and the roof there were asbestos plates that ensured noise and heat insulation of the car. In addition the plant designer gave the angles of the car body a streamline contour to reduce the air resistance contrary to the sharp angles in the American project. This sophisticated and elegant shape of the car body is still in use on the serial cars.

In August 1934 the first two-car train was produced and passed all the tune-up works and tests on the Sokolniki subway line. The product was launched into serial production and by August 1935 the plant built already 40 cars. The design of the first cars was very favorable: high-speed, reliability in operation, good-looking and comfortable for the passengers. All 55 cars of that type built by the plant properly operated till the end of their life cycle and were withdrawn from the operation only in 1975.

Thus, the history of the domestic metropolitan railway construction was started far back in the 1931-1933s. The plant designers' efforts paved the way for the creation, development and improvement of the subway rolling stock configuration.

By the 75th anniversary of the metropolitan railway in April-May 2010 Metrowagonmash produced a retro train consisting of the cars having the same look as at the beginning of the 30-s of the previous century (although certainly "the stuffing", electronics and the bogies are modern ones — as in the serial production). Now each passenger has all the chances to take a ride on a "new" train and sense the history of the Russian subway construction. ■



Moscow subway, 1935

in the USA for many years, got a higher engineering degree, worked in the car building companies for many years. Starting the project of the future car for the Moscow subway Mr Travin urged to the necessity of using the American technologies in the creation of the car but at the same time follow the domestic car building experience.

Despite the difficulties with the metal it was categorically decided to build entirely metal weld car bodies. The issue of manufacturing of the thin-sheet corrugated flooring was successfully resolved. The original wooden design features were preserved in the internal finishing of the

of the first variant of the car configuration produced in real dimensions was rejected by the government committee. The car reminded of a tram — wooden seat, handrails, gloomy finishing.

The designer embarked on the work once again. As a result an original internal finishing, comparable with the most advanced car of that time — beautiful finishing of the walls with the flexible paper-base laminate, soft arm-chairs faces with leather, ceiling faced with faux leather of nice colors, nickel handrails, ceiling lamps and bras with the dome lamps in the form of a tulip was created.

ALSTOM — TRANSMASHHOLDING ALLIANCE OF TWO GIANTS



Signing of the documents on the entry of ALSTOM in the Transmashholding capital on March 1, 2010

EQUAL PARTNERSHIP WITH PROSPECTS

- › Alstom and Transmashholding are joining their forces, advanced technologies and unique knowledge of the market within the “1520 gauge area”
- › Alstom and Transmashholding set up a joint enterprise (50/50) for the purpose of designing the new models of the rolling stock

- › Alstom acquires a share of 25% + 1 share in the Transmashholding parent company. Its representative is appointed deputy General Director of Transmashholding

PRAGMATIC APPROACH — EXCHANGE OF EXPERIENCE AND SKILLS

- › Alstom will lend technological support to Transmashholding in the upgrade of the member plants as well as the production processes
- › The Joint venture will deal with the establishment in Russia of the competence centers on the design of the new products on the basis of the skills and know-how possessed by both of the parties. The first result of the joint design is the passenger two-system electric locomotive EP20 built with the application of the base platform principle
- › The basis for technical cooperation will be the creation of the interface between the competence centers of Transmashholding and Alstom

KEY MILESTONES

- **December 3, 2007** — Signing of the contractual agreement on the establishment of the Joint Venture in the territory of the Russian Federation
- **March 27, 2008** — signing of the agreement on the technical assistance. Three plants of the holding were audited
- **March 31, 2009** — The companies sign an agreement on the strategic partnership
- **March 1, 2010** — The companies signed a package of the documents on the inclusion of Alstom in the share capital of Transmashholding



Signing of the agreement on the strategic partnership March 31, 2009

Alstom Transport

- › Offers a vast range of the equipment and services for the railway vehicles construction market
- › Global leader in the high-speed trains market (300 km per hour and more)
- › Ranks second globally in the urban transport market
- › Turnover in 2009–2010 — 5.8 billion Euro
- › The company is represented in 60 countries (27 000 employees)



Pendolino Allegro for the line Helsinki-St. Petersburg



2ES4K Donchak — first Russian freight DC electric locomotive

Transmashholding

- › Leading producer in the CIS countries of the whole variety of the railway vehicles
- › Sole producer of the rolling stock of the arctic service in Russia
- › OJSC Russian Railways is a big share holder of the holding and the main consumer of the products
- › Turnover in 2009 — 71 billion rubles
- › Manpower — 54 000 employees



- 1 The largest rolling stock manufacturer and seller in the CIS
- 2 A top ten world manufacturer of railway equipment
- 3 The only Russian company with expertise in development and production of equipment for Arctic climate
- 4 Transmashholding-manufactured equipment is in service in all climate zones

PRODUCTS AND SERVICES PROVIDED BY THE COMPANY:

- Main line and industrial electric locomotives
- Main line and industrial diesel locomotives
- Freight cars and passenger coaches
- Electric train cars and metro cars
- Rail buses and diesel trains
- Car castings
- Diesel engines for diesel locomotives and marine vessels
- Diesel-generators and turbo chargers
- Components for transport
- Spare parts
- Repairs and maintenance

