

Moscow spurt

The story of the Russian capital's most unprecedented transport programme

Transport infrastructure in Moscow, one of the largest megacities in the world, was in a critical state 10 years ago. Everything was heading for collapse: uncomfortable metros and electric trains meant residents were favouring private cars, leading to chronic traffic congestion. However, decisive actions by the new mayor's office, which launched several largescale infrastructure programmes simultaneously, made it possible to reverse the situation in a short time.

Moscow's current urban planning policy is based on the development of public transport. According to Boston Consulting Group (BCG) calculations, the underground network is expanding at the fastest pace in the world, the importance of railways is changing dramatically, and disparate passenger flows are being integrated into modern hubs. The Moscow transport system will comprise more than 1,000 km of metro, Moscow Centre Circle and Moscow Central Diameters by 2023. Key facilities are being built using unique technologies by engineers from the Mosproekt-3 Group of Companies, which ensure the rapid and high-quality implementation of infrastructure projects.

"If we suggested that Muscovites go back to the Moscow of the 2000s or 2010, I think there would be a complete consensus - no one would want to go back there. This means that we are going in the right direction," says Moscow Mayor, Sergey Sobyenin.

Underground

The unprecedented programme to expand the underground network was launched in Moscow in 2011. Initially, measures were taken that would produce the most immediate effect by extending existing lines to remote areas. With the launch of the New Moscow project, part of the resources were allocated to integrate annexed territories.

When conceiving the expansion programme, the Moscow mayor's office was inspired by the "Grand Paris" project. Despite the fact that the Russian project started later, the metro came to New Moscow earlier: in a record-breaking two years, and included a unique overland section developed by the specialists of Mosproekt-3 Group of Companies.

"The metro line, which was originally conceived as a high-speed tramway, was combined into a single structure with the motorway. While updating the project, we actively used BIM. This is how we managed to change the layout of the engineering systems of classic metro stations and fit them into cramped conditions," said Anna Merkulova, CEO of Mosproekt-3 Group of Companies. According to Mosproekt-3 engineers, a completely new line is being built in the remote territories.

"The world city that impressed me most with its ability to change is Moscow! This city has managed to become one of the most modern megacities on the European continent," is how former French President Nicolas Sarkozy reacted to the success of underground builders in New Moscow.

The symbol of the grandiose project to expand the Moscow metro network is the Big Circle Line. In the future, it will dramatically change the transport behaviour of Muscovites. Previously, moving around the city inevitably led through the centre with passengers simply having no alternatives.

In the near future, the situation will change: the Great Ring with 31 stations will make it possible to make 21 transfers in the middle of the metropolis. The 70km line will become the longest in the world, surpassing the Beijing metro. The new line is already breaking records: experts at Guinness World Records recorded 23 tunnel boring machines working simultaneously. "The launch of the Big Circle Line will be a revolution in the capital's metro system. It will reduce the load on the existing Circle Line and create new links between the city districts," Sobyenin says.

Railway Transport

Another Circle Line was commissioned five years ago. The 54km Moscow Central Circle (MCC)

was re-purposed for passenger traffic from a Soviet era freight railway line serving industrial areas. The ring is now fully integrated with the classic Moscow metro: trains operate at minimal intervals, and it is possible to make 29 transfers from 23 stations using a single ticket.

An important task of the MCC is to return former industrial areas to economic activity. Balanced neighbourhoods with additional jobs within walking distance are being built around the surface metro.

The success of the MCC made it possible to implement another megaproject - the Moscow Central Diameters (MCD). This is a 132km network of commuter rail lines. Passengers can travel through the capital and reach the nearest towns in the suburbs. The new network is also integrated with the metro and the MCC. The first two lines - MCD-1 and MCD-2 - are now operational, but three more are being built to complement them. "By 2024, we plan to complete the formation of a modern unified transport network for Moscow. By that time, the Big Circle Line will be completed, the MCD-3 and MCD-4 routes will be opened, and the system of high-speed chord highways will be launched," explains Andrey Bochkarev, Deputy Mayor of Moscow for Urban Development and Construction.

The future of Moscow transport

Accelerated implementation of a programme of such scale is possible due to the mobilisation of the best specialists and the use of modern technologies. Exclusive technical solutions are developed by the team of Mosproekt-3 Group of Companies, the leading centre of engineering competence in the country. Based on the unique experience of the Soviet engineering school, the specialists of the holding company have created modern projects for deep stations in unstable ground. In addition, the Mosproekt-3 team participated in the construction of Moscow's first double-track tunnel, for which they adapted Spanish technology.

The specialists actively use BIM in their work, for which the holding company has repeatedly been recognised as a leader in Russia. In particular, Mosproekt-3 engineers were the first in the country to fully design a metro station in a digital environment.

"The unprecedented urban planning projects implemented over the past decade in Moscow have allowed us to rapidly develop competencies in infrastructure construction. Today we rely on the knowledge of the Soviet engineering school, one of the best in the world, and we adapt this experience to modern realities and



“The Mosproekt-3 group of companies is the leading Russian center of engineering competence which provides high-tech solutions in the field of transport construction and integrated territorial development. Today the holding company has more than 10,000 completed projects under its belt.”

—Anna Merkulova, CEO

develop completely new technologies that are not only exclusive to the domestic industry, but often have no analogies in the world,” comments Anna Merkulova, CEO of Mosproekt-3 Group of Companies.

The founder of All2plan Consulting ApS, Dr Alun Thomas, who has 25 years’ experience in the field of underground construction, admits that he is “impressed with the scale and complexity of current projects in Russia and can observe with interest how new technologies such as BIM and top-down help to realise these projects”.

Sobyanin says it is impossible to imagine the megacity without the constant development of the transport system. And the city authorities have successfully continued the work despite the difficulties caused by COVID-19.

After the completion of the Big Circle Line project, the mayor’s office intends to implement two new metro lines and three MCC lines. As noted by Andrey Bochkarev, Deputy Mayor of Moscow for Urban Development and Construction, the Russian capital city has made a major breakthrough, after which it plans to switch to a quiet period and focus on individual projects.



Mayor of Moscow Sergey Sobyenin opens new metro stations.



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