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IR's PSUs: Focus RailTel

Interview

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Interview

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Rail Biz Interview : Vinay Kumar Singh, MD, National Capital Region Transport Corporation

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Vinay Kumar Singh is a civil engineer who started his professional career in the Indian Railways (IRSE 1988 batch). After his graduation from MNIT, Ahmedabad, he did his MTech in Civil Engineering from IIT, Delhi. He is presently leading the transformation in regional mobility as the first Managing Director of NCRTC, which is mandated for design, development, implementation, finance, operations, and maintenance of the Regional Rapid Transit System (RRTS) projects in the National Capital Region of India.

With his expertise in rail-based transport systems and deep understanding of advanced technologies, he is leading the implementation of RRTS as arguably the most technologically advanced transport project in India at present. With implementation of RRTS, he hopes to take the commute in NCR to the next level, beyond the change brought by metro systems over the last two decades.

He has led procurement under various government frameworks including that involving external borrowings and has developed a thorough understanding of public procurement. He has also been part of loan negotiations for various projects and has been closely interacting with multilateral and bilateral funding agencies. Singh has been extensively exposed to international railway systems of Japan, Spain, Germany, China, etc., and metro systems of Hong Kong, Singapore, Paris, Washington, etc. Before joining NCRTC, he was the Chief Executive Officer of the High-Speed Rail Corporation, where he played a key role in developing the Mumbai-Ahmedabad HSR project and finalisation of techno–economic agreement between India and Japan for the construction of this line. Associated with many 'firsts', he was the officer in-charge of the execution team of the first section of Delhi Metro project in field. Always challenging the status-quo with his courageous decisions, he focusses on value-creation by making complex problems simple for his team, leveraging technology to the fullest and converting concepts into actionable projects.

Working with an entrepreneurial mindset and foresight, Singh is working to ensure long-term sustainability of the RRTS project by focusing on non-fare revenue streams besides steps to maximise the ridership on the system. RailBiz team reached out to him with many questions which he was gracious enough to answer.

Q. Congratulations for getting CMRS sanction for the priority section of Delhi-Meerut RRTS. Now that NCRTC is on the cusp of operationalising it, tell us about the major challenges in achieving this target in such a short span of time?

A. From the beginning, NCRTC has prioritized the needs and comfort of commuters over the ease of construction, following a 'commuter-first' approach. Despite numerous challenges, we have remained committed to this principle.

A good example of this strategy is the decision to locate an RRTS station near the existing infrastructure such as the Indian Railway Station, ISBTs, and Metro Station with two Metro lines. This decision created difficulties, including tunnelling in close proximity of the existing foundation of the Metro infrastructure.

Another challenge arises from the fact that NCRTC is implementing this project in multiple states, which means engaging with numerous stakeholders. The complexity of the project requires obtaining multiple approvals and NOCs even before starting construction on the ground. Additionally, in the densely

developed urban environment where the corridor is being built, NCRTC faced a number of challenges including availability of land. However, to mitigate this risk, at the planning stage itself, we strategically reviewed and modified the alignment to minimize the land footprint by utilising the right-of-way (ROW) of the state highway and available land owned by the government or its agencies.

I am glad that within four years of starting the construction of this first-of-its-kind project, we received approval from the Ministry of Railways and the Commissioner for Metro Rail Safety (CMRS) in June 2023. This 17-kilometer-long priority section of the Delhi-Ghaziabad-Meerut RRTS corridor is the country's first railway system to be opened for operations along its entire length, with a maximum operational speed of 160 kmph.

Q. How do you position your service compared to the existing metro, bus, and railways services like Vande Bharat? Also, take us through the thought behind naming the country's first Regional Rail service as RAPIDX.

A. In comparison to the existing metro, bus, and railways services like Vande Bharat, the RRTS service is positioned differently.

RRTS is designed as a high-speed, high-frequency, and high-throughput rail-based system specifically for regional or inter-city commutes with longer travel lengths, typically 50 km or 100 km. The distances between RRTS stations are around 5-7 km, which is significantly longer compared to Metro systems, where the distances are around 1-1.5 km. This makes RRTS a distinct product that caters to the specific requirements of regional commutes.

Unlike traditional railways, RRTS does not operate on a fixed timetable or require a seat reservation. Instead, it is a high-frequency urban commuter service on customised alignment with trains available every 5 - 15 minutes, and the frequency can be increased if needed. In contrast, even modern railway service like Vande Bharat, which have similar speeds, serve a different purpose as they cover much longer inter-city distances and operate timetabled with services once or twice a day only on the existing infrastructure.

It is important to note that the existing urban transit systems such as metro and bus systems will complement the RAPIDX services by acting as feeders for commuters' journeys.

The brand name - RAPIDX is easy to read and simple to pronounce in various languages. The name 'RAPID' has already been adopted and is loved as their own transit system by the citizens across the region. In addition to signifying speed and progress, the 'X' in the name denotes next generation technology and the new-age mobility solution. It also represents youth, optimism, and energy.

Q. The industry and especially the rail fraternity is all praise for the many 'firsts' in terms of technology being implemented in the RRTS project. Please tell us more about the RRTS technologies.

A. RRTS, which will bring in India's first Regional Rail, is an entirely new project with no precedents in the country. To make this project feasible and to provide the best quality services to the commuters, it was imperative to opt for technologies and practices which are being adopted for the first time in the country or what you call 'firsts'.

Despite using these first-of-its-kind technologies, we have prioritised the Make in India initiative. Modern RRTS trainsets with design speed of 180 kilometres per hour, are being manufactured in Savli, Gujarat.

To enable seamless commuter movement without train changes, we implemented interoperability among the three priority RRTS corridors. This was made possible through the adoption of hybrid Level 3 technology of the European Train Control System (ETCS), a highly advanced signalling and train control system. This deployment combines the latest ETCS Standard, Interlocking, Platform Screen Door (PSD), and Automatic Train Operation (ATO) over Long-Term Evolution (LTE) radio, a first-of-its-kind integration in the world. This is also being implemented under MII guidelines. Furthermore, the contract conditions were designed

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to be vendor agnostic, thereby creating more competition, leading to competitive pricing and easy availability of spares in the future.
For track technology suitable for speed of 180 Kmph, NCRTC has selected precast ballastless slab track technology (Austrian technology by M/s Porr). This high-performance, low maintenance ballastless track technology is also new in the country. We adopted an innovative approach in getting this technology by purchasing its intellectual property rights (IPR) which allowed domestic contractors in the installation. Moreover, this strategy ensured that advanced technology is available to the Indian industry for future projects.

In addition, Platform Screen Doors (PSDs) have been designed and developed indigenously for the first time in the country by NCRTC and a complete set has been installed at one platform in the priority section. This obviates the need for importing PSDs, predominantly being done from China.

Q. The RRTS project is being implemented for the first time in India. The speed and efficiency with which NCRTC is progressing under your able leadership are commendable. Please share some insights.

A. This topic is close to my heart and I have focussed upon it personally since inception. Broadly speaking, there have been two key elements in ensuring timely implementation of RRTS. First, early identification and mitigation of risks and second is leveraging digital tools in project management.

As a risk mitigation strategy, we decided to take up all enabling works such as utility shifting, road widening etc. through the respective utility owners as deposit works or through independent contracts much before on-boarding of the main civil contractor to ensure encumbrance free ready-to-construct ROW to civil contractors. This helped in minimising the risk of time and cost overrun.

Extensive use of techniques like pre-casting have also helped us in achieving this speed of execution. The majority of the RRTS construction is being done at the median of a heavily operational highway. Pre-casting helped us in minimizing the in-situ construction, resulting in reduced deployment of project implementation and at the same time has dashboards for higher management reviews.

We are also supporting our peer organisations including Bangalore Metro (BMRCL) and Haryana Rail Infrastructure Development Corporation (HRIDC) with the implementation of SPEED for their projects.

Q. With so much emphasis on the development of critical infrastructure including the logistics sector, have you faced any difficulty in the availability of credible contractors, equipment, and technical manpower?

A. If you look at the larger picture, the infrastructure industry in the country is quite mature. However, the scale and pace of capital expenditure by the Government in this sector has been unprecedented over the past few years. The industry has not been able to grow in terms of trained manpower and equipment at the same pace.

However, our strategy has been to do thorough research/ benchmarking and extensive industry interactions before the tender stage with an objective of assessing the industry capability and experience. This allowed us to design suitable tender conditions in line with the system/ technology requirements. As a result, we are working with the best available national and international contractors including L&T, AFOCNS, Alstom, Deutsche Bahn, SYSTRA, AYESA, Italferr and others.

As a core principle, we have always worked with our contractors as partners and have helped them in timely availability of drawings, clear sites and quick decisions. Though there had been a sharp manpower shortage and disruptions in supply chains during the pandemic, we worked with our contractors to find out solutions with minimal impact on the pace of implementation.

Q. Any other innovative initiative adopted in this project that you would like to share with our readers?

A. Certainly, I would like to mention two pathbreaking initiatives that we have undertaken to bring in private

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sector efficiency in the operation and maintenance of RRTS.

Through an international competitive bidding process, we have selected Deutsche Bahn (DB) RRTS India for 12-year comprehensive O&M of RRTS. DB RRTS India is a subsidiary of Deutsche Bahn AG, the national railway operator of Germany. The scope of activities in this contract includes operation and maintenance of the RRTS system including track system, signalling and E&M excluding maintenance of rolling stock, automated fare collection (AFC) and civil structures. This contract has been awarded on gross cost basis thereby allowing us to have visibility of O&M cost over a long-term and enabling us to work for financial sustainability of the system. For the first RRTS corridor, DB will work with their Indian team which will be supported by their core German team members.

This leapfrog initiative will undoubtedly pave the path for the transfer of knowledge, best international practices, and managerial services; boost domestic capacities in the sector having a multiplier effect; enhancement of existing skill sets of local engineers; optimize performance of the operator through a system of incentives and penalties; and assist in realizing GOI's long-term goal of brownfield monetization of infrastructure assets due to predictability and transparency of O&M costs. This is the first contract of its kind in the country in line with the vision of the Metro policy 2017 which envisages and encourages Public Private Partnership to capitalize on the resources, expertise, and entrepreneurship available in private sector.

Another innovative step that we have taken is bundling the 15-year maintenance of rolling stock with its supply contract which has been awarded to Alstom. Since the rolling stock of this project is unique and has never been used in India before, we wanted to ensure that their maintenance is being efficiently taken care of. This strategy has not only allowed us to optimise the lifecycle cost of the rolling stock but also transfer of knowledge and best practices to the country.

Successful operation of these two contracts will bring in a paradigm shift in railway industry in the country and improve the efficiencies in the operation and maintenance of rail-based assets with cost optimisation.

Q. With the accident at Balasore, Rail safety is again under focus. Have any special safety measures been incorporated in design, maintenance and operational aspects, and recruitment/ training of manpower for RRTS different from IR and Metro systems?

A. RRTS system has its own specific safety protocols and standards, in addition to compliance with the general rules mandated by the regulatory authorities. The system has undergone rigorous safety assessments during the design, planning and execution phases by external International Independent Safety Assessors and regulatory authorities. The system has incorporated technologies such as the most advanced signalling systems, automatic train control systems, train protection systems, and other safety mechanisms to minimize the risk of accidents. All control mechanisms of the systems are centralised and secured access is ensured during the system operation and maintenance phase.

Maintenance and operational procedures are developed with inputs from the international operator to ensure safe and reliable operations. These procedures include multilevel authorization for any manual activity, regular inspections, maintenance schedules, and adherence to safety guidelines imbibed in spirit.

Recruitment and training of personnel also play a vital role in ensuring rail safety. Specific training programs have been implemented to equip workforce with the necessary skills and knowledge related to operation, maintenance, and emergency safety procedures.

Q. Is the fare structure going to be commensurate with the investment that has been made in the project? Is there any proposal to generate non-fare box revenue? Also, share some details of the new-age fare collection systems you may have adopted for RAPIDX service.

A. Urban transit projects including RRTS are sanctioned on the basis of economic benefits accruing to the society. No rail-based passenger transit system can recover its investment through fare box alone. Even in the case of Indian Railways, passenger business is cross subsidised by freight business despite such high passenger traffic.

A fine balance of guiding principles of ridership maximization, revenue maximization, fare of other competitive modes, etc. has been used to arrive at the fare structure for the Delhi Meerut RRTS. Various national and international urban rail systems have been studied comprehensively to understand the practices related to per-km fare, fare structures, fare differentiation and different fare products, and exhaustive analysis have been undertaken of public and private modes operating along the corridor (metro, bus, train, Ola, Uber, autorickshaw, cab, car, 2-wheeler).

Yes, NCRTC has adopted a multi-pronged approach to identify various non-farebox opportunities/ instruments to generate non-fare box revenues. These include value capture financing, land monetisation, commercial exploitation of air rights over buildings/ structures, property business, etc. Once the whole corridor is operational, we intend to generate revenue through logistics also.

We have adopted Automatic Fare Collection (AFC) system for Delhi-Meerut RAPIDX services. In line with the Government of India mission, the AFC system for RAPIDX services is compliant with National Common Mobility Card (NCMC) open loop system, from the very first day, to enable commuters to move seamlessly from one transit mode to another. In addition, AFC will offer QR Code-based ticketing which includes digital QR generated via RAPIDX Connect Mobile Application or paper QR based tickets generated via ticket vending machines (TVMs) at the stations. RAPIDX stations have the first UPI-enabled TVMs which are also equipped with a credit/debit/ pre-paid card reader compliant with RuPay standard for non-cash payment of transactions.

Q. With the experience gained by your organization in this field of intercity rapid transit, are you looking at mentoring other such projects in the country, particularly around other mega cities just as DMRC did for metro projects in other various cities?

A. In the last few years, while implementing the first RRTS corridor, we have gained expertise and developed innovative solutions required for such large-scale infrastructure projects. Since the beginning of the project, we have been documenting in detail all our strategy, processes, and protocols. These would prove to be very helpful for the replication of similar projects across the country. NCRTC is keen on sharing the knowledge gained and expertise with other organizations for the implementation of such complex and large-scale transport infrastructure projects in future.

In fact, we are already working with Bangalore Metro and Haryana Rail Infrastructure Development Corporation (HRIDC) to support them to adopt and implement our project monitoring technology-tool SPEED. Asian Development Bank (ADB) and World Bank are also closely working with NCRTC to see how they can leverage NCRTC's innovation and expertise for other projects being funded by them in the country and across the globe.

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