



# BETTER, FASTER AND LIGHTER

New international players are in talks with the Indian government to help build better and savvy metro rails.

BY JAYASHREE KINI-MENDES

Over the last few years, Metro Rail projects have advanced rapidly in India. More state governments are now talking of constructing one within their respective states thus giving it that edge that metros share. Last month, the proposed metro rail project for Vijayawada and Visakhapatnam moved forward with the central government giving its nod to the AP government to seek international funds to execute the ambitious work. The Japan International Cooperation Agency (JICA) has also agreed in principle to fund the metro rail projects.

In order to boost the activities of redevelopment, modernisation of railways in India has been in dire need for some time. "An efficient and fast railway network is critical for India. The Indian government must seek out the best technology available to meet growing demand arising from accelerating economic growth & improving service quality," says Mukul Gupta, MD, EcoEarth Solutions OPC.

Noting a few points in terms of how metro rail projects

coming up in newer states can be done differently, Priyanshu Singh, regional general manager, Honeywell Building Solutions, says, "Projects should be conceived along with operations and maintenance (serviceability of the system integrator/OEM) to ensure the quality life cycle management of the infrastructure. The integration systems/platform should be globally certified such as CMMI level 5, ISO 19770-1 to ensure quality, reliability and sustainability of infrastructure. And, finally, the newer projects should propagate advance technologies delivered at a value and not just L1 pricing. In other words QCBS (Quality & Cost Based Selection) should be a preferred vendor selection methodology in lieu of cost based vendor selection."

Most companies participating in metro rails are also of the opinion that the concept of lifecycle cost instead of first acquisition asset procurement cost should be given more importance to reduce the total cost of ownership. "Metro operators for small city projects should explore the possibility of restricting their role as 'operators' and outsource the 'maintenance'

## METRO RAIL

Technology scaling plays an important role in running a smooth rail network.



Global rolling stock manufacturers offer some new models of trains in India.



A view of the metro rail station in Delhi.

with the concept of total cost of ownership, to make the overall system more efficient and cost effective," says Harsh Dhingra, chief country representative and whole time director, Bombardier Transportation India.

Raghav Chaudhari, head, business development, Motorola Solutions India, says that radio communication is an essential requirement for metros. Radio communication is required not just for real time communications between driver, station controller and line controller but also among various support staff like security, depot, operations & maintenance, etc. TETRA (TErrestrial Trunked RAdio) is a digital radio trunking technology deployed worldwide for such radio communication requirements in metros. TETRA operates in licensed radio frequency band and provides secure, spectrally efficient, integrated voice and data communication platform to support round the clock metro operations. In India, TETRA is typically deployed in 380-



PROJECTS AND O&M  
GO HAND-IN-HAND TO  
ENSURE LIFECYCLE  
MANAGEMENT OF THE  
INFRASTRUCTURE.

PRIYANSHU SINGH





Offering a revenue model to concessionaires will ensure participation from more companies.

### PERMANENT MAGNET SYNCHRONOUS MOTORS

Traction systems as the 'heart' of rail transit trains determine the power quality, energy consumption and control characteristics of trains, and are also responsible for train economy, comfort and reliability. Permanent magnet synchronous motors have advantages of high efficiency and high power density. To develop the permanent magnet synchronous motor traction systems is not only upgrading of rail vehicles 'engine', but also promoting train traction system technology revolution.

Rail industry leading countries such as China, Germany, France and Japan have launched permanent magnet synchronous traction system research, entered the stage of engineering and commercial application, and formed technical models of their own characteristics.

Zhuzhou CRRC Times Electric Co., Ltd. (TEC) is one of the earliest companies to have started researches for this. TEC started research and production in 1995 and has achieved much in terms of technologies and manufacturing processes. These have been applied to high-speed EMUs, metro trains, low-floor trams and other vehicles. For metro trains with 250kW permanent magnet synchronous traction motor, power density increased 30%, efficiency rate is over 97% and energy consumption reduces 15% as compared to asynchronous motors.

- Hao Tian, chief representative, India, Zhuzhou CRRC Times Electric

400 MHz or 410-430 MHz bands for such closed group/captive radio users.

Sanjay Gautam, national sales director, IND, REHAU Polymers, says, "The major problem so far has been the prolonged efforts to acquire land after project initiation. This not only leads to delay in setting up the project but also results in project costs overrun that further delays the project progress as re-approvals have to be obtained for higher project costs and these are time consuming. The prime focus should be to involve the local bodies at the lowest level and to make them aware of the need for setting up the metro rail project for the benefit of community as a whole and take their views and concurrence on land acquisition before fixing the coordinates of the metro rail track."

Dinesh Pardasani, partner, Link Legal says that metro rail project can be implemented in the following manner: Vide a PPP model by the concessionaire being provided incentives that would enable them to earn some revenue. For instance construction of shopping areas/malls on or near metro stations; or, alternatively, the government could fund the construction and outsource the operation and management on a profit sharing basis to a private party.

In terms of new technologies, Singh of Honeywell says, that command and control suite provides a comprehensive view of the facility with ability to monitor multiple sites through enterprise dashboard, resolve queries using incident work flow and remote view using the video wall. It ensures faster resolution of incidents/alarms and protects the site with disaster recovery. Video management system provides remote view of premises,



Wide use of aluminium alloy has been made in railway stock.

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**MUKUL GUPTA**

flexibility to add security equipment, redundancy and mobile interface for operators to monitor and resolve incidents in real time/on the go. State-of-the-art emergency management system using SIL3 design ensure faster disaster management in case of emergency, increase uptime of the site and reduced life threatening incident impact.

Another company that has a comprehensive product portfolio for urban railway networks is Getzner. Its bear-

ings for mass-spring systems provide particularly effective protection against vibrations and noise for people living close to railway lines. In India alone, Getzner has installed mass-spring system in three major metros in India. The new Getzner Embedded Rail is an optimised vibration protection system for urban transport especially for the light railway system like trams.

Gupta says that sandwich structures (especially honeycombs) have been used successfully for three decades in aerospace industry. Only recent technological advances and price decline have made applications to railway sector feasible and attractive. Wide use of aluminium alloy has been made in railway stock, the reason being again their light weight and remarkable durability. Sandwich structures are presently used in the rail industry for a number of purposes: As energy absorbing material (for buffers, fenders and driver protection); for carriage interior panels; and as structural panels for the separating floor of coaches.

Considering the range of technology and products available for metro rails, it should not be hard for India to construct world-class metro rails. **cv**