To the Readers

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Because of its low carbon dioxide emission and high energy efficiency compared to automobiles and airplanes, railways have been recognized as an important transportation system, therefore many nations such as the United States, India, Malaysia, Singapore, Thai, and Vietnam are now actively studying and promoting the development of high-speed railways and urban railways. Overseas development of the railway technology and system of Japan that has realized a safe, stable, and efficient transportation, with which there is no other comparable system in the world, will not only contribute to economic and social development of the concerned country but also enhance the relationship between nations. In addition, it will lead to further succession and development of the railway technology and prosperity of the railway industry in Japan.

Railway technology is referred to as experience engineering. Among the results of study and investigation on the findings obtained through various experiences, this issue will present articles regarding: reduction of maintenance costs and labour based on massive track measurement data obtained from commercial trains; development of new stress monitoring equipment for long-term continuous monitoring of stress in steel bridges for further safe and stable transportation by Shinkansen trains, for which no external power source is required and the base price and installation expenses are significantly decreased; improvement of riding comfort based on the carbody inclination system to provide a comfortable riding experience to the passengers; and the statistical method that improves the reliability of and saves labour for rolling stock maintenance and the rolling stock with energy-saving technology are introduced. The "Topics" part introduces the overview, prototyping and test of the non-contact power supply system for rolling stock that can make us imagine the near future of railway systems. We sincerely hope this issue will contribute to the development of railway technology in various countries.

NEWS

○Groundbreaking Ceremony of Indian High-Speed Railway

A groundbreaking ceremony of the Indian high-speed railway (Mumbai – Ahmedabad, about 500 km) which will use the Japanese Shinkansen method was held at Ahmedabad, Gujarat on September 14 (local time), 2017, attended by Prime Minister Shinzo Abe and India's Prime Minister Modi. The total project cost is 980 billion rupees (approx. 1 trillion 800 billion yen), and construction will start in 2018 and scheduled to be complete in 2023. The ceremony was also attended by East Japan Railway Company's president Tetsuro Tomita, executive officers of companies concerned, and representatives of group companies.

The high-speed rail project plans to connect the section at a maximum speed of 320 km/h, in about two hours by the fastest train. Twelve stations are planned to be constructed in the section. This time, the construction of a training facility for the high-speed railway has started, where driving simulator training and technical guidance of maintenance are to be conducted.

The East Japan Railway Company will support National High-speed Rail Corporation Limited, who is in charge of the railway. Specifically, they will provide general consulting services (design, order support, construction management, etc.) mainly operated by Japan International Consultants for Transportation Co., Ltd., and technical support and human resources development for construction and operation body.

○The Next Car "N700S" for Shinkansen

The Central Japan Railway Company announced on September 28, 2017 the next car "N700S" for the Tokaido Shinkansen line and Sanyo Shinkansen line, which is a fully changed model since the N700 series and introduces the product of technological development which has been newly verified. N700S employs a new bogie with high performance and light weight, and a pantograph that improves current collection efficiency and achieves maintenance-saving, which are expected to exert great effects in the improvement of riding comfort.

The new bogie succeeded in significantly reducing its weight by approx. 75 kg per bogie, by reducing the number of reinforcement members and welding points based on re-examination of the lower plate thickness of the bogie frame structure.

From the perspective of riding comfort, "full-active vibration control equipment" is installed. It is a combination of a semi-active damper, a small motor, and a pump, and it aims to halve swaying in tunnels.

Concerning the pantograph, the company developed flexible contact strips. Since contact strips "bend" within the range of about 1 cm, it not only significantly improves followability and current collection performance, but is also effective in prolonging the life of contact strips.

The company plans to complete a verification test train consisting of 16 cars in March 2018 to conduct various tests, and put commercial cars (mass production cars) into service in FY2020.

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