FOR IMMEDIATE RELEASE

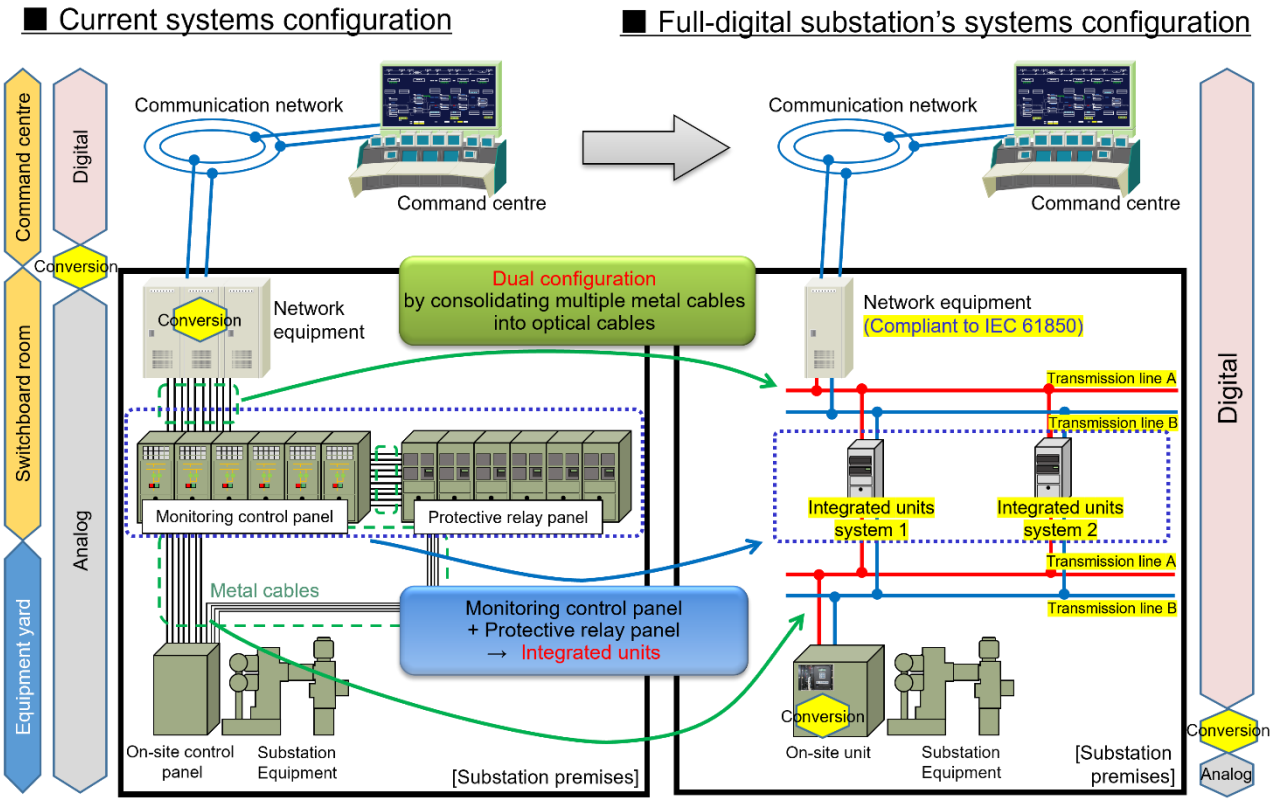
Introduction of a full-digital substation system

- East Japan Railway Company (JR East) and Hitachi, Ltd. (Hitachi) will jointly develop a full-digital substation system in fiscal 2025.
- The system will enable dual configuration of transmission lines and of protection and control functions in the substation premises, enabling the stable transportation of railways through the stable supply of electricity. Furthermore, it will improve efficiency in construction by reducing the size of facilities.
- JR East and Hitachi will continue to work together to achieve stable power supply and digitalization of substations.

1. Overview of the full-digital substation systems

The current protection and control system were configured to require one metal cable for each piece of information to be delivered in the substation premises, making it difficult to achieve duplexing. The full-digital substation system that will be introduced in the future will utilize fibre optic technologies to enable a single optical cable to transmit many pieces of information from network equipment to on-site units, and make duplexing easy. JR East and Hitachi jointly examined the system configuration and operation methods of the substation and conducted field tests[*1]. We have decided to introduce the system into the operating facilities as we are ready to put it into practical use.

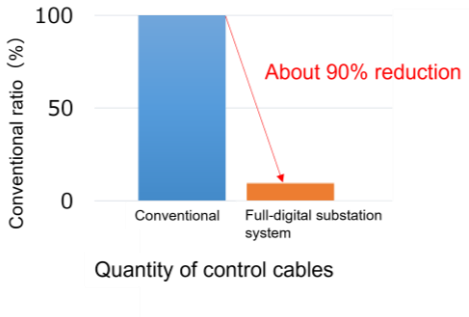
*1 Field tests: Test equipment was installed at the substation of JR East, and communication status was confirmed under the actual environment.



2. Features of the full-digital substation systems

(1) Stable supply of electricity through digitalization of substations
We have achieved complete dual configuration of transmission lines and of protection and control functions in substations. Therefore, even if a failure occurs in one equipment within the substation premises, the other equipment can continue to operate, providing a more stable supply of electricity than before.

(2) Saving space and improving efficiency of construction
By consolidating and downsizing the monitoring control panel and the protective relay panel into an integrated unit (developed by Hitachi), we have significantly reduced the number of panels. In addition, by adopting fibre optic technologies that does not require a large number of control cables from the network equipment to the on-site units, the number of control cables was reduced by approximately 90%. As a result, space saving and improving efficiency of construction are realized.



(3) Adopting international standards
By adopting the international standard IEC61850*2 to this system, JR East will reduce the risks of introducing new system and ensure business continuity. This is the first introduction of a digital substation system based on IEC61850 by a domestic railway company.

*2 An international standard developed by the technical expert committee of the International Electrotechnical Commission (IEC), and international standardisation organisation that develops international standards in the field of electrical and electronic technology. It specifies the communication networks and systems required for power utility automation.

3. Commencement of use

It is scheduled to be installed at the Koiwa AC substation from fiscal 2025 onward. We plan to gradually install equipment from fiscal 2024, start using 22,000 volt equipment in fiscal 2025, remove old 22,000 volt equipment and install 66,000 volt equipment in fiscal 2026, and start using 66,000 volt equipment in fiscal 2027.

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