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Participation in Smart Community Demonstration Project in Slovenia

Tokyo, December 3, 2014 --- Hitachi, Ltd. (President & COO: Toshiaki Higashihara), Mizuho Bank, Ltd. (President & CEO: Nobuhide Hayashi), Mizuho Information & Research Institute, Inc. (President & CEO: Junichi Nishizawa), and THE Power Grid Solution Ltd. (President and Representative Director: Kiyonori Morita) today announced that they have been selected to carry out a feasibility study for a smart community demonstration project in the Republic of Slovenia being run by the New Energy and Industrial Technology Development Organization (NEDO) as part of its international project for technologies and systems related to energy consumption efficiency. The demonstration project includes a feasibility study running from December 2014 to September 2015 that will be conducted jointly by Hitachi and the three other companies, with Hitachi acting as the project leader. Based on the results of the feasibility study the project will move to the three-year demonstration phase.

The demonstration project is a joint project between Japan and Slovenia, with participation by local companies and support from the Slovenian government. The feasibility study will include working with Slovenian companies to determine details such as the scope of each technological trial and where they are to be conducted in demonstration phase.

Based on EU directives that include reductions in the emission of greenhouse gases, Slovenia has set targets for producing 25% of its total energy from renewable sources and for improving energy efficiency by 20%, both by 2020.

Meanwhile, given the aging distribution network infrastructure and the increasing demand for electric power due to economic growth, it is anticipated that capital investment in distribution network will increase. Similarly, the likely impact on the distribution network of the installation of large amounts of renewable energy is also creating a need for technology that can provide sophisticated distribution network management.

The demonstration project aims to ensure the stability of the distribution network and to achieve efficient operation by utilizing advanced Japanese technologies in the field of power distribution and ICT^{*1}, by installing a DMS^{*2} that can minimize the capital investment needed to provide voltage optimization and distribution network monitoring, with benefits that include measures for dealing with the installation of renewable

energy. The project also aims to establish DR^{*3} solutions to minimize peak demand and realize local production and consumption of energy by utilizing xEMSs^{*4} that interact with DMS.

The following lists the preliminary activities in the project as well as background information about the four participating companies. Further details of the activities will be determined based on the feasibility study.

- (1) Development and demonstration of cloud-based integrated DMS which can be used by multiple electricity distribution companies (Hitachi, THE Power Grid Solution)

The demonstration project will include the technology development and demonstration of a cloud-based integrated DMS that can be used jointly by a number of electricity distribution companies in Slovenia. In addition to functions to visualize distribution network information such as voltage, current, the integrated DMS also includes a voltage and reactive power optimization function to regulate the voltage fluctuations that accompany the connection of renewable energy, a fault detection function to ensure a faster recovery from outages, and a function for identifying the location of faults on the distribution network and for disconnecting, shutting down, and restoring the faulty section.

- (2) Development and demonstration of DR solution that interacts with xEMSs (Hitachi)

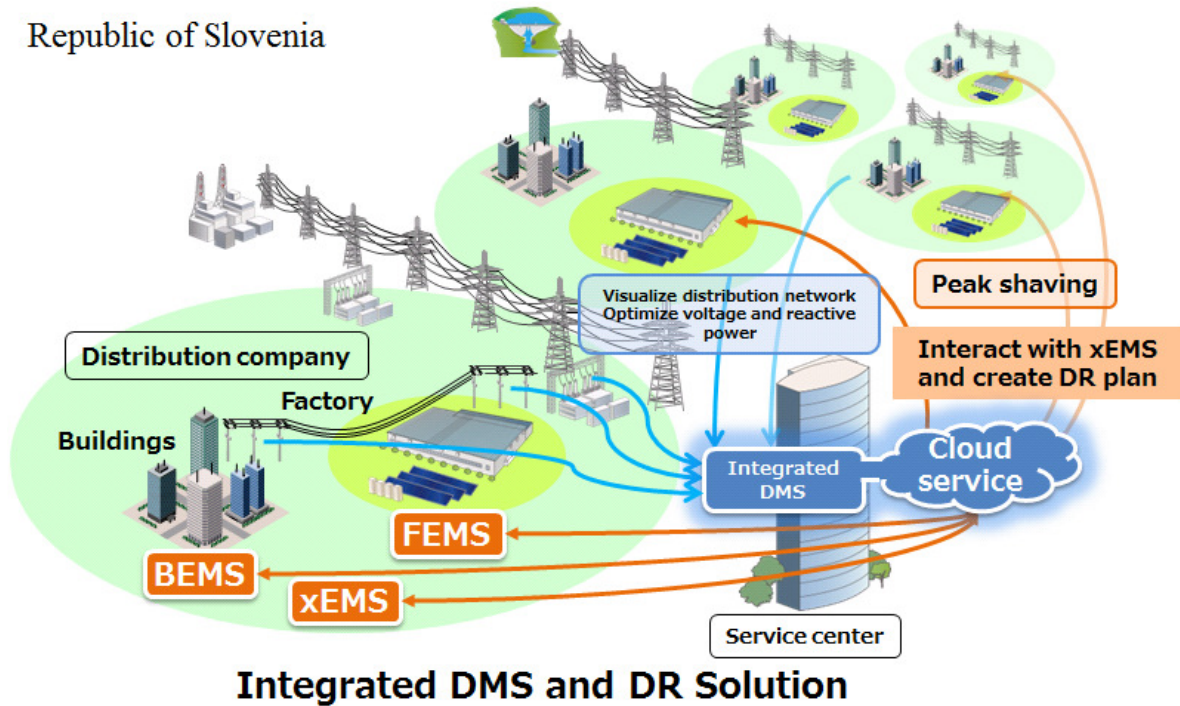
The demonstration project will include the technology development and demonstration of a DR solution that will minimize peak demand and encourage local production and consumption of energy by interacting DMS which operated by electricity distribution companies and other xEMSs such as BEMSs^{*5} installed by consumers.

- (3) Establishment of business models (Mizuho Bank, Mizuho Information & Research Institute)

In order to establish sustainable operation of the integrated DMS and the DR solution described above in Slovenia, feasible business models must be proposed and tested. Mizuho Bank and Mizuho Information & Research Institute will jointly conduct survey around utility industry and its related, regulatory and environmental requirements to propose business structure. This business research will also include following proposal of necessary regulatory changes to governmental authorities, and feasibility evaluation of the business models. In addition, a study to extract issues raised for extending the project to other countries with similar electric power systems to Slovenia will also be conducted.

■ System Overview

Republic of Slovenia



*1 ICT: Information and communication technology

*2 DMS: Distribution management system

*3 DR: Demand response (The modification of usual electric power demand patterns by using incentives designed to encourage consumers to reduce their power use at certain times, such as when supply is insufficient.)

*4 xEMS: X-energy management system (a system that uses IT for the management of electric power, gas, and other forms of energy)

*5 BEMS: Building-energy management system

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