

FOR IMMEDIATE RELEASE

JWD, Toyota, Panasonic Electric Works and Hitachi start Smart Grid Demonstration Project in Rokkasho Village

Tokyo September 15, 2010 --- Japan Wind Development Co., Ltd. (TSE MOTHERS: 2766, "JWD"), Toyota Motor Corporation (NYSE:TM/TSE:7203, "Toyota"), Panasonic Electric Works Co., Ltd. (TSE:6991, "Panasonic Electric Works") and Hitachi, Ltd. (NYSE:HIT/TSE:6501, "Hitachi") announced the start of a smart grid demonstration project on September 16, 2010 in Rokkasho Village, Aomori Prefecture, Japan. The project aims to verify technologies that allow for the efficient use of energy toward the achievement of a low-carbon society. The project will use only renewable energy sources, such as the world's first wind power stations with dedicated large-capacity batteries and photovoltaic power-generation systems.

Building smart grids requires meeting the electricity supply conditions (power sources and transmission lines) and communications infrastructure of each specific country and region, as well as introducing such elements as renewable energy generation facilities, electric vehicles and plug-in hybrid vehicles, storage batteries, EcoCute (an electric water heating and supply system) and heat storage units. Currently, possibilities in new electricity distribution methods and vast advances in information and communications technology (ICT) are raising the prospect of a shift from today's conventional supply-demand adjustment approach to one that optimizes both supply and demand.

JWD, Toyota, Panasonic Electric Works and Hitachi have built an isolated grid--an electricity network independent from the main grid--in Rokkasho Village, which has favorable conditions for wind power generation and has Japan's largest wind power generation capacity. The companies will work jointly to develop and demonstrate technologies for optimizing supply and demand effectively.

1. Project Overview

Planned timeframe: September 2010 to July 2012

Location: Oaza Obuchi, Rokkasho-mura, Kamikita-gun, Aomori-ken (Refer to overview)

2. Features

The four companies have built an isolated grid that emits no CO₂ by using the world's first wind power stations with dedicated large-capacity storage batteries. Aiming for quick commercialization of the system in Japan and overseas, the demonstration project will integrate supply-side electricity generation using renewable energy with demand, while conducting energy management for the entire area concerned to demonstrate optimization of energy efficiency.

Specifically, the project will verify the more-efficient use of energy by creating scenarios that can only be demonstrated with an isolated grid. The scenarios will be based on assumptions regarding electricity conditions (power sources, demand and

supply-demand balance) and regional conditions (remote island, weather and other specific conditions) in target countries and regions (Japan, Europe, emerging nations, resource-rich countries, etc.).

- An isolated grid uses renewable energy (wind power generation, photovoltaic solar power generation) as the supply source
- Verification based on data from real households
- Allows simulation of a local electric power market by being independent from the main power grid
- Allows various forms of operation by installing energy storage equipment on both the supply and demand sides

3. Main Facilities

- Rokkashomura-Futamata Wind Power Station
- Control Center: JWD, Hitachi
JWD, Hitachi will develop a monitoring and control system to link overall supply and demand, power generation and energy storage. (The control center is located at the training center of EOS Engineering & Service Co., Ltd.)
- Smart houses: JWD
Six smart houses have been built in the North District of Obuchi Lake Town, a residential and commercial subdivision in Rokkasho Village, to collect real household environment data for testing.
- Private distribution line (Approx. 8 km, 6.6 kV power cable and optical fiber for communications): JWD
A dedicated private distribution line has been installed between the Rokkashomura-Futamata Wind Power Station and the North District of Obuchi Lake Town
- Energy management system: JWD, Toyota, Panasonic Electric Works
Three types of home energy management systems (HEMS) are installed in smart houses.
- Automated metering system: Hitachi
Smart meters will be installed in smart houses and other power consumption locations.
- Photovoltaic power generation system (100 kW): Hitachi
- Storage battery (NAS batteries 100 kW-class): JWD
To adjust supply and demand in the grid, a storage battery has been installed as a “HUB-battery” for local use
- Prius Plug-in Hybrids (8): Toyota
- Plug-in hybrid chargers: Toyota

4. Experiments

- The effectiveness of various demand adjustment techniques and energy management system functions will be assessed under environments that simulate respective electricity conditions in selected target countries and regions.
- The project aims to develop technology for power supply systems for responding to various needs, such as CO₂ reductions, stabilization of power supplies or efficient utilization of renewable energy.
- As a means of adjusting supply in order to efficiently use electricity generated on the

demand side, electricity storage and discharge will be controlled at a high technological level based on the status of renewable energy power generation in the demonstration system.

On the supply side, when there is a surplus of electricity generated by renewable energy, it will be stored in the HUB-battery and heat storage units. Conversely, when there are shortages, the HUB-battery will supply electricity.

The project will carry out operational adjustments of the HUB-battery and heat storage units by controlling energy storage based on power generation projections. As a means of making adjustments on the demand side, the project will use one method or a combination of several methods, such as inducing demand through the provision of information and inducing demand by price and demand response. Also, power trading between smart houses will be conducted as a part of grid operations.

Activities of Participating Companies

JWD

JWD will build a CO₂-free electricity supply and demand control system to address the inherent instability of renewable-energy-based power generation. The system will optimize supply and demand by using a HUB-battery and controlling demand (smart houses). JWD will install energy management systems in smart houses for planning and controlling electricity usage based on variables, such as projected power generation and residents' demand patterns, as well as developing systems for coordinating with the supply side without sacrificing convenience.

Toyota

Toyota will test the TOYOTA Smart Center (TSC) system for creating and controlling smart houses, PHV operation control systems and electricity consumption/storage. The TSC controls electricity storage in batteries and EcoCute electric heat pump water heaters, taking into account consumption patterns and electricity supply loads from electricity consumption information. Moreover, Toyota will test TOYOTA Smart Vision (TSV) for communities as a tool for visualizing electricity conditions, HEMS monitors for users, smartphones and on board (in-vehicle) "Display-Audio" units.

Panasonic Electric Works

Panasonic Electric Works will conduct surveys and examine measures aiming to meet the needs of the electricity supply side while also delivering comfort for residents. The measures will utilize HEMS, which link to grids in smart grid networks that use unstable renewable energy as the main supply source. Panasonic Electric Works will also test the energy-saving benefits of using HEMS together with airtight and super-insulated houses in cold regions, and the responsiveness of HEMS systems in cold regions.

Hitachi

Hitachi supplies power grid control technology, Advanced Metering Infrastructure (AMI) and 100kW photovoltaic power generation system (PV system) for this experimental demonstration. These technologies have been researched and developed by Hitachi over a decade and are expected to contribute to optimization of renewable

energy usage for the future through this demonstration. Hitachi will develop a control center to conduct tests and verify the control aspects of energy storage devices and local power load in order to develop more efficient control technology of the communal HUB-battery. Specifically, Hitachi will monitor fluctuating current flow at the interconnected points to wind power stations, PV system output and supply-demand at smart houses through AMI.

Participating companies

Main members

Japan Wind Development Co., Ltd.
Toyota Motor Corporation
Panasonic Electric Works Co., Ltd.
Hitachi, Ltd.

Project adviser

SPARX Group Co., Ltd.

Cooperation companies

EOS Energy Management Co., Ltd.
EOS Engineering & Service Co., Ltd.
The Energy Strategy Institute Co., Ltd.
Sekisui House, Ltd.
DENSO CORPORATION
Toyota Housing Corporation
TOYOTA MEDIA SERVICE CORPORATION.
Hitachi Appliances, Inc.
Hitachi Engineering & Services Co., Ltd.
Hitachi Information & Control Solutions, Ltd.
Futamata Wind Development Co., Ltd.

Municipal cooperation

Rokkasho Village Municipal Government

About Japan Wind Development Co., Ltd.

JWD (Japan Wind Development Co., Ltd.), headquartered in Tokyo, Japan, owns and operates 184 wind turbines that generate electricity sold to local utility companies and other industrial users. JWD is aggressively investing in wind resources throughout the world. JWD's global network of offices and wind power plants has expanded rapidly in the last decade. Furthermore, JWD is focusing on obtaining technological knowledge through experimental projects with the most-efficient control systems for power demand/supply adjustment. JWD intends to apply intellectual properties from the Rokkasho Village demonstration project to renewable energy projects globally. For more information on the company, please visit the company's website at

<http://www.jwd.co.jp/>.

About Toyota Motor Corporation

Founded in 1937, Toyota City, Aichi Prefecture-based Toyota Motor Corporation is one of the largest automakers in the world, producing a full range of vehicles, from minivehicles to large trucks. Global sales of its Toyota and Lexus brands, combined with those of Daihatsu and Hino, totaled 7.2 million units for the year ended March 31, 2010. Toyota is a leader in environmentally friendly vehicles, with cumulative global sales of its hybrid vehicles marking 2.7 million units as of the end of August 2010. As of the end of March 2010, besides its facilities in Japan, Toyota has 51 manufacturing companies in 26 countries/regions. Toyota employs about 320,000 people worldwide (on a consolidated basis), and markets vehicles in more than 170 countries/regions.

About Panasonic Electric Works

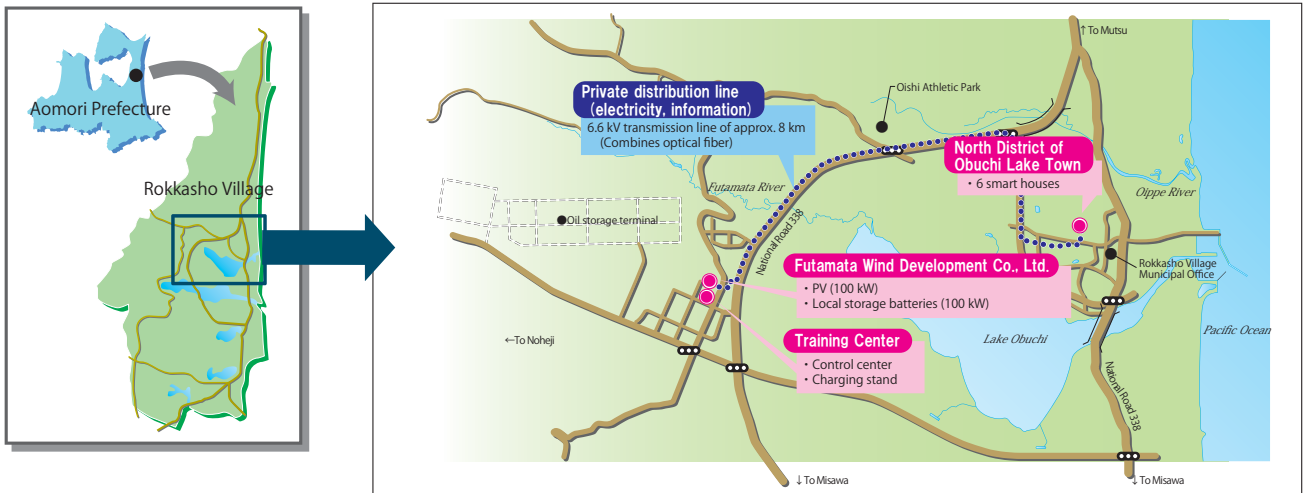
Panasonic Electric Works Co., Ltd. (PEW) traces its roots to the company started in 1918 by Konosuke Matsushita. This forerunner of PEW started out by producing an enhanced attachment plug. Thereafter, PEW expanded the scope of its business beyond electrical construction materials (lighting products, information equipment and wiring products), home appliances, building products, electronic materials and automation controls, all of which showcase its technological strengths. Based in Osaka, Japan, the company recorded consolidated net sales of 1.45 trillion yen (US\$15.6 billion) for the year ended March 31, 2010. The company's shares are listed on the Tokyo and Osaka stock exchanges. For more information on the company, please visit the company's website at <http://panasonic-electric-works.net/>.

About Hitachi, Ltd.

Hitachi, Ltd., (NYSE: HIT / TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 360,000 employees worldwide. Fiscal 2009 (ended March 31, 2010) consolidated revenues totaled 8,968 billion yen (\$96.4 billion). Hitachi will focus more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, environmental, industrial and transportation systems, and social and urban systems, as well as the sophisticated materials and key devices that support them. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>

Overview

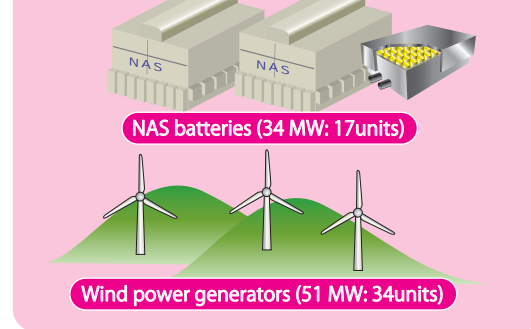
Location Maps



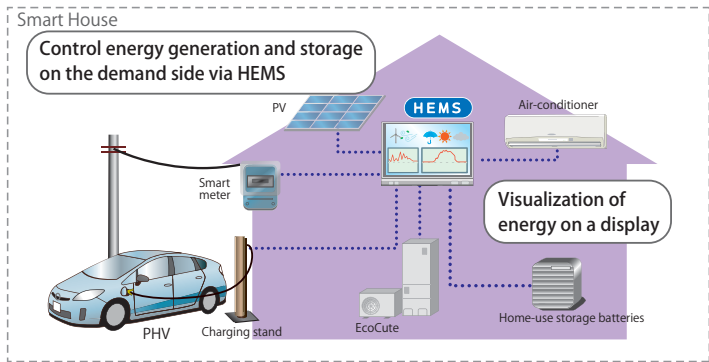
Facility Composition

Rokkashomura-Futamata Wind Power Station

Simulated core grid

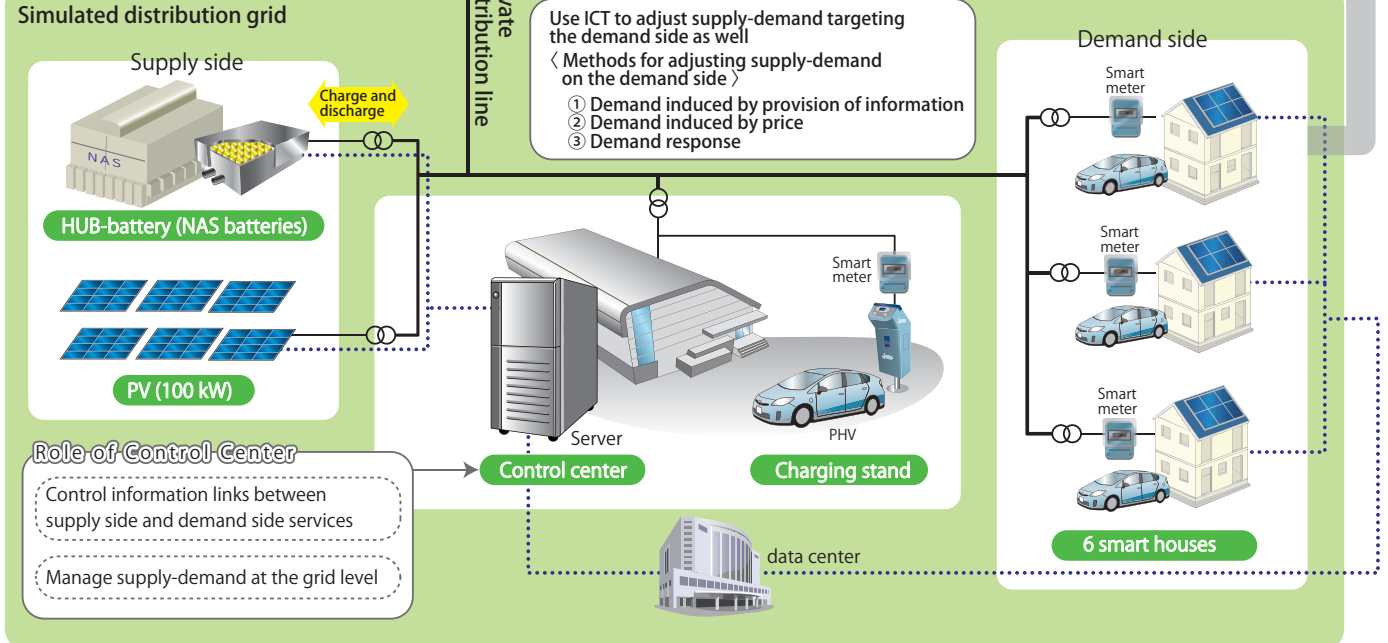


— Electricity flow - - - Information flow



Smart Grid Pilot Facilities

Simulated distribution grid



Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
