

**FOR IMMEDIATE RELEASE**

## Hitachi and ABB Sign Joint Venture for HVDC in Japan

Tokyo, June 15, 2015 --- Hitachi, Ltd. (TSE: 6501 / "Hitachi") and ABB, the leading power and automation group, today signed a formal contract to establish a joint venture company for high-voltage direct current (HVDC) transmission in Japan. Closure of the transaction is subject to customary regulatory approvals with the intention of establishing the joint venture in August. Hitachi will own 51% of the joint venture and ABB will own 49%. The new joint venture will be based in Tokyo and will provide ABB's latest technology to HVDC projects on which Hitachi is the prime contractor, taking full responsibility for all aspects of direct current (DC) systems from design to engineering and equipment supply as well as after-sales service. The intention is to contribute to wide-area electric power distribution networks in Japan by combining Hitachi's sales network, project management know-how, and quality assurance processes with leading-edge HVDC technology and system integration capability from ABB.

This strategic partnership between the two companies will contribute to the evolution of Japan's power network. Hitachi and ABB will explore further strengthening of the relationship and address opportunities to widen the scope for future collaboration.

"I am delighted with today's agreement to establish a joint venture with ABB Japan in the HVDC business in Japan. Hitachi has supported improvements in the reliability of Japan's electric power network through its participation in all HVDC projects in the country since our development commenced in 1970." Masaaki Nomoto, President & CEO, Energy Solutions Company, Hitachi, Ltd. "Through this new joint venture, our aim is to supply the best possible systems for ensuring the security of electricity supply by helping create a more robust transmission system that can enable the installation of renewable energy generation, something that is anticipated to grow."

"We are pleased to sign this agreement with Hitachi. The joint venture brings together ABB's technology and innovation heritage and leading position in HVDC with Hitachi's solid reputation and extensive experience in the Japanese market. Together we can leverage our complementary strengths to support the evolution of Japan's power infrastructure" said Tony Zeitoun, President and Representative Director, ABB Japan.

HVDC is a technology used mainly for transmitting electricity between two grid systems. The supply side power is converted from alternating current (AC) to direct current (DC) before

being transmitted, and it is then converted back to AC in the receiving side system for use. The system is ideal for long-distance transmissions due to its ability to minimize electricity losses and to its lower space requirements and construction costs. It is also well suited for interconnections between two grids different frequencies.

Driven by factors such as the growing installation of renewable energy and reforms to the electric power system, use of HVDC transmission in Japan is expected to be increasingly deployed for applications such as grid connections for offshore wind power integration and regional interconnections in the transmission grid. In particular, it is anticipated that greater use will be made of VSC-HVDC\*<sup>1</sup>, which is already widely used in global markets, in response to the difficulties associated with the use of the LCC-HVDC\*<sup>2</sup> that has predominated in Japan to date, and includes controlling reactive power or starting up an AC system when no power supply is available on the grid.

Hitachi developed LCC-HVDC in 1970 and has participated in the HVDC projects at all six sites where the technology has been installed in Japan, with a total installed capacity that exceeds 2,800 MW. It has achieved world-class levels of utilization through ongoing technology development and by supplying engineering and systems that satisfy the high levels of reliability, operating performance, and quality demanded by Japanese power companies.

ABB pioneered HVDC technology, putting into operation the world's first commercial link in Sweden in 1954, and was the first to introduce VSC technology (HVDC Light) in the 1990s. The company also holds many other world records in this technology. Over the years ABB has been awarded around 100 HVDC projects representing a total installed capacity of more than 120,000 MW, accounting for about half of the global installed base. ABB's HVDC Light solution leads the way in VSC technology; the company has delivered 15 of the 19 VSC links that have been commissioned worldwide. The new joint venture will help ensure the security of supply of high quality electric power in Japan by taking maximum advantage of the strengths of both companies.

\*1: VSC-HVDC (Voltage Source Converter High-Voltage Direct Current transmission) : A HVDC system with AC/DC converter using power semiconductor devices (IGBTs, etc.) that can be switched on and off at any time (IGBTs, etc.). There are less restrictions, compared to LCC type, as regards the power grid for its installation, and it has considerable benefits for grid stabilization, for example with respect to supplying reactive power. Since it requires no grid stabilization measures, it achieves a simpler overall configuration than LCC-HVDC systems.

\*2: LCC-HVDC (Line Commutated Converter High-Voltage Direct Current transmission) : A HVDC system with AC/DC converter using power semiconductor devices (a thyristor) that requires the passing current to be zero when off. This was the principle method used from the 1970s onward, and there are many examples of it in operation. The system configuration is simple, and the technology mature; however, its installation entails a large number of restrictions as regards the power grid, necessitating grid stabilization measures in some cases such as reactive power compensation.

\*3: HVDC Light is a registered trademark of ABB Ltd.

■ Overview of New Company

Item	Description
Name	Hitachi ABB HVDC Technologies, Ltd.
Headquarters	1-18-13 Soto-Kanda, Chiyoda-ku, Tokyo
Capital	1.4 billion yen approx. (Hitachi: 51%, ABB: 49%)
Management	To be announced
Business activities	Engineering, HVDC system study, manufacturing, assembly and testing, marketing, sales and after sales services of converter valves and control and protection systems for HVDC projects in Japan, including upgrade of existing HVDC installations in Japan
Employees	Starting with 10 employees at the time of the establishment

**About ABB Ltd**

ABB ([www.abb.com](http://www.abb.com)) is a leader in power and automation technologies that enable utility, industry, and transport and infrastructure customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in roughly 100 countries and employs about 140,000 people. ABB Japan is based in Tokyo and has been active in Japan for more than 100 years.

**About Hitachi, Ltd.**

Hitachi, Ltd. ([www.hitachi.com](http://www.hitachi.com)), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2014 (ended March 31, 2015) totaled 9,761 billion yen (\$81.3 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes power & infrastructure systems, information & telecommunication systems, construction machinery, high functional materials & components, automotive systems, healthcare and others.

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