

PRESS RELEASE

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**Experimental Research for High-temperature
Superconductive Direct-current Transmission System**

Chiyoda Corporation (“Chiyoda”), Sumitomo Electric Industries, Ltd. (“Sumitomo Electric”), Chubu University (“Chubu”) and Sakura Internet Inc. (“Sakura”) announce that the Ministry of Economy, Trade and Industry entrusted them jointly, on March 29, 2013, to undertake experimental research work for a high-temperature superconductive direct-current transmission system in Ishikari Bay New Port Area, Ishikari city, Hokkaido. A substantial part of the work was started today after the memorandum of agreement was concluded among the parties concerned.

We will construct the world’s longest experimental transmission system to be electrified by direct current.

1. Client : Ministry of Economy, Trade and Industry
2. Scope of Work : Engineering, manufacturing, installation and testing for high-temperature superconductive direct-current transmission system
3. Amount : Approximately 2.5 billion yen (FY 2013)
4. Site : Ishikari Bay New Port Area, Ishikari city, Hokkaido
5. Schedule : Site work will start in FY 2013, and experimental operation will start partially in FY 2014.

Two power lines will be installed, one about 500m long and the other more than 2km, both in Ishikari Bay New Port Area, Ishikari city, Hokkaido. Direct current electricity will be transmitted through the 500m-line from a supply source such as a PV power station. The other line, more than 2km long, will be designed and manufactured as a transmission line, equipped with refrigeration system, that conducts electricity from an alternating current power station.

Conventional superconducting material has to be cooled with liquid helium to around -269 degrees Celsius to achieve zero electrical resistance. However a high-temperature superconducting material has been developed which, by using liquid nitrogen, has superconducting properties at a higher temperature of -196 degrees Celsius. Superconducting cables incorporating this material will be able to transmit electricity over long distances with negligible power loss.

The aim of this experimental work is to construct a high-temperature superconducting direct-current transmission system able to transmit electricity, over longer distances than previously achieved, by using the technologies and know-how that Chubu and Sumitomo Electric have developed, and Chiyoda's project management skill and cryogenic technologies. Additionally, there will be a real end-user by way of a datacenter, owned by Sakura, which will use the direct current and enable technical and institutional issues to be analyzed quickly in order to reduce the electric power consumptions. There are also plans in the offing for Hokkaido to produce sufficient renewable energy, such as solar and wind power generation, to feed a proposed 200km-long transmission line through the Prefecture. "Smart" communities will evolve in the future that utilize various energy sources, and the repository for the world's leading superconductivity technologies will be Ishikari Bay New Port Area.

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