MITSUBISHI ELECTRIC CORPORATION
PUBLIC RELATIONS DIVISION
7-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8310 Japan

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Customer Inquiries

Information Technology R&D Center
Mitsubishi Electric Corporation
www.MitsubishiElectric.com/ssl/contact/company/rd/form.html
www.MitsubishiElectric.com/company/rd

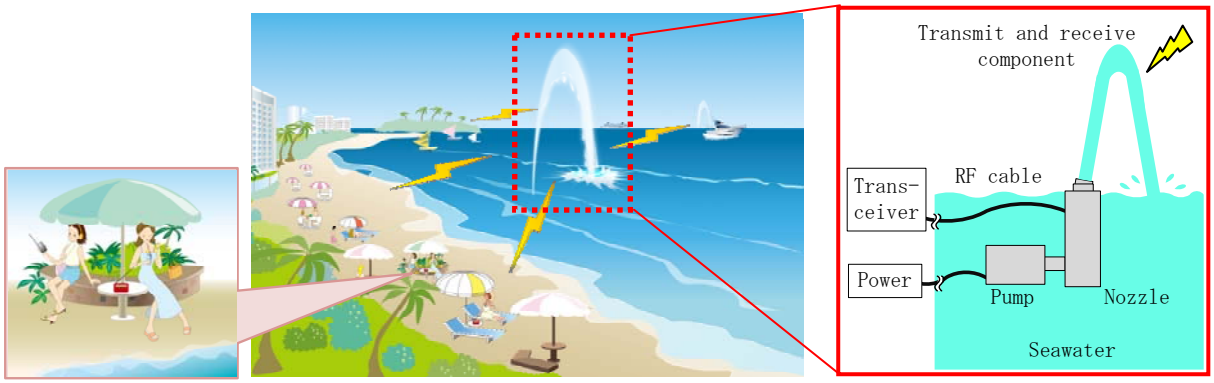
Media Inquiries

Public Relations Division
Mitsubishi Electric Corporation
prd.gnews@nk.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/news

Mitsubishi Electric's SeaAerial Antenna Uses Seawater Plume

Creates a large, movable antenna without massive construction

TOKYO, January 27, 2016 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has developed an innovative antenna system, called SeaAerial, that shoots a column of seawater into the air to create a conductive plume for the transmission and reception of radio-frequency waves. The system can be easily implemented offshore or along shorelines. SeaAerial is thought to be the world's first seawater antenna capable of receiving digital terrestrial broadcasts for normal viewing.



A plume of seawater can be used as an antenna if it is insulated, so Mitsubishi Electric developed an insulated nozzle that transmits radio waves to the antenna even when the plume is physically connected to the sea surface. Effective insulation is achieved with a quarter-wavelength tube in the nozzle.

One of the challenges was to secure antenna efficiency, or the ratio of radiated power to input power, because seawater is much less conductive than metal. Mitsubishi Electric used simulations to determine the ideal diameter of the plume, resulting in an efficiency level of 70 percent, which is sufficient for transmitting and receiving signals.

The size of an antenna is usually determined by its operating frequency, so the height of a low-frequency antenna can be up to tens of meters in some cases, requiring a complicated configuration and a huge structure for support. Finding a fixed place to erect such a large antenna, as well as moving it to another location, can present many problems. SeaAerial, despite its size, can be installed virtually anywhere along the shore, as well as offshore, and it can be moved easily by ship and other vessels because basically it requires just a pump and an insulated nozzle.

Mitsubishi Electric, aiming to develop antennas that offer new functions and superior performance, is investigating conductive and transmutative liquids as new materials for antennas. One such highly practical liquid is seawater, the most abundant resource on Earth.

Trademarks

Mitsubishi Electric Corporation has applied for SeaAerial as a trademark.

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About Mitsubishi Electric Corporation

With over 90 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 4,323.0 billion yen (US$ 36.0 billion*) in the fiscal year ended March 31, 2015. For more information visit:
http://www.MitsubishiElectric.com
*At an exchange rate of 120 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2015