

## Contribution of Fuji Electric's "Energy-Related Business" to a Safe, Secure and Sustainable Society

Fuji Electric has adopted the "expansion of energy-related business," the "pursuit of globalization" and the "Work together as a team with concerted team strength" as management policies, and "Innovating Energy Technology" as a brand statement that reflects a desire to pursue innovation in electric and thermal energy technology in order to create products that use energy with maximum efficiency and to contribute to the realization of a safe, secure and sustainable society.

In FY2013, positioned as new base year of an aggressive management initiative to expand our global energy business, we established FY2015 Medium-Term Management Plans, created a foundation for growth for future business expansion, and worked to further strengthen profitability.

In Japan, the renewable energy and energy conservation-related fields continued their strong growth, and new products in the food distribution business made good progress. Overseas, the fields of power electronics devices and power semiconductors continued strong growth, and through our acquisition of equity in a transformer manufacturer and launch of a new factory in Thailand, and establishment of a joint venture in China, and so on, we built out an infrastructure for strengthening our overseas business.

In terms of R&D, we focused on the development of distinctive global products in the energy field, and were able to achieve significant results.

Fuji Electric developed power devices that

use silicon carbide (SiC), a material expected to revolutionize power devices, and accelerated the development of power electronics products that incorporate such devices. We were the first in the industry to build a SiC 6-inch wafer mass-production line, and have already started pre-mass-production. Additionally, we have utilized SiC devices in practical applications to develop power conditioner and inverters for photovoltaic power generators that realize significantly low loss and smaller size than in the past, and plan to launch products on the market in FY2014.

In addition, we have developed a number of power electronics devices based on a new 3-level power conversion circuit that uses a reverse-blocking insulated gate bipolar transistor (RB-IGBT), which is Fuji Electric's proprietary power semiconductor. All of these devices realize high efficiency and space-savings. One example is a 3-phase 4-wire high-capacity UPS developed for overseas markets, including Asia, that achieves a conversion efficiency of 96.5% and enables the installation footprint to be reduced by at 30% or more compared to conventional models.

Together with the development of components that combine power semiconductor technology and power electronics technology, Fuji Electric has also developed the "MICREX-VieW XX," a small- and medium-scale monitoring and control system for use as a platform for the control system that "connects" these devices. Featuring high reliability,



small size and high performance, this system enables the continued use of customer assets of programs and screens.

As a solution for maximizing the efficiency of energy utilization, we are developing various types of energy management systems (EMS) that realize energy-savings through optimal control of electric energy and thermal energy. In the Kitakyushu Smart Community Creation Project, which is part of the “Next-Generation Energy and Social System Demonstration Program” initiated by the Ministry of Economy, Trade and Industry in FY2010, Fuji Electric has played a central role by developing a cluster EMS (CEMS) centering on a “regional power saving station,” and is continuing to demonstrate and evaluate this station. We demonstrated that dynamic pricing, which sets a high price for peak periods on summer and winter days when a power shortage is expected, is effective and confirmed that a reduction in demand of about 10% can be achieved. In addition, we have also advanced the development and demonstration of EMS for buildings (BEMS), EMS for retail (REMS), and EMS for factories (FEMS), and in response to the good results obtained, are moving forward with numerous commercial negotiations, and significant developments are expected in the future.

From the perspective of safety and security, Fuji Electric has developed systems for diagnosing the health of bridges and buildings through utiliz-

ing vibration sensors that incorporate micro electro mechanical systems (MEMS) technology to sense minute vibrations, and has begun demonstrating these systems. By utilizing MEMS technology, the sensors can be made smaller and lighter, and can easily be installed in various locations with only minimal limitations on the installation site, enabling good diagnostic accuracy to be achieved at low cost.

In addition, Fuji Electric has developed and has begun demonstrating the world’s first aerosol spectrometer for performing real-time measurement of concentrations of PM2.5 mass and components, which is being scrutinized as a major environmental issue. This spectrometer is configured from an analysis unit that employs laser spectroscopic technology originally developed with gas analyzers, a particle concentrator that utilizes MEMS technology, and a mass analyzer. The spectrometer is an innovative device, and through measuring particle components in real-time, can assist in identifying the source of emissions.

Through accurately assessing the needs of society and innovating electric and thermal energy technology, Fuji Electric intends to continue to create products that use energy with maximum efficiency and to contribute to the realization of a safe, secure and sustainable society. We sincerely request guidance and support from everyone.

KITAZAWA, Michihiro  
President and Representative Director

A handwritten signature in black ink, appearing to read 'M. Kitazawa', written in a cursive style.



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