

Fuji Electric's Contribution to the Creation of a Responsible and Sustainable Society Through Innovation in Electric and Thermal Energy Technology

Adopting a management strategy for “Expand energy-related businesses,” “Globalize” and “Realize concerted strength as a team,” as well as a brand statement of “Innovating Energy Technology” that represents our pursuit of innovation in electric and thermal energy technology, Fuji Electric develops products that maximize energy efficiency and lead to a responsible and sustainable society.

As an intermediate year of our “FY2015 Medium-Term Management Plan,” FY2014 was positioned as a year for “Expanding Our Focus on Aggressive Management” as a next step after a “First Year for Aggressive Management” in FY2013, and focused on “bolster profitability” and “establish a growth foundation.” Especially for a manufacturer such as Fuji Electric, enhancing our “manufacturing capabilities” and our “R&D capabilities” are vital for future growth. Our manufacturing-related efforts involved strengthening domestic mother factories, training production technology engineers, succeeding skills and accelerating local production and local consumption. Our R&D-related activities were centered on a core of power semiconductor and power electronics technology, including instrumentation and thermal technology, and we developed thoroughly distinctive components, and then based on those components, also developed control technology platforms and packages, and endeavored to develop products that would provide a variety of solutions to our customers. Our R&D initiatives for FY2014 also focused precisely on these areas and we achieved significant results. We also moved forward with the

construction of research and development buildings at sites in Tokyo, Matsumoto and Fukiage in order to strengthen our company-wide R&D capabilities and to improve our ability to develop power semiconductors, components for power receiving and distribution, switches and control devices.

Below, I will describe the major achievements of our FY2014 R&D initiatives.

Aiming to realize technical innovation in the fields of electrical and thermal energy, we focused developing power devices that utilize silicon carbide (SiC), a promising material expected to revolutionize power devices, and developing power electronics products that incorporate those devices. We launched a 690-V line of our “FRENIC-VG Stack Series” of inverters that employ a hybrid module containing a SiC Schottky barrier diode (SiC-SBD). We also developed an All-SiC module that employs a SiC-SBD and SiC metal-oxide-semiconductor field-effect transistor (SiC-MOSFET), incorporated this module into a power conditioning sub-system (PCS) and marketed it for use in mega solar applications. This product was awarded First Prize in the FY2015 Japan Electrical Manufacturers’ Association Technical Achievement Award. In addition, we also advanced development in the electrical power, industrial and transportation fields.

In the field of power electronics components, we developed distinguished products such as our “Premium Efficiency Motor” which conforms to the Top Runner Program that began in April 2015, motors with integrated invertors that realize dramatic energy savings in applications for driving air conditioning fans, and the “FRENIC-VP Series” for



the Chinese fan and pump market.

As a distinctive thermal component, we developed the “F-COOL NEO” hybrid air conditioner that aims to reduce the consumption of energy for air conditioning at data centers. This product uses approximately a third of the annual amount of electric power consumed by a typical air conditioner, and can realize significant energy savings. In FY2014, this product won the Japan Machinery Federation’s President Award.

Recently, the concept of an Internet of things (IoT), in which all objects are connected to the Internet, has been attracting attention. Fuji Electric has developed “Integrated Cloud Service” that provides various services and solutions through analyzing and optimizing local data that has been uploaded to the cloud.

We are also actively developing fundamental technology that commonly supports the various technologies described above, and are carrying out leading-edge research and development with an eye toward the future.

As a tool for designing optimal structures accurately and efficiently, in FY2014, we also focused on the development of simulation technology. We designed various simulation technologies, such as for thermal fluids, structures, electromagnetism, and electromagnetic compatibility (EMC). Moreover, for materials-related simulations, we developed simulation technology for metal materials, magnetic materials, resin materials, and so on, and have also developed advanced simulation technology such as for corrosion prediction, and have applied these various technologies to materials de-

velopment. In order to differentiate our IoT-based services and solutions, it is important that we differentiate the technology for analyzing collected data, and for this purpose we are also advancing high-level research.

So that products can be deployed globally, compliance with international standards is becoming increasingly important and Fuji Electric continues to strengthen its efforts in complying with international standards. In particular, for power electronics and smart communities, we are strengthening our compliance through actively participating in international committee activities, and are contributing to the enactment of standards for the EMC of PCSs and for the measurement of inverter efficiency.

Aiming to realize more efficient research and development, Fuji Electric utilizes open innovation. In China, in order to promote R&D and to create new business opportunities, we are further expanding the Zhejiang University – Fuji Electric Innovation Center, and have strengthened our collaborative activities with the establishment of the Zhejiang University – Fuji Electric Cooperation Center.

By accurately assessing the needs of society and via our energy-related businesses that leverage the electric and thermal energy technology we have refined since our founding, Fuji Electric intends to contribute to the creation of a responsible and sustainable society. We sincerely request guidance and support from all concerned parties.

KITAZAWA, Michihiro
President and Representative Director

A stylized, handwritten signature in black ink, appearing to read 'Mr. Kitazawa'.



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