

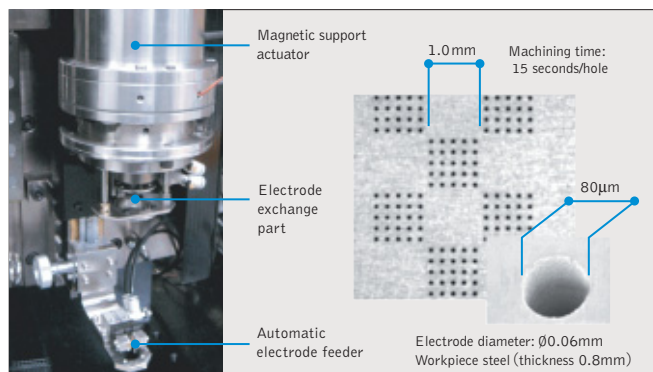
At Mitsubishi Electric, R&D centers that are associated with Corporate Research and Development, including the Advanced Technology R&D Center, Information Technology R&D Center, Industrial Design Center, and laboratories in the United States and Europe, are closely linked with research and development departments affiliated with each business group. Under this solid R&D structure, Mitsubishi Electric concentrates efforts on product development and the development of innovative new technologies that will become the foundation of future businesses.

To make strong businesses stronger, including elevators, industrial automation systems and equipment, and automotive electric and electronic components businesses, Mitsubishi Electric is promoting the integration of business and development strategies. In addition, we are combining technologies related primarily to our strong businesses in an effort to create new solutions businesses, such as environmental/energy-saving solutions and total security solutions.

Nurturing the results of such R&D initiatives as common assets of the entire company, we are constructing an effective development system that will allow these assets to be readily utilized. We are also promoting activities to obtain intellectual property rights linked with business and development strategies, as well as those that can be utilized and standardized on a global scale. Furthermore, Mitsubishi Electric is pressing ahead with joint research in collaboration with leading research institutions in Japan and abroad, participating in national projects and working actively together with industries, government entities, and academic institutions.

## Development Results in the Fiscal Year Ended March 31, 2006

### High-Speed Precision Electrical-Discharge Machining Modules



Mitsubishi Electric succeeded in developing a prototype of a high-speed precision electrical-discharge machining module with a magnetic support actuator. Precise control of the electrode by use of the magnetic support actuator enables machining of fine holes of less than 100 µm\* diameter, which was difficult to carry out by conventional mechanical drilling, with positioning accuracy of 0.2 µm and with approximately double the speed that was previously possible.

\* µm (micrometer): One thousandth of a millimeter

### SiC-MOSFET\* Inverter

Mitsubishi Electric became the first company in the world to succeed in driving a 3.7kW motor, widely used for industrial and other applications, by utilizing an SiC-MOSFET inverter. Silicon carbide (SiC) is a promising material for next-generation power semiconductors because of its high withstand voltage. The inverter modules were fabricated using Mitsubishi-developed SiC-MOSFETs and tested by combining them with the motor. Compared with conventional inverters, the new inverter cuts power loss by 54% while the motor is running.

\*MOSFET: Metal Oxide Semiconductor Field Effect Transistor

### Laser Projection TVs



Mitsubishi Electric developed the world's first laser projection TV compatible with the new xvYCC\* international standard for extended color space for video applications, boasting exceptional color reproduction. By employing red, green and blue semiconductor lasers as light sources, the area of reproducible colors is 1.8 times broader than that of conventional LCD TVs, enabling the display of vivid color images that were impossible to reproduce on previous TVs.

\*xvYCC: The international standard for extended color space for video applications, issued as IEC61966-2-4 by the International Electrotechnical Commission.

### Key Devices for Optical-Fiber Communication Systems

Mitsubishi Electric has developed six key devices to enable data transmission over optical-fiber communication systems at a rate of 40Gbps\*, four times the rate currently possible. Use of these devices allows data to be transmitted a distance four times greater than communication systems that use conventional schemes. This in turn enables the construction of inter-city networks capable of large-volume transmissions using existing optical-fibers.

\*bps (bits per second): Number of bits transmitted or received each second (1G = 1 billion)

### High-Performance Cryptographic Algorithms

Mitsubishi Electric has developed new cryptographic algorithms that can be customized and installed for use on a broad range of devices. The compact BRUME cryptographic algorithm utilizes approximately half the software size of MISTY\*, while the BROUILLARD cryptographic algorithm processes data at approximately 10 times the speed of MISTY. These developments will enable safer communications and information protection in industries that previously faced difficulties in applying cryptographic algorithm technologies due to system processing capacity limitations.

\*MISTY: A cryptographic algorithm providing exceptional safety created by Mitsubishi Electric in 1995.

### High-Speed Identification System for Massive-Volume Biometrics Database

Mitsubishi Electric developed a high-speed identification system for massive-volume biometrics databases. The system is capable of finding, for example, a subject from among the fingerprints of 100,000 people in approximately one second. At the same size of memory, the Company's newly developed system enables retrieval of approximately 10 times the data that is possible with conventional systems. That in turn enables retrieval of the biometrics data for 100,000 people using one PC. In addition to fingerprint authentication, Mitsubishi Electric will press ahead to develop a wider range of biometrics and other new applications, including face authentication, aiming to commercialize systems in response to market needs.