

## Research & Development

We continuously explore exciting new possibilities for tomorrow.



Metal fatigue inspection by electron microscope

Relying on its advanced technological capabilities and vast expertise accumulated through half a century, Kansai EP engages in R&D on kaleidoscopic fronts, in a continuing quest for new products offering economic and other benefits to society.



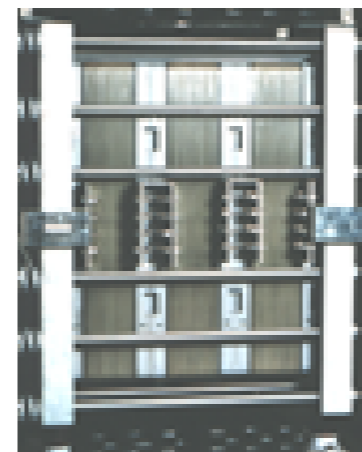
Development of soil decontamination technologies



Research into human error



Experimental robot



Redox-flow battery



Basic research into SOFC materials

### Development of Products Elevating Customer Satisfaction

Kansai EP steadfastly pursues R&D projects targeting the creation of new products that will offer ever greater convenience and economy to society. Presently under development is a comprehensive hot-water supply and heating system designed to be multifunctional and space-saving; it consists of our "Eco Cute" CO<sub>2</sub> heat-pump hot-water system for home use, boasting outstanding economy and environmental compatibility, integrated with floor-heating and bathroom-drying systems. Another project in progress is development of redox-flow (power storage) batteries; easy to maintain and offering long service life, they are well suited to serving as emergency power sources or as energy boosters to counter instantaneous voltage dips. We are also carrying forward research into solid oxide fuel cells (SOFC), which excel in power-generation efficiency, stability and environmental friendliness; they are garnering wide attention for use in applications ranging from small-scale home power supplies to an alternative option to thermal power plants.

### Globally Recognized for Contributions to Environmental Protection

For some time, in conjunction with our environmental protection initiatives we have carried out R&D into high-performance chemical absorbents of CO<sub>2</sub>, and today our achievements have won patents not only in Japan but also in the United States, Europe and Asia. Related technologies have already been adopted in a urea production plant in Malaysia. We are also conducting research into regeneration of tropical rain forests as a means of revitalizing the natural environment and expanding CO<sub>2</sub> absorption sinks. Another R&D focus relating to environmental protection is the development of soil decontamination technologies employing biotechnologies; we are currently conducting research into soil remediation technologies and into biosensors for measuring heavy metals, dioxins and other environmentally detrimental substances.

### Basic Research Focused on Reducing Power Loss

As part of our basic research program, we are probing next-generation power elements to supersede conventional silicon elements, in a quest to substantially reduce power loss. The revolutionary new semiconductor elements under development are relatively immune to crystal breakage under high voltage, and power loss is lessened significantly. They are expected to make salient contributions to cost reductions and productivity enhancement at electrical installations.



SIC diode module testing