

**We continuously explore new technologies  
– and new possibilities – for tomorrow.**

## Research & Development

Availing of its advanced technological capabilities and rich expertise accumulated through its electricity operations, Kansai EP engages in R&D of remarkable diversity.



Testing of large-capacity SiC modules and inverters

Basic research in SOFCs

Liquid-hydrogen mobile station



### Globally Acclaimed Environmental Technologies

In conjunction with an array of initiatives geared toward protection of the global environment, Kansai EP is carrying forward research into chemical absorbents of CO<sub>2</sub>. The tangible results of our R&D program have secured patents not only in Japan but also in the United States, Europe and Asia, and our technologies have been adopted in a urea production plant in Malaysia.

Another R&D focus related 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.

### Development of Revolutionary Nanotechnologies

Today the Company is actively pursuing research into silicon carbide (SiC) diodes to supersede conventional silicon (Si) diodes, enabling major reductions in power loss. We have already succeeded in developing 100kVA inverters using SiC diodes, and once they shift into commercial production and replace today's Si inverters, power loss is expected to decrease more than 50%. In that way, SiC diodes are projected to make a significant contribution to energy savings throughout the entire industrial sector.

### Next-Generation Energy Research

In preparation for the coming era of hydrogen-based energy reliance, Kansai EP is currently working toward commercial production of compact, low-cost power generation systems incorporating fuel cells. In particular, solid oxide fuel cells (SOFC) are garnering attention today as an epochmaking new technology offering excellent characteristics in generation efficiency, stability and environmental friendliness. We are also in the process of developing a mobile station for liquid hydrogen. As a compact unit capable of transporting and supplying hydrogen in large volumes, the new station is expected to enable the realization of a low-cost and highly mobile hydrogen supply system.

### Eco-Friendly, Efficient Hot Water Heaters

In a quest to induce numerous customers to make electricity their energy mode of choice, at Kansai EP today we are working to develop heat-pump type electrical equipment as the centerpiece of our initiatives to curb global warming.

As a representative example, for home users we are currently developing "Eco Cute," environmentally friendly and economical electric heat-pump water heaters that use a natural refrigerant (CO<sub>2</sub>). For business users, we are pressing forward with development of heat-pump air-conditioning and water-heating systems for business applications. The new systems are being engineered for compact size, convenience and high efficiency, to spur their selection as utilities to support business operations.

**We are actively involved in projects spanning the entire globe.**



San Roque, Philippines

## Overseas Operations

Applying the rich management resources it has cultivated through the years, Kansai EP is actively developing electricity business overseas. Initiatives include participation in power generation projects and provision of consulting services.



Thailand's Rojana Power Co., Ltd.

### Involvement in Diverse Projects Across the Globe

Applying the diversified management resources it has cultivated through its domestic electricity operations, Kansai EP today is moving proactively to develop electricity business overseas. In doing so, the Company looks to contribute to the growth of its electricity business and to pursue business expansion as a new source of earnings, as a way of fostering the sustained growth of its entire Group.

In 1998 Kansai EP became the first domestic power provider to take part in a power-generation project overseas, the San Roque Multipurpose Project in the Philippines. In March 2000 we participated in a fund targeted at conserving energy and curbing emissions in Eastern Europe, and in March 2003 we acquired equity in Rojana Power Co., Ltd. of Thailand. In March 2005 and December 2006 we acquired stock in and began active participation in the management of two power plants in Taiwan: the Ming Jian hydropower plant and Kuokuang thermal power plant, respectively. Today, we are actively advancing a hydropower development project in Laos.

Going forward, the Company will continue to develop operations overseas proactively on diverse fronts.

### Steady Progress in Overseas Consulting Services

In recent years Kansai EP has been capitalizing on its accumulated expertise in power solutions to promote its consulting services throughout Asia.

In the power field, illustrating our success is a project carried out in China applying our unique solutions in risk-based maintenance (RBM). Advice was provided toward achieving optimal maintenance and inspection of the client's coal-fired power generation facilities, featuring an output of 1,600 megawatts (MW). We are also performing consultation pertaining to fuel conversion at thermal power plants in China and Singapore. For the aforementioned San Roque Multipurpose Project in the Philippines, we provided consulting services in plant operation and maintenance (O&M), and through a combination of investment and technology transfer we are achieving earnings while simultaneously contributing to the client's benefit.

In the field of distribution, in Taiwan we are providing consultation capitalizing on our proprietary technology in underground transmission. In Cambodia, we are furnishing consulting services for a tie-line project with Vietnam, thereby contributing to improvement of local power supplies.

In coming years we will aggressively pursue further business opportunities through operations of these kinds.