

## Special Feature: Realizing a Sustainable Society

# 3 Contribution to the Promotion of Clean Energy

There is growing attention on power generation from renewable energy, in light of global warming and other environmental problems.

Fuji Electric aims to realize a sustainable society by providing products that contribute to the promotion of clean energy, such as equipment that can efficiently convert solar and wind power into electricity, steam turbines for power generation based on craftsmanship technology from knowledge of the nature of geothermal steam, and fuel cells that create electricity from hydrogen and oxygen.



### Case Example

### Fuji Electric Minami Alps Energy Park (Yamanashi Factory)

#### Start of Onsite Solar Power Business

#### Contribution to the Promotion of Mega Solar through the EPC (Engineering, Procurement, Construction) Business Model

Fuji Electric Minami Alps Energy Park, a mega solar power generation plant (2 MW), was constructed on the grounds of Fuji Electric's Yamanashi Factory. It started operations in April 2013. The plant sells all of its generated electricity to Tokyo Electric Power Company, Inc., based on Japan's feed-in tariff fixed purchase price system.

When we explore a potential mega solar power generation operation, we verify sunlight conditions, interconnectable transmission lines, and any needs for land improvements. We also discuss transmission grid connections with electric power companies. Power plant construction necessitates total engineering. This encompasses designing of overall facilities, procuring and constructing of materials such as panels and electrical facilities on site, and

maintaining and running facilities after operations start. Fuji Electric has the engineering, procurement, and construction (EPC) expertise to comprehensively deliver these capabilities.

Power conditioners are the core devices for solar power generation systems. They are proprietary products of Fuji Electric for use in mega solar systems. These conditioners employ Fuji Electric's energy-saving power semiconductors, and can operate at a world-leading efficiency of 98.5%, with minimal energy loss.

Fuji Electric will contribute to the promotion of renewable energy by moving forward with its power electronics technologies and expanding its mega solar EPC business.



Solar panels installed onsite at the Yamanashi Factory



Fuji Electric power conditioners (1 MW x 2)

## Case Example

## U.S. Hudson Ranch I and II Geothermal Power Plants

## Participation in Geothermal Power Project in the U.S.



Hudson Ranch I Geothermal Power Plant (HRI): HRI and HRII each generate enough power to serve 50,000 homes in the Southwestern region of the U.S.

Fuji Electric has supplied and installed major facilities for geothermal power generation plants for many customers in Southeast Asia, New Zealand, the U.S., Iceland, and other countries since the 1970s. We have established a position as a leading manufacturer of geothermal steam turbines and generators over the last 10 years, enjoying a 40%

share of the world market.

Fuji Electric supplied a turbine and generator to the Hudson Ranch I geothermal power plant (HRI) in California, which started commercial operations in March 2012. We were selected by the customer based on their evaluation of our rich experience and highly developed technologies, including technologies for enduring geothermal environments, which are highly erosive and corrosive.

We participated as an equity-holding member in the Hudson Ranch II (HRII) project, an expansion project being developed in the same area. Through the implementation of HRII, we will acquire further know-how in the geothermal power generation business. This will enable us to continue supplying even more efficient and reliable geothermal power generation plants to the market.



The turbine Fuji Electric supplied for HRI

## Case Example

## Yokohama Tsurugamine Hospital

## Fuel Cells Ensure Continuous Power Supply When Disaster Strikes

Following the Great East Japan Earthquake, the Yokohama Tsurugamine Hospital installed fuel cells as emergency power generators out of a heightened awareness of the need for uninterrupted power supply systems. Fuji Electric's fuel cells normally run on city gas, supplying 100 kW of electricity and hot water at 60°C. In the event of a disaster, proprietary fuel changeover technology enables these fuel cells to switch to stored LP gas and keep running, maintaining supplies of electricity and hot water for evacuees.

Because fuel cells can deliver uninterrupted supplies of electricity and heat during emergencies, Fuji Electric is endeavoring to expand the use of these systems to hospitals and other key public facilities. We are applying our technology in Japan

to fuel cells\* that run on digestive gases from sewage treatment facilities. In Europe, we are working on fuel cells with low oxygen content by-product levels for fire suppression.

\* Fuel cells running on digestive gases became subject to Japan's feed-in tariff fixed purchase price system for renewable energy, which went into effect in July 2012.



Fuel cells installed adjacent to a residential area

## Voice

## Comment from the Customer



Masaki Uchida  
Head Office Manager  
Yokohama Tsurugamine Hospital

The initial impetus for installing fuel cells was to secure electricity in the event of a disaster. Once the system was in place, we found that we were able to produce hot water from waste heat. We have not had to worry about noise, and have cut carbon dioxide emissions, so we have been satisfied at having a power supply source that is good for the community. We hope that more hospitals and public facilities employ Fuji Electric's fuel cells.