Hitachi's Electric Power and Energy Systems

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INTEREST in the sustainable development of electric power and energy system is expected to increase due to medium- and long-term economic growth in the global power sector. In the short term, the power industry is facing many fundamental changes such as the deregulation of the power market and the soaring prices of oil, gas, and coal. Protecting the environment is a world-wide concern, and for the power industry this means reducing CO_2 emissions to prevent global warming. Improving the efficiency of power generation is urgently required to reduce not only CO_2 emissions but also the consumption of valuable resources.

In addressing these market needs, Hitachi has developed high-efficiency power systems for many fuel resources. Beginning with its first steam turbine, which went on-line in 1933, Hitachi has given the world more than 1,500 steam and gas turbines with an aggregate capacity of more than 100 GW. As steam temperatures increased with the development of new sources of energy, Hitachi dramatically increased the efficiency of its coal- and gas-fired plants. We also developed an AQCS (air-quality control system) that dramatically reduces emissions of SO_x and NO_x. Hitachi is now expanding from such areas as physical plant facilities (including supercritical-pressure coal-fired plants and high-efficiency gas turbines) to such areas as EPC (engineering, procurement, and construction) and O&M (operation and maintenance).

In the twenty-first century, nuclear power will continue to play an important role in generating electricity not only as a highly economical source of energy but also as a means of solving environmental problems and providing a stable source of energy. In the field of light-water reactors, Hitachi has been improving the performance and reliability of its ABWRs (advanced boiling water reactors). In the area of the fuel cycle, Hitachi has been developing various technologies related to fuel reprocessing and radioactive-waste disposal.

Hydroelectric power generation offers excellent performance in terms of reducing CO_2 emissions. Using hydroelectric power technology, Hitachi has constructed over 40 pumped-storage power plants in Japan since 1959, thereby helping to handle peak loads by using power stored during off-peak hours. The first domestic pump turbine with a 130-m pumping head started operating about 40 years ago. Within the next 15 years, pumping heads had exceeded 500 m. At the Kazunogawa Power Station, operated by The Tokyo Electric Power Co., Inc., the pumping head exceeds 700 m.

Hitachi has been energetically conducting research and development to improve its customers' competitiveness and profitability. From its advantageous position as a comprehensive electrical manufacturer, the Hitachi Group (Hitachi, Ltd. and its affiliate companies) contributes to providing the best mix of energy sources.

This issue of the Hitachi Review will highlight some of the latest technologies and developments in the areas of electric power and energy. As your best solutions partner in these areas, Hitachi Group will continue responding promptly and effectively to customer needs and making customer satisfaction a priority. In doing so, Hitachi will strive to contribute globally in both the energy field and the environmental field. We will focus our efforts on providing our customers with the best-available technology and solutions.