

Hitachi's Electric Power and Energy Systems



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IN the mid-1970's, when I started to work for Hitachi, we were in the aftermath of the first of two oil crises, which affected the whole world and forced society to recognize the problem of finite resources of fossil fuel. Its strong reliance on oil at that time prompted Japan to shift power generation from oil to coal and natural gas, and accelerated the construction of nuclear power stations. In addition to energy security, another critical issue is global warming, for which effective and economical solutions will take a long time. Furthermore, the rapid economic growth has resulted in developing countries facing a power generation shortage. Deregulation, which originated in western countries, is spreading to the traditional power markets, driven by the large demand for lower electricity prices. On the other hand, several problems arising from hasty deregulation recently surfaced as big financial failures of energy trading companies and power outages in metropolitan districts. IT, which is still showing rapid progress, will provide opportunities for new service business to newcomers entering the deregulated power market. The power situation will continue to change based on the conditions of the global economy, environment, natural resources, etc.

From its advantageous position as a comprehensive electrical goods manufacturer, the Hitachi Group (Hitachi, Ltd. and its subsidiary companies) has contributed to the solutions of energy problems with a wide variety of products in accordance with the changes

in customers' demands and social needs. The electric power business is one of the core businesses of Hitachi and has achieved in its history a primitive form of integrated solution business, or customers' "Best Solutions Partner," which is the recent direction of all its business groups.

The Hitachi Review features activities of the power business group by periodically introducing products and technologies of the moment. This special issue introduces leading-edge technologies in three business categories; thermal and hydraulic power, nuclear power, and electricity transmission. The thermal and hydraulic power division describes the latest power stations: a 1,000-MW coal power plant with a steam temperature of 600°C and a hydraulic power station with an 87-MW Kaplan turbine. The nuclear division overviews a next-generation nuclear reactor and a medium-size ABWR, which aims to achieve both low initial investment and high performance. Several pieces of equipment are described for forthcoming power transmission and distribution systems to cope with diversified distributed resources and high-voltage distribution. Typical and effective roles of IT in heavy industry are shown in the articles on the latest load-dispatching system and preventive maintenance system for thermal power stations.

I hope that the articles in this special issue will provide a lot of useful information to its readers.