

Pumps for Nuclear Power Plants

—A Prospective Growth Market for the Fluid Machinery & Systems Company

Rising Global Demand for Nuclear Power

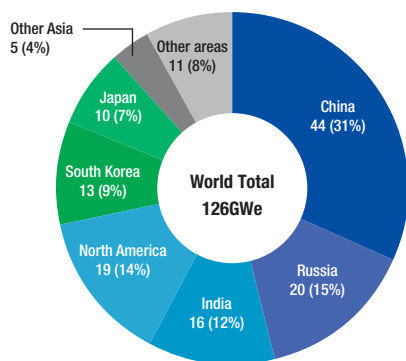
Along with rising concern about global warming and other environmental issues in recent years, there has been a trend toward reviewing the usage of nuclear power generation. Also, in part because of the growth of electric power demand accompanying rapid economic growth in China, Russia, and India, between 2008 and 2030, it is estimated that additional nuclear power generation capacity amounting to about 126 million kW will be added on a worldwide basis. Including requirements for the renovation of aging nuclear power plants, about 200 nuclear power plants are expected to be constructed globally.

In China in particular, from 2007 onward, competitive bids were held for more than 20 nuclear power plants, and the rush to bid for these facilities is expected to continue. One of the features of this market is that, in addition to the construction of conventional types of nuclear power plants, the construction of new types of nuclear power plants that subsequently will be constructed around the world is also being planned, and China is pursuing a policy of raising the ratio of these plants “made in China.” EBARA

believes that, in view of the global development of the market for new types of nuclear generation facilities in the years to come, it will be strategically important to build its record of pump deliveries for new types of plants in China, making the effective use of EBARA's production bases in China. Therefore, EBARA is participating aggressively in activities to obtain orders. In addition, in the United States, where no nuclear power plants have been built for several decades, the specifics of plans for constructing about 30 nuclear generation facilities are in preparation. In Europe, the freeze placed on the construction of some nuclear power plants has been lifted, and, as a result of these various developments, world demand for nuclear power generation is rising.

Pumps Used in Nuclear Power Plants

There are two basic types of nuclear power generation plants: the boiling water reactor (BWR) type and the pressurized water reactor (PWR) type. Many kinds of pumps are indispensable for both types of plants. EBARA has an extensive record of deliveries of pumps for nuclear power plants. EBARA is especially strong in the area of pumps that are required by both the BWR and PWR types: namely, Feed Water Pumps, which supply water under high pressure to the nuclear reactor, and Circulating Water Pumps, which are used in the process for cooling steam that has run through power turbines to water. EBARA has delivered many pumps for use in BWR-type nuclear power plants, and its technology for these pumps is fully applicable for PWR power plants. EBARA takes pride in being one of the few pump manufacturers capable of delivering high-reliability pumps to meet demand for both BWR- and PWR-type nuclear power plants.



Estimated Increase in Nuclear Power Generating Capacity by Region and Country

Increase from 2008 through 2030 (Taking account of a decline of 12GWe for Europe)
(Prepared based on data made available by the U.S. Department of Energy (DOE) and EIA (Energy Information Administration) in 2008)

Orders Received from China

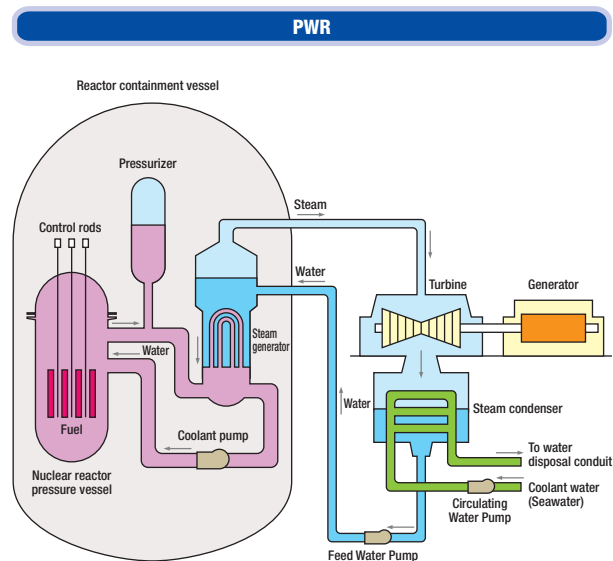
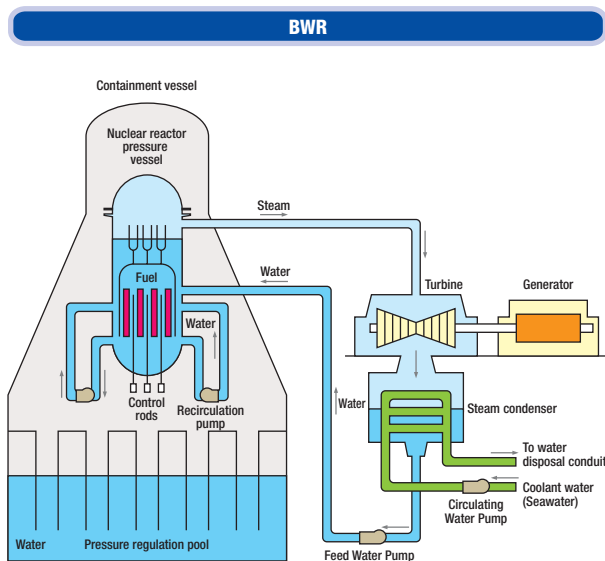
During the year ended March 31, 2009, EBARA received two major orders from China. One of these is for Circulating Water Pump equipment for the Haiyang nuclear power plant in China's Shandong Province. The Haiyang nuclear power plant will be the second nuclear generating facility in the world to adopt the new type AP1000 PWR-type nuclear reactor. A total of six nuclear generator units are scheduled to be built as part of this project, and four of these will be supplied by EBARA. The No. 1 unit is slated to go into operation in 2014. The orders received for this facility are for vertical fabrication pump models, which have the capacity to fill a 25-meter pool located on the roof of a four-story building in less than 10 seconds and are the largest-scale pumps of their kind in the world. Only a few of the world's pump manufacturers have the equipment necessary to assemble and test

pumps of this massive scale. Since the Haiyang nuclear power plant will employ seawater as a coolant, the material used in the pump will be double-layer, strongly corrosion-resistant stainless steel. EBARA is the only pump manufacturer in the world that has a successful record of such large-scale pumps using this special material.



Circulating Water Pump

Schematic Diagram of Nuclear Power Generators (BWR and PWR types)



Source: From *Graphical Flip-chart of Nuclear & Energy Related Topics 2009*, prepared by The Federation of Electric Power Companies of Japan