

# Sihwa Tidal Power Plant Project

Dr. Sang Hoon Kim

Position

In 1980s, Korean government decided to construct Sihwa tide embankment which was originally planned for developing industrial/agricultural lands and securing irrigation water. After the completion of the Sihwa tide embankment in 1994, however, the water quality had gone bad. The water contamination occurred due to excessive inflow of polluted substances from industrial complexes around Sihwa lake, therefore Korean government changed the plan to circulate seawater into the lake. In this aspect, Sihwa Tidal Power Plant Project has been introduced to improve the water quality of Sihwa Lake and develop renewable energy.

The Sihwa Tidal Power Plant is composed of 10 units of 25.4MW each turbine, the total capacity of 254MW. The amount of annual generation is 552.7GWh which can be supplied for around 200,000 residents. For the enough water circulation, 8 culvert type sluice gates were also planned. The total project period is 7 years from 2003 and the total project cost is US\$355 million.

At the initial design stage, it was key issues to maximize the tidal current circulation for the water quality improvement and control the basin water level for industrial/metropolitan area around Sihwa Lake. Under those considerations, a single-effect flood generation type was adopted to the project. In general, there are three types of tidal power plants: single-effect flood generation, single-effect ebb generation and double-effect generation type. Considering only the amounts of electricity, the double-effect generation type would be the most desirable scheme but it is not an economic way. Among single-effect generation type, the single-effect ebb generation type would be the appropriate choice considering the electricity generation compare to the single-effect flood generation type. However, the flood generation type was chosen as the most suitable scheme because it can minimize the rise of the basin water level during the flood period and lowered the basin water level as much as possible during ebb tide using sluice gates.

The construction was commenced in 2004 and the expected completion date is August, 2010. As of October 2009, the progress in the total construction is 70% and the turbine/generators for the tidal power plant are being installed.

The Sihwa Tidal Power Plant will help boost Korea's energy self-sufficiency through the renewable energy development and contribute to cutting down oil imports by 862,000 barrels per year and reducing the emission of carbon dioxide by 315,000 tons per year.



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