SIWHA TIDAL POWER PLANT CONSTRUCTION PROJECT

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Abstract

Siwha dike that is 12.7 kilometers and connects Oi island located at Jung-Wang-dong Siheung-si Kyunggi-do and Bang-A Meori in Ansan-si has been constructed in 1994. However, it gave rise to the serious water pollution of Siwha lake because it intercepted sea water circulation into the bay of Siwha after construction. Finally, the government decided to rehabilitate the Siwha lake as Sea water lake in 2001. Siwha Tidal Power Plant(TTP) project has been planned as a counterplan. The main goals of this project are, therefore, to improve the water quality of the Siwha lake by sea water circulation and to maintain flood control capacity of the sea water lake as well as stable power supply.

On the three defined combinations, unit construction costs(won/kWh) were compared. The comparison indicated that the scheme 2 is cheaper than the scheme 1 by 29.37 won/kWh and the scheme 3 by 9.37 won/kWh. As a result, it appeared that the scheme 2 is the most economical, and has good reliability, maintenance, workability, and efficiency

Table 1. Comparison of proposals

	Proposal 1	Proposal 2	Proposal 3
Turbine capacity	21.5MW	25.4MW	28.4MW
No. of turbine	12	10	9
No. of gate	8	8	8
Annual energy	558.6GWh	552.7GWh	552.8GWh
Annual generation time	3,197hr	3,213hr	3,151hr
Annual quantity of dewatering	52,575 million m^3	51,074 million m^3	51,434 million m^3
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Once Sihwa tidal power plant runs, the reservoir water level is anticipated to vary from EL(-) 1.0m to EL(-)4.5m. It also anticipates that the tidal zone will be 9,804,000m^2 which is 23 times larger than that before tidal power plant operates. According to the energy productivity simulation, the annual discharge capacity appears to be about 51,074m^3. Therefore it is anticipated to give positive effect on water quality improvement and recovery of an ecological system. The average annual energy for 5 years after construction will be 601.4GWh, which brings 862barrel/year of oil substitution effect. Finally, it is expected to contribute to the local economy vitality by attraction millions of tourist, and to provide amenity oriented place for leisure sports.

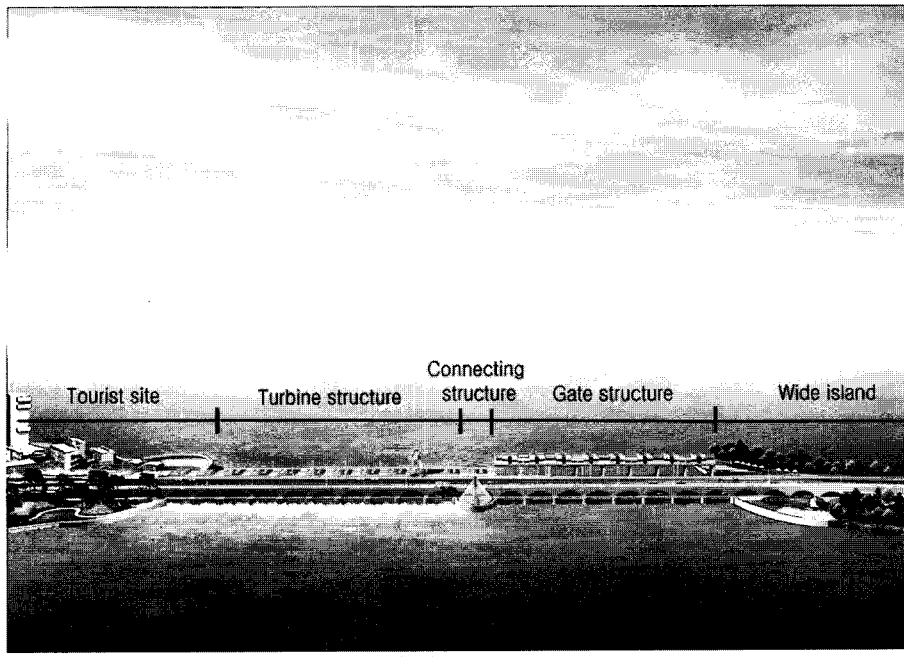

Fig. 1 Final arrangement