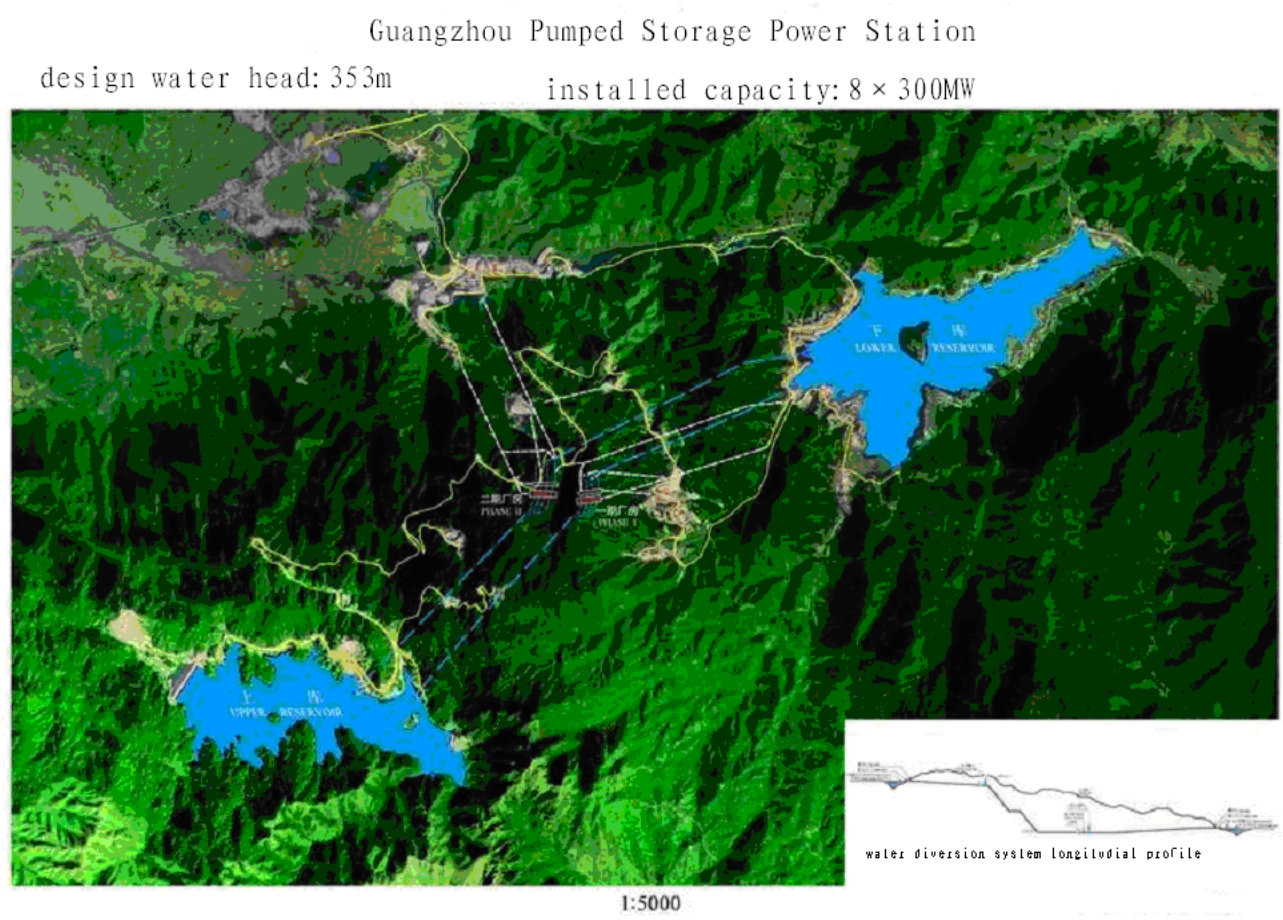
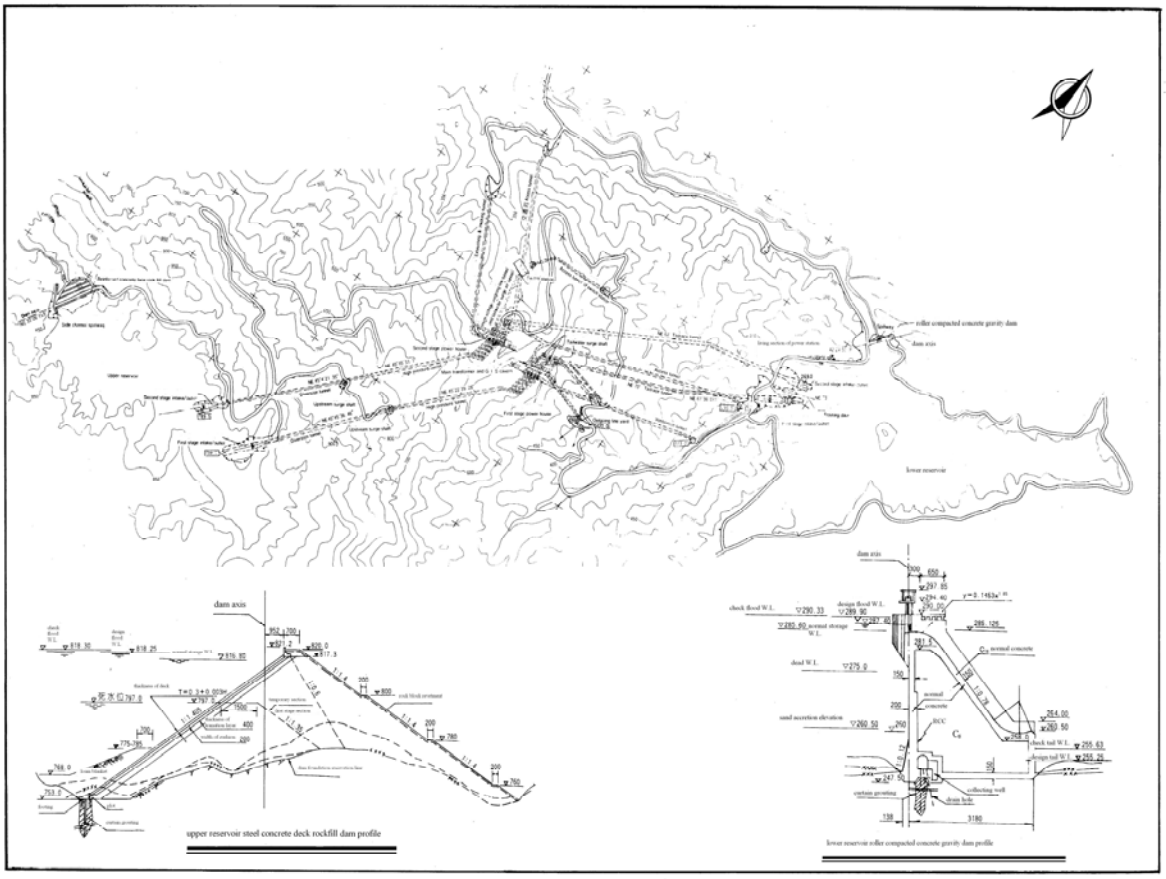
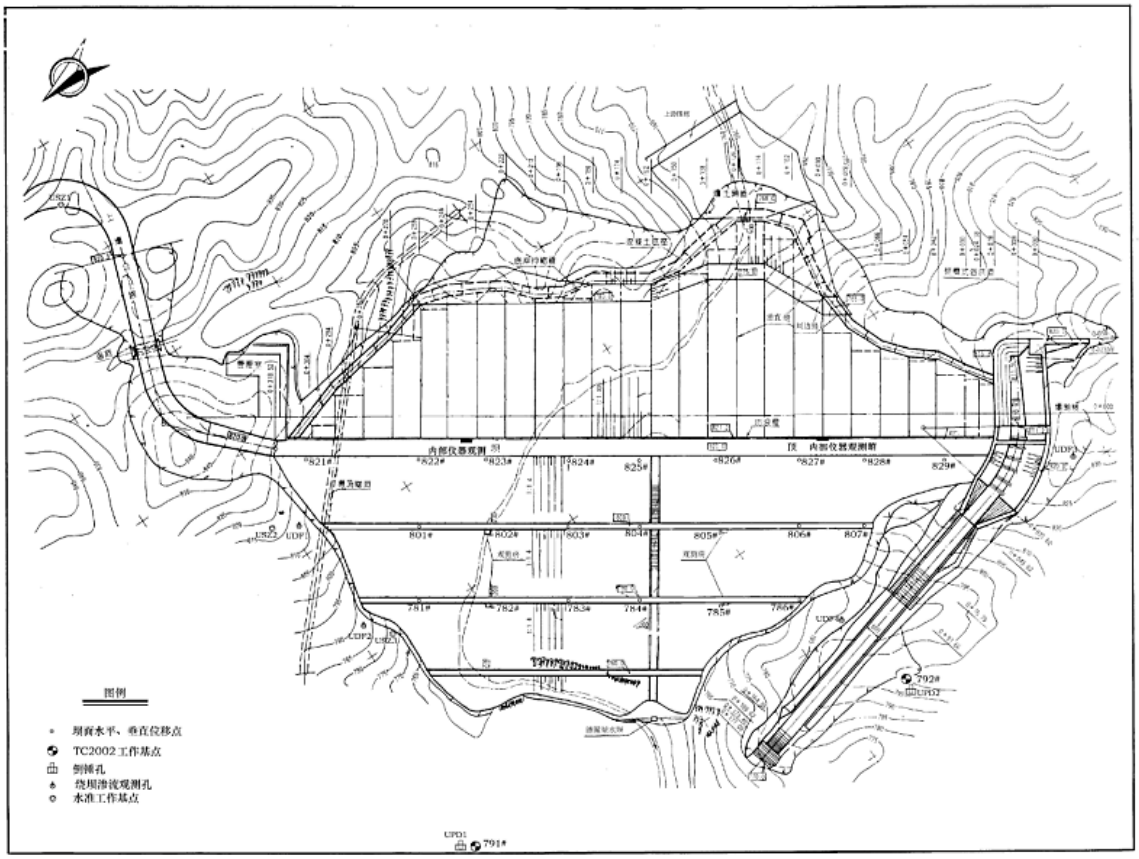
Guangzhou pumped-storage power station



Guangzhou pumped storage power station (GPSPS) is currently the largest pumped storage power station around the world. It has 2400MW installed capacity, which includes 8 reversible pumped storage units, whose gross head is 535 m. The station is built in 2 stages. During Stage 1 (1989.5-1994.3) it built in 4*300MW's reversible units which were imported from France, and in Stage 2 (1994.9-2000.6) it built in 4*300MW's reversible units which were imported from Germany. The project complex is made up of upper and lower reservoir, waterway system, underground power house and T&D works.

The upper dam is CFRD with a height of 68m， crest length of 318.52m and width of 7m. The side channel spillway is laid on the left bank. The catchment area of the upper reservoir is 5.2km^2. Its water level/storage at FSL is 816.8m/24.08 million m^3, and dead water level/storage is 797m/23.40 million m^3. The lower dam is RCC gravity dam, and the inner part of dam is with rolled RC and the surface is with 1.5 m thick of normal RC. There is a gallery through the upstream belly part of lower dam which connects the left and right banks. The lower dam is with the height of 43.5m, the crest length of 153.12m and the width of 7m. The crest spillway is laid on the middle of the dam. The catchment area of the lower reservoir is 13.2km^2. Its water level/storage at FSL is 287.4m/23.42 million m^3, and dead water level/storage is 275m/629 million m^3.


roller compacted concrete gravity dam
dam axis
lower reservoir
dam axis
upper reservoir steel concrete deck rockfill dam profile
lower reservoir roller compacted concrete gravity dam profile


图例
坝面水平、垂直位移点
TC2002 工作基点
倒锤孔
绕坝渗流观测孔
水准工作基点
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792#

General Features

Project Location	On the Liuxi River, Guangdong Province, China.	**Project Purpose**	Peak Load Regulation, Frequency Regulation, Emergency Standby
		Years of Construction:	1989-2000
Catchment and Reservoir		**Main Dam**	
Catchment Area	5.2km^2 (Upper Reservoir)	Type	CFRD (Upper Reservoir)
	13.2km^2 (Lower Reservoir)		RCC (Lower Reservoir)
Mean Annual Runoff	0.209km^3 /s (Upper Reservoir)	Height	68m Upper Reservoir)
	0.544km^3 /s (Lower Reservoir)		43.5m (Lower Reservoir)
Reservoir Area at FSL	1.2km^2 (Upper Reservoir)	Crest Length	318.52m (Upper Reservoir)
	1.6km^2 (Lower Reservoir)		153.12m (Lower Reservoir)
Storage at FSL	24.08 million m^3 (Upper Reservoir)		
	23.40million m^3 (Lower Reservoir)	**Power plant**	
Water Level	16.86 million m^3 (Upper Reservoir)	Maximum Gross Head	535m
	17.11 million m^3(Lower Reservoir)	Installed Capacity	1,200MW 1st stage
Spillway			1,200MW 2nd stage
Number of Spillway	1 (Upper Reservoir)+1(Lower Reservoir)	No. and Capacity of Units	8×300 MW
Type	Side channel spillway (Upper Reservoir)	Penstock No. / Type	2×4 Steel penstock embedded in concrete
	Crest spillway (Lower Reservoir)	Type of Turbine	Vertical, single stage and reversible
Discharge Capacity	723m^3/s (P=0.1%) (Lower Reservoir)	**Main Volume of Works**	**1st stage** / **2nd stage**
Type and No. of Discharge Gates	2 flat gates (Lower Reservoir)	Concrete	440,000m^3 / 266,300m^3
Size of Gates	9m×1.8m (Lower Reservoir)	Rockfill and soil	1,660,000 / –
Project Developers		**Main Equipment Suppliers**	**1st stage** / **2nd stage**
Owner	GPSC	Turbines	NEYRPIC / VOITH
Designer	GDIWCHP	Generators & HV Electrical Equipment	ALSTHOM,ABB SIEMIENS,PEEBLES
Erection Contractor	Fourteenth Construction Bureau, Moe	Gates & Hydromenchanical Equipment	NEYRPIC / VOITH