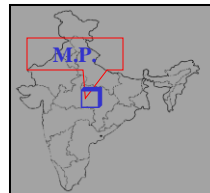




अनुसंधान के माध्यम से सेवा
Service Through Research

OMKARESHWAR DAM SPILLWAY, MADHYA PRADESH



SALIENT FEATURES

| | |
|-------------------|--------------------------------------|
| Location | : Dist. Khandwa |
| State | : Madhya Pradesh |
| River | : Narmada |
| Power Generation | : 520 MW (8 x 65) |
| Maximum Discharge | : 88,315 Cumec |
| Type of dam | : Concrete Gravity Dam Height 62 m |
| Spillway | : 23 Spans of 20 m (L) X 18.03 m (H) |
| Energy dissipator | : Stilling basin |

MAJOR STUDIES

1: 110 Comprehensive model and 1:50 Scale Sectional Model

- ☺ Approach flow conditions upstream of spillway and power intake
- ☺ Assessment of discharging capacity and pressures on spillway
- ☺ Design of energy dissipator
- ☺ Performance of power intake including head race and tail race channel
- ☺ Disposition of divide walls in the stilling basin



BENEFITS

- ☑ Design of energy dissipator finalised on sectional model, after studying four alternative designs. Roller bucket changed to stilling basin.
- ☑ Discharging capacity of spillway is adequate.
- ☑ Upstream divide wall between spillway and power intake recommended to minimise cross flow and deposition of material in front of intakes.
- ☑ Recommended four divide walls in stilling basin to minimise return eddies and ease of maintenance.
- ☑ Modified layout of tail race channel including weir alignment
- ☑ Recommended dressing of ground downstream to lower tail water levels
- ☑ Project is executed incorporating all the model study recommendations suggestions and functioning efficiently



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AREAS OF ACTIVITIES AT THE CWPRS

- * HYDROLOGY AND WATER RESOURCES ANALYSIS
- * RIVER ENGINEERING
- * RESERVOIR AND APPURTENANT STRUCTURES
- * COASTAL AND OFFSHORE ENGINEERING
- * SHIP HYDRODYNAMICS
- * HYDRAULIC MACHINERY
- * APPLIED EARTH SCIENCES
- * MATHEMATICAL MODELLING
- * INSTRUMENTATION AND CONTROL ENGINEERING
- * FOUNDATION AND STRUCTURES
- * INFORMATION SYSTEM (WATER AND POWER)

RESERVOIR AND APPURTENANT STRUCTURES

FACILITIES

Large size covered and open model trays, Glass sided and Tilting flumes for hydraulic model studies. Precision Equipment for measurement of hydraulic parameters with data acquisition system. Workshop facilities for fabrication models Equipment for Field data Collection, Computer Center Numerical models for aeration devices and water hammer analysis.

AREAS OF SPECIALIZATION AND MAJOR STUDIES

STORAGE AND DIVERSION STRUCTURES

The study of storage and diversion structures include spillways, energy dissipators and appurtenant structures such as training walls, divide walls, downstream protection works.

❖ Spillway and Energy Dissipators : Bhakra, Salal, Sardar Sarovar, Chamera, Srilsailam, Nathpa Jahakri, Dhauliganga, Tala (Bhutan), Kurichu (Bhutan), Chukha (Bhutan), Bekhme (Iraq), Bakurman (Iraq), Khaliikan (Iraq), Sedwagyi (Myanmar), Ukai, Kadana, Dharoi, Baira-Siul, Mahi Bajaj Sagar, Matrikundai, Ranjitsagar, Icha, Rajghat, Khandong, Thoubal, Doyang.

❖ Appurtenant Structures : Assessment of hydrodynamic pressures/forces and bending moments on divide walls, chute, baffle blocks, breast walls, stilling basin apron and plunge pool lining for Sardar Sarovar, Salal, Bekhme (Iraq), Icha, Ranjitsagar, Ranganadi and Koyna Projects.

CONTROL STRUCTURES

The study of structures controlling and guiding high velocity flows include gate, tunnels and outlets. The major studies include assessment of hydrodynamic uplift and downpull and estimating air demand of gated outlets. CWPRS is the only laboratory in India using the state-of-art equipments for studies with the help of hydraulic models.

❖ Gates : Sardar Sarovar, Tala, Chamera, Supa, Beas, Mahanadi, Malaprabha, Cheruthoni, Kadana, Ukai, Idukki, Bhira.

CONVEYANCE STRUCTURES

The studies include intakes, penstocks, surge shafts, tunnels.

❖ Projects : Sardar Sarovar, Bhira Surge Tank, Indira Sarovar, Kakkad, Indravati, Doyang, Baira-Siul, Beas P3R, T1, T2 Tunnels, Pandoh Baggi, Koyna and Salal Tail Race Systems, Koyna Lake Tape, Srisailam Intake, Kalinadi Surge Shaft.

❖ Mathematical Modelling for water hammer analysis for Ghatghar and Kal Projects.

CENTRAL WATER AND POWER RESEARCH STATION,
PUNE - 411 024, INDIA.

CENTRAL WATER AND POWER RESEARCH STATION, KHADAKWASLA, PUNE - 411024

Tel : (020) 24103307,24103345

Fax : (020) 24381004

Website : www.mah.nic.in/cwprs

E-Mail : wapis@mah.nic.in