



Two Days Training Course  
on  
**HYDRAULIC MODELLING OF  
RESERVOIR AND APPURTENANT  
STRUCTURES**

29-30 August, 2019

PUNE – INDIA



Organized by

Central Water and Power Research Station,  
Khadakwasla, Pune - 411024

Dr. (Mrs.) V.V. Bhosekar  
Director

**RESERVOIR AND APPURTENANT  
STRUCTURES, CWPRS, PUNE**

Central Water and Power Research Station (CWPRS), Pune is a premier national institute offering a wide range of R&D services related to water and energy resources development, river engineering problems and the coastal development projects. As the UN recognized Regional Laboratory for ESCAP region, CWPRS has offered its services to neighbouring countries in Asia, Middle East and Africa. Reservoir and Appurtenant Structures is one of the major disciplines of research at CWPRS.

Under this discipline, studies are carried out for evolving efficient, economical and safe hydraulic designs of structures such as spillways, energy dissipators and water conductor systems involving power intakes, high head gates, sluices and outlets, surge tanks, tunnels, and tailrace tunnels/channels. The studies are carried out with the help of hydraulic models, mathematical models and analysis of prototype data in the following areas of specialization:

• **Spillways and Energy Dissipators**

Studies include discharging capacity assessment, pressures and water surface profiles, performance of energy dissipators and plunge pool design.

• **Power intakes, Water Conductors and Tailrace System**

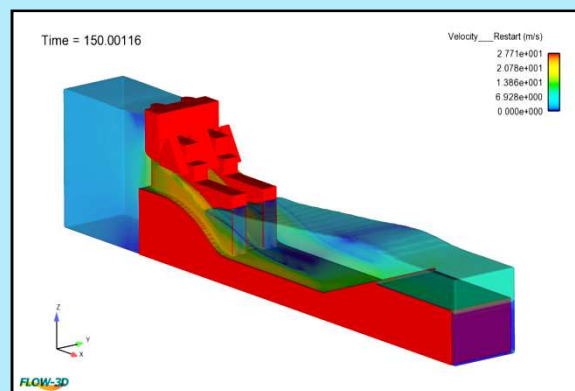
Layout, location and dimensions of intake and water conductor system, submergence from the consideration of vortex, transient analysis for water hammer effect, water levels in surge tank and tail race system.

• **Vertical, Radial and Stoplog Gates**

Layout of gates and location of airvents, optimization of hydrodynamic uplift and downpull forces, hydrodynamic pressures and air demand.



Punatsangchhu-II Dam Spillway, Bhutan



Simulation of flow over Spillway using CFD Code



Radial & Stoplog Gates



Flow near Power Intake

## Objectives

Multipurpose river valley projects backed by big dams and water conductor systems have played a vital role in ensuring self-sufficiency in food production, flood control, rapid industrialization and electrification. The construction of dams involves huge capital cost and recurring expenditure for maintenance. The dam hydraulics should be optimized functionally and economically before the execution of construction work. The most reliable method of investigation of flow over spillways and through the water conductor systems and other outlet/ head regulators/ canal etc. is by performing experiments on scaled models. The rapidly varied flows with complex geometry, supercritical velocities due to high heads leading to cavitation damages, intense turbulence causing hydrodynamic forces on the spillway and appurtenant structures are normally investigated by physical models. Numerical modelling using CFD techniques is also emerging as complementary tool.

The present training course is being organized to discuss on various modelling techniques used for hydraulic design of spillways, power intake, water conductor systems, gates, tail race system and application of canal automation. The course will provide a platform for site engineers, researchers and academicians to review the existing practices assess the future challenges and work on strategies for newly emerging modeling techniques for adopting a hydraulically efficient and techno-economically feasible hydraulic design.

## Course Content

The training course will provide the state of the art information through series of lectures by CWPRS experts about techniques used in hydraulic modelling of spillways, energy dissipators, power intakes, water conductor systems, and gates followed by demonstrations of physical models. Several important case studies will also be discussed during the course. A visit to various laboratories and important models at CWPRS will also be organised.

## Venue and Date

The training course will be held between 0930 and 1700 hours from 29<sup>th</sup>-30<sup>th</sup> August, 2019 at CWPRS, Khadakwasla, Pune.

## Participation

The proposed course is designed for professionals/ practicing and design engineers, post graduate students, academicians and researchers.

## Registration

The registration fee for this course is Rs.5000/- for private institutions / companies, Rs.4000/- for Central / State Govt., PSU, Colleges etc., Rs. 2000/- for Indian students. The Demand Draft towards registration fees may be drawn in the name of PAO, CW&PRS, Khadakwasla, Pune-411024 payable at Pune

## Accommodation

Limited accommodation, at nominal cost, is available at CWPRS Guest House for the participants to the Training Programme on a 'first-come-first-served' basis. Nominations of intended participants, along with the registration form, may be sent to the course coordinator latest by 10<sup>th</sup> August, 2019.

## Coordinator

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## Co-Coordinator

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## Training Course on

## HYDRAULIC MODELLING OF RESERVOIR AND APPURTENANT STRUCTURES

at

CWPRS, Pune-411024  
29-30 August, 2019

## REGISTRATION FORM

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Organisation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

Tel: Off. \_\_\_\_\_ Res. \_\_\_\_\_

Fax: \_\_\_\_\_

e-mail: \_\_\_\_\_

Please find enclosed DD No. \_\_\_\_\_

dated \_\_\_\_\_ for Rs. \_\_\_\_\_ drawn  
on \_\_\_\_\_ towards registration  
fees.

Signature