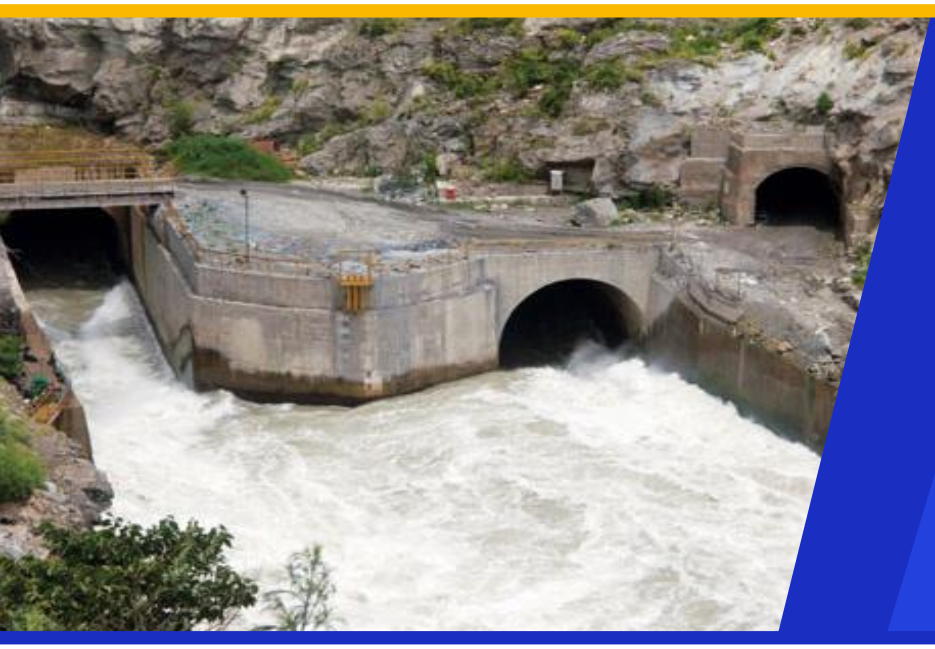
RITE GEOSYSTEMS

ENCARDIO RITE METASENSING FOR MEGA STRUCTURES

Project Dossier



PROJECT DOSSIER

PUNATSANGCHHU-I HEP

PROJECT OVERVIEW

Punatsangchhu-I project is being developed by PHPA, a joint venture of the Governments of India and Bhutan. India's Water and Power Consultancy Services (WAPCOS) is engineering and design consultant for this run-of-river project.

The project is located on the left bank of Punatsangchhu River in the Southern Himalayas, about 80 km east of Bhutan's capital Thimphu. The project's concrete dam is 130 m in height by 239 m in length. The facility includes an underground powerhouse that will generate 1200 MW power via six 200 MW turbines when complete in 2019. It also includes:

- Two diversion tunnels, 11 m dia x 2724 m length
- Downstream surge gallery
- Butterfly valve chamber
- Two pressure shafts and six penstocks
- Headrace tunnel, 10 m dia x 8.9 km length
- Tailrace tunnel, 10 m in dia x 1.3 km length
- Surge shaft, 24.5 m dia x 128.5 m height
- Underground machine hall cavern
- Underground transformer hall cavern

Project	**Punatsangchhu-I Hydroelectric Project**
Location	Wangdue Phodrang Dzongkhag, Bhutan
Client	Punatsangchhu-I Hydroelectric Project Authority (PHPA)
Contractor	HCC Limited
Consultants	Water and Power Consultancy Services (WAPCOS) Ltd.
Duration	2012-2019

Dam construction will start once slope stabilization work at right bank of dam is completed. We have also supplied instrumentation i.e. digital inclinometer system, piezometers & load cells for multi-strand anchor load cells for slope stability monitoring.

Monitoring solution

Encardio-rite was awarded the contract for supply, installation, commissioning and monitoring of instruments for power house complex.

Turnkey services

- Supply of geotechnical instrumentation for power house complex
- Installation services
- Commissioning, monitoring, reporting and maintenance

INSTRUMENT USED

- **Multi-point borehole extensometers:** To monitor subsurface deformation around underground structures of power house complex
- **Piezometers:** To monitor pore pressure of water around the power house complex
- **Anchor bolt load cells:** To monitor load on the rock bolts
- **Measuring anchor:** To monitor subsurface movements
- **Bireflex targets:** 3D monitoring of deformations

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