

HYDROPOWER SYSTEMS

Hydropower systems encompass the structures and equipment that convert the force of falling water to electricity, 'water to wire'.

This course will explore the systems from water conveyancing, through the machine turbine, to the high voltage electrical systems.

The aim of the course is to educate the participants in the theoretical and practical aspects of hydropower systems and hydropower operation and maintenance.

The practical aspects will include Entura's working knowledge and expertise, which is backed up by over 100 years of experience in developing and operating power and water infrastructure as part of Hydro Tasmania, Australia's largest renewable energy producer.

COURSE CONTENT

Hydropower systems

- Water conveyances - forebay, intake, gates, canals and flumes, pipelines, tunnels, hilltop valves, penstocks
- Hydropower machines:
 - intake valve
 - turbine
 - pump
 - alternator – rotor and stator
 - excitation system
 - governors
 - auxiliary equipment relief valve
 - machine control and protection
 - AC and DC systems
- High **voltage** electrical systems:
 - busbar and cables
 - switch gear
 - transformer
 - machine protection
 - earthing

Hydropower operations and maintenance

- Key operational sequences
- Operating modes – peak, base load, pumping
- Typical design limitations of hydropower machines – potential causes of damage to the equipment from incorrect operation.
- Maintenance strategy differences – identification of maintenance strategies specific to hydropower machines

PARTICIPANT PROFILE

This course is designed for hydropower professionals and managers involved in the design, operation and management of hydropower assets.

LEARNING OBJECTIVES

- To provide participants with a high level of technical understanding of hydropower systems
- To develop an understanding of the key operational modes of hydropower machines and the associated operational risks, including potential causes of damage to equipment
- To identify the key maintenance requirements specific to hydropower and potential maintenance strategies to address these

LEARNING METHODS

- Lectures
- Discussion
- Equipment access

COURSE PROVIDERS

Entura's lecturers include:

- Accredited training professionals
- Technical specialists and professionals with extensive experience in the hydropower industry

CUSTOMISATION

This course can be customised in content and duration to suit client requirements.

COURSE DURATION
4 DAYS

LOCATION:
Tasmania, Australia
(Includes site visits)
Or client site as negotiated

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