



Course duration

**4 days**

Location

- Tasmania, Australia (includes site visits)
- Client site as negotiated

# Hydro power 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 hydro power systems and hydro power operation and maintenance.

The practical aspects will include Entura's working knowledge and expertise, which is backed up by almost 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

### Hydro power system

- Water conveyances - forebay, intake, gates, canals and flumes, pipelines, tunnels, hilltop valves, penstocks
- Hydro power 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

### Hydro power operations and maintenance

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

## Participant profile

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

## Learning objectives

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

## Customisation

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



### Course Director

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