

Short Course on "Hydropower Water Conduit Design"

Delft, The Netherlands, 13-24 March 2017

The increase in prices of fossil energy sources and their impact on the environment due to green gas emissions has made hydropower more and more an important and attractive energy source. Optimal design of the power waterway connecting the reservoir and the powerhouse is one of the crucial parts by the hydropower plant design.

UNESCO-IHE Institute for Water Education offers a two-week short course on the design of the hydropower water conduit system. These provides theoretical understanding and practical insights to the geotechnical, hydraulic and structural design of the power waterway in global, but also in its particular parts. The course deals with parameters needed for optimal design, theoretical design background and practical design examples.



Learning objectives

- To design the hydropower power waterway parts based on hydraulic and structural requirements
- To evaluate the impact of the power waterway on the environment and society

Target

The course is designed for scientists, engineers and water managers involved in hydropower development and water resources management, or interested in these topics.

Pre-requisites

Basic knowledge of hydraulics, geotechnics and structural engineering

Contents

Introduction and planning (project stages)

Layout selection and possibilities

Hydraulic design of open and pressurized power waterways, losses, water levels, transient calculations)

The structural design of the power waterways (intakes, sand traps, channels, forebays, tunnels, pressurized tunnels, surge tanks, penstocks.

Environmental aspects important for power waterway design

Economic considerations and cost estimates

Auxiliary structures and safety

Practical examples of calculations (hand calculations, software)

Workshop with practical power waterway design prepared examples or participant projects

Methods

Use of state of the art literature coupled with field experience from international professionals and academics.

Frontal lectures in class; individual exercises; group exercises; case study analysis.

Lecturers

Miroslav Marenc (UNESCO-IHE)

Alessandro Cattapan (UNESCO-IHE)

Ioana Popescu (UNESCO-IHE)

Angeles Mendoza – Samet (UNESCO-IHE)

Ivo Pothof (Deltares)

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Dates and location

13-24 March 2017

The course will be held at UNESCO-IHE (www.unesco-ihe.org) in Delft, The Netherlands

Application procedure and more information

Visit <http://www.unesco-ihe.org/hydropower> and follow instructions

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