

# Penstocks, pressure shafts & pressure tunnels

*workshop*



Working Group

November 3-4  
2022



Online &  
in presence

## Date and time



**November 03, 2022**

14:00 - 17:30, UTC +1

**November 04, 2022**

09:00 - 12:30, UTC +1

## Location



**Centro Congressi FAST**

Piazzale R. Morandi 2

20121 Milan

Italy

organized by



## Registration



Send an email to [itcold@iol.it](mailto:itcold@iol.it) by **October 25, 2022**

attaching the *registration form* received via email together with this brochure. For Italian engineers, *Crediti Formativi Professionali* (CFP) will be available.

in collaboration with





Day I - November 03, 2022

13:00 - 14:00

**Registration and welcome coffee**

14:00 - 14:30

**Opening remarks**

**Alfredo Granados**, General Secretary of EurCOLD

**Giovanni Ruggeri**, ITCOLD President

**Antonella Frigerio**, Coordinator of the EWG “Penstocks & Pressure shafts”

14:30 - 15:20

**Special lecture on Power waterway design – Introduction**

**Miroslav Marenc**, IHE Delft Institute for Water Education

15:20 - 17:25

**Session I – Chairman Giovanni Ruggeri**

15:20 - 15:45

*Overview of main penstocks types with their constitutive elements*

**Nicolas Crocheton**, TRACTEBEL

15:45 - 16:10

*Surge tank design for safe penstock and pressure tunnel*

**Wolfgang Richter**, TU Graz

16:10 - 16:35

*Main surveillance and control methodologies*

**Armin Kager**, HYDRO SAFETY Engineering

16:35 - 17:00

*Non-Destructive Testinf for steel penstocks*

**Roberto Felicetti**, Politecnico di Milano & **Ezio Tuberosa**, IREN ENERGIA - AIPnD, CICPND

17:00 - 17:25

*Inspection of unlined pressure shaft*

**Jonas Jessen Ruud**, Norconsult AS

17:25 - 17:30

**Closing of Day I**



Day II - November 04, 2022

09:00 - 09:30

**Opening and morning coffee**

09:30 - 12:00

**Session II - Chairman Guido Mazzà**

09:30 - 09:55

*French classification of penstocks and the perimeter of risk analysis*

**Florent Bacchus**, Pôle National de la Sécurité des Ouvrages Hydrauliques

09:55 - 10:20

*Penstocks in ENEL: risk assessment system*

**Francesco Fornari & Marco Lauro**, ENEL

10:20 - 10:45

*Penstocks expansion joints: a particular case of corrosion*

**Giuseppe Donghi**, EDISON

10:45 - 11:10

*Rehabilitation of penstock: untraditional solutions*

**Emanuele Zaniboni**, eZETA engineering

11:10 - 11:35

*Safety assessment of ageing steel-lined pressure tunnels and shafts*

**Alexandre Pachoud**, Swiss Federal Office of Energy

11:35 - 12:00

*Numerical modelling of penstocks: from simple to advanced methods*

**Antonella Frigerio**, Ricerca sul Sistema Energetico - RSE

12:00 - 13:00

**Open discussion and closing of the Workshop**

13:00 - 14:00

**Light lunch**