

Hydraulic Machinery Engineering 2023 Short Course

Date: September 4 to September 8, 2023

Organized by EPFL

To be held at the EPFL Technology Platform for Hydraulic Machines
Avenue de Cour 33 Bis, 1007 Lausanne, Switzerland

PROGRAM

Hydraulic turbomachines:

- Fundamentals;
- Hydrodynamics - Similitude – Cavitation.

Hydraulic turbomachinery engineering:

- Francis turbine runner;
- Pelton turbines;
- Centrifugal pumps.

Hydraulic turbomachines flow numerical simulations:

- Current and future tools;
- Industrial practice.

Model and Field Testing

- Reduced scale physical model instrumentation;
- Acceptance tests and specific tests;
- Hydroelectric power plant visit.

Operation Challenges

- Electricity market;
- Power system stability;
- Pumped storage power plants.

CONDITIONS

Short course:

- Duration: 40 hours, 16 lecture modules, 1 site visit, 5 days;
- Prerequisite: Degree in engineering or professional engineering experience in industry;
- Language: English
- Certificate of attendance: at the end of the Short Course.

The course session will be held week 36 if a minimum of 12 attendees are registered.

Registration

- Online at www.epfl.ch/labs/lmh/formation-continue/;
- By completing the attached form to be addressed to EPFL-PTMH attention to Mrs. Isabelle STOU DMANN, Avenue de Cour 33 Bis, 1007 Lausanne/Switzerland, E-mail: info.ptmh@epfl.ch, Tel.: +41 21 693 25 05, Facsimile: +41 21 693 35 54

Fees (VAT 7.7% not included)

- CHF 3'500.00* (per person, including technical documentation, technical visit, lunch and coffee break).
- CHF 3'000.00* for the second attendee of the same company or institute;
- **Cancellation fees*: 10% of the amount will be charged.
- Payment in advance by bank or postal transfer in Swiss Franc (CHF) to Swiss Post, Postfinance SA, Mingerstrasse 20, 3030 Bern-Switzerland Swift/Bic [POFICHBEXXX](https://www.scb.ch/POFICHBEXXX), Account no: [17-714571-6](https://www.scb.ch/17-714571-6), IBAN for Swiss Francs: [CH2709000000177145716](https://www.scb.ch/CH2709000000177145716) Reference: CC 0332 - Funds 111564 + invoice no. to be mentioned
- to be transferred before August 10.

Hydraulic Machinery Engineering 2023 Short Course Time Schedule

Week 36	Monday 04.09.2023	Tuesday 05.09.2023	Wednesday 06.09.2023	Thursday 07.09.2023	Friday 08.09.2023
07:30				Visits	
08:00	Introduction to Hydraulic Turbomachines F. AVELLAN EPFL PTMH	Pelton Turbines Engineering N. GERVAIS ANDRITZ HYDRO	Hydraulic Turbine Engineering Design Y. LAURANT GE HYDRO FRANCE		Hydraulic Turbine Engineering CFD Analysis A. BOMBENGER GE HYDRO FRANCE
08:15					
08:30					
08:45					
09:00					
09:15	Cavitation M. FARHAT EPFL STI SCI MF				
09:30					
09:45					
10:00					
10:15	Coffee Break (30 min)	Coffee Break (30 min)	Coffee Break (30 min)	Bieudron Power Plant 	Coffee Break (30 min)
10:30					
10:45	Cavitation in Hydraulic Machines A. JUNG VOITH HYDRO	Hydro Energy Market M. MURET CITY WORKS OF LAUSANNE	Hydraulic Turbine Engineering Dynamic Phenomena F. DUPARCHY GE HYDRO FRANCE		Advanced measuring and Signal process. Techniques (PIV, LDV, Pres., Wall Friction...) M. FAHRAT & Phd Students EPFL SCI STI MF
11:00					
11:15					
11:30					
11:45					
12:00					
12:15					
12:30					
12:45					
13:00	Lunch (45 min)	Lunch (45 min)	Lunch (45 min)	Grande Dixence Dam 	Lunch (45 min)
13:15					
13:30	Model Testing & On Site Measurements M. SUAREZ EPFL PTMH	Pump Design & Selection Criteria S. BERTEN SULZER PUMPS	Transient Phenomena In Hydroelectric Power Plant C. NICOLET POWER VISION		Conclusion
13:45					
14:00					End of the Short Course
14:15					
14:30					
15:00					
15:15	Break (30 min)	Break (30 min)	Break (30 min)		
15:30	Model Tests and Cavitation Tunnel Demonstrations EPFL PTMH EPFL SCI STI MF	R&D with Numerical Simulations for Hydraulic Machines C.MÜNCH & colleagues (HES-SO)	Variable Speed Pumped Storage and Electric Power Systems C. MOREIRA INESCTEC		
15:45					
16:00					
16:15					
16:30					
16:45					
17:00					
17:15	Welcome Party				
19:00				Dinner	

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Short Course**

September 4 to September 8, 2023

Registration Form

e-mail: info.ptmh@epfl.ch - Fax: +41 21 693 35 54

	Title	<input type="checkbox"/> Mr.	<input type="checkbox"/> Ms.	<input type="checkbox"/> Mrs.	<input type="checkbox"/> Prof.	<input type="checkbox"/> Dr.
	First name					
	Last name					
	Position					
	Company Name					
	Street, No.					
	City					
	Zip Code					
	Country					
	Tel. (country + area code)					
	Facsimile					
	e-mail					
	Dietary restrictions if any					

For hotel reservation, at your own expense, you may contact [Lausanne Tourisme, www.lausanne-tourisme.ch](http://www.lausanne-tourisme.ch), please be aware that there are many seminars in Lausanne during this period and hotel accommodation may be difficult in case of late registration.

Please take note that the EPFL-LMH is located downtown Lausanne, not on the main campus of EPFL in Ecublens. If you book a hotel room in Lausanne, you are eligible for the public transport card gratuity, valid for the duration of your stay.

Hotels situated nearby EPFL-LMH are the following:

- [Hotel Bellerive, info@hotelbellerive.ch](mailto:info@hotelbellerive.ch)
- [Hotel Agora Swiss Night, asn@byf.ch](mailto:asn@byf.ch)
- [Hotel A la Gare, info@hotelalagare.ch](mailto:info@hotelalagare.ch)
- [Hotel le Boulevard, info@boulevard51.ch](mailto:info@boulevard51.ch)
- [Hotel Victoria, info@hotelvictoria.ch](mailto:info@hotelvictoria.ch)
- [Hotel Carlton, contact@carltonlausanne.ch](mailto:contact@carltonlausanne.ch)
- [Hotel Elite, info@elite-lausanne.ch](mailto:info@elite-lausanne.ch)
- [Hotel Alpha Palmiers, ap@byf.ch](mailto:ap@byf.ch)
- [Hotel Continental, reservation@hotelcontinental.ch](mailto:reservation@hotelcontinental.ch)

Registration to reach our office by June 30 the latest, registration will be confirmed.

Payment in CHF, invoice will be sent per e-mail (pdf), please provide the invoicing address if different.

Fees (VAT 7.7% not included)

- CHF 3'500.00* (per person, including technical documentation, technical visit, lunch and coffee break).
- CHF 3'000.00* for the second attendee of the same company or institute;
- * **Cancelation fees: 10% of the amount will be charged.**
Pour toute inscription annulée le 10% du montant sera facturé.