

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 STOUDEMANN, 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.postfinance.ch/eng/branches/branches), Account no: [17-714571-6](https://www.postfinance.ch/eng/branches/branches), IBAN for Swiss Francs: [CH2709000000177145716](https://www.postfinance.ch/eng/branches/branches) 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				Departure Visits	
08:00 08:15	Participants welcome				
08:30 09:15	Introduction to Hydraulic Turbomachines F. AVELLAN EPFL PTMH	Pelton Turbine Engineering	Hydraulic Turbine Engineering Design		Hydraulic Turbine Engineering CFD Analysis
09:15 10:15	Cavitation M. FARHAT EPFL STI SCI MF	N. GERVAIS ANDRITZ HYDRO	Y. LAURANT GE HYDRO FR	Bieudron Power Plant	C. SEGOUFIN GE HYDRO FR
10:15 10:45	Coffee Break (30 min)	Coffee Break (30 min)	Coffee Break (30 min)		Coffee Break (30 min)
10:45 12:45	Cavitation in Hydraulic Machines A. JUNG VOITH HYDRO	Advanced measuring and Signal process. Techniques (PIV, LDV, Pres., Wall Friction...) M. FAHRAT & Phd Students EPFL SCI STI MF	Hydraulic Turbine Engineering Dynamic Phenomena F. DUPARCHY GE HYDRO FR		Hydro Energy Market M. MURET CITY WORKS OF LAUSANNE
12:45 13:30	Lunch (45 min)	Lunch (45 min)	Lunch (45 min)	Grande Dixence Dam	Lunch (45 min)
13:30 15:00	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 End of the Short Course
15:00	Break (30 min)	Break (30 min)	Break (30 min)		
15:30 17:15	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		
17:15	Welcome Party				
19:00				Dinner	

Hydraulic Machinery Engineering

Short Course

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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.