5th IAHR International Workshop on
Cavitation and Dynamic Problems in Hydraulic Machinery

September 9-11, 2013, EPFL, Lausanne, Switzerland

Supported by CEDEX

Sunday, September 8

16:00 - 22:00	Registration in the ELA entrance hall	

Monday, September 9

08:15	Welcome address by Prof. François Avellan	
08:30 - 10:00	**Session 1**	**Experimental flow investigation - part 1** Chair: François Avellan (EPFL-LMH)
08:30	E. Egusquiza	Dynamic response of runners (invited lecture)
09:00	A. Bergant	Velocity profile and wall shear stress measurements in pulsating pipe flow at resonance and non-resonance conditions
09:15	V. Bulatović	Investigations of water hammer and column separation in unsteady friction dominated pipeline apparatus
09:30	A. Kravtsova	Experimental study of a scale effect on cavity patterns and flow characteristics around a NACA0015 hydrofoil
09:45	A. Kravtsova	Influence of a NACA0015 hydrofoil wall roughness on cavitation inception and turbulence development
10:00 - 10:30	Coffee break	
10:30 - 12:00	**Session 2**	**Experimental flow investigation - part 2** Chair: Jiri Koutnik (Voith Hydro)
10:30	M. Couston	Hydraulic machinery always relying on leading research (invited lecture)
11:00	S. Muntean	Swirling flow analysis downstream the runner of the swirl generator at lower speeds
11:15	D. Štefan	Analysis of Pelton turbine jet decay using a proper orthogonal decomposition of experimentally obtained image ensemble
11:30	X. Huang	Experimental and numerical analysis of dynamic behavior of a high head Francis runner
11:45	M. Dreyer	Experimental characterization of tip leakage vortex dynamics
12:00 - 13:30	Lunch break	
13:30 - 15:00	**Session 3**	**Numerical flow modeling and CFD - part 1** Chair: Pierre Leroy (Alstom Hydro)
13:30	J. Decaix	Numerical computations of a tip vortex including gap with RANS and LES turbulence models
13:45	S. Cupillard	CFD simulation of the tip vortex cavitation in a propeller turbine
14:00	P. Kuibin	Development of a cavity model for description of a Francis turbine full load instability
14:15	E. Jahanbakhsh	Simulation of impinging jet using Finite Volume Particle Method
14:30	J. Schneider	Simulation of self-excited shaft vibrations due to blade-tip leakage flow in Kaplan turbines
14:45	T. Krappel	Flow simulation of Francis turbine using a hybrid RANS-LES turbulence model
15:00 - 15:30	Coffee break	
15:30 - 17:00	**Session 4**	**Numerical flow modeling and CFD - part 2** Chair: Cécile Münch-Alligné (HES-SO)
15:30	G. Pavesi	Influence of the flow phenomena on pump-turbine stability at part-load in pump mode
15:45	O. Braun	Numerical investigations of the dynamics of the full load vortex rope in a Francis turbine
16:00	T.D. Tran	Prediction of unsteady cavitating flow effects on hydrofoil pressure fluctuations by numerical modeling
16:15	A. Guardo	Numerical study of the vortex shedding in a Donaldson-type hydrofoil
16:30	O. Pacot	Large Eddy Simulation of rotating stall in a pump-turbine
16:45	A. Javadi	Advanced numerical prediction of strongly swirling turbulent flows

18:30 - 22:00	Conference dinner on the Leman Lake

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08:15 - 10:00	**Session 5**	**Transient operation and components behavior & lifetime** Chair: E. Egusquiza (UPC Barcelona)
08:15	W. Weber	Advanced fatigue analysis for transient operating conditions of Francis turbines
08:30	C. Mende	Potential of start optimization for Francis turbines
08:45	J. Chamberland	Life consumption of Francis runners under various operating conditions
09:00	Z. Ma	Vibration behavior of the powerhouse structure of a pumped storage power plant
09:15	D. Valentín	Influence of nearby rigid surfaces on natural frequencies in a submerged disk
09:30	D. Starinac	On-site measurements in pressurized system of high head hydropower plant
09:45	P.-T. Storli	Permanent speed droop and dynamic behavior of the turbine
10:00 - 10:30	Coffee break	
10:30 - 12:15	**Session 6**	**Cavitation research and measurement techniques** Chair: Olivier Braun (Andritz Hydro)
10:30	P. Gruber	Cavitation detection via ultrasonic signal characteristics
10:45	T. Gross	On the transition from sheet to cloud cavitation - a comparison of experiments conducted at different test facilities
11:00	M. van Rijsbergen	On the physics of sheet cavitation inception
11:15	M. Farhat	Independent components analysis based non-intrusive detection of random cyclostationary phenomena in hydraulic turbomachines
11:30	V. Hasmatuchi	Pressure-synchronized PIV for rotating stall evidence
11:45	A. Bombenger	Partial load vortex rope and pressure pulsation
12:00	P. Rudolf	Analysis of the coherent vortical structures in a diffuser
12:15 - 13:45	Lunch break	
13:45 - 15:15	**Session 7**	**Pumps and fluid-structure coupling** Chair: Christophe Nicolet (Power Vision Engineering)
13:45	R. Klas	Low specific speed pumps with atypical impellers
14:00	S. Berten	Investigation of part load flow pressure pulsations and cavitation phenomena in stationary components of centrifugal pumps
14:15	L. Allenbach	Two-way fluid-structure coupling for damping prediction in flowing water
14:30	R. Guillaume	Overview of the rotor-stator interaction phenomenon in pump-turbines
14:45	M. Sedlář	Numerical study of cavitating flow in inducer pump with different suction casings and its influence on pump performance
15:00	K. Amiri	Experimental study of fluid structure interaction in a Kaplan turbine runner blade
15:15 - 15:45	Coffee break	
15:45 - 17:00	**Session 8**	**Analytical flow description and hydroacoustic modeling** Chair: François Avellan (EPFL-LMH)
15:45	N. Ruchonnet	Phase resonance revisited: The importance of boundary conditions
16:00	S. Alligné	Cavitation surge modeling in Francis turbine draft tube
16:15	C. Nicolet	Transient analysis of Hauterive-Rossens power plant
16:30	K. Urbanowicz	Does weighting function need to be precise?
16:45	R. Susan-Resiga	Swirling flows with stagnant region and vortex sheet: a novel variational approach
17:00	Closing address by Prof. François Avellan	

Wednesday, September 11

07:45 - 18:30	Post-workshop tour