SHF CONFERENCE
Cavitation and Hydraulic Machines
26-27 May 2011, Lausanne, Switzerland

Preliminary Program

May 26th 2011

13:00 – 13:45 **Registration**

13:45 – 14:15 **Welcome, Short presentation of EPFL**
Message from SHF by Prof Guy Caignaert, ENSAM, Lille
Welcome speech, Prof. T. Püttgen, Director of EPFL Energy Center

14:15 – 16:10 **Session 1**

Invited Lecture: Pumping Industry, present developments and future challenges
Ph. Dupont, Sulzer Pumps AG, Switzerland

Experimental investigation of pressure fluctuations and mechanical vibrations in a high-energy centrifugal pump stage
S. Berten, Ph. Dupont (Sulzer Pumps AG, Switzerland), M. Farhat, F. Avellan (EPFL-LMH, Switzerland)

Experimental and numerical investigation of unforced unsteadiness in vaneless diffuser
G. Pavesi, A. Dazin, G. Cavazzini, G. Caignaert, G. Bois, G. Ardizzon
University of Padova, Italy, Laboratoire de Mécanique de Lille, France

Hydrodynamic instabilities in pump turbines at off-design operation
V. Hasmatuchi, M. Farhat, F. Avellan, EPFL-LMH, Switzerland

Interaction of cavitation nuclei with a propeller flow
F. Pereira, CNR – INSEAN, The Italian Ship Model Basin, Rome, Italy

16:10 – 16:30 **Coffee Break**

16:30 – 18:30 **Session 2**

Progress in Turbulence & Cavitation Modelling
Georg Scheuerer, ANSYS Germany GmbH, Germany

CFD prediction of cavitation inception in the tip vortex of Kaplan turbines – impact of mesh refinement and turbulence model choice
Ch. Mortier, M. Koller, O. Braun, Andritz Hydro AG, Switzerland

Numerical study of a cavitating flow with a Scale-Adaptive turbulence model
J. Decaix, E. Goncalves, LEGI – Grenoble INP, France.

Effect of a single vortex on the development of cavitation around a naca0015 foil
S. Prothin (IFREMER, France), H. Djeridi (LEGI - Grenoble INP, France) and J-Y. Billard (IRENav , France)

Does size matter (in cavitating flow dynamics)?
Matevž Dular (Laboratory for Water and Turbine Machines, University of Ljubljana, Slovenia)
O. Coutier-Delgosha (Arts et Metiers ParisTech / Laboratoire de Mécanique de Lille, France)

What can we learn from bubble dynamics in microgravity?
D. Obreschkow, M. Tinguely, M. Farhat, EPFL-LMH

19:30 – 21:00 **Dinner at EPFL (BC building, 4th floor)**

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08:30 – 10:10 Session 3

Pitting tests and impact load measurements in an erosive cavitating flow
J. P. Franc (LEGI, Grenoble INP, France), A. Karimi and D. Carnelli (EPFL, Switzerland)

Evaluation of the pressure of cavitation impacts based on the pitting test and depth sensing nanoindentation technique
A. Karimi, D. Carnelli (EPFL, Switzerland) and J.-P. Franc, (LEGI, Grenoble INP, France)

Cavitation erosion by numerical simulation
C. Flageul, R. Fortes-Patella, A. Archer, LEGI – Grenoble INP, EDF R&D, France

Damage strips with span-wise regularity caused by cavitation: Observation and envisaged mechanism
Shengcai Li, School of Engineering, University of Warwick, Coventry, UK

Cloud Cavitation and Cavitation Erosion
Peter Pelz, TU Darmstadt, Germany

10:10 – 10:30 Coffee Break

10:30 – 12:30 Session 4

Invited Lecture: Advanced development in Pelton turbines
E. Parkinson (Andritz Hydro, Switzerland)

Remote on-line monitoring of hydraulic turbines
E. Egusquiza, C. Valero, A. Presas, Center Industrial Diagnostics CDIF, UPC, Barcelona, Spain

Hydro-pneumatic energy storage using pump-turbines
E. Ortego, A. Dazin, O. Coutier-Delgosha, G. Caignaert, Laboratoire de Mécanique de Lille, France

Hydropower plants security and fitness for purpose
E. Papilloud, G. Zurbrigen, A. Zobeiri, Hydro Exploitation SA, Switzerland

Stability analysis of Francis pump-turbine at runaway
C. Nicolet (Power Vision Engineering), S. Alligné, F. Avellan (EPFL-LMH),
B. Kawkabani, J.-J Simond (EPFL-LEM), J. Koutnik (Voith Hydro, Germany)

12:30 – 13:30 Lunch

13:30 – 14:30 Session 5

Development of a ducted tidal turbine
C. Münch (HES-SO Sion), M. Vonlanthen; J. Gomes, F. Avellan (EPFL-LMH) and P. Guinard

Mesures par vélocimétrie par image de particules 2D-2C du champ de vitesse dans une hydrolienne tripale de type Darrieus
J. Bossard, J.-P. Franc, T. Maître, L. Vignal (LEGI, Grenoble, France)

Numerical analysis of unsteady cavitating flow in a 3D axial inducer
R. Campos-Amezcua, S. Khelladi, L. Bergerat, Z. Mazur-Czerwiec, R. Rey, F. Bakir F. Ravelet, ESAM, France

14:30 – 15:00 Project RESCIF: Réseau d'excellence des sciences de l'ingénieur de la Francophonie
Prof. Bolay, Director of EPFL-Cooperation

15:00 – 16:00 Coffee, discussion