

Scientific Program

June 5th 2013

9:00 – 10:00 Registration

10:00 – 10:30 Introduction

Welcome speech, Prof O. Métais, Director of ENSE³, Grenoble INP

Message from SHF by Prof Guy Caignaert, ENSAM, Lille

10:30 – 12:00 Session 1: “Turbines and Energy Storage”, chaired by G. Bois

Partial load vortex rope investigation

A. Bombenger, E. Gaudin, R. Guillaume, T. De Colombel (Alstom, France)

Experimental and numerical study of the tip vortex (Application to Kaplan turbines)

J. Decaix, M. Dreyer, C. Münch-Alligné, M. Farhat, (HEVS, LMH-EPFL, Switzerland)

Enhancement of the draft-tube head loss of a Kaplan turbine operated at high load

HT. Phan, F. Loiseau and C. Desrats (Alstom, France)

Functional modeling and experimental measurements on a hydro-pneumatic energy storage system using a rotodynamic pump turbine

E. Ortego, A. Dazin, G. Caignaert, F. Colas, O. Coutier-Delgosha (Arts et Métiers ParisTech, France)

12:00 – 13:30 Lunch and discussions

13:30 – 15:00 Session 2: “Cavitation Erosion 1”, chaired by A. Archer

Spatial and temporal high resolution measurement of interfacial stresses due to cavitation

M. Dimitrov, S. Lang, G. Ludwig, P. F. Pelz (TUD, Germany)

Simultaneous observation of cavitation structures and cavitation erosion

M. Petkovšek, M. Dular (Univ. of Ljubljana, Slovenia)

Cavitation erosion resistance of ultra high molecular weight polyethylene coatings

B.B. Pavel, O. Lame, J.Y. Cavaille (MATEIS), M. Fivel (SIMaP), J.P. Franc (LEGI, France)

Analysis of turbulent cavitating flow in a micro-channel

C. P. Egerer, S. Hickel, S. J. Schmidt & N. A. Adams (TUM, Germany)

15:00 – 16:30 Session 3: “Cavitation Erosion 2”, chaired by G. Ludwig

Numerical simulation of cavitation erosion effects within fuel injection equipment

D. Greif, W. Edelbauer (AVL, Austria)

Estimation of incubation times through numerical simulation of 3-D unsteady Cavitating flows

M.S. Mihatsch, S.J. Schmidt, N.A. Adams (TUM, Germany)

Elaboration of an erosion model from cavitating flow simulations

L. Krumenacker, R. Fortes-Patella (LEGI), A. Archer (EDF R&D, France)

Finite element analysis of cavitation pits to estimate bubble collapse pressure

S.C. Roy, M. Fivel (SIMaP), J. P. Franc, C. Pellone (LEGI, France)

16:30 – 18:00 Session 4: “Pumps”, chaired by G. Caignaert

Experimental and numerical investigations of 4-quadrant characteristics on a multistage centrifugal pump

L. Gros, A. Couzinet, D. Pierrat, L. Landry (CETIM, France)

Investigations in a vaned diffuser of SHF impeller

A.C. Bayeul-Lainé, P. Dupont (Ecole Centrale de Lille), G. Cavazzini (University of Padova, Italy), A. Dazin, P. Cherdieu, G. Bois, O. Roussette (Arts et Métiers ParisTech, France)

Essais hydrauliques sur la station de pompage de l’EPR Flamanville

A. Archer, A. Boyer, M. Luck, J.P. Maréchal (EDF R&D, France)

Traitements adaptés de données stéréo PIV résolues en temps obtenues dans un diffuseur lisse d’une pompe centrifuge

C. Cuvier, P. Dupont, A. Dazin, G. Bois (Arts et Métiers ParisTech, France)

June 6th 2013

8:30 – 10:00 Session 5: “Transients and Air in Water Pipes 1”, chaired by Y. Lecoffre

Frictional drag reduction by micro air bubbles generated in a flow acceleration water channel

H. Kato (University of Tokyo), S. Fujishita, H. Katayose (Toyo University, Japan)

Risk of low pressure at penstock top of pumped storage power plant in pumping mode

C. Nicolet (Power Vision Engineering), J. Arpe (AF-Consult, Switzerland)

Model based analysis of the time scales associated to pump start-ups

A. Dazin, G. Caignaert (Arts et Métiers ParisTech), G. Dauphin-Tanguy (Ecole Centrale de Lille, France)

Transient pressure monitoring in penstocks: EDF approach

M. Lacaze, B. Lecomte, J.L. Ballester (EDF DTG, France)

10:00 – 10:30 Coffee and discussions

10:30 – 12:15 Session 6 (room Craya):

“Transients and Air in Water Pipes 2”, chaired by C. Nicolet

Problèmes liés à la présence d’air dans les conduites

L. Dupuis (Airvalve, France)

L’aménagement hydroélectrique d’ARTEMARE: Un prototype

P. Jehanno (Artelia/Sogreah), C. Convert (Forces Motrices du Gelon, France)

Siphons sous vide. Entrainement d’air et dégazage

Y. Lecoffre (Hydeo), C. Frangin (Eau Service Projet), A. Libaux (EDF CIH, France)

Théorie entrée/sortie d’air des réseaux d’eau

M. Comelli (Grenoble INP), C. Frangin (Eau Service Projet, France)

Intérêt des entrées/sorties dissymétriques en présence de régimes transitoires

C. Frangin (Eau Service Projet, France)

10:30 – 12:00 Session 7 (room Jonquille):

“Thermal Effects on Cavitating Flows”, chaired by J.P. Franc

IR measurements of the thermodynamic effects of cavitation in a small Venturi channel

M. Petkovsek, M. Dular (Univ. of Ljubljana, Slovenia)

Thermal investigation of cavitating flows through microchannels, with the help of fluorescent nanoprobe

F. Ayela (LEGI), G. Ledoux (ILM, France)

On cavitating flow modeling in thermal regime

D. Colombet, E. Goncalvès, R. Fortes-Patella (LEGI, France)

12:15 – 13:30 Lunch and discussions

13:30 – 15:00 Session 8: “Experiments on Cavitating Flows”, chaired by C. Münch-Alligné

On the transition from sheet to cloud cavitation: a comparison of experiments conducted at different test facilities

T. Keil, T. Groß, G. Ludwig, P. F. Pelz (TUD, Germany), M. Farhat (LMH-EPFL, Switzerland)

Experimental analysis of the effect of a grooved Venturi profile on the cavitation regime

A. Danlos, F. Ravelet, F. Bakir, O. Coutier-Delgosha (Arts et Métiers ParisTech, France)

Following cavitating vortices through pressure sensors signals

G. Maurice, H. Djeridi, S. Barre (LEGI, France)

Velocity measurements in cavitating flows using fast x-ray imaging

I. Khelifa, O. Coutier-Delgosha, S. Fuzier (Arts et Métiers ParisTech, France), M. Hocevar (Univ. of Ljubljana, Slovenia), A. Vabre (CEA LIST, France), K. Fezza (Argonne National Laboratory, USA)

15:00 – 16:30 Session 9: “Numerical Studies on Cavitating Flows”, chaired by E. Goncalvès

Transport equation cavitation models in an unstructured flow solver

K. Claramunt, C. Hirsch (Numeca Int., Belgium)

Development of a semi-compressible two-phase algorithm for the numerical simulation of cavitation and analyze of three-dimensional effects

R. Chebli, O. Coutier-Delgosha (Arts et Métiers ParisTech), B. Audebert (EDF R&D, France)

Smoothed hydrodynamic particles simulation for cavitating flow: a 1D simplified model

J. Lelouvetel, L. Fang (Beihang University, China), J. Caro, F. Leboeuf (ECL, France)

Turbulence model comparison in cavitating flow

A. Esteghamatian, E. Goncalvès (LEGI, France)

16:30 – 17:30 Discussions