IST – EPFL Joint doctoral Initiative

Thesis Topic Proposal Form

TITLE: Water hammer in the power generation of compressed air energy storage (CAES) solutions **FOCUS AREA: Environmental Hydraulics**

Short Description (up to 250 characters) ○ Development of CFD analysis and experimental tests of water hammer and air pockets' behaviour concerning compression and expansion stages. ○ Analysis of the potential energy absorption of two-phase flows in a compressed air volume (CAV) based on surge pressure induced by water hammer events. ○ Investigation of CAV ability for safety purposes and pump or hydropower solutions with application to case studies. ○ Establishment of an integrated methodology for energy recovery based on new compressed air energy storage (CAES) systems.
Keywords: water hammer, CFD analysis, air-pocket behaviour, two-phase flows, CAES

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Planned start date: 1st March 2015	Start institution (IST or EPFL): (to discuss later)