Plenary Presentation

Name: Prof. Wang Zhengwei (Tsinghua University)

Profile: Professor Wang Zhengwei is the head of Fluid Machinery and Engineering Research Team in Tsinghua University, a tenured Professor, a Ph.D. supervisor. He has been committed to the research on theoretical models, numerical methods and performance analysis of multiphase flow and multi-field coupling characteristics in fluid machinery and systems. He has built a high-precision computational analysis, evaluation, and optimization platform for transient dynamic characteristics, which has found application to multi-field coupled dynamic characterisitcs analysis, evaluation and safe operation improvement for nearly one hundred large and medium-sized hydropower stations and pumped storage power stations such as the Three Gorges Power Station, Wanjiazhai Power Station, Xiaolangdi Power Station, Shuikou Power Station, Datengxia Power Station, Baihetan Power Station, Xiluodu Hydropower Plant, Guangzhou Pumped Storage, Yangjiang Pumped Storage and Fengning Variable Speed Pumped Storage. The operational zone division based on theoretical calculations and empirical measurements of units in Shuikou Power Station, Wanjiazhai Power Station, Xiaolangdi Power Station have long been safeguarding the safe and efficient operation of the units. The analytical prediction evaluation of transient dynamic power characteristics of the Yangjiang Pumped Storage Power Station’s turbine, has become a

model for the prediction and improvement of safe and stable operation of domestic high-head, large-capacity prototype energy storage units. Prof. Wang has also developed more than 80 sets of water turbine/pump impellers, which operate safely, efficiently, and stably in many water and hydropower engineering projects. Among them, the world-leading “National Advanced Heavy Equipment” bidirectional water turbines, pumps, and tidal units operating under complex conditions have been running safely and stably in Jiangxia Tidal Experimental Power Station for a long term. He developed the “first set” of Mujatai new type anti-wear impeller, which has shown slight and even wear during years of operation under high water head and sediment-laden conditions. The self-developed high-efficiency abrasion-resistant 18,000 cubic meters per hour dredge pump is the core component of the Asian largest bucket-wheel dredger, one of “National Advanced heavy Equipment”. He has also contributed to strengthening international academic exchanges and cooperation. The cooperation with Toshiba has highly promoted the accuracy of computational fluid-structure coupling theory. the cooperation with ANDRITZ has enhanced the wider load safety and stable operation performance of the units; the cooperation with Catalonia Polytechnic University, Lausanne Polytechnic University and other universities has supported the cultivation of talents with international perspectives. He has organized several academic exchange meetings of the IAHR academic

conferences.