

## Introduction

The International Association for Hydro-Environment Engineering and Research (IAHR), founded in 1935, is a worldwide independent organization of engineers and water specialists working in fields related to the hydro-environmental sciences and their practical application. Activities range from river and maritime hydraulics to water resources development and eco-hydraulics, through to ice engineering, hydro-informatics and continuing education and training. IAHR stimulates and promotes both research and its application and by doing so it strives to contribute to sustainable development, the optimization of world water resources management and industrial flow processes.

IAHR accomplishes its goals by a wide variety of member activities including working groups, research agenda, congresses, specialty conferences, workshops and short courses; journals, monographs and proceedings; by involvement in international programs such as UNESCO, WMO, IDNDR, GWP, ICSU and by co-operation with other water-related (inter)national organizations.

IAHR consists of 3 academic sessions, covering its 16 technical committee, IAHR AWG belongs to hydraulics (IAHR Hydraulics), one of the 6 Committee of the water conservancy machinery and Systems Committee (Committee on Hydraulic Machinery and Systems). The international conference, held every two years, has the most important influence in the field of hydraulic machinery. The main topics of the conference include: water turbine and pump, hydropower, hydraulic system, advanced computing and experimental methods, industrial and special field applications.

In order to conform to the trend of hydropower development in Asia, the academic committee IAHR announced establishment of IAHR hydraulic machinery and systems in Asia Working Group (AWG-IAHR) in September 2014, during the twenty-seventh IAHR hydraulic machinery and Systems International Conference (27th Symposium on Hydraulic Machinery and Systems). Professor Wang Zhengwei as the leader in this working group, organized IAHR of hydraulic machinery Asian association, at Tsinghua University.

The 2017 AWG-IAHR Symposium on Hydraulic Machinery and Systems was held in November 16<sup>th</sup>-19<sup>th</sup> 2017, Tsinghua university, Beijing, China. The symposium aims to contact scientific researchers in the field of hydraulic machinery in Asian countries. It also will strengthen the scientific research cooperation among hydraulic machinery researchers Asia in terms of research



on different aspects related to the development of hydraulic machinery, especially on ocean energy utilization, multiphase flow, multi-field coupling, etc.

The Symposium brings together more than 230 scientists and researchers from 12 countries, affiliated with universities, technology centers and industrial firms. The Symposium invited 21 experts from China, Korea, Japan, Spain, Austria, France, Switzerland and other country. They gave a special speech to the participants, introduced the frontier science and technology and the future research directions in their research fields. The Scientific Committee has selected 127 papers, out of 196 abstracts submitted, on the following topics: optimization of design and operation; computational and experimental techniques; multi-field coupling; cavitation and multi-phase flow; pumped storage unit; ocean energy utilization; new generation of fluid machinery to be presented at the symposium and to be included in the proceedings.

The Symposium organized by the Institute of Fluid Machinery and Fluid Engineering, Department of Energy and Power Engineering, Tsinghua University, supported by Harbin Electric Corporation, Jiangsu University, Xi'an University of Technology, Xihua University, Yangzhou University, Tianfa Heavy Machinery Hydro Power Co., LTD., Hi-Key Technology Co., LTD., IDAJ Co., LTD.





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