



# 海岸和近海工程国家重点实验室 学术讲堂

**题 目： Numerical investigation of offshore oscillating water column devices**

**报告人： Dr. Ming ZHAO**

**时 间： 2022年12月09日 15:30-16:30**

**地 点： 腾讯会议房间号： 966 2798 6502**



## 内容简介：

Associate Professor Ming Zhao joined the School of Engineering (currently School of Engineering, Design and Built Environment), Western Sydney University in March 2011. He obtained his Bachelor degree in Engineering from Liaoning Institute of Technology, China in 1993 and his PhD degree at the State Key Laboratory of Coastal and Offshore Engineering, Dalian University of Technology, China in 2003 and worked in this laboratory as a postdoctoral fellow until 2005. Between 2005 and 2011, he worked in the School of Civil and Resource Engineering, the University of Western Australia as a research associate and then research assistant professor. Ming received six ARC (Australian Research Council) discovery grants as a Chief Investigator and has published over 200 refereed papers in international journals and conferences.

**ABSTRACT:** The oscillating water column (OWC) systems utilize wave energy to compress the air in a closed column to drive an air turbine to generate electricity. The hydrodynamic efficiency of offshore stationary OWC devices with different configurations are investigated through two-dimensional computational fluid dynamics simulations. The two-dimensional incompressible Reynolds-Averaged Navier-Stokes equations and the Shear Stress Transport (SST)  $k-\omega$  turbulence model are solved for the simulation of water motion under regular waves. The airflow through the turbine is calculated using a compressible aerodynamic model. After the numerical model is validated using the experimental data, it has been used to conduct three types of investigations: (1) scaling effect, (2) improvement of OWC by geometric modification and (3) effects of motion of OWC on performance. The outcomes of these investigations will be presented in this seminar.

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