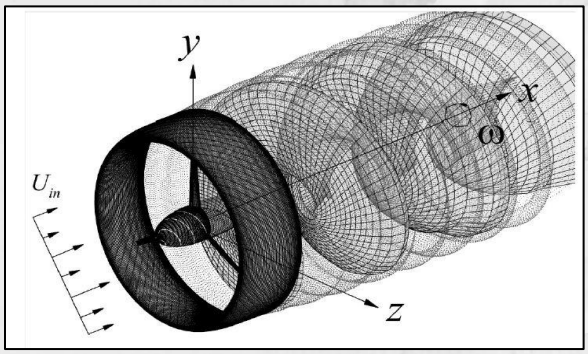
Environmental and Water Resources Engineering Seminar Series Presents:

Thursday, April 11th 2024, 3:30-4:30pm, CPE 2.218

Hydroacoustic and Hydrodynamics of Marine Ducted and Open Turbines through BEM/FW-H Approach and RANS

Kyle Kumar

Bachelor of Science in Environmental Engineering, University of Georgia, 2022
Advisor: Dr. Spyros Kinnas



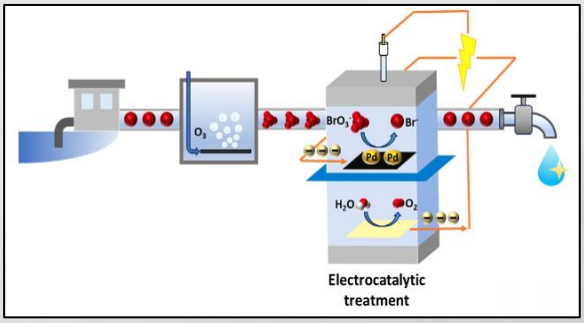
As the demand for renewable energy soars, marine turbines offer a promising solution for harnessing the power of ocean tides and currents. However, their success depends on designs that are efficient, generate minimal noise, and promote a safe environment for marine life. In this seminar, we will delve into the hydrodynamic and hydroacoustic analysis of both open and ducted marine turbines. Using Boundary Element Method (BEM) coupled with the Ffowcs Williams-Hawkings (FW-H), we'll examine performance and acoustic characteristics. Additionally, Reynolds Averaged Navier Stokes (RANS) simulations will provide validation and comparison of the differences between ducted and open designs. Finally, we will discuss the intricate role of duct geometry in influencing both turbine efficiency and its acoustic signature.

A regenerable, low energy-consuming electrocatalytic bromate reduction in drinking water

Kuan-Lin Lee

MS in Environmental Engineering from National Cheng Kung University
Advisor: Dr. Charles Werth

Bromate is a possible human carcinogen and is commonly found in the water system after ozonation/disinfection processes. Electrocatalytically, Pd has shown good removal efficiency in reducing bromate into bromine, however, the efficiency and energy consumption of the technology are still not reliable for scalability. In this work, we used a well-designed reactor with minimum mass transfer limitation to test the kinetics and energy consumption for bromate reduction and developed a regeneration process to adapt our system for treating drinking water and demonstrated an excellent bromate removal over long-term performance.



EWRE Seminar Committee Members: Claire Baldus, Priyanshu Gupta, Elle Henson, Mila Otegui, Zijie Zheng
Supervising Faculty: Dr. Ben Hodges