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CLEAN WATER AND SANITATION

Research

Emerging Water Resources - Opportunities of Reclaimed Water and Desalinated Water

The NYCU Environmental Technology & Smart System Research Center (ETSS) analyzed the pros and cons of reclaimed water and seawater desalination. The center came to the conclusion that both have their suitable uses and advantages to avoid wasting marine resources, both should be developed equally, with desalinated water making up for the lack of reclaimed water. Therefore, ETSS helps desalination plants develop brine resources, hoping to extract high-purity magnesium, which has high economic value. This will not only offset the cost of desalination, but also decrease the amount of minerals expelled with the brine, thereby putting less strain on the environment. The center also provides better suggestions for Taiwan's water policies.

Formosa Plastics Group Collaborates with NYCU to Develop UVC LED

NYCU formed industry-academia collaborations with Formosa Plastics Group's NKFG Corporation and LIGHT SPACE Corporation to develop green energy and national epidemic prevention equipment, focusing on the main product UVC LED water purification equipment (DWM1). DWM1 adopts the UV-C UV light in a UV wavelength of 200nm-280nm, which is optimal for disinfection and sterilization, and is able to directly destroy the central structure that results in instantaneous death or loss of production ability for viruses, bacteria, and algae, in order to achieve rapid sterilization. Additionally, to better manage the quality of water used in Taiwan's semiconductor and electronic manufacturing processes, the product uses exposure sterilization on algae by applying UV-C deep UV light, allowing for easy installation and effective energy conservation. Not only does the product avoid secondary water pollution, it also has a long lifespan that does not require prolonged periods of maintenance by personnel. It is able to ensure the cooling efficiency of semiconductor manufacturing equipment, reduces the downtime for maintenance derived from the cleaning of water cooling systems, and is more environmentally friendly.

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5.3%

Percentage of All Taiwan Publications

Social Impact

Transforming the Nanliao Seawater Desalination Plant into a Water Resource Startup Hub

NYCU's Environmental Technology and Smart System Research Center (ETSS) was commissioned by the Water Resources Planning Institute of the MOEA's Water Resources Agency to plan and manage the "Nanliao Water Resource Startup Hub." ETSS set up mobile container desalination units at the innovative water resource technology R&D, testing, and demonstration base next to Hsinchu's Nanliao Harbor to provide a platform for the industry to conduct R&D, testing, and demonstrations of innovative water resource technology and support small and medium-sized enterprises in their efforts to upgrade their technologies and develop innovative technologies. The center will continue to

promote water resource IoT technology, disaster prevention technology, water supply and supply management technology, and water resource and energy integration with the long-term vision of technology cultivation and value-added industry applications. Going forward, the center will work with local enterprises, government agencies, and academic institutions to establish a cross-regional and interdisciplinary resource sharing platform to provide services like technical support and cross-industry cooperation, creating opportunities for collaboration between enterprises with the ultimate goal of becoming a park with circular economy and diversified incubation.

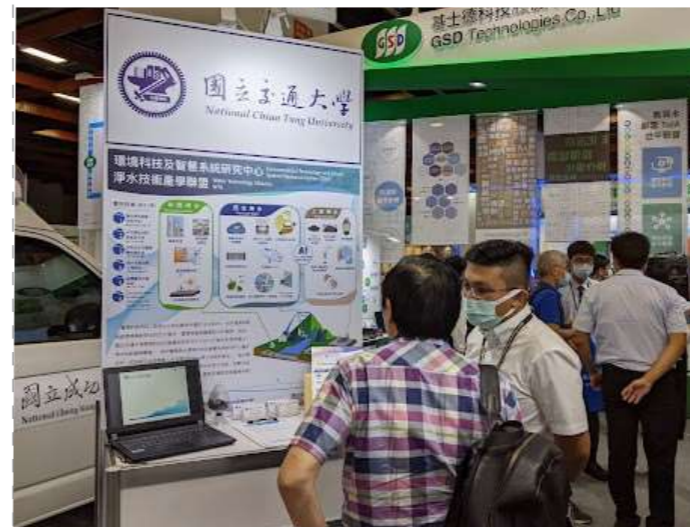
Student Cultivation

The Hydraulics and Ocean Engineering Program

To equip students with rigorous and comprehensive knowledge of Hydraulics and Ocean Engineering, the curriculum of this program is designed with equal emphasis on theory and practice. The courses can be divided into two categories based on content: The basic courses include fluid mechanics, hydrology, hydraulic engineering, groundwater, engineering statistics, engineering economics, ocean engineering, etc. The application courses include: open channel hydraulics, environmental diffusion theory, water resource planning, sediment transport theory, groundwater and pollution transport, advanced fluid mechanics, wave theory, coastal process, ocean engineering, and marine environment. Students can choose courses based on their interests and expertise.

Research Team Presents Research Outcome

NYCU's Environmental Technology and Smart System Research Center (ETSS) and the Water Technology Alliance led a research team at the Taiwan International Water Week. The team, sponsored by GSD Technologies, presented the findings of the ETSS and WTA along with the Water Affairs Organization. The alliance received support from many academic and government institutions throughout the event. Additionally, to promote the "Water Technology Industry-Academia Alliance," NYCU's ETSS and the WTA allow students and research teams to assist on visits and expert consultations with the alliance's member manufacturers each year and organizes technical seminars for member manufacturers in hopes of enhancing Taiwan's water environment industry and driving product and service quality as well as technological competition.



14
Course Units



375
Students who chose the Course Units

125
Publications in SCOPUS

Stewardship

Domestic Wastewater Recycling

NYCU makes full use of integrated water resource management and extensive use of water-saving equipment to greatly improve the efficiency of water use and water conservation in dormitories. NYCU estimated wastewater volume based on the number of students living in the dormitories, allowing it to implement and promote water-saving in everyday life. The University also established rainwater harvesting and wastewater recycling systems, which provide the water for flushing toilets and watering plants, beautifying the environment, providing clean water resources, and improving water conservation rates.