NEWSLETTER

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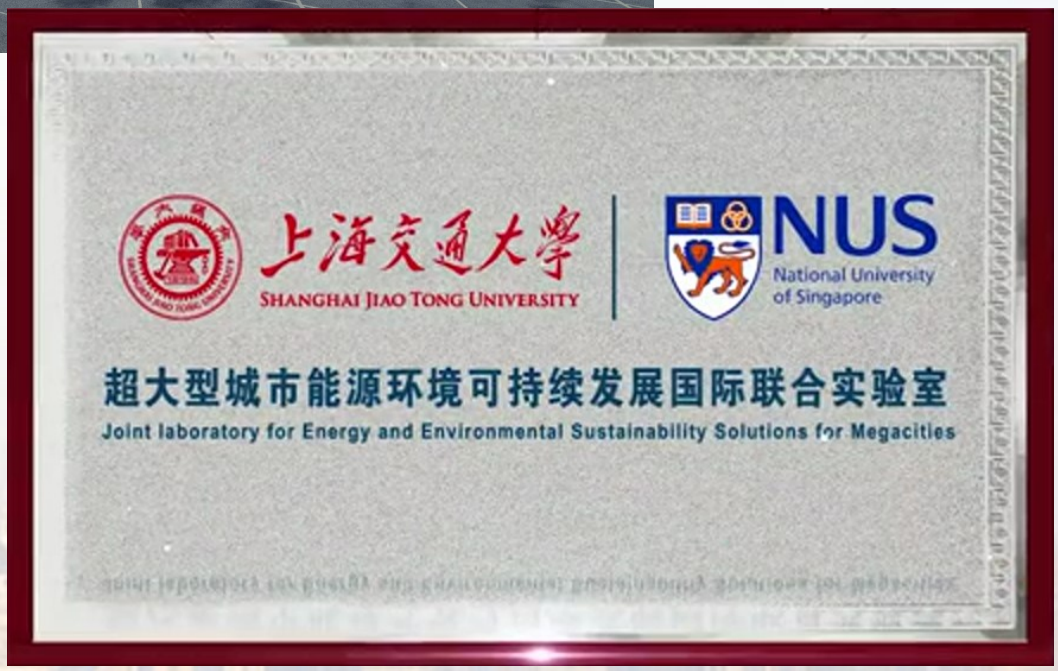
NRF and Prime Minister's Office visiting E2S2-CREATE testbed at GBB

NRF and Prime Minister's Office Public Sector Science and Technology Policy and Plans Office (S&TPPO) visited E2S2-CREATE testbed at Garden By the Bay on 25 Nov 2020. This is a joint project of E2S2-CREATE and Mursun Pte Ltd involving Temasek and Singapore Power Group. The objective of this project is to integrate waste-to-energy and waste heat recovery technologies together to improve overall energy efficiency of waste-to-energy system at Gardens by The Bay.

The key visitors include:

* Mr. Lim Tuang Liang - Executive Director, NRF; Group Chief Technology Officer, S&TPPO
* Mr. Pang Chung Khiang - Group Chief Systems Officer, S&TPPO
* Mr. Low Xin Wei - Director (Strategy and Master planning), S&TPPO

The launch of Joint Laboratory for Energy and Environmental Sustainability Solutions for Megacities



At the second Singapore-Shanghai Comprehensive Cooperation Council Meeting, the National University of Singapore and Shanghai Jiao Tong University launched a joint laboratory for energy and environmental sustainability solutions for mega cities.

The laboratory will focus on emerging environmental contaminants and allow the two institutions to test the project's technologies at test beds in Shanghai, with potential opportunities in other parts of China.

The Straits Times on 12 Dec, 2020

E2S2 research featured in the media:

Mobile food waste-to-energy system

Recently, the mobile food waste-to-energy system and food waste sorting system have been tested in SJTU and reported by several medias in China. In the media interview, Associate Professor Zhang Jingxin from China-UK Low Carbon College (SJTU), who is Co-PI of E2S2 ES-1 project introduced the Anaerobic Digestion (AD) system currently implemented in NUS and SJTU. After putting 40 kg of food waste into the tank in AD system, biogas is produced through anaerobic fermentation, which is then converted into electricity and heat. The output power can be used to charge around 1,000 mobile phones. Prof Zhang further shared that the food waste sorting system and AD system can effectively reduce organic waste and urban greenhouse gas emissions, generate more energy and improve resource utilization efficiency.

The staffs recently joined E2S2

⇒ **Dr. TSUI To-Hung, Thomas**
E2S2 Research Fellow

Dr. TSUI To-Hung, Thomas is currently a research fellow of E2S2. He received his Ph.D. and B.Eng in the Department of Civil & Environmental Engineering, Hong Kong University of Science and Technology. During and after his postgraduate study, he visited and was trained in UNESCO-IHE, Tsinghua University, Hong Kong Baptist University, South China Agricultural University and Hong Kong Productivity Council. He has wide interests and experience in environmental research & practices, including anaerobic digestion, urban agriculture, degradable plastic production, saline sewage treatment, etc. His current research interests in E2S2 are about technology formulation for future waste-to-resources and sewage treatment infrastructures in low-carbon megacities of densely-populated settings.

To promote the long-term sustainability of liveable city, zero-waste design for minimising waste at source, enhance waste-related infrastructure, and encourage materials reuse and recycling are equally important. Sustainable waste management is a global trend and is conducive to achieve our urgent global agenda of decarbonization in mitigating climate change. Thomas's research focus can be summarized as two main aspects. First, the development of energy- and resources- efficient technology for centralized and decentralized waste refinery. Second, bridging the interface of different decarbonization technologies (e.g. gasification and biotechnological means) to help realize an fully integrated and total management of different municipal waste streams.

On this basis, Thomas trust that E2S2-CREATE gathers remarkable researchers in fields and it can provide a strong platform for relevant fundamental research and solution implementation in articulating new strategic policies of sustainable waste management. It will eventually step up promotion of regional environmental leadership and commitment in low-carbon circular economy for future smart city.

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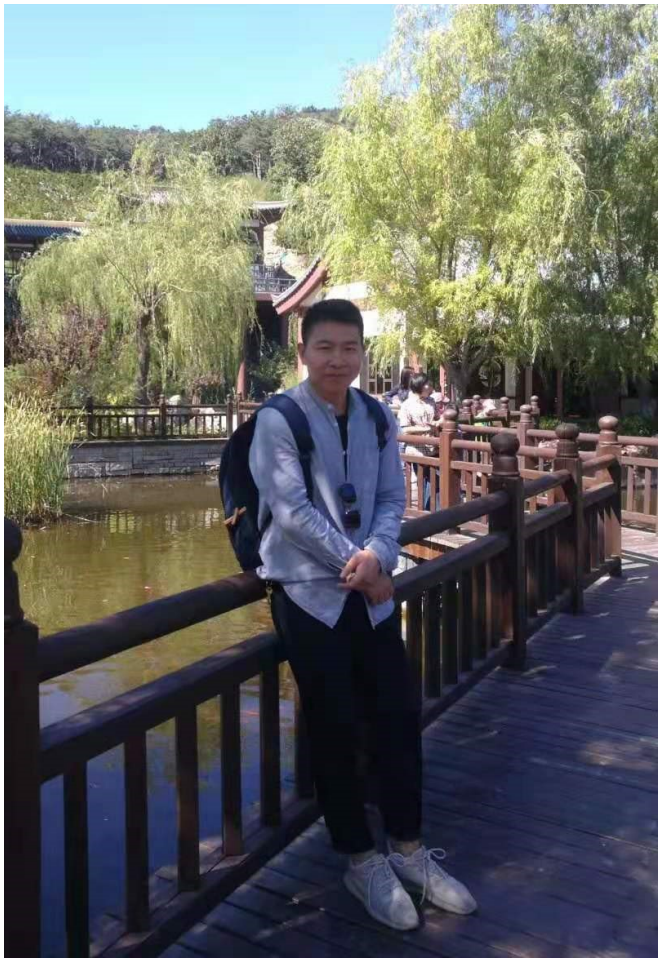

Dr. Wei Guozhen

E2S2 Research Fellow

Dr Wei Guozhen joined E2SE-CREATE program as Research Fellow in June 2020. He completed his PHD from Dalian University of Technology, China in Hydrology and Water Resources. His study focuses on hydrodynamic model and machine Learning Method.

Application of a Machine Learning Method (Long-Short-Term Memory Neural Network Model (LSTM)) to emulate the 2-Dimensional Shallow Water Equation.(a Hydrodynamic partial differential equation [“PDE”] model) using data from a catchment named Pangtoupao with the area of 1994 km2 in Heilongjiang province in China. The purpose is to have a way to predict flooding for any hydrograph of inflow to this catchment that is much faster than by computing the full PDE catchment hydrodynamic model during an actual flood event. Fast prediction is necessary in order to have sufficient time to issue helpful flood warning and flood mitigation strategies.