

**IEEE
PES
Day 2021**

Clean Energy Revolution

SPECS
Smart Grids + Power Electronics
Consortium Singapore



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

**IEEE
PES**
Power & Energy Society®
SINGAPORE CHAPTER

4th IEEE PES Day Webinar Series

20TH April 2021 | 9:00AM – 10:00AM
(GMT+8)

IEEE PES Day + IEEE PES SG + NTU + SPECS

Experiences and Learned Lessons from an Air Free-Cooled Tropical Data Center Testbed



Presenter Dr. Rui Tan
Associate Professor
Nanyang Technological University
Singapore

REGISTER NOW

Experiences and Learned Lessons from an Air Free-Cooled Tropical Data Center Testbed

Abstract:

The air free-cooling has been long thought infeasible in tropics due to the unique challenges of year-round high ambient temperature and relative humidity. In recent years, the increasing availability of servers that can tolerate higher temperatures and relative humidity levels sheds light upon the feasibility of the air free-cooling to enhance the data center energy efficiency. However, building an air free-cooled data center in the tropics requires extensive experiments to understand the details of how the realistic tropical environment conditions will affect data center power consumption, computing throughput, and server hardware reliability. This presentation will talk about the key observations, experiences and learned lessons from the experiment that was conducted. The experiments show that (1) the air free-cooling design that uses fans only can reduce the power usage effectiveness (PUE) by 38%, compared to the global average PUE, (2) the tropics' year-round high temperatures up to 37 degree Celsius do not impede the air free-cooling, and (3) the implementation of the air free-cooled data centers in tropics requires special cares to deal with airborne contaminants to avoid fast corrosion rate and dust-induced server faults. Presentation will also highlight the energy resilience of Singapore and its carbon footprint.



April 20, 2021



9 AM Singapore Time (GMT+8)



bit.ly/web-datacenter



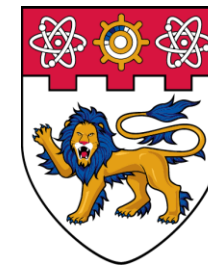
Rui Tan

Associate Professor
Nanyang Technological University (NTU)

Rui Tan is currently an Associate Professor at School of Computer Science and Engineering, Nanyang Technological University (NTU). He joined NTU in 2016 as an Assistant Professor. Before that, he was a Senior Research Scientist at Advanced Digital Sciences Center, a Singapore-based research center of University of Illinois at Urbana-Champaign, and a postdoctoral Research Associate at Michigan State University. He received a PhD degree from City University of Hong Kong. His research interests include sensor networks, Internet of things, and cyber-physical systems. He is the recipient of IPSN'17 and CPSR-SG'17 Best Paper Awards, IPSN'14 and PerCom'13 Best Paper Award Runner-Ups, and CityU Outstanding Academic Performance Award. He is a Senior Member of the IEEE.



Clean Energy Revolution



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE