

Energy Management and Optimization Control for Building Energy Systems Under Extremely Hot Climate Conditions-Qatar Case Study



Dr Zhaohui Cen

Dr. Zhaohui Cen is a Lead Researcher/Scientist at the Technology Innovation Institute (TII), Abu Dhabi, UAE, and specializes in intelligent automation for energy systems and aerospace systems.

Presenter Introduction:

Dr. Zhaohui brings to his role over 15 years of experience in the field of intelligent automation, condition monitoring and fault diagnostics for industrial systems including UAVs/Spacecrafts and Lithium ion battery storage systems, as well as Robotics and Autonomous systems for Solar PV applications. Prior to joining TII, he was Scientist at Qatar Environment and Energy Research Institute(QEERI), and Project head of Robotics and Autonomous systems. He has held academic and research positions in China, UK, Qatar, and UAE.

Presentation Summary:

Famous for its unique geographic location between desert and sea, Qatar has a significant desert climate and extremely hot weather conditions with strong solar irradiance, high temperature, humidity, and sandstorms. The local weather has some significance of representing a unique desert and coastline climate, which attracts a lot of research interests in various fields such as building efficiency, health, urban environment, and renewable energy. Especially, research on building energy systems, including Solar PV integration, control, and optimization for Heating, Ventilation, and Air Conditioning (HVAC), and energy storage is key for this region. In this talk, the Qatar case study on energy management and optimization control for building energy systems will be presented, including energy management studies on a 500kW/500kWh hybrid PV-storage system for a sustainable building demo; condition monitoring and reliability studies on the key element-battery energy storage system; HVAC Cooling challenges under Qatar's hot weather conditions.

Organizers:

Department of Civil, Environmental and Geomatic Engineering, UCL
The Bartlett School of Sustainable Construction, UCL
CIBSE Intelligent Buildings Group
CIB W098 – Intelligent and Responsive Buildings

Time: 4pm - 5pm, 3 Mar 2023

Zoom meeting room:

<https://ucl.zoom.us/j/5942880382>



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