IEEE Sri Lanka Central Region Subsection, IEEE PES Sri Lanka Chapter and IESL Kandurata Chapter

Jointly organizes a seminar on

"Renewable Energy – Opportunities, Key Challenges and Potential Solutions – 2019"

with guest lectures on

"Renewable Energy in India: Grid Integration and Management"

Prof. Naran M. Pindoriya
Associate Professor in Electrical Engineering at Indian Institute of Technology Gandhinagar, India.

"Integrating solar photovoltaic (PV) in LV/MV distribution networks: challenges and potential solution using battery energy storage system (BESS)"

Dr Shivashankar Sukumar
Post Doctoral Research Fellow at Indian Institute of Technology (IIT) Gandhinagar, India.

"Grid Integration of Wind Energy and Battery Energy Storage System"

Mr Rishabh Abhinav
PhD student, Indian Institute of Technology Gandhinagar, India.

Tuesday, 19th March 2019, 3.30 pm to 5.30 pm
(refreshments will be provided from 3.00 pm onward)

@ CEB Auditorium, DGM-CP office complex
No: 04, Asgiriya Road, Kandy

All are Welcome!!!

Prof. Naran M. Pindoriya is Associate Professor in Electrical Engineering at Indian Institute of Technology Gandhinagar, India. Before he joined IIT Gandhinagar, he was a research fellow in the Department of Electrical and Computer Engineering at National University of Singapore, Singapore in 2010. He received PhD in Electrical Engineering from Indian Institute of Technology Kanpur, India in 2009. His focused research interests include smart distribution grid/microgrids and grid integration of renewable energy and energy management.

He is currently the Principal Investigator of the DST/SERB-EMR project on "Smart Integrated Campus Energy Monitoring and Management System" and the international collaborative research projects viz DST-UKIERI thematic partnership on "D-DIEM: Data driven intelligent energy management for Sustainable Energy Access" and Indo-German (IGSTC) industry relevance project on "ECO-WET: Efficient Coupling of Water and Energy Technologies for Smart Sustainable Cities", and Co-Investigator of DST Mission Innovation - Smart Grid project on "Development of Prosumer Driven Integrated SMART grid". In past, he has successfully completed a couple of research projects/activities (Fast-track DST/SERB research project grant, Newton-Bhabha India – UK Advanced Training School award).

He has been awarded *IEEE Power & Energy Society (PES)* Gujarat Chapter *Outstanding Engineer award* (2017) to recognize his research contribution in power systems and smart distribution grid. He is a recipient of the prestigious *Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowship* by India-US Science and Technology Forum (IUSSTF) under which he has spent three months in 2016 at Virginia Tech University - Advanced Research Institute (ARI), VA USA for carrying out research in building energy management.

He is an Associate Editor of the IET Smart Grid Journal, Member of Editorial Board of International Transactions on Electrical Energy Systems and Guest Editor for the Special Issue on Data-Driven Methods in Modern Power Engineering of the MDPI Energies Journal.

He is a senior member of IEEE, Fellow of IETE and member of the Institution of Engineers (India).

Title: Renewable Energy in India : Grid Integration and Management

Abstract:
The share of renewable energy (RE) sources, primarily wind and solar generation, in Indian power grid has been growing significantly. The Government of India has established an installed capacity target of 175 GW of RE by 2022 that includes 60 GW of wind and 100 GW of solar, up from present capacities of 35 GW of wind and 26 GW of solar. As renewables grow more cost-competitive and increasingly contribute power to electric grids, the challenges of integrating such nondispatchable, variable generation are becoming more prominent. Strengthening the grid integration strategies and grid operations will help to manage these challenges. This talk will start with the present status and operational practice of Indian power sector and later will discuss the operational impacts of high penetration of RE into the grid and also the policy and regulatory framework to support RE integration and grid management in India.

Dr Shivashankar Sukumar is currently working as Post Doctoral Research Fellow at Indian Institute of Technology (IIT) Gandhinagar, India. He received his PhD in 2017 from University of Malaya, Kuala Lumpur. Before joining IIT, he was a Post Doctoral Fellow at University Tenaga National (UNITEN), Kuala Lumpur. His research interests include smart distribution system, microgrids, renewable energy integration and energy management.

Title: Integrating solar photovoltaic (PV) in LV/MV distribution networks: challenges and potential solution using battery energy storage system (BESS)

Abstract: Grid connected solar PV is the fastest growing renewable energy sources power generation technology. The quantity of electricity produced from solar PV directly depends on intensity of sun light. The PV penetration relies on solar radiation which fluctuates daily, hourly and over a shorter period of time (minutes and seconds). Solar PV when connected to the grid has positive impact on the network and at the same time, integrating the intermittent source with the utility grid can have negative impact. Therefore, the talk seeks to identify the challenges of integrating solar PV at LV/MV level distribution network and potential solution to address the challenges using BESS with a practical case study.

Mr Rishabh Abhinav did his B.Tech. in Electrical & Electronics Engineering from SHIATS, Allahabad in 2010 and M.Tech. in Electrical Engineering in 2012 from MNNIT, Allahabad, India. He worked as an Assistant Professor in GCET, Great Noida from July 2012-December 2013. He is currently pursuing his PhD degree from Indian Institute of Technology Gandhinagar, India. His research interests are short-term wind power forecasting, Grid integration of wind energy and battery energy storage system, and Wind energy trading in the Indian electricity market.

Title: Grid Integration of Wind Energy and Battery Energy Storage System

Abstract: The intermittent nature of wind makes it difficult to efficiently predict, schedule, manage, and control wind power generation. Grid integration of large-scale wind farms may pose significant challenges on power system operation and management. Battery energy storage system (BESS) coordinated with wind turbine has excellent potential to solve these problems. In my talk, I will address the issues pertinent to active and reactive power management due to the large-scale