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ΠΡΟΣΚΛΗΣΗ

Η Ελληνική Επιτροπή Ισχύος και Ενέργειας
του διεθνούς Ινστιτούτου Ηλεκτρολόγων και Ηλεκτρονικών Μηχανικών (IEEE)
σας προσκαλεί στη διάλεξη του:

Prof. Srinivas Bhaskar Karanki,

Indian Institute of Technology Bhubaneswar

με θέμα:

"Management of power flow in autonomous interconnected rural microgrids "

Η εκδήλωση θα πραγματοποιηθεί στο **Αμφιθέατρο Πολυμέσων** κτίριο Κεντρικής Βιβλιοθήκης ΕΜΠ, **Πολυτεχνειούπολη Ζωγράφου την Παρασκευή 5 Ιουλίου 2024, στις 12:00.**

Η διάλεξη θα δοθεί στα Αγγλικά

Πληροφορίες:

Επικ. Καθ. Β. Νικολαΐδης, Πρόεδρος Ελληνικής Επιτροπής Ισχύος και Ενέργειας IEEE, τηλ. 210-7723967

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Abstract

Renewable integrated DC microgrids are gaining popularity in remote locations or village areas where grid is not available. The reliability of autonomous DC microgrids depends on battery capacity and the presence of other sources like biogas/biomass due to the stochastic behavior of renewable energy. Overcharging and discharging scenarios force the microgrid into an insecure zone. Increasing the storage capacity is not an economical solution because of the additional maintenance and capital costs. Thus, in order to improve the reliability and optimize the requirements of battery energy storage, interconnecting different DC microgrids is a good solution. Actual experiences of an advanced microgrid in Keonjhar India comprising PV, storage, biomass, biogas and synchronization with a previously established microgrid will be presented. A dual active bridge (DAB)- based multiport DC-DC converter is a viable option to integrate two autonomous DC microgrids. The main challenge while using a multiport dc-dc converter is controlling power flow due to the increasing number of ports. Apart from this, connecting multiple energy vectors of different ratings required a control strategy to share the power based on its rating. The mismatch in voltages at the converter side of the circulating current leads to power losses. So in order to solve the aforementioned problem, sliding mode-based droop control is designed for proportional power sharing, and to interconnect different dc microgrids, a multiport dc-dc converter is proposed. The energy management technique is designed to achieve effective coordination and energy management between and within microgrids.

Short Bio

Srinivas Bhaskar Karanki received his B.Tech. degree from the Acharya Nagarjuna University, Guntur, India, in 2007 and the Ph.D. degree in electrical engineering from the Indian Institute of Technology Madras, Chennai, India, in 2012. From 2012 to 2014, he was a Post-Doctoral Fellow in Centre for Urban Energy (CUE), Ryerson University, and Toronto, Canada. He is currently an Associate Professor in the School of Electrical Sciences, Indian Institute of Technology Bhubaneswar, Bhubaneswar, India. He is senior member of the IEEE Power & Energy Society and Power Electronics Society. He was the chapter chair for IEEE Power Electronics Society Bhubaneswar Chapter (2019-2021) and also currently the Indian Liaison for IEEE PELS . He was awarded with POSOCO-2013 best thesis award for his doctoral thesis. He was an academic visitor at University of Warwick, Coventry United Kingdom in 2019. He has participated in UK India research projects as principal investigator from IIT Bhubaneswar for UKICERI (UK India Clean Energy Research Institute). Dr. Srinivas Bhaskar Karanki was awarded with Director's Commendation for Outstanding Services 2020 (Faculty Members)- For Counselling Services in 2021. He was also awarded with teaching excellence award in 2022. He has been involved in several other research projects as PI and Co-PI sponsored by DST, Odisha State. His current research interests include power electronic converters for renewable energy systems, power quality, energy storage, and power electronics applications in power systems.