Title: Resilient Nuclear-Renewable Hybrid Energy Systems
Speaker: Dr. Hossam A. Gabbar, PEng, RAMSP Fellow, Director of Smart Energy Systems Lab, Ontario Tech University, Canada

Abstract:

This talk will present integration of nuclear-renewable to support energy infrastrutures. Different coupling mechanisms will be presented to support different installtions and user requirements. Design and operation strategies and different technologies will be illsutrated to deploy nuclear-renewable hybrid energy systems and their use for different applications in city, urban, and remote communities. Performance measures are proposed to evaluate different strategies. The talk will include techno-economic evaluation of interconnected nuclear-renewable micro hybrid energy systems with combined heat and power, and their impact on number of implementation strategies. Stratgies will be illustrated to deploy nuclear- renewable hybrid energy system (N-R HES), with considerations on scalability, capital cost, project lifetime, and other implementation parameters. Nuclear technologies will be presented, including Small Modular Reactor (SMR) or Micro Modular Reactor (MMR), as integrated wihitn micro energy grids. Resiliency and performance measures will be discussed in view of number of operation and control strategies to meet user requirements.

Bio

Dr. Gabbar is a full Professor in the Faculty of Energy Systems and Nuclear Science, and cross appointed in the Faculty of Engineering and Applied Science, at Ontario Tech University (UOIT), where he has established the Energy Safety and Control Lab (ESCL), Smart Energy Systems Lab, and Advanced Plasma Engineering Lab. He is the recipient of the Senior Research Excellence Aware for 2016, UOIT. He is recognized among the top 2% of worldwide scientists with high citation in the area of energy. He is leading national and international research in the areas of smart energy grids, energy safety and control systems, and waste to energy using advanced plasma technologies. Dr. Gabbar obtained his B.Sc. degree in 1988 with first class of honor from the Faculty of Engineering, Alexandria University (Egypt). In 2001, he obtained his Ph.D. degree from Okayama University (Japan). From 2001 till 2004, he joined Tokyo Institute of Technology (Japan), as a research associate. From 2004 till 2008, he joined Okayama University (Japan) as an Associate Professor, in the Division of Industrial Innovation Sciences. From 2007 till 2008, he was a Visiting Professor at the University of Toronto. He also worked as process control, safety, and automation specialist in energy and oil & gas industries. Dr. Gabbar has more than 230 publications, including patents, books / chapters, journal and conference papers.