**Title**: Challenges and Solutions of Future Renewable-rich Grid for Power Utility

**Abstract:** Many governments are encouraging an increase in the share of renewable energy (RE) in their national electricity generation mix, and it is already evident that RE generators are being connected at all voltage levels. The intermittent and variable nature of the resource, the fluctuation caused by cloud cover and wind turbulences, and the single-phase nature of some R.E.s causes many challenges for network operations and control. This demands a highly controllable and intelligent electricity network with ample communications with different parts of the network. That means the grid should move away from the current passive mode to a more active network management mode where distributed generation (D.G.) and consumer loads are in a responsive mode. In this talk, the challenges & solutions required when operating the grid with high penetration of renewables are discussed in detail while emphasizing the smart grid concept.

**Short CV**: Prof. Janaka Ekanayake graduated from the University of Peradeniya in 1990 with First Class Honours in Electrical & Electronics Engineering and obtained his PhD from the University of Manchester Institute of Science & Technology, UK in 1995. He is a renowned personality in the Engineering fraternity and a Fellow of IEEE (USA), IET (UK) and IESL. He was also awarded as the most outstanding Engineering researcher in Sri Lanka in 2018. He has a wealth of experience in modern power systems and has contributed to renewable energy generation and integration in the UK, Bangladesh, Viet Nam, and Sri Lanka. He has authored a number of books and journal papers on power electronic applications for electricity systems, wind power generation, renewable energy integration, and smart grids. He is a Visiting Professor at the Cardiff University, UK, and an Honorary Professor at the University of Wollongong, Australia. At present, he is the Senior Professor and Chair of Electrical & Electronics Engineering, University of Peradeniya.

**Date:** 1st December 2022

**Time:** 14:00-15:30

**Room:** Room B001