POWER, ENERGY & CLEAN TECHNOLOGIES seminars

Date and Time:
Friday 2 June 2023
12:00pm (AEST) – start
12:55 – conclusion
Time will be allocated for questions after the presentation

This seminar will be delivered in person and by livestream Zoom:

Venue: GP-P-419
P-Block, Level 4, Research Forum P419, QUT Gardens Point
Zoom Delivery: Join by Zoom Password: 204375

The Energy Researchers at QUT are pleased to invite you to an online PECT Seminar given by Dr Shabir Ahmadyar from KPMG

Biography

Dr Shabir Ahmadyar
Director of Power Solutions
KPMG

Dr Ahmadyar has more than 15 years of experience in power system studies. He has a PhD in power systems from The University of Sydney. He has led and delivered many generator connection projects in the last five years. His focus area is the operational challenges of future power systems. He is the Director of Power Solutions at KPMG and a research affiliate with The University of Sydney, where he co-supervises PhD students who work on planning and operational challenges of future grids.

He is a Chartered professional engineer (CPeng), a Senior Member of IEEE, and an active member of CIGRE AU-C4.

Speaker's contact details
Email: sahmadyar@kpmg.com.au

Frequency Performance of Future Power Systems – Challenges and Opportunities

Abstract

The increasing penetration of non-synchronous renewable energy sources (NS-RES) alters the dynamic characteristic and, consequently, the frequency behaviour of the system. To accurately identify these changing trends and address them in a systemic way, it is crucial to assess a large number of scenarios. Given this, Dr Shabir presents a frequency stability assessment framework based on a time-series approach that facilitates the analysis of a large number of future power system scenarios.

Second, the application of the framework to assess the frequency stability of the Australian future power system by considering a large number of future scenarios and the sensitivity of different parameters will be presented. This leads to identifying a maximum non-synchronous instantaneous penetration range from the frequency stability point of view for the Australian system.

Third, to reduce the detrimental impacts of high NS-RES penetration on system frequency stability, a dynamic inertia constraint is derived and incorporated into the market dispatch model. The performance and frequency stability of the system with such a constraint is assessed. Then, the contribution of synchronous condensers, synthetic inertia of wind farms and a governor-like response from de-loaded wind farms on system frequency stability is assessed and quantified.

Finally, a wind farm coordinated operation strategy is proposed, and the contribution of wind farms to frequency control is quantified.

RSVP via Eventbrite
COB Thursday 1 June 2023