Real-Time Digital Power and Energy System Simulations

Real-time digital simulation of power and energy systems with sufficient resolution (2-50µs) allows for monitoring, operation, control, testing, optimisation, validation and maintenance of large and complex electricity and energy networks.

Competitive advantage

- Having the largest real-time digital-simulation laboratory in Australia and one of the largest in academic and research institutions globally, offers unprecedented simulation capabilities
- Expertise in comprehensive modelling and the real-time digital simulation of power and energy systems
- Expertise in power electronics, combined AC/DC networks and power-systems integration
- Ability to develop digital twins
- Test-bed systems for educational and training purposes

More Information

Dr Georgios Konstantinou

School of Electrical Engineering and Telecommunications

T: +61 (0) 2 9385 7405
E: g.konstantinou@unsw.edu.au

UNSW Knowledge Exchange

knowledge.exchange@unsw.edu.au

www.capabilities.unsw.edu.au

+61 (2) 9385 5008

Impact

- More reliable, secure, stable and efficient networks, integration of transmission and distribution modelling, integration of advanced energy conversion systems such as wind turbines, photovoltaic power plants and energy storage systems.

Successful applications

- High-voltage DC grids for flexible and efficient electricity transmission
- ElectraNet Heywood Interconnector distance protection relay hardware-in-the-loop testing
- ElectraNet Heywood Interconnector series compensation protection testing
- Simplified 14-generator Australian network test system
- Battery energy-storage system models

Capabilities and facilities

- 18-rack, 180 CPUs for the RTDS real-time digital simulator
- 1 x OPAL-RT OP5607 real-time digital simulator
- 4 x OPAL-RT OP4500 real-time digital simulators
- 4 x Omicron CMS100 power amplifiers
- Interface with Regatron DC/AC supplies for power hardware-in-the-loop testing

Our partners

- AEMO
- AEMC