Ryerson University

Centre for Urban Energy

Research case study > smart grid

Smart grid lab demonstration

Version 1 (updated May 11, 2017)

Context: The Schneider Electric Smart Grid (SESG) Lab is Canada's first university based Smart Grid Lab. This innovative project serves not only for collaborative industrial research but also for academic studies and training.

Problem: Currently available software simulation tools which are mainly based on theoretical calculations, idealized assumptions and preloaded conditions provide limitations to testing a power utility company's system.

Solution: The SESG Lab has state-of-the-art hardware and controls allowing for real-life technology and power system operation in the lab. These functions of a physical lab cannot be easily replaced using conventional simulators.

Impact: The SESG Lab provides utilities with the opportunity to investigate solution options in a cost-effect way without the risk of customer interruptions. This can improve planning and provide a valuable opportunity to physically test "what if" scenarios.

CUE's role: Researchers were able study heavily loaded feeders, model a photovoltaic (PV) system on the feeder, and successfully create a physical replica of one of the feeders from PowerStream's Greenwood Transformer Station in the lab.

✓ *Completed*

Sponsors:
PowerStream (now Alectra Utilities)

Timeline:
August 2014–August 2015

Research team:
Bala Venkatesh, Peng Yu

Key stats

27.6kV	Feeder from PowerStream Station
3	Feeders
2 modes	Islanded and grid connected