NSERC SMART MICROGRID NETWORK
nsmg-net

Project 1.3

Status Monitoring, Disturbance Detection, Diagnosis and Protection for Intelligent Microgrids

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NSERC CRSNG

Progresses

- In the area of Microgrid protection, we developed a "decoupled" approach to deal with the protection coordination problem. The idea is to limit the fault current contribution of distribution generators so that they cannot interfere with the microgrid protection (Poster 1)

- In the area of microgrid monitoring, we proposed a state estimation approach to provide improved visibility for the monitoring and protection of microgrids. (Poster 2)

- The task on home-based microgrid has completed the definition phase. The finalized concept may be called the "neighborhood microgrid". A simulation strategy for this microgrid has been established (Poster 3)

Deliverables

Two journal papers

- H. Yazdanpanahi, Y. Li, W. Xu, "A New Control Strategy to Mitigate the Impact of Inverter-based DGs on Protection System", IEEE Transaction on Smart Grid, accepted in January 2012.

- S. Lin, D. Salles, W. Freitas, and W. Xu, "An Intelligent Control Strategy for Power Factor Compensation on Distorted Low Voltage Power Systems," IEEE Transactions on Smart Grid, Accepted in May 2012

Student training

- One M.Sc. student graduated
- The project currently has the participation of 3PhD and 2MSc students

Collaborations

Industry:

Hydro One Network Inc.: We presented the fault current restriction concept to Hydro One engineers.

University:

With the MG-Net:
McGill university, Prof. Geza Joos
University of Toronto, Prof. Reza Iravani
University of New Brunswick, Prof. Julian Meng.

Outside the MG-Net:
University of Compinas (Brazil), Prof. Walmir Freitas