POLYTECHNIQUE MONTRÉAL

Department of Electrical Engineering
Polytechnique Montréal & GERAD

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Title : Generic and versatile optimal power flow formulation based on the modified augmented nodal analysis (MANA)

Keywords : renewable energy systems, load-flow, optimal power flow, optimization.

Short project description :

Renewable electric power grids are complex systems integrating many components. They now integrate inverter-based large-scale renewable generators, e.g., wind or solar farms, and grid-forming and/or grid-following distributed energy resources (DERs, e.g., residential solar pannels, electric vehicles, etc.), in addition to the more standard loads, conventional generators, and transmission infrastructure, e.g., transformers, switches and reactive power compensation. Thus, given of the large number of different coupled components, dispatching optimally generation resources while meeting all load and electrical network constraints is a difficulty tasks and dedicated approaches must be designed.

In this project, an optimal power flow method capable of interfacing all components of modern grids with renewables will be formulated based on the modified augmented nodal analysis (MANA).

Program : M.A.Sc. or Ph.D.

Academic unit : Department of Electrical Engineering, Polytechnique Montréal.

Supervisors : Prof. Jean Mahseredjian & Prof. Antoine Lesage-Landry.

Requirements : The candidate must hold a Bachelor of Engineering in Electrical Engineering or in a relevant field and have a strong background in power engineering and mathematics.

Funding : financial support of 18k$ (M.A.Sc.) or 22k$ (Ph.D.) per year.

Application : To apply, please send your CV, a cover letter and your academic transcripts to :

- `jean.mahseredjian@polymtl.ca` and ;
- `antoine.lesage-landry@polymtl.ca`.