swissgrid

Swissgrid Ltd,
Bleichemattstrasse 31,
5001, Aarau

Master Thesis/ Internship

Date: 17.05.2024, Aarau

Development and improvement of the existing outage scheduling optimization tool at Swissgrid

Introduction

The current outage planning process at Swissgrid is undertaken by experienced outage planners in a manual approach. With increasing network complexity due to RES integration at distribution grids and also increasing number of grid reinforcement projects and maintenances, such experience-based outage planning principles may not be functioning anymore in the future. Swissgrid has therefore built an internal tool to optimize and automatise the requested outages considering the abovementioned challenges. The current tool considers the non-technical work-related constraints such as outage durations, outage blocking periods, as well as system operation constraints such as power flows, line loadings, net transfer capacity (NTC). The tool needs to be further developed and other aspects of the outage planning shall be included.

Tasks

- Development of power plant limitations in the outage planning algorithm,
- Enhancing the net transfer capacity (NTC) constraints in the main algorithm,
- Development of outage planning dynamic constraints based on the given outage requests,
- Enhancing the current N-1 security assessment in the outage planning algorithm.

Requirements

- Programming language skills like python,
- Familiar with optimization solvers such as Gurobi,
- Understanding the mathematical optimization of mixed integer linear programs (MILP),
- Strong Power system analysis knowledge,
- Familiarity with power flow tool such as PSSE, PowerFactory, Pandapower, or similar,
- established communication and writing skills in English (German or French are advantages),
- Self-reliance on solving the challenges and debugging the programming codes.

Duration

6 months with a possibility of having a 6-month internship in advance.

Location

Aarau

Contact person

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