

INTERPLAN

INTEgrated opeRation PLANning tool towards the pan-European network
Transforming Grid Operation Planning

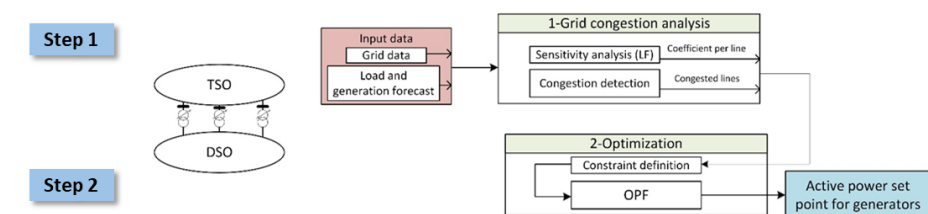
Use Case 2: Grid Congestion Management

Objective: Optimization of the active power variation of flexible resources for solving the congestion issues.

Network operation planning criteria: Mitigating grid congestion, maximizing DG/DRES contribution to ancillary services.

Use case solution: The congestion issues are solved by optimizing the active power variation of flexible resources. In detail, instability events are identified and the optimization function is activated to evaluate the total minimum active power variation to apply to each busbar for their solving.

Context diagram:



Description:

Step1: The TSO detects congestion issues and triggers the congestion management process.

Step2: The active power flexibility assessment per each resource is performed at both TSO and DSO level. This assessment is essential to know the possible active power variation at each busbar to solve the congestion problems detected in step 1. Then a sensitivity analysis is performed to calculate the minimum active power variation at each busbar to solve the detected grid congestion problems at TSO level.

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Operation challenge:

- Congestion Management

Actors:

- TSO
- DSO
- Aggregator

Controllable units:

- Synchronous generators
- DRES and DG

Project duration

1 November 2017 - 31 January 2021

Contact

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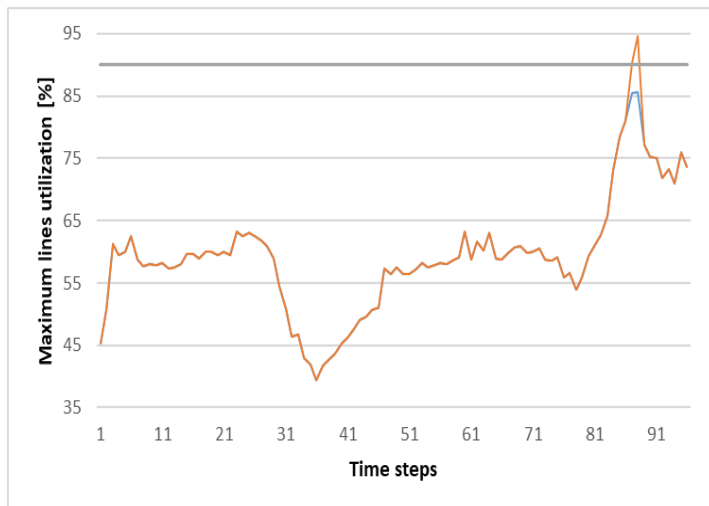
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The key results of implementing use case 2 control functions:

Congestion Detection

The following diagram shows the maximum line utilization with (blue curve) and without (orange curve) use case 2 control function. This function allows mitigating the congested lines, evaluating the optimal active power set points of distributed resources for ensuring that maximum lines' loading is lesser than the limit value of 90%.



The simulation is performed for the time range of 00:00 to 23:45 with the resolution of fifteen minutes.

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