

R&D
NESTER

NODAL CAPACITY ALLOCATION TOOL

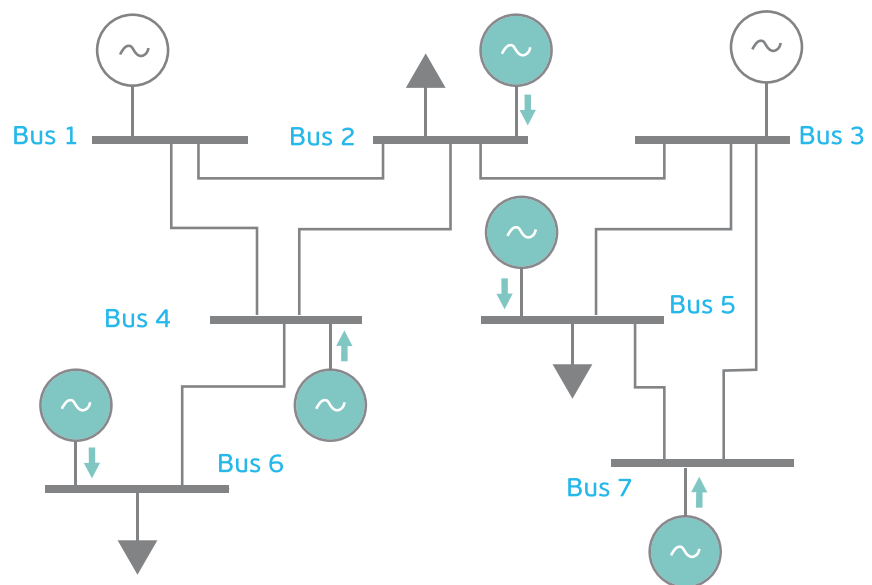
The challenge: the increase of distributed generation grid connections, particularly from renewable sources such as wind and solar raised a very important challenge in grid planning. It is necessary to determine the maximum capacity that each node can accommodate while ensuring safe grid operation.

THE APPROACH

R&D Nester implemented a software tool using Python + Siemens PTI PSS®E package to **determine the maximum nodal capacity of each node** in a grid, based in evolutionary algorithms. Different compensation methods can be performed and the user has the possibility to select non-simultaneous or simultaneous nodal injections (considering one or more nodes of the network simultaneously).

The tool runs **multiple grid scenarios, including contingency analysis** and creates automatic reports so the user can easily check obtained results. It gives the user the possibility to run a full analysis of a network but also to analyze only user-defined zones/nodes.

A **user-friendly GUI** allows a quick configuration of the tool and provides feedback of the evolution of the different algorithms calculation process. The output of this tool may be **used for planning purposes and management of the RES grid connection levels**. This tool was successfully applied to a large scale transmission network of an European TSO.



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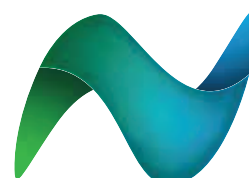
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