

Managing and Utilizing System Transmission

PSS[®]MUST

At a glance

The PSS[®]MUST program calculates electric transmission transfer capabilities and the impact of transactions and generation dispatch. Its results are key to use the electricity grid more fully and managing the effect of power transactions and dispatch changes.

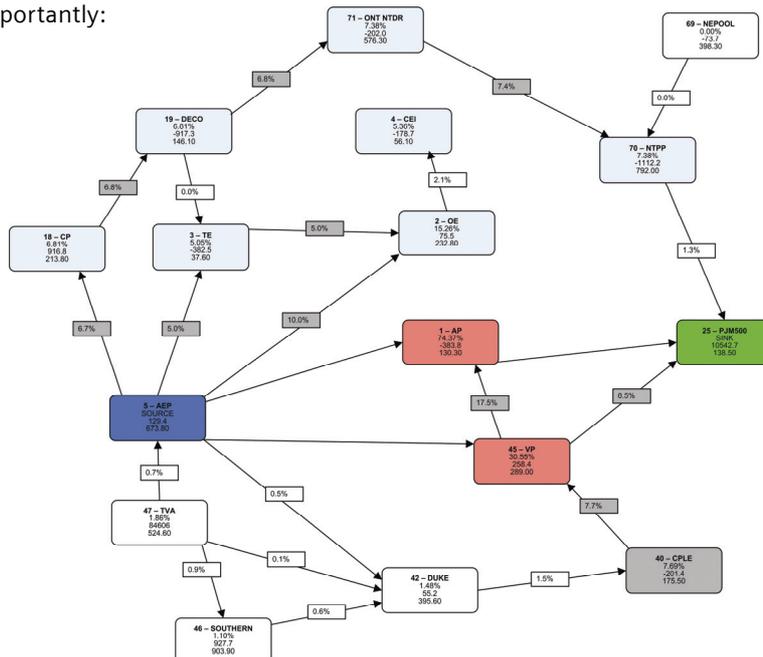
The challenge

The capability to move power from one part of the transmission grid to another is a key commercial and technical concern in the restructured electric utility environment. Engineers determine transmission transfer capability by simulating network conditions with equipment outages during changing network conditions. Many uncertainties remain in the process, most importantly:

- Source/sink transactions different than those assumed in the initial (base) calculation
- Generation dispatch patterns different from those assumed in the initial calculation

Our solution

Simulation tools calculate the first contingency incremental transfer capability (FCITC). FCITC is adjusted for uncertainties and posted as the available transmission capability (ATC) and total transmission capability (TTC). The purpose of PSS[®]MUST is to efficiently calculate:



Answers for infrastructure and cities.

- Transaction impacts on transmission areas, interfaces, monitored elements, or flowgates
- Generation redispatch factors for relieving overloads
- Incremental transfer capability (FCITC)

FCITC variations with respect to network changes, transactions, and generation dispatch.

PSS®MUST complements Siemens PTI's Power System Simulator for Engineering (PSS®E) data handling and analysis functions with the most advanced linear power flow and user interface available. The PSS®MUST speed, ease-of-use, and versatile Microsoft Excel® interface simplifies and reduces data setup time, and improves results display and understanding.

PSS®MUST is a focused, PC-only, stand-alone product with simple data requirements, Excel® based user interface, and seamless links with PSS®E and PSS®TPLAN products.

Transfer Limit Calculation

A fundamental PSS®MUST function is the calculation of the FCITC between sources and sinks under base case and contingency conditions. The sources and sinks can be any grouping of bus loads or generation (often called subsystems). FCITC results are the same as from other commercial tools (i.e., PSS®E activities TLTG or DCCC).

The PSS®MUST program employs efficient data structures and algorithms tuned to the target calculations. User experience at many locations has consistently demonstrated a 60 times speedup of FCITC calculation compared to TLTG.

Other PSS®MUST features stem from the transfer limit calculation, best exemplified by application.

Operation

PSS®MUST is a standalone program that depends on other software for input, such as PSS®E saved case or raw data files. PSS®E TLTG contingency, subsystem, and monitored element files are read directly into PSS®MUST. Additionally, output from TLTG and minimum sensitivity controls can be used by PSS®MUST. PSS®MUST data input is very simple, consisting only of specifying study and parallel transfers, from and to subsystems, and the maximum test limits.

The PSS®MUST program can be run in a graphically-oriented Excel® interface or in a command-line mode convenient for embedded automated calculations.

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