

WECC MVS Updates

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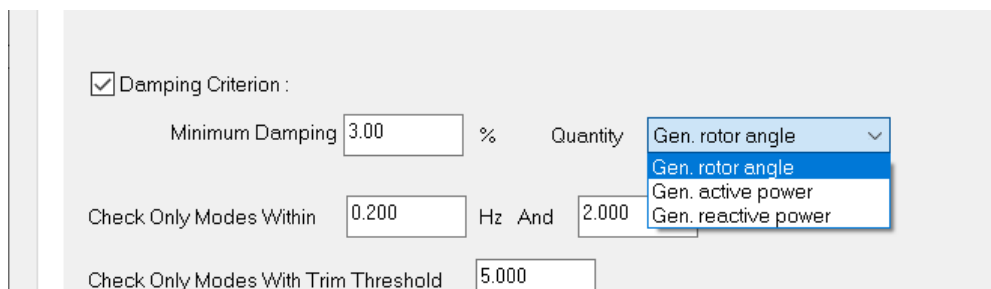
- Note:
 - From v22 onward transitioned to scheduled releases (3 minor releases/year, e.g., v22.1, v22.2, v22.3, 1 major release e.g. v23)
 - Minor releases will generally include fixes/model support/small enhancement requests, major release cycle for public release of more significant features
- Plan for **July 7th** major release (v23)

TSAT – Modeling Changes (up to v22.3)

- Removed fixed limit on # of relay data entries
- Third-party library support
 - WT12A1U_B and WT1P_B conversion/support
 - PSS/E
 - MAXEX1/MAXEX2 OEL models
 - PLNTBU1 no longer requires generator association, e.g., can be mapped to FACTS-only devices

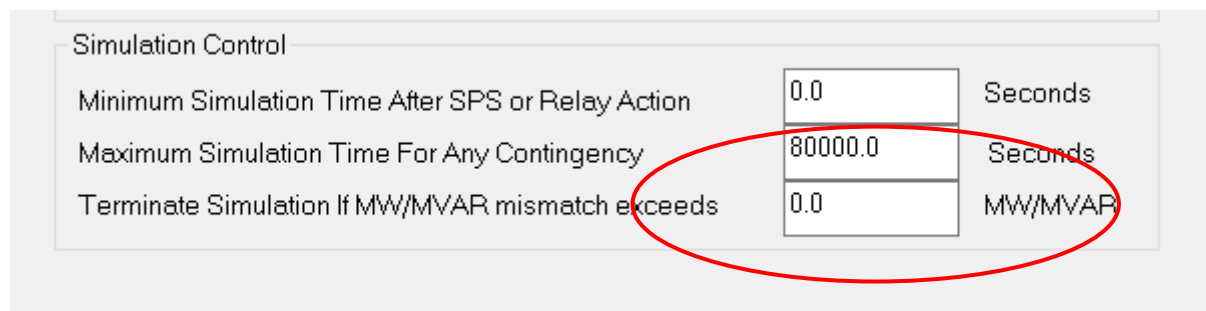
TSAT – Simulation options

- Allow use of quantities in addition to generator rotor angles for continuous damping calculation (previously just rotor angle)



A screenshot of a software interface for simulation options. It features a 'Damping Criterion' section with a checked checkbox. Below it, there are three rows of settings: 'Minimum Damping' set to 3.00%, 'Quantity' set to 'Gen. rotor angle' (with a dropdown menu open showing 'Gen. rotor angle', 'Gen. active power', and 'Gen. reactive power'), 'Check Only Modes Within' set to 0.200 Hz, and 'Check Only Modes With Trim Threshold' set to 5.000.

- (from 22.1)** Configurable MW/MVAR mismatch allowance - will allow simulation to proceed after solution iterations exhausted if less than threshold (will be marked in simulation/logs)



A screenshot of a 'Simulation Control' dialog box. It contains three rows of settings: 'Minimum Simulation Time After SPS or Relay Action' set to 0.0 Seconds, 'Maximum Simulation Time For Any Contingency' set to 80000.0 Seconds, and 'Terminate Simulation If MW/MVAR mismatch exceeds' set to 0.0 MW/MVAR. The last row is circled in red.

User-Defined Modeling (up to 22.3)

- Allow use of TSAT SPS UDMs for logical evaluation in VSAT cases
- Previous update/reminder:
 - Supervisory controller (SUPBUS/SUPUDM) block monitoring
 - # blocks increased (200) in AC UDMs to allow more detailed modeling
 - Encrypted template models now supported in DSA Manager / Online DSA
 - DLBProc support for DLLs in user-defined DC models (previously AC-only)

Upcoming (v23 – July7)

- Continued work on MQT tool to be included with TSAT (target v23 or separately released module)
- Switchable Shunt ID support:
 - will allow proper support for ABBSVC2,CSSCST2,SVSMO1T3,SVSMO2T3,SWSHNT2, etc. target v23
 - New UDM class for referencing devices
- TSAT multi-threaded engine support
 - Seeing ~2-3x speed up for large interconnect cases for single contingency execution (more significant where not already leveraging distributed computation)
 - DLBs/DLLs on main thread

Upcoming (v23)

- Will include REGFMA1 and GFM End Block for UDM development
- Composite load dynamic phasor model for 1ph AC motor (ACPHSLD) in DSATools modular load format
 - Preliminary testing shows performance impact about 6% reduced in WECC case vs MOT1PH
- IEEE 421.5
 - Remaining priority 1 items for v23
- SSAT – adding additional analysis options for modular renewables
 - Response and additional monitoring capability