

TSAT 22.0 Release Notes

This document summarizes the new features and enhancements available in TSAT version 22.0. All changes included are from TSAT version 21.0. For more details on these changes, please refer to TSAT manuals.

1. Modeling

- Support for the following models in PSS/E format:
 - GEWTGCU1, GEWTECU1, GEWTPTU1, GEWTARU1, GEWT2MU1, GEWTGDU1
 - PSS2C, PSS2CU1
 - SLYPN1
 - HYG3U1
 - OLTC1T
- Support for the following PSS/E IDEV change commands:
 - BAT_SWSMOD_CHANGE_CON
 - BAT_SWSMOD_CHANGE_ICON
 - BAT_CCTMSCOMOD_STATUS
- Support high voltage reactive current logic in PSS/E WT3G2 model
- Support Lvpnt0 and Lvpnt1 parameters in PSS/E GEWTG1 model
- Additional messages are reported for PSS/E SLNOS1 model when apparent impedance enters or leaves the relay zones
- Support for the following models in PSLF format:
 - cmpldw2, _cmpldw2
 - exac1m
 - _cmp_der_a in _cmpldw
- Support for the following models in the DSATools format
 - CMPLD2, AC1MLD, MOT3LD, ELECLD, STATLD, DISTEQ, DGPVGN
- Add a dummy electrical controller model for renewables if it is missing and required by a torque or plant controller

2. User-Defined Model (UDM) Enhancements

- Support DLB blocks with multiple outputs
- Supervisory controller models are now supported.
 - Models can be associated with a bus or with no device
 - User-defined supervisory controllers must use a plant controller end block
- Additional functions supported in template UDM's:
 - genmbase
 - % (modulo operator)
 - atan2
 - log10
- Asatcal and Bsatcal functions in template UDM's to support exponential saturation type
- Plant controller end block and generator monitoring blocks: %1 can be used to specify first generator ID at the bus
- Plant controller end block can be initialized to the total output of downstream devices
- VSI end block supports Phase Locked Loop (PLL)
- New quantities for branch monitoring:
 - From side and to side voltage magnitude
 - From side and to side voltage angle
 - From side and to side frequency
- Support two-argument arctangent block 'atan2' block
- Added support for SINK, OUTLVL block in user-defined DC models.

This block can be used to increase the verbosity of TSAT internal messages for converter solution logging.

3. Computational Features

- Allow up to 100 injection files
- Equipment name format: From side node for branches can be specified as a station name + "*" to match any node name starting with that station
- Interface monitoring block supports "*" in ID field to monitor flow on all branches between the two buses

4. Contingency

- Support ‘Modify Three Winding Transformer’ contingency command
- Support ‘Disable Early Termination’ contingency command
- For high-tension bus contingency creation, renewable generators are now included in addition to synchronous machines.

5. Monitor

- Out of service generators that are specified individually, not by region, are now included in the monitored generator set. This is to allow the monitoring of units that are turned on in transfer analysis.

6. Powerflow solution

- Added new powerflow solution parameter ‘Admittance Matrix Singularity Threshold’
- Support remote control target for the switchable shunt powerflow solution option
- Support ‘Percentage of discrete shunts adjusted’ parameter

7. DSAOA Output Analysis Tool and script plotting

- Add powerflow non-convergence report from powerflow solutions that fail to solve
- Add support for importing JSIS CSV files for plotting against TSAT curves

8. Others

- Maximum Simultaneous Server Start Count parameter added in distributed computation settings. This parameter can be used to throttle how much data is initially sent out to servers.