

ARTEMiS User Documentation

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The ARTEMiS Blockset is a performance-enhancing add-on to the SimPowerSystems Blockset that extends its capability for real-time simulation.

ARTEMiS has the following characteristics:

- Deterministically-bound fixed time step integration method suitable for real-time simulation
- Non-iterative execution appropriate for hardware-in-the-loop simulation
- High execution speed suitable for large-scale simulation
- Support for parallel processing suitable for distributed simulation in RT-LAB and eMEGAsim
- Superior numerical stability through the use of L-stable discretization methods
- Interpolation capability for increased precision in switched network
- State-Space Nodal (SSN) solver for real-time simulation without any limitation on the number of switches

Some SSN features:

- Can handle models with hundreds of switches in real-time
- Interpolation capability for Thyristors and IGBTs
- SSN enables parallelization of the nodal equations without delays in the solution
- SSN enables the user to incorporate their own models directly into the nodal solver without any delay in the solution
- SSN iteration capability on MOVs and Single Switches (new 2015)
- SSN benchmarked for 750 EMTP nodes distribution grid at 52 μ s on Xeon-v3 20 cores PCs (new 2015)

TSB-RD (with real-diode in rectification mode) for nanosecond accuracy in simulation of 2-level, 3-level NPC and 3-level T-type inverters (new 2018)

- Support parallelization (2-level)
- Snubber selection made more easy because of real-diode in rectification mode

- Equivalent nanosecond interpolation accuracy with RT-Events modulation or Digital Input with Time Stamping

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