

Simulation Systems Comparison Chart



HYPERMIM



eMEGASIM



ePHASORSIM



eFPGASIM

Industries	Power Systems Simulation	Power Systems and Power Electronics Simulation	Power Systems Simulation	Power Electronics Simulation
Applications	Protection Systems, Power System Controls, Modular Multilevel Converter (MMC), Wide-Area Monitoring Protection and Control, Cybersecurity, Microgrid, Distribution	Protection Systems, Power System Controls, Modular Multilevel Converter (MMC), Microgrid, Onboard Power Systems, Hybrid and Electrical Transportation, Cybersecurity	Wide-Area Monitoring Protection and Control, Power System Controls, Cybersecurity	Energy Conversion Controls, Hybrid and Electrical Transportation, Power System Controls
Simulation type	EMT domain	EMT domain	Phasor domain	EMT domain
Typical time step	Network solution: 5 - 100 μ s Switches and converters: 200 ns - 2 μ s	Network solution: 10 - 100 μ s Switches and converters: 200 ns - 2 μ s	1 ms - 10 ms	200 ns - 2 μ s
Compatible modeling environments	HYPERMIM, Simulink, Simscape Power System	Simulink, Simscape Power System	Simulink, Excel, PSS®E, CYME, Power Factory, ETAP, FMU (Open Modelica and Dymola)	Simulink, Simscape Power System, PLECS, PSIM and NI Multisim
Maximum tested real-time network size	9,000 3-phase nodes (27,000 nodes)	300 3-phase nodes (900 nodes)	108,000 1-phase nodes	n/a
Maximum non real-time network size	Unlimited	1,500 3-phase nodes (5,000 nodes)	Unlimited	n/a
Capability per CPU core or per FPGA	75 3-phase nodes @ 50 μ s (200 switches)	n/a	10,000 nodes @ 10 ms	288 states/ 128 switches*
Features	<ul style="list-style-type: none"> Automatic parallelization of computation Windows-based offline simulation to prepare to real-time Test automation tool and Python API On-the-fly parameter modification during simulation COMTRADE playback Compatibility with Simulink for controls 	<ul style="list-style-type: none"> Dedicated SSN solver API: Python, C, Java, LabVIEW Multi-physical domain simulation 	<ul style="list-style-type: none"> Positive sequence and unbalanced networks Load flow (positive sequence) Simulation of very large mixed T&D networks 	<ul style="list-style-type: none"> Automatic scripting FPGA compilation not required 200 kHz PWM I/O Rich library of electrical motors

*Variable according to the selected eHS series. Visit the eHS page for more information: www.opal-rt.com/solver-ehs/

About OPAL-RT TECHNOLOGIES

OPAL-RT is the world leader in the development of PC/FPGA-based Real-Time Digital Simulator, Hardware-in-the-Loop (HIL) testing equipment and Rapid Control Prototyping (RCP) systems to design, test and optimize control and protection systems used in power grids, power electronics, motor drives, automotive industry, trains, aircraft and various industries, as well as R&D centers and universities.



OPAL-RT
TECHNOLOGIES

opal-rt.com