

Simulation of a wind-turbine asynchronous generator

Simpowersystems

Power system modeling and simulation software

SimPowerSystems is a software for modeling and simulating electric power systems in the Simulink® environment. It has powerful features for modeling generation, transmission and distribution, especially when designing associated monitoring and control systems.

SimPowerSystems is well suited to the development of complex, self-contained power systems, such as those in automobiles, aircraft, manufacturing plants and generating stations.

Multidomain simulation in Simulink

SimPowerSystems seamlessly incorporates Simulink multidomain block libraries. By combining SimPowerSystems electrical models with Simulink control models or with the mechanical, hydraulic or thermal models of other MATLAB products, users can rapidly model and simulate complex systems, and study how control systems and power systems interact.

Impressive block library

The SimPowerSystems library contains more than 150 blocks distributed in sublibraries such as:

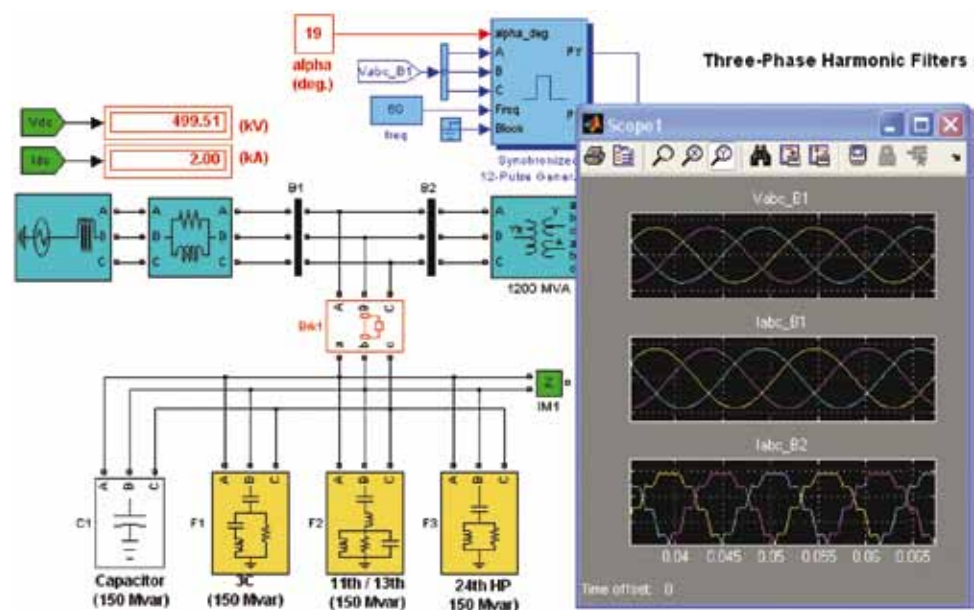
- > Electrical sources – voltage and current sources
- > Circuit elements – transformers, RLC branches, loads, transmission lines, etc.
- > Machinery – AC and DC motors, generators, turbines and governors
- > Power electronics – power switches (diodes, thyristors, GTOs, IGBTs, etc.)
- > Measurement – voltage, current and impedance measurement instruments

Specialized applications

SimPowerSystems also provides block libraries for simulating turbines, wind farms and FACTS devices (SVC, STATCOM, etc.), as well as models of AC and DC electric drives (developed by Montréal's ETS engineering school).

Key features

- > Electrical circuit modeling and simulation using standard symbols
- > Comprehensive block libraries for building detailed power system models
- > Detailed models of AC and DC electric drives
- > Powerful Simulink algorithms to rapidly deliver highly accurate simulations
- > Discretization and phasor modes to run complex simulations faster and to make real-time applications possible
- > Analysis tools and functions: circuit status equations, steady-state voltage and current calculations, adjustment of initial state values of the circuit (including motors and generators), settings for transformer hysteresis, calculation of transmission line parameters, etc.



For information:

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Flexible and adaptable

SimPowerSystems' open architecture allows models to be adapted to specific needs. This flexibility, combined with the wide variety of easy-to-use blocks, makes SimPowerSystems the ideal prototyping platform for studying new power system models and for understanding complex control systems.