RSCAD® FX: REAL-TIME SIMULATION SOFTWARE PACKAGE

RTDS Technologies

The RTDS® Simulator is a combination of custom hardware and software that are used together to achieve real-time power system simulation for hardware-in-the-loop testing of protection, control, and power equipment. RSCAD® is the proprietary simulation software package that is used to configure the simulations that are then run on parallel processing hardware.

ALL-IN-ONE PACKAGE
RSCAD FX includes every library and feature required to carry out all types of real-time simulation. No add-on modules necessary.

SITE LICENSE
RSCAD FX can be installed on any quantity of workstations.

UNMATCHED USER SUPPORT
RSCAD FX has been developed completely by our in-house team, so we offer prompt and comprehensive user support.

RSCAD FX MODULES AND FEATURES

CIRCUIT CONSTRUCTION: Select from an extensive component library and construct a single- or multi-phase circuit by configuring component parameters and topology. Choose from different timestep environments for representing power electronics or network equivalents.
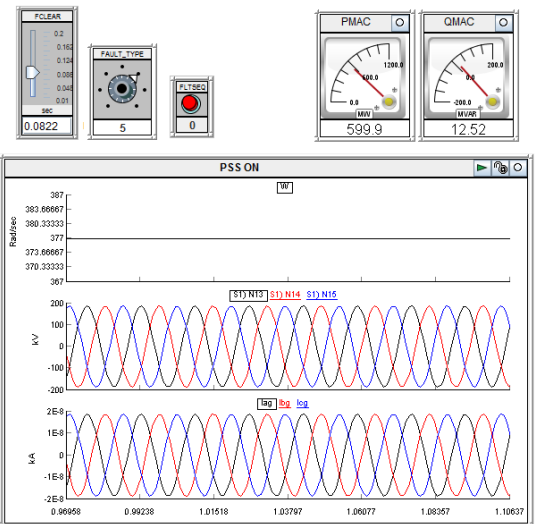
OPERATOR'S MODULE: Start, stop, and interact with the simulation in real time. Apply faults, adjust parameters dynamically, and view simulation data. Conveniently annotate and save data.

SCRIPTING AND TEST AUTOMATION: Conveniently automate many tests via C-type scripts. Eliminate user intervention in running tests, changing parameters, and saving data.

PROTECTION AND AUTOMATION SUITE: Test and validate substation protocols including IEC 61850 MMS, DNP3, IEC 60870-5-104, and MODBUS.

COMPONENT BUILDER: Use C language and a drawing facility to create user-defined power system or controls components that run in real time alongside existing library components.

MANUALS AND DOCUMENTATION: Comprehensive documentation for library components, software modules, sample cases, and tutorials.

CONTROL THE SIMULATION AND VIEW RESULTS IN REAL TIME IN THE OPERATOR'S CONSOLE

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YOUR WORLD IN REAL TIME.
RTDS.COM

## CONVERSION PROGRAMS: IMPORT CASES FROM OTHER SOFTWARE TO RSCAD

RSCAD offers several conversion programs that allow the user to conveniently import case files from other leading power system modelling tools.

MATLAB & SIMULINK   CYME   PSS®E   PSCAD

RSCAD FX COMPONENT LIBRARY: INDUSTRY-LEADING POWER SYSTEM MODELS

The RSCAD FX component library, developed by a dedicated in-house team over the past twenty-five years and counting, contains a vast variety of power system, power electronics, controls, and automation components. A high-level list is available by contacting us. Here are a few of the models you can expect to find included with the software.

- **POWER SYSTEMS LIBRARY:** Travelling wave transmission lines and cables (including frequency-dependent models); synchronous and induction machines; transformers including saturation; renewable energy; series and static VAR compensation; instrument transformers; average models for power electronic converters.
- **POWER ELECTRONICS LIBRARY:** User-configurable high-frequency switching circuits including 2- and 3-level VSCs; point to point and back to back VSCs; MMC valves; firing pulse and ramp generators.
- **PROTECTION AND AUTOMATION LIBRARY:** Multifunction distance, overcurrent, differential, and generator relay models; symmetrical components, impedance measurement with sequence components; breaker control with sync check; COMTRADE file playback; standard-compliant communications protocols.
- **CONTROLS LIBRARY:** Logic, sequencing, trigonometric and math functions; IEEE generator, governor, and PSS models; MATLAB/Simulink controls circuit conversion.
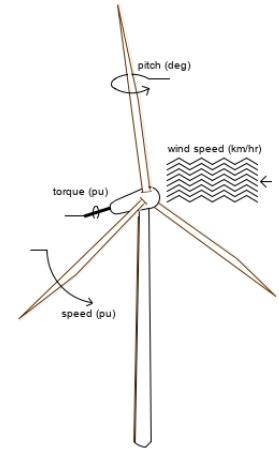
STATE-OF-THE-ART MODELS AND FEATURES
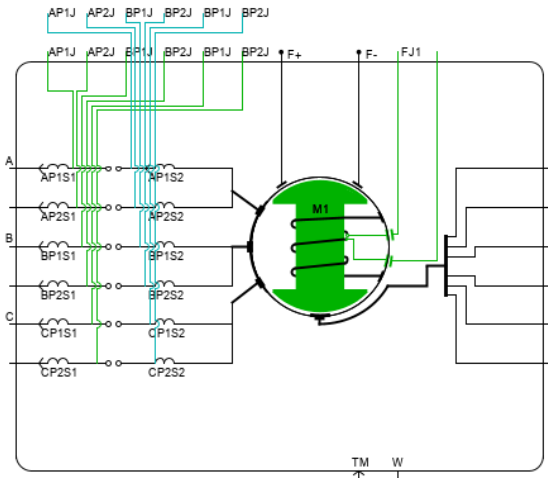
FAULTED PHASE DOMAIN SYNCHRONOUS MACHINE

SUBSTEP FREQUENCY DEPENDENT T-LINE: The only real-time frequency dependent transmission line model that runs at a sufficiently small simulation timestep (~1-3 microseconds) for the accurate testing of travelling wave protective relay testing.

FAULTED PHASE DOMAIN SYNCHRONOUS MACHINE: The only real-time synchronous machine model allowing user access to the field winding, parallel windings for split phase machine testing, and simulation of a true stator-ground internal fault. Can be used for the testing of 100% stator-ground fault protection.

HARMONIC SCAN AND STABILITY ANALYSIS: The most user-friendly solution for real-time calculation of the system's frequency-domain impedance response (up to 9 kHz) and determination of the Nyquist stability criterion based on eigenvalue analysis.

LEARN MORE ABOUT RSCAD FX AT RTDS.COM/TECHNOLOGY/GRAPHICAL-USER-INTERFACE

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