

### The Company

**RTDS Technologies is the world standard for real time digital power system simulation.**



RTDS Technologies Inc. provides power system simulators and simulation support to customers in over 40 countries around the world. Our main product, the RTDS® Simulator, was the world's first fully digital real time simulator, and continues to serve as the world's benchmark for performing real time power system simulation.

The RTDS Simulator was originally developed from a research project done at the Manitoba HVDC Research Centre, which resulted in the world's first real time digital HVDC simulation in 1989. Today, RTDS Technologies is the exclusive supplier of the RTDS Simulator.

Our customers are the world's leading electrical utilities, power system equipment manufacturers, research institutes, and universities. We are continuously developing our hardware and software capabilities in response to needs expressed by our customers. At RTDS Technologies, we are dedicated to equipping our users with what they need to push the limits.

### The RTDS Simulator

The RTDS Simulator consists of custom hardware and software, specifically designed to perform real time ElectroMagnetic Transient (EMT) simulations. It operates continuously in real time while providing accurate results over a frequency range from DC to 3 kHz. This range provides a greater depth of analysis than traditional stability or load flow programs which study phenomenon within a very limited frequency range.

The RTDS Simulator's fully digital parallel processing hardware is capable of simulating complex networks using a typical time step of 25-50  $\mu$ s. The simulator also allows for small timestep subnetworks that operate with timesteps in the range of 1-4  $\mu$ s for simulation of fast switching power electronic devices (e.g. VSC bridges with PWM switching). The hardware is comprised of a multicore processor housed in units called chassis that allow easy expansion of the Simulator's computing capability as required. Using the RTDS Simulator, analytical studies can be performed much faster than with offline EMT simulation programs.



**Closed-loop testing of protection and control systems • Power hardware in the loop studies  
IEC 61850 communication • Smart grid and distributed generation • Education and training**

### The Hardware

Custom • Modular • Proudly built in-house

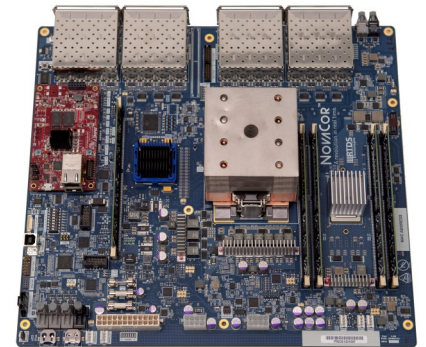


The parallel processing required by the RTDS Simulator is carried out by a multicore processor. This processor is housed in a unit known as a chassis. One or more chassis may be housed in a cubicle. Of the ten cores of the multicore processor, varying amounts can be licensed depending on simulation requirements. As the simulation demands of a user increase, additional cores can be licensed. Additional chassis can also be acquired, and many different chassis can be involved in a given simulation.

RTDS Simulator cubicles include standard DIN rails for the installation of I/O cards and other components. The I/O cards available from RTDS Technologies allow the Simulator to be interfaced with external equipment such as protective relays.

◀ This mid-size cubicle contains two chassis and is mounted on wheels for easy relocation.

IBM®'s POWER8™ processor is at the heart of NovaCor™, the current generation of hardware for the RTDS Simulator.



### The Software

User-friendly • Proudly developed in-house

RTDS Technologies' proprietary software, designed specifically for interfacing to the RTDS Simulator hardware, is called RSCAD. RSCAD is a user-friendly interface, intended to create a working environment familiar to the power system engineer.

RSCAD is an all-in-one package, containing all facilities that the user needs to prepare and run simulations, and to view and analyze results. This eliminates the need for third-party products. RSCAD is provided with a site license, which means it can be used for an unlimited number of users at a given site—there is no per-seat fee.

Since the RTDS Simulator operates in continuous real time, the simulated power system can be "operated" in a manner similar to a real power system. As simulation parameters are modified and contingencies are applied, the user can watch the power system respond in real time.



**HVDC, SVC, and FACTS control systems • Interaction of AC and DC systems • DC grids  
Marine systems • MMC-based HVDC schemes • PMU studies • Cyber security studies**

Learn more at [www.rtds.com](http://www.rtds.com).