RTDS NEWS

2016 European User's Group Meeting

WHAT'S NEW: SEPTEMBER 2016

Yunnan Luxi back-to-back HVDC project in China uses RTDS Simulator for control and protection testing

Introducing RSCAD V5—featuring a revamped compiler, and all-new Distribution Mode
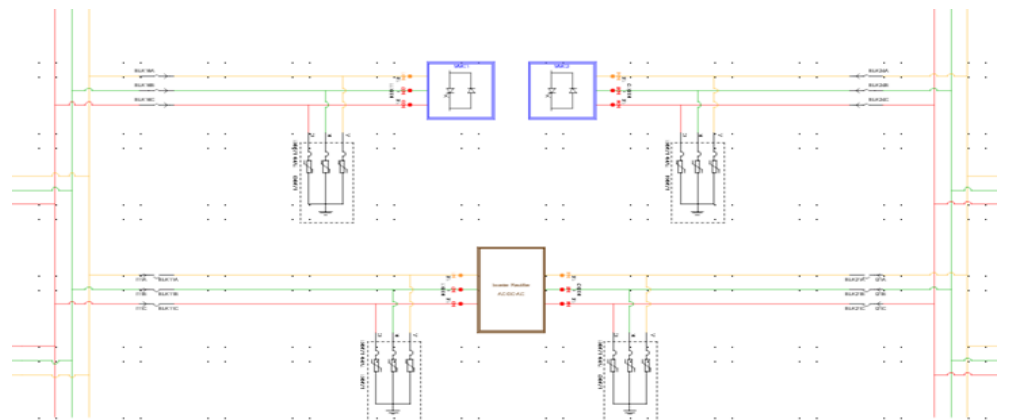
GUEST ARTICLE

RTDS Simulator used for complete control and protection system testing for the world's highest voltage and largest capacity VSC-based HVDC project

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On August 29, 2016, the Yunnan Luxi back-to-back VSC-HVDC project was officially put into operation. The project is located in Yunnan Province, Luoping County, China, and is the first ever back-to-back VSC-HVDC and LCC-HVDC parallel operated mode HVDC project in the world. The VSC-HVDC unit's capacity of 1,000 MW and ± 350 kV DC voltage also make it the largest capacity and highest voltage VSC-based HVDC project in the world.

The technical director of the project is SEPRI (Electric Power Research Institute, China Southern Power Grid), and complete testing of the project's control and protection system functionality, as well as dynamic performance testing (FPT/DPT), were accomplished using the RTDS Simulator.

The project's control and protection system consists of three parts: LCC-HVDC, VSC-HVDC, and coordinated control. The FPT/DPT was accomplished using the RTDS Simulator's GTFPGA Unit to simulate MMC valves using RSCAD's latest Generic Model for MMC valves. Each simulated leg contained up to 512 submodules, simulated at a time step of 2.5 us. Through an external file, different capacitance values for each submodule can be set, and bypass faults and capacitor open/short circuit faults can be set for any submodule. By using MMC simulation on the RTDS Simulator, the testing team minimized the possibility of HVDC control and protection system deficiencies, and guaranteed the reliability and availability of the system.

The LCC-HVDC and VSC-HVDC systems modelled in the RTDS Simulator's software, RSCAD

The smooth implementation of the project enhanced the overall security and stability of China's south main power grid and improved the delivery capacity of the Yunnan power grid. The project also helped to provide clean, inexpensive, green power to the Guangdong and Guangxi regions.

MMC valves of the Yunnan Luxi project

Control and protection cubicle alongside the RTDS Simulator's GTFPGA Units for MMC simulation
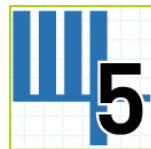
Introducing RSCAD Version 5, featuring Distribution Mode and much more

RTDS Technologies is excited to announce the release of RSCAD Version 5. This new version of the RSCAD software offers many new advantages to users of the RTDS Simulator. Most notably, V5 runs on an entirely overhauled compiler, and features Distribution Mode, which allows users to simulate distribution feeders with over 1000 interconnected nodes on a single rack.

RSCAD V5 also includes a new feature for streaming IEC 61850-9-2 Sampled Values from the RTDS Simulator via dedicated FPGA-based hardware. GTFPGA-SV can output up to 16 Sampled Values data streams simultaneously.

To learn more about RSCAD V5, visit our website or read the excerpts from the release notes below.

What's new in RSCAD V5

RSCAD V5 is compatible with racks containing PB5 and/or GPC Processor Cards only.

- The RTDS compiler has been revamped by our software development team, which will make it easier to maintain and enhance RSCAD's capabilities moving forward.
- Distribution Mode allows users to simulate a distribution network with several hundred to a thousand nodes in one tightly coupled area.
- The GTFPGA-SV component allows the output of many simultaneous IEC 61850 Sampled Values data streams via the GTFPGA Unit hardware. Both IEC 61850-9-2LE and IEC 61869-9 modes are available.
- The number of variables that can be communicated over the backplane has been increased from 1000 to 2000.
- A number of hard limits have been removed (G-matrix overlays, current injections, switches per network solution, and more). Limits still exist in V5, but depend on available resources rather than fixed hard limits.

Click here to log in to the RTDS client area, where you can access the full RSCAD release notes.

If you have an idea for a new feature, please send it to **feedback@rtds.com**. We want to hear from you!