48-pulse, GTO-STATCOM-compensated power system

Keywords: STATCOM, power system, multi-level converters

This 48-pulse STATCOM is built with four 3-phase, 3-level inverters coupled with 4 phase shifting transformers introducing a phase shift of +/- 7.5. This power system has 3 buses and 3 power lines and the STATCOM device is connected to BUS1. The network is also composed of 3 ideal inductive sources.

The STATCOM is modeled with Opal-RT Time-Stamped Bridges while the rest of the power system is modeled with SimPowerSystems and ARTEMIS **Error! Reference source not found.**.

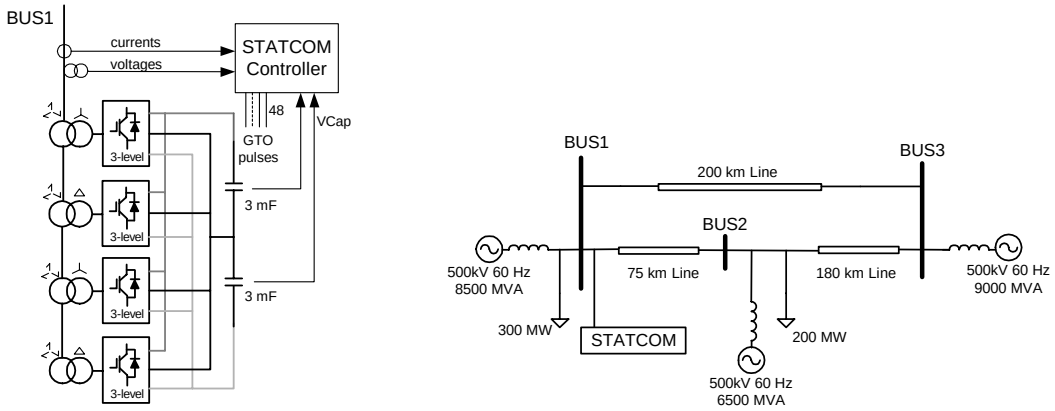

Figure 1. 48-pulse, STATCOM configuration (left) and test power system (right)

The STATCOM network has been simulated on a dual-Xeon-based, shared-memory,RT-LAB simulator running RT-LAB 7.1 software under the RedHawk Linux operating system. ARTEMIS and Time-Stamped Bridges reduced by 10 times the real-time speed to below 40 microseconds compared to SimPowerSystems alone.

Hard-real-time computational speeds on dual-Xeon-based, 2.4 GHz, RT-LAB simulator

SimPowerSystems (with ARTEMIS) network + Time-Stamped Bridge for STATCOM switches	36 microseconds
SimPowerSystems only	340 microseconds

System configuration	
Hardware enclosure	HILBox
Software modules	RT-Events, ARTEMIS
Additional models	N/A
Package	D