

## Kundur power system

**Keywords:** Electromechanical power system stability, multi-machine power grid, dual-core Opteron simulation

The Kundur power system consists of 2 fully symmetrical areas linked together by two 230 kV lines of 220 km length. It was specifically designed to study low-frequency electromechanical oscillations in large interconnected power systems. Despite its small size, it mimics very closely the behavior of typical systems in actual operation.

The electromagnetic transient type of simulation made in RT-LAB enables the study of fast and detailed phenomena like single-phase faults in the Kundur network and to observe their effects on a larger time scale (i.e., on the electromechanical scale, as with inter-area power oscillations).

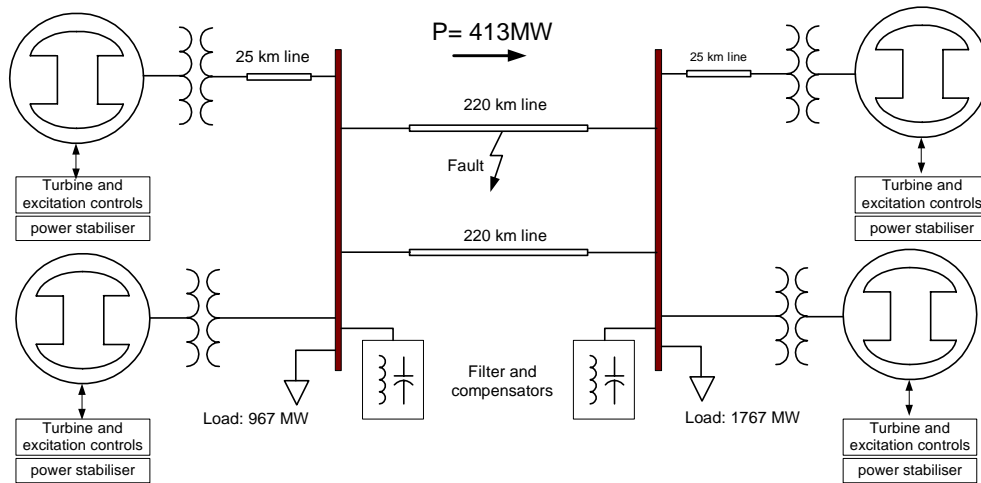


Figure 1. Kundur power network

This real-time simulation ran on dual-core, dual-Opteron-based RT-LAB simulator with a time step of 18 microseconds. Task separation was as follows: Area 1 power system on CPU 1; Area 2 power system on CPU2; All controls, CPU 3; Linux OS (TCP/IP) on CPU 4. Each task had a 12-14-microsecond calculation time.

System configuration	
Hardware enclosure	HILBox
Software modules	ARTEMIS
Additional models	DPL
Package	E21Q-1