

RT-LAB Application Example

Real-time simulation of a 23-bus network

Keywords: Transport Network, Transient Analysis, Synchronous Machine

This model simulates a 500 kV transport network consisting of 45-distribution lines that supplies power to 17 loads of 120 MW and 30 MVar. The frequency of the network is 60 Hz. There are seven 1000 MVA hydraulic generation turbine plants (synchronous machines and regulators) connected to the network.

This transport network represents a typical electric network with loads, generation machines and distribution lines. It shows the capacity of eMEGAsim to simulate this kind of network in real time with good performance. This model is separated in 4 CPUs and the step size of each cpu are 58 us on a dual quad core machine running at 2.3 GHz.

eMEGAsim makes it possible to analyze the behavior of the network when faults are introduced into the simulation (A to ground, AB to ground, ABC to ground). It is also possible to study the effects on the electromagnetic transients when machines or lines are inoperative. Instability, islanding and resonance are some of the phenomena that can be studied or validated with the simulation model.

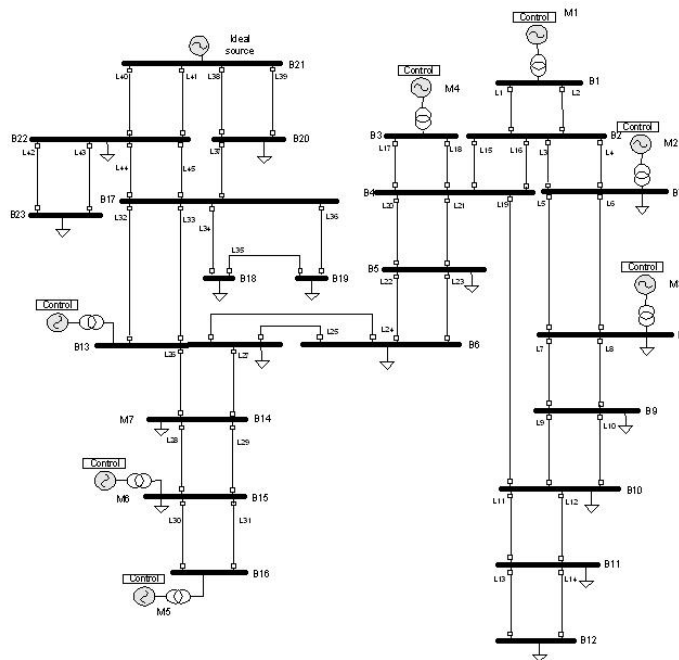


Figure 1. 23-bus network

Solution configuration	
Solution package	eMEGAsim
Hardware enclosure	8-CPU HILBox
Software modules	RT-LAB, RT-Events, ARTEMIS