Design of Power Electronics Based Emulator for Study of Microgrid Related Applications

Background

- Power generation studies necessitates having access to power generators to study their characteristic
- Real power generators are highly costly and have physical and environmental limitations
- Emulator as a resolution for study of power generation applications
- Inverters could be designed in such a way to mimic the same characteristic of generators

Research Objectives

- Mathematical modeling of the electrical and mechanical parts of diesel engine and wind turbine generators
- Integration of parallel operation of different sources of power generators
- Implementation of a VSI as the main part of the emulator
- Control of the VSI to produce the same power characteristic as a real power generator
Proposed schematic of a commercial diesel engine power generator emulator working in parallel with other sources of power