SIMULATION OF PARALLELEDDC CONVERTERSFOR INTEGRATING RENEWABLE SOURCES

ABHIMANYU KUMAR YADAV, PANKAJYADAV, BRIJESHTRIPATHI & MAKARAND LOKHANDE

School of solar Energy, Pandit Deendayal Petroleum University,
Raisonvillage, Gandhinagar, Gujarat-382007, India.

ABSTRACT

In recent years, there is rapid development of renewable energy sources and their interconnection to the existing utility grid is increasing day by day.It can create disturbances in grid operation and also may result in poor power quality during transmission. So alternative to this issue can be a DC micro-grids where transmission and utilization of energy is at DC level.With increasing innovations in power electronics (DC converters) and energy storages (ultra-capacitors, flywheel),DC interconnection tomicro-grids could be a better option than AC interconnection grids because of no frequency and phase shift problems need to be considered. Several energy sources are connected in parallel in DC micro-grid which require us to study the parallel operation of converters, their safety and protection.In this paper paralleling of a non-isolatedstep-down and a non-isolatedstep-up converter from a circuit theoretic viewpoint is discussed. In the proposed configuration converters are modeled as voltage sources and their connection in parallel is done to provide voltage regulation across the load. Both converters are modeled as closed loop systems and the simulated result is presented in this paper.

KEYWORDS : Buck Converter, Boost Converter, PID Controller,PSO Algorithm.