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Power Quality Improvement in Hybride And Wind-PV Farms Grid-Connected Using Dynamic Voltage Restorer

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Abstract - The worlds population is creating great sociological, environment and structural strains on the cities where people are moving to. Housing is becoming scarce and expensive, while the need to build new housing is placing great burdens on existing infrastructure especially local power grid Incorporation of microgrid based on cogenerating power station where waste heat is used to provide climate control and hot water and where power production is supplemented with renewable energy sources, would effectively remove the development from the local grid and greatly reduce green house gas emission. The recent global need is to have a sustainable and low carbon living when there are issue pertaining to environmental degradation which have adversely affected the quality of living. This is possible only by adopting to green generation using renewable energy sources in place of conventional power generation.

Key Words: Inverter, Solar panel, transformer , converter, Renewable energy, Rectifier

1.INTRODUCTION

The ever increasing energy consumption, high cost, limited resources of fossil fuel and the worsening global environment has created increased interest in green power generation systems. Wind and solar power generation are two are the most promising renewable power generation technologies. The micro-grid is a single phase AC network, a solar power generation system and a storage battery micro- Implement three phase sources with internal R-L impendance. The three phase source block implement a balanced three-phase voltage source with an internal R-L impendance. The three voltage sources are connected in Y neutral connection that can be internally grounded. The sources internal resistance and inductance either directly by entering R and L values or Indirectly by specifying the source inductive short circuit level and X/R ratio.

2. Three phase sources

Implement three phase sources with internal R-L impendance. The three phase source block implement a balanced three-phase voltage source with an internal R-L impendance. The three voltage sources are connected in Y neutral connection that can be internally grounded. The sources internal resistance and inductance either directly by entering R and L values or Indirectly by specifying the source inductive short circuit level and X/R ratio.

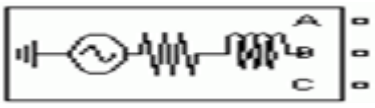

Fig 1: Block diagram of three phase sources**.**

3. THREE PHASE V-I MEASURMENT

The three phase V-I measurement block is used to measure instantaneous three phase voltage and current in a circuit. When connected in series with three phase element, it return the three phase to ground or phase to phase peak voltage and current.

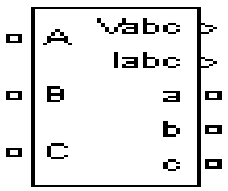

Fig 2: Three phase V-I Measurment

4. THREE PHASE TRANSFORMER

The two winding transformer is one in which two winding are link by a common time varying magnetic flux. The two winding of transformer can be connected as follow;

- Y with accessible neutral
- Grounded Y
- Delta, delta lagging Y by 30 degrees
- Delta, delta leading Y by 30 degrees

- Y connection with accessible neutral for winding 1

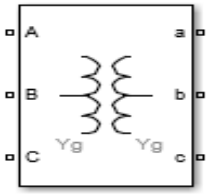

Fig 3: Three Phase Transformer

3 Series RLC Branch

The three phase series RLC branch block implements three balanced branches consisting each of resistor, an inductor, or a capacitor or series combination of these. Use the branch type parameter to select element In each branch. Negative values are allowed for resistance, inductance, and capacitance. The R letter define the resistor, the L letter define the inductor, and the C letter define the capacitor.

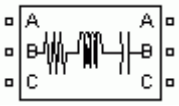

Fig 4: Series RLC Branch block diagram

5. WORKING

The battery control performs tracking control of the current so that active power which flow into system power from the secondary side of the pole transformer is set to 0. Then the active power of secondary side of the pole mounted transformer is always around zero. The storage battery supplies the insufficient current when the power of the micro grid is insufficient and absorbs surplus current from the micro grid when its power is surpasses the electric The storage battery is fixed to a constant and does not change since charge or discharge of the storage battery is not performed by the battery controller. When there is a power shortage in the micro grid, the system power supplies insufficient power. When there is a surplus power in the micro grid. Surplus power is returned to the system power. The active power in the secondary side of the pole transformer and the electric power in the storage battery.

6. CONCLUSIONS

Micro-grid operation of a system based on renewable power generation units. The system behavior and technical issues involved with three operational modes in micro grid, proper control scheme are additionally required for the operation of the study system in a micro grid scheme. A control coordinator and monitoring system is also required to monitor micro grid system. The required control scheme development for the proposed micro grid system.

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