Abstract

Small scale stand alone wind generators are a significant different source of electrical energy. Unluckily, most of these systems do not capture more power at every wind speed. Particularly, at low wind speeds which are provide low power. To address this problem, this paper has been proposed a permanent magnet synchronous generator (PMSG) and Z-source inverter. This generator is connected to the power network by means of a Z-source inverter. Permanent-magnet synchronous generators are having some amazing characteristics such as with a reduction of burden and level, advanced performance, minimized size of gear box and no need of external power in permanent magnet excitation. The PMSG defeat the all other generators, marvelous performances without absorb the grid power. This paper presents a Z-source inverter that can be proposed as an option power conversion concept for variable speed wind turbines. It consist both buck and boost capabilities as they permit the inverter to perform the shoot through state. It utilizes a special Z-source network (L-C network) to DC-link in between inverter and the DC source. By controlling the shoot-through duty cycle of IGBTs in inverter system, we can diminish the line harmonics, develop power factor, and enlarge output voltage range.
Sliding Mode Controller based Permanent Magnet Synchronous Generator with Z-Source Inverter for Variable Speed Wind Energy Translation Structure using Power Quality Enhancement

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Index Terms

Computer Science

Control Systems
Keywords
Permanent Magnet Synchronous Generator (PMSG)  Wind Energy Conversion System (WECS) and Z-Source Inverter (ZSI).