

# Operation of Grid Connected PV-Battery-Wind Driven DFIG Based System

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**Abstract:** The grid-connected system with an enhanced multi-functional control method for the grid-side converter (GSC) is presented in this study. It is powered by a PV-battery and a wind-driven doubly fed induction generator (DFIG). Both the DC-link voltage across the GSC and the reactive power into the grid are controlled by a three-stage improved reduced-order multiple integrator (ROMI) control. The grid side control raises the quality of the power under various abnormal circumstances. Additionally, it acts in a way that decreases the transients' rise time, maximum peak overshoot, and settling time. For the wind power generator (WPG), the rotor side converter (RSC) is employed to deliver the necessary amount of reactive power using field-oriented control. As a WPG, a DFIG is employed. A battery with a bidirectional converter and a single-stage PV array are connected to the GSC's common DC-link. In light load situations, the battery aids in maximizing wind power generation

**Keywords:** Doubly-fed Induction Generator, PV-Battery, Wind Driven, Induction Generator

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