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# Energy Management System for Smart Grid Connected with Power Grid System

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**Abstract:** *The rapid economic development is causing huge stresses in the existing generation, transmission and distribution systems as they are not able to keep pace with the increasing demand. Installation and incorporation of a large number of electrical power generation units with increased capacities to deal with the surging demand has an adverse impact on the environment therefore an efficient Energy Management is imperative. Smart Grid may be the answer to this expected energy crisis and management. Conventional instrumentation has proven inadequate for the purpose of managing the extensive and complex power systems. The electric grid to increase overall system efficiency and reliability. Much of the technology currently in use by the grid is outdated and in many cases unreliable. The non-linear load current harmonics may result in voltage harmonics and can create a serious PQ problem in the power system network. Active power filters (APF) are extensively used to compensate the load current harmonics and load unbalance at distribution level. This results in an additional hardware cost. However, in this paper authors have incorporated the features of APF in the, conventional inverter interfacing renewable with the grid, without any additional hardware cost.*

**Keywords:** Energy management system**,** Active power filters (APF), Power Quality (PQ), Distributed system

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