


ENHANCED UPQC FOR A SINGLE PHASE SUPPLY SYSTEM TO IMPROVE POWER QUALITY USING SUPER CAPACITOR ENERGY STORAGE SYSTEM

[V. Prakash](#), [T. Reddy](#), [S. Kalyani](#), [T. Padmavathi](#), [Wgl Arjun](#) [less](#) • Published 2013 • Engineering, Environmental Science

In recent years, energy storage systems are playing a major role in all areas, because of supplying energy in remote locations. The use of energy storage devices in many applications are increased extensively by the researchers. In this paper, we propose a concept to enhance the UPQC (Unified power Quality conditioner) for improving power quality at the end-user using a super capacitor energy storage system (SCESS). The power quality problem occurred as a non-standard current, frequency, harmonics and voltage and leads to failure of sensitive loads and also causes service interruptions. The UPQC has the capability of improving power quality at the point of installation on power distribution systems. In other words, the function of UPQC is to eliminate the disturbances that affect the performance of the critical load in a power system. A constant revision is happening to solve the PQ related issues at present. For a country like India, Power Quality is a big issue as there are frequent variations in power, outages and frequency. Hence, it is mandatory to take vital steps towards the development. This research describes the UPQC principles and power restoration (voltage and current) for balanced / unbalanced voltage sags/swells in a distribution system. This paper proposes a typical configuration of UPQC that consists of a DC/DC converter supplied by a super capacitor at the DC link. A suitable series-shunt controller is employed for controlling the UPQC. The operation of the proposed system is simulated with MATLAB / Simulink. [Collapse](#)

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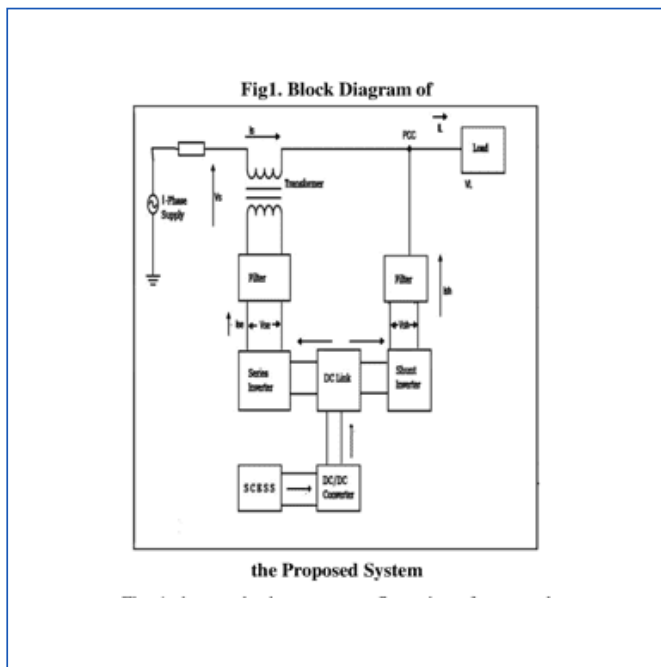


Figure 1

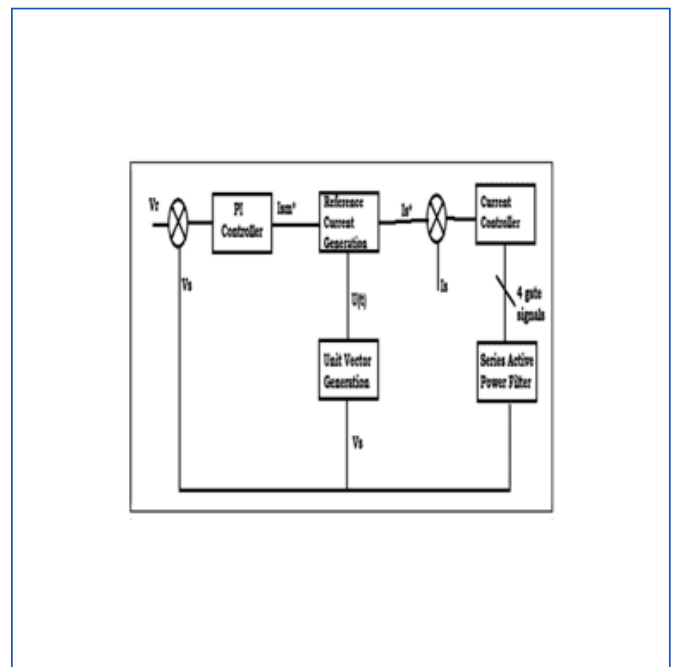


Figure 3

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This paper presents a novel philosophy to compensate the load reactive power demand through three phase

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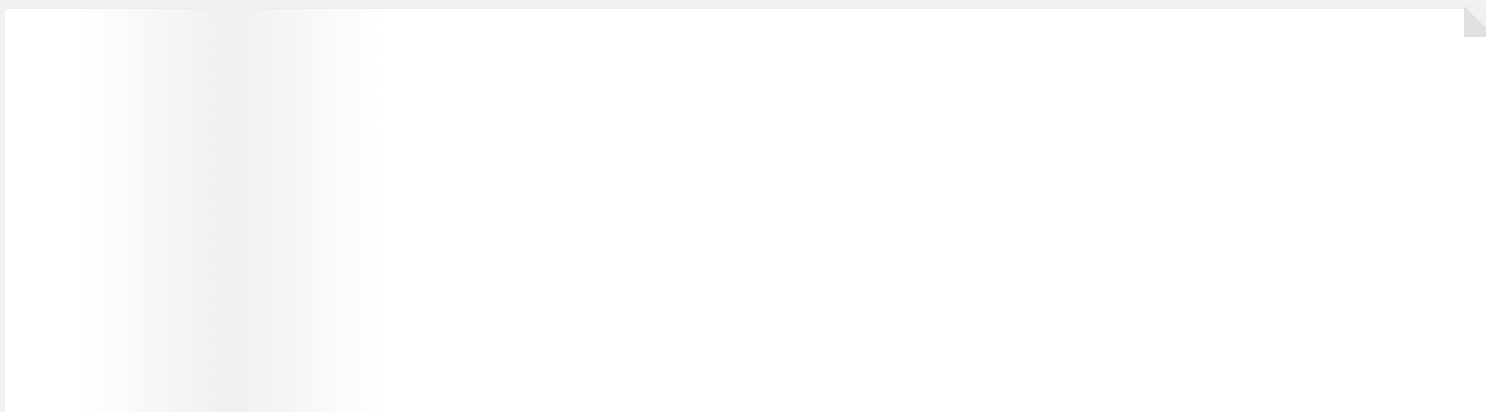
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