

APPLICATION OF SUPERCAPACITOR IN ENHANCING POWER QUALITY OF UPQC FOR A THREE PHASE BALANCED/UNBALANCED LOADS

Prakash Vodapalli, Rama Subba Reddy, T • Published 2020 • Engineering

This paper introduces the integration of unified power quality conditioner with the supercapacitor for improving the power quality at the supply mains. This work described the unified power quality conditioner principles and power restoration for balanced or unbalanced voltage sags or swells in a distribution system. This method proposes a typical configuration of unified power quality conditioner for compensating sag or swells conditions for three phase system that consists of a DC/DC converter supplied by a supercapacitor at the DC link. A suitable series-shunt controller is employed for controlling the unified power quality conditioner under balanced or unbalanced load currents is also presented. The operation of the proposed system is modeled and simulated in MATLAB environment using Simulink and Simpower System toolboxes.

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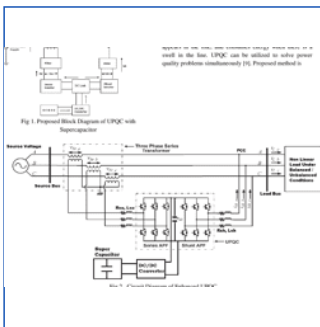


Figure 1

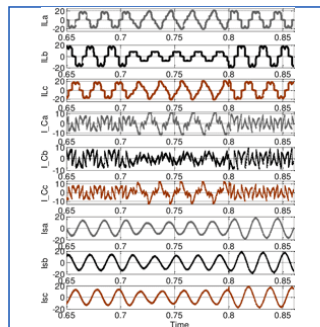


Figure 10

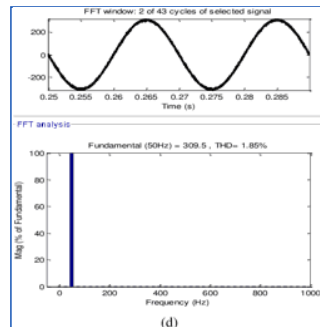


Figure 11

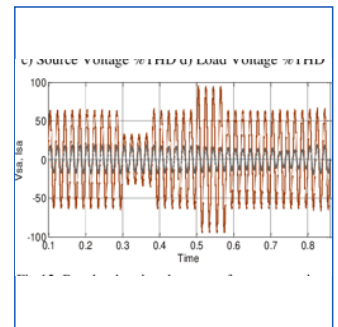


Figure 12

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B. Han B. Bae Engineering, Physics · 2008

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M. Basu S.P. Das G. Dubey Engineering · IEEE 2002 28th Annual Conference of the... · 2002

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S. Aali Engineering, Computer Science · 2020

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M. Aredes R.M. Fernandes Engineering, Physics · [Brazilian Power Electronics Conference](#) · 2009

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V. Khadkikar A. Chandra Engineering · [IEEE transactions on power electronics](#) · 2011

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Zhang Yi-cheng Wu Lu-lu Zhu Xue-jun Li Hai-quan Engineering, Environmental Science ·

2008 IEEE Vehicle Power and Propulsion Conference · 2008

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W. Lhomme P. Delarue P. Barrade A. Bouscayrol A. Rufer Engineering, Physics ·

Fourtieth IAS Annual Meeting. Conference Record... · 2005

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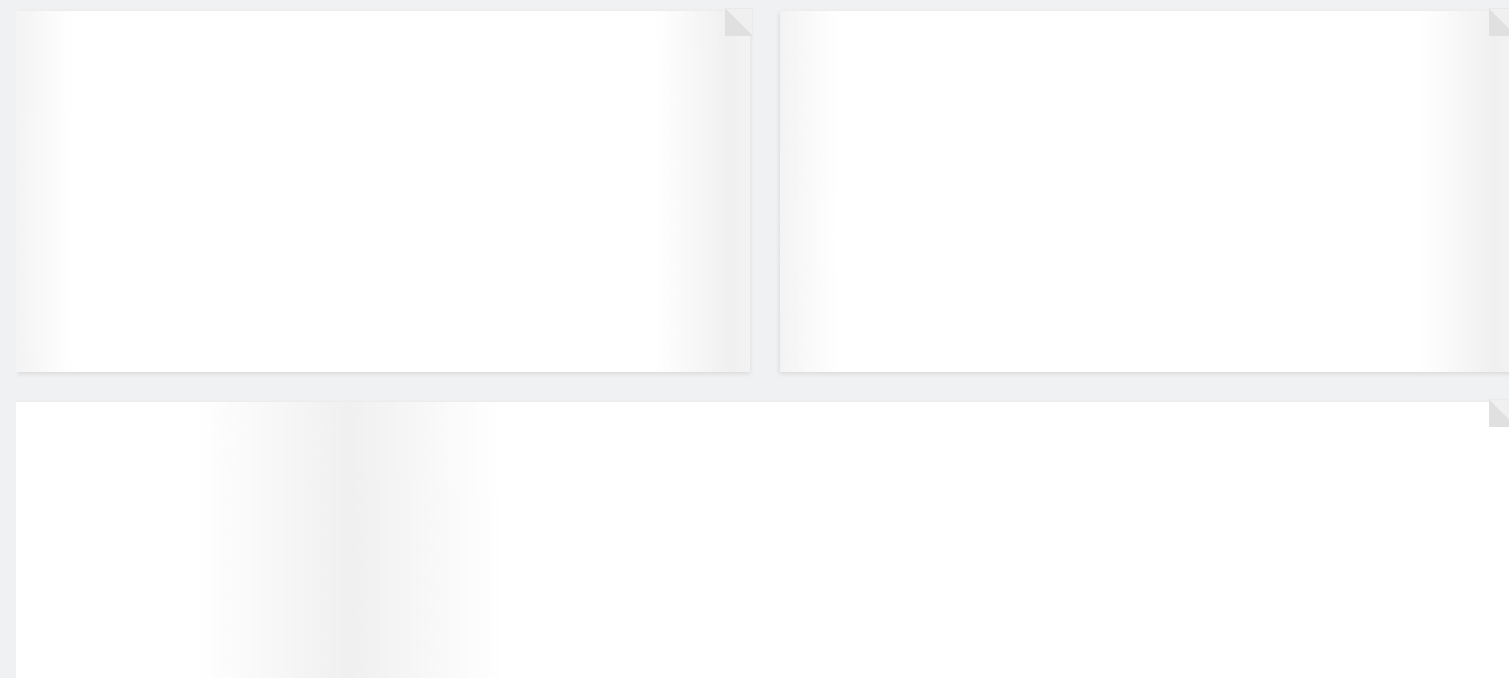
Advancement of energy storage devices and applications in electrical power system

S.C. Smith P. Sen B. Kroposki Engineering, Environmental Science · [IEEE Power & Energy Society General Meeting](#) · 2008

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