



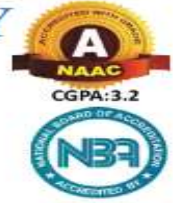
KALLAM HARANADHAREDDY INSTITUTE OF TECHNOLOGY

(Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada)

NH- 5, Chowdavaram, Guntur-522 019

Accredited by NBA & NAAC with 'A' Grade

DEPARTMENT OF EEE



Performance Evaluation of Solar-PV Integrated Hybrid Fuzzy-Logic Controlled Multi- Functional UPQC for Enhancing PQ Features presented by

V.Venkatesh (208X5A0220)

Under the guidance of
P. Naga Jyothi M.Tech
Asst. Professor

CONTENTS:

- ✓ Abstract,
- ✓ Introduction,
- ✓ Literature Review,
- ✓ Problem statement,
- ✓ Block diagram,
- ✓ Proposed Methodology.

ABSTRACT:

- ✓ Most of the power pollution issues created in power distribution systems are due to the non-linear characteristics and fast switching of power electronic equipment. In general, passive filters are used for compensating voltage harmonics, but these passive filters doesn't gives good compensation features and have various demerits like limited compensation characteristics, high transient response, etc. Modern power electronics devices like active power filter and comprehensive simulation study of relay give the idea of power quality improvement.
- ✓ The successful implementation of DG in ac distribution system depends on the Power Quality (PQ) of generation. The power conditioning or the power quality of the microgrid is accomplished by Multi-Functional Unified Power Quality Conditioner (MF-UPQC). Moreover, the common dc-link voltage is also adjusted adaptively for the reduction of the voltage source converter losses during the power-quality compensation. The power quality aspects are governed by the various standards such as the IEEE-519-1992 standard.

INTRODUCTION:

- ✓ Power quality issues are becoming stronger because sensitive equipment will be more sensitive for market competition reasons, equipment will continue polluting the system more and more due to cost increase caused by the built-in compensation and sometimes for the lack of enforced regulations.
- ✓ The successful implementation of DG in ac distribution system depends on the Power Quality (PQ) of generation. The power conditioning or the power quality of the microgrid is accomplished by Multi-Functional Unified Power Quality Conditioner (MF-UPQC).

LITERATURE REVIEW:

S.No	Author Name	Title Of The Paper	Publication Details	Proposed Method
1	B.Singh And S. Devassy	Modified P-q Theory Based Control Of Solar PV Integrated UPQC-S	IEEE Trans. Ind. Appl., Vol. 53, No. 5, Pp. 5031–5040, Sept 2017	<p>A Modified P-q Theory Based Control Of Solar Photovoltaic Array Integrated Unified Power Quality Conditioner (PV-UPQC-S).</p> <p>The Fundamental Frequency Positive Sequence (FFPS) Voltages Are Extracted Using Generalized Cascaded Delay Signal Cancellation (GCDSC) Which Is Used In P-q Theory Based Control To Generate Reference Grid Currents For The Shunt Compensator</p>

2	C. Jain And B. Singh	An Adjustable DC Link Voltage Based Control Of Multifunctional Grid Interfaced Solar PV System	IEEE Journal Of Emerging And Selected Topics In Power Electronics, Vol. 5, No. 2, Pp.651–660, June 2017.	A Grid Supported Solar Energy Conversion System With An Adjustable DC Link Voltage For CPI (Common Point Of Interconnection) Voltage Variations. A Two Stage Circuit Topology Is Proposed.
3	Pinto S.J., R. Peesapati, And Panda. G	An Implementation Of Hybrid Control Strategy For Distributed Generation System Interface Using Xilinx System Generator	IEEE Transactions On Industrial Informatics, Vol. 13,no. 5, Pp. 2735–2745, Oct 2017.	An Analytical Study And Hardware-in-loop (HIL) Co-simulation Design Of A Grid Connected Inverter System With A Combinational Robust Observer Based Modified Repetitive Current (OMRC) Controller

4	B. Singh, And Devassy	Design And Performance Analysis Of Three-phase Solar PV Integrated UPQC	IEEE Transactions On Industry Applications, Vol. PP, No. 99, Pp. 1–1, 2017.	The Design And Performance Analysis Of A Three-phase Single Stage Solar Photovoltaic In-tegrated Unified Power Quality Conditioner (PV-UPQC).
5	B. Singh, I. Hussain, And M. Kandpal	Control Of Grid Tied Smart PV-DSTATCOM System Using An Adaptive Technique	IEEE Transactions On Smart Grid, Vol. PP, No. 99, Pp. 1–1, 2017.	A Control Of Smart PV-DSTATCOM Grid Tied System Using An Adaptive Reweighted Zero Attracting (RZA) Control Algorithm With P & O And Maximum Power Point Tracking Technique For A Three Phase System To Improve Power Quality And Support The Three Phase AC Grid And Connected Loads By Supplying Power.

PROBLEM STATEMENT:

- ✓ Most of the power pollution issues created in power distribution systems are due to the non-linear characteristics and fast switching of power electronic equipment.
- ✓ In general, passive filters are used for compensating voltage harmonics, but these passive filters doesn't gives good compensation features and have various demerits like limited compensation characteristics, high transient response, etc.
- ✓ Additionally, regulation of DC capacitor voltage at a desired level using a PI controller is not suitable for enhanced PQ features. But, this controller is unpopular due to tuning issues of current controller.

Block diagram:

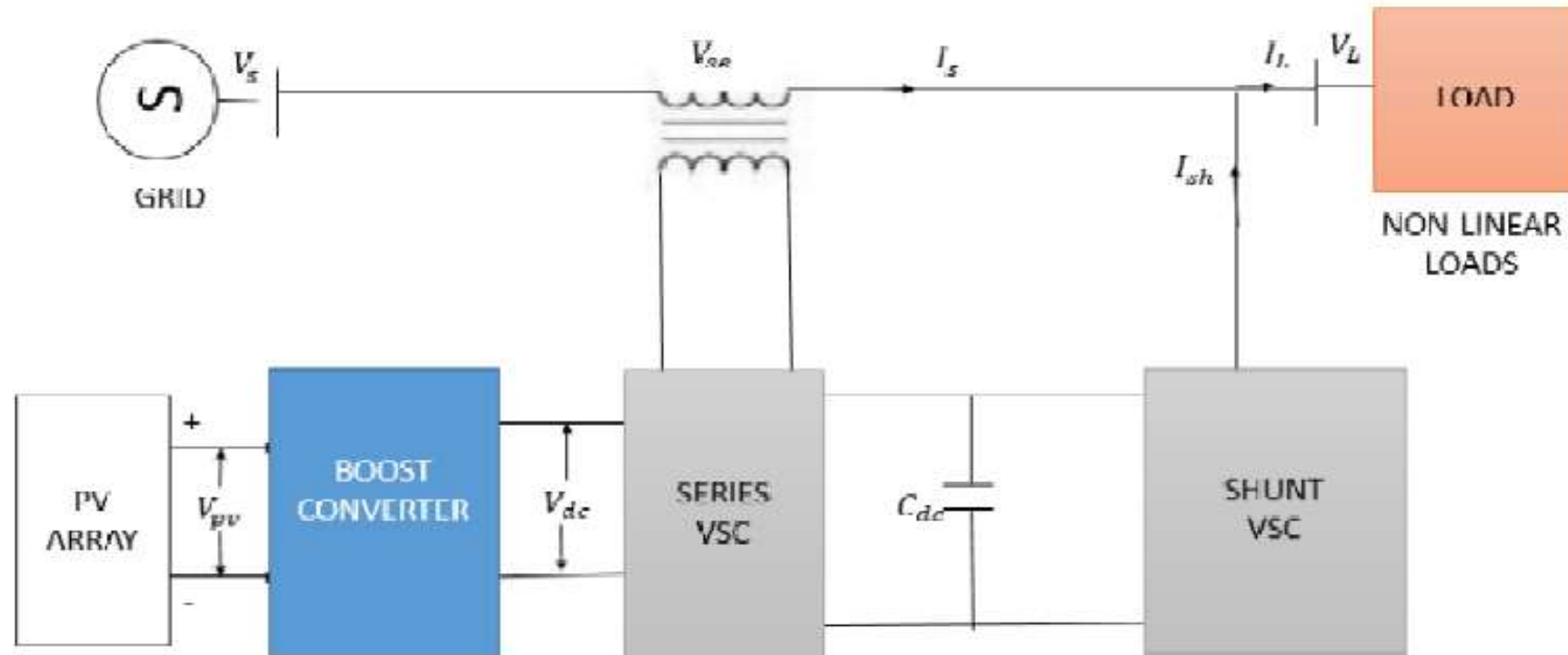


Fig. 1. Block Diagram of the Proposed System

PROPOSED METHODOLOGY:

- ✓ The proposed intelligent Fuzzy control schemes are highly used in several applications, in that Hybrid-Fuzzy controller has been greatly recognized due to enhanced performance over the classical PI and Fuzzy controllers. This work compares the performance of MF-UPQC with classical PI and intelligent Fuzzy-Logic controller in PQ enhancement. The proposed hybrid-Fuzzy controlled MF-UPQC provides compensates all current-related disturbances like current harmonics, reactive power control, power-factor correction, unbalanced current and reduction in Total Harmonic Distortion, so on.

THANK YOU