

A Major-Project report on
**“ZSI supported DSTATCOM for Plug-in Electrical Vehicle
charging station”**

Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfilment of the academic requirements for

the award of Degree of

BACHELOR OF TECHNOLOGY

In

ELECTRICAL & ELECTRONICS ENGINEERING

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2022-23

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CERTIFICATE

This is to certify that the major project entitled “**ZSI supported DSTATCOM for Plug-in Electrical Vehicle charging station**” submitted to JNTUH carried out by the following students of IV-BTech in the partial fulfillment for the award of the BTech Degree in **Electrical & Electronics Engineering** during the academic year 2022-23.

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ABSTRACT

In this research work, bidirectional Z source inverter (ZSI) supported DSTATCOM is utilized for Plug-in Electric vehicle (PEV) charging station. The PEV are being replaced by the conventional vehicles to reduce atmospheric pollution and reduce fuel consumption. A ZSI supported DSTATCOM is presented in this research work to improving the power quality of a power system and PEV charging station by using the Instantaneous Symmetrical Component Theory (ISCT) control technique. This system is presented for decreasing harmonics on the supply signals and elimination of large currents in the system due to a fault in the power system and PEV charging station. ZSI acts as a multi converter and has a feature of buck/boost. The power quality aspects are governed by the various standards such as the IEEE-519-1992 standard. The results are extracted using extensive digital simulations performed in MATLAB/SIMULINK environment.



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