

A Major-Project report on

**“EFFECT OF FAULT RIDE THROUGH CAPABILITY ON
ELECTRIC VEHICLE CHARGING STATION UNDER
CRITICAL VOLTAGE CONDITIONS”**

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

By

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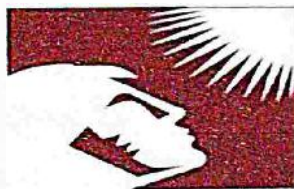
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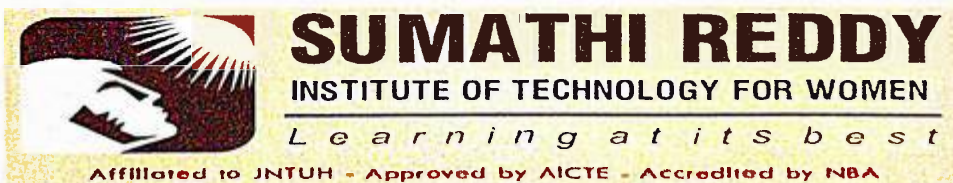
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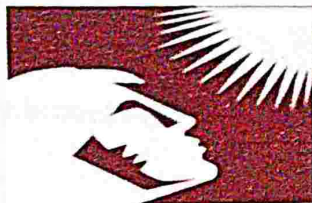
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CERTIFICATE

This is to certify that the major project entitled “Effect of Fault Ride Through Capability on Electric Vehicle Charging Station Under Critical Voltage Conditions” submitted to JNTUH carried out by the following students of IV-B.Tech in the partial fulfilment for the award of the B.Tech Degree in Electrical & Electronics Engineering during the academic year 2022-23.

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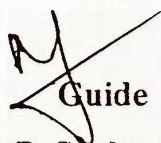
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ABSTRACT

A high-quality power supply is required for the proper functioning of the electric vehicle (EV) charging system. However, the voltage quality is one of the significant issues in the distribution grid. This article aims to examine the impacts of voltage disturbance on EV batteries and charging systems, and provides a fault ride-through capability (FRTC) to enhance the voltage quality. The charging system is constructed by the three-phase controlled rectifier and the dc-dc converter. The EV battery pack is modeled with lithium-ion batteries. The FRTC system is designed to improve the voltage quality, and it is achieved through the dynamic voltage restorer. It protects the EV batteries and charging system from the critical voltage sag levels. The performance of the proposed EV charging station (EVCS) has been investigated in 30%, 60%, and 90% voltage sag through the MATLAB/Simulink platform. Also, the real-time validation has been carried out by the software-in-the-loop test with the help of the dSPACE (DS1202) real-time system. The EVCS with an FRTC system provides better performance than the conventional EVCS.



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