Madanapalle Institute of Technology & Science

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Department of Electrical & Electronics Engineering

Name of the Project: Advanced Simulation and Modeling of Three-Phase Hybrid Electric Vehicle Chargers with Improved SOC, Voltage, and Current Using High Frequency Inverters

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Aim of the Project:

The aim of the project is to provide fast and efficient charging for hybrid and electric vehicles by utilizing the three-phase power. By enabling quicker charging times, reducing overall charging time, and promoting the adoption of hybrid and electric vehicles by making charging more convenient and accessible.

Apparatus Required:

Three-phase power supply, Rectifier, Boost Converter, IGBT, High frequency Inverter, Capacitor, IGBT, Pulse generator, Single-phase transformer, Battery.

Results:

The simulation results demonstrate a marked improvement in charger efficiency and performance metrics, offering a promising avenue for future HEV charging infrastructure.
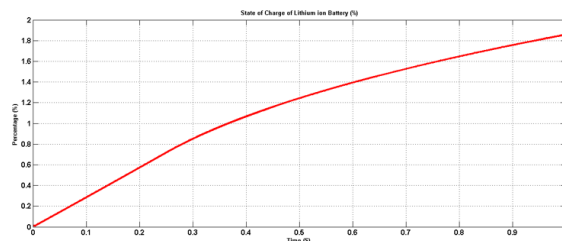
Block Diagram:
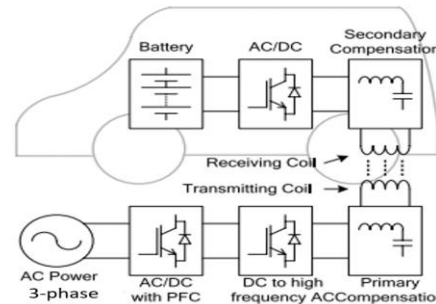
Conclusion: :

In conclusion, charging performance and efficiency are greatly improved by switching from single-phase to three-phase hybrid electric car chargers combined with high-frequency inverters. Our model verify that, in addition to offering better voltage stability, current delivery, and state of charge, these systems are less expensive and larger in size than conventional chargers.

Tools and Platform Used :

- MATLAB/SIMULINK

Working:

The proposed model consists of three-phase EV charger with high frequency inverter to improve the state of charging(SOC), and to have better system stability and good performance.

Simulink Diagram: