A Pulse Charging Technique for Fast Charging of Electrical Vehicle

Amol Jagdish Mishra[1], Dr. Farid Ahmed[2], Dr. Pawan C. Tapre[3]

ME Scholar, Department of Electrical Engineering[1]

ME Coordinator, Department of Electrical Engineering[2]

H.O.D Department of Electrical Engineering[3]

S.N.D College of Engineering & Research Center, Yeola, Nashik, Maharashtra, India

Abstract*: Electric vehicles (EVs) have become integral to the automotive industry due to two primary factors: diminishing reliance on oil and mitigating air pollution, thereby fostering an environmentally friendly environment. When purchasing EVs, consumers evaluate various factors such as overall vehicle mileage, recharge time, mileage per charge, battery charging/discharging safety, longevity, charging rate, capacity, and temperature regulation. A novel pulse charging technique has been proposed, incorporating proportional integral derivative (PID) control and neural network mechanisms to enhance battery charging efficiency. This design utilizes a PID controller within the charging unit, with feedforward neural networks determining PID control parameters. Additionally, a battery management system (BMS) ensures swift and efficient charging while maintaining battery health. The system is implemented using MATLAB/Simulink.*

Keywords: Electric vehicles