

A Control System And A Method For Operating A Charging Station

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ABSTRACT

A control system (106) and a method (300) for operating an Electric Vehicle (EV) charging station (102) is proposed. A charging current of a battery of the EV is measured (302) to calculate (304) a State of Charge (SOC) level of the battery based on the charging current. A constant current charging (308; 310) for the battery is selected if the SOC level is less than or equal to a first threshold level or a second threshold level. Else, a constant voltage charging (312) for the battery is selected if the SOC level is more than the second threshold.

KEY APPLICATION AREAS

1. Electric Vehicle (EV) charging infrastructure.
2. Fast-charging stations for EVs.
3. Battery Management Systems (BMS).
4. Smart charging and energy management.
5. Power electronics for EV charging.
6. Li-ion battery charging optimization.

POTENTIAL USE

1. SOC-based adaptive charging that switches between multi-level Constant Current (CC) and Constant Voltage (CV) modes.
2. Fast charging of EV batteries with reduced charging time while preserving battery health.
3. Smart public and commercial charging stations supporting dynamic charging control and higher charger utilization.
4. Battery health optimization by adjusting charging rates based on State of Charge (SOC) thresholds.
5. CAN-enabled communication between the charging station and EV Battery

Management System (BMS) for intelligent charging control.

6.High-power charging systems for EVs, PHEVs, BEVs, and HEVs using optimized multi-stage charging strategies.