1 Overview

The motor in an electric vehicle is a major component. The type of motor can have large design implications, from power suppieys to drive chain.

1.1 AC motor

An AC motor is driven by an AC current. The motors rotation speed is set by the supply frequency and the number of poles. The AC motor doesn't need a split ring commutator like a DC supply, but is less flexible.

The kind of motor considered would be an AC induction motor. The system attempts to bring the rotor frequency into a value proportional to the drive frequency.

This will need a variable frequency inverter.

1.2 DC motor

DC motors are a class of motor driven by a DC supply. The DC supply then needs to be driven to the rotors in an oscillatory fashion. These are commonly used for electric vehicles as they have the useful property of increasing torque when under load.

1.3 Brushed vs Brushless

Brushless motors requires a drive control circuit to turn the supply DC into a set of oscillating drive lines. Brushed motors have a much more simple drive system, the supply is DC, and the supply is commutated mechanically. The brushes incur mechanical loss.

DC brushless the supply is DC, but is modulated to create the time varying supply. Either an inverter or a power supply.

2 Required

- Max output (Wh) can supply motor
- Battery lasts for 1 week of use with 1 charge
- Charges overnight (8 hours) at a maximum

3 Desired

- Charges in 1 hour
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