MDI Wheelmotor

Design Features:
- Simple add-on for Hybrid Vehicles
- High torque and efficiency
- Simple direct drive (no gears)
- Field repairable
- Programmable Controller
- Redundancy (two motors & two controllers per wheel)
- Minimum weight
- High-volume manufacturability to minimize cost

Configuration: Dual axial-gap brushless motor
Maximum voltage: 600V DC
Continuous Torque: 250 Ft-lb_f at 100 Amps
Peak Torque: 800 Ft-lb_f at 300 Amps
Maximum Speed: 60 mph
Brakes: Integral band brake

Total weight: 120 Lb_m
Tire Size: 26-inch outside diameter
Width: 5.5 inches (less than tire width)
Mounting: Stainless-steel adapter plate for bolting to existing rear trailing arm
Magnets: Neodymium iron boron
Cores: Powdered metal, sintered iron, low loss
Airgap: .100 inch per side, adjustable
Cooling: Air cooled stators
Bearings: Two 32210 tapered roller
Seal: Labyrinth seal between rotor and stators (2)

Controllers: Two separate IGBT pulse-width modulated controllers with separate wiring, one for each stator winding (external to motor)
Protection: Over-current • Over-voltage • Under-voltage • Over-temperature
Sensors: Hall effect position sensors (6 total)
Embedded temperature sensors in windings (4)

Estimated Cost: (in quantities of 100) $4,500 per wheel which includes IGBT controllers

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Design, testing, and fabrication of prototype motors and controllers for vehicular and industrial applications.

Inside the Wheelmotor