Zeroshift transmission for electric vehicles

Peter Parkes
The World’s Most Efficient Automatic Transmission

Milton Keynes Headquarters
Batteries are the Achilles heel of electric vehicles

• High cost (ca $10,000 for Leaf)
• Low range – max 100 miles theoretical
  – Range anxiety
• Recharge
  – 8 hours standard power
  – 45 kw for rapid charge
Efficiency of electric cars

- Efficiency of motor falls off at low and high speeds.
- Poor on stop-start urban cycle and cruise / range.
- Require over-size motor to compensate for lack of ratios.
Benefits of Transmissions in electric vehicles

• Gear ratios can keep the motor of an electric vehicle in its ‘sweet spot’ of highest power and efficiency.
• > 10 % efficiency results
  – Smaller / cheaper battery
  – Smaller / lighter motor
• Better performance
  – Smoother launch
  – Greater range
  – Better ability on gradients
  – Faster acceleration
  – Faster cruise speed
Problems with transmission for electric vehicles

- Conventional **automatics** introduce 10% losses and extra weight, plus cost, negating benefit.

- **Manual** gearboxes are efficient but interrupt torque during gear changes.

- **Zeroshift** provides seamless automatic transmission with minimal efficiency losses. No Clutch.
Zeroshift is ideal for electric vehicles

- Maximum efficiency
- High quality shifts
- Low weight
- Small size
- Low cost
Awards

• "Best Advanced Transmission Technology 2010“
  Institute of Transport Management
• Winner of 2008 Overall Bright Sparc Award
• Winner of 2007 Society of Automotive Engineers
  Technology’s Award
• Winner of 2007 Frost & Sullivan Company of the
  Year Award in the European Powertrain Market
• Winner of 2007 Milton Keynes & North Bucks
  Chamber of Commerce Award for International Trade
  Best New Exporter
What the press says about Zeroshift

**Sport Compact Car** (USA), “Zeroshift, the only gearbox the future really needs”

**Racecar Engineering** “In 10 years time every car in the world will be built with a gearbox operating on the Zeroshift principle”

**EVO** “..making both conventional transmissions obsolete at a stroke!” “RIP Manuals”

**Autocar** “..the new British gearbox that is about to make DSG (Audi’s Dual Sequential Gearbox) and SMG (BMW’s Sequential Manual Gearbox) seem underdeveloped and over-rated”
Status and Next steps

• Customer funded projects for **Hybrid**:  
  – FWD car  
  – RWD car  
  – light commercial  
  – bus  
• Looking for **partner** for simulation of electric car with Zeroshift transmission.  
• Seeking additional funding.
Test Drive in MK…

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