Mission Motors & Growth in the Electric Vehicle Industry

Ray Shan ‘08
LGO Webinar
April 15th, 2011
INDUSTRY FORCES
Global Forces affecting Electric Vehicles

**Energy Security**
Federal CAFÉ Standards will rise to 35.5 mpg in 2016 and higher by 2020.

**Emission Reductions**
EU seeks less than 130g CO2e/km by 2012 and less than 95g/km by 2020.

**Green Consciousness**
39% of American drivers are considering EV or Hybrid as their next car purchase. – Consumer Reports

**Better Technology**
Li-ion battery price/kWh to drop 40-50% over the next 5 years
Vehicle OEM’s shifting to electric drive

Macro Forces:
- Peak oil
- Energy security
- Climate change
- Oil spills

Regulation + Markets

Result:
~15% of the vehicle market will be Electric or Hybrid by 2020.

Vehicle manufacturers need EV solutions to
Maximize performance and Reduce time to market.
Electric Vehicles are Inevitable

43 companies are launching over 70 new electric or hybrid models by 2015

Electric and hybrid vehicle launches planned for 4Q 2010 - 2012

Est. Vehicle Price

>$200K

Tesla Roadster
2,000 units sold

BMW Mini-E
> 20,000 ordered

Fisker Karma
3,000 ordered

VW Taureg

Audi R8 E-tron

$90K

Tesla Model S

Chevy Volt
25,000 ordered

Prius PHEV

$50K

Nissan Leaf
> 20,000 ordered

Coda Sedan

Ford Focus EV

Volvo C30

Fisker Nine

$35k

Mitsubishi iMEV

Think City

Infiniti M35H

Lincoln MKZ

Cadillac XT S

BEV  PHEV  Hybrid

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Source: Company reports, press releases, Credit Agricole estimates.
Market Size

Vehicle OEMs are Shifting to Electric Drive

- Global HEV/PHEV/BEV sales in 2015 expected to be 4MM units, or 6.5% SOM

OEMs Acquiring EV Technology
OEMs are looking to acquire better EV/Hybrid technology from smaller players

“Automakers are trying to enhance their competitiveness by acquiring core technologies in areas where they are weak.” – Goldman Sachs
Strategic Partnerships

Business Partnerships Set up for New Technology Development

**AUTOMAKERS**
- Toyota
- Volkswagen
- Honda
- Mitsubishi Motors
- Fuji Heavy Industries
- Nissan
- Ford
- BMW
- Chrysler
- Daimler
- Hyundai Motor Corp
- GM
- Think Nordic
- BYD Auto

**BATTERY MAKERS**
- Panasonic EV energy
- Sanyo
- Blue Energy
- Lithium Energy Japan
- Automotive Energy Supply Corp
- JC – Saft JV
- LI-Tec
- Deustche Accumotive
- LG Chem Power Inc
- A123 Systems
- Enerdel
- BYD Auto (CH)

- Panasonic
- GS Yuasa Corp
- Mitsubishi Corp
- NEC
- NEC Tokin
- Saft (FR)
- JCI (US)
- Evonik (GER)
- LG Chem
- GE
- Delphi
- Ener1
- MidAmerican Energy Holdings

- Historical battery cell maker
- Planned battery supplier
- Battery supplier (incl. NiMH batteries and indirect supply)
- Finance
- Development partnership

Source: CLSA, Samsung, CA Cheuvreux

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ENTER MISSION MOTORS
Our Vision
Better performing electric powertrain technology for every application

Mission’s Business Model

• Push the limits of EV technology

• Offer higher performing, flexible electric powertrains to all applications.

• Help OEM’s reduce their risk and time to market for new EV’s.

• Build a Capital-Efficient vehicle brand and powertrain technology company
Company History

2008
Developed flexible, high-performance electric powertrain

2009
Demonstrated technology in 163 mph electric motorcycle

2010
Signed powertrain contracts with 2 major vehicle OEMs
Business model
Providing the technology that enables OEM's to optimize electric vehicle performance

Mission R&D
R&D to continuously advance electric drive system state-of-the-art

Eng. Services
Integrate our technology into early-stage vehicle programs

Powertrain Systems Supplier
- Energy Storage
- Vehicle Software
- Motor Control
- Motor System

High volume supplier of electric powertrain components

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Core of the Company – The Team
Mission Electric Vehicle Technology

Multiple patent applications spanning all parts of the electric powertrain system

- **Vehicle Software**
  Makes everything work
  Talk to your vehicle from home

- **Motor & Control Systems**
  Turn energy into motion

- **Battery Pack**
  Stores Energy

- **Low Voltage Supply**
  Keeps the radio on

- **Onboard Charger**
  Allows charging

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System Architecture
System understanding enables Mission software to optimize across the entire powertrain.
Mission Vehicle Development
Continuously demonstrating technology through a performance vehicle

Purpose of Mission Motorcycle

- Provides platform for development
- Demonstrates cutting-edge performance
- Builds Mission’s technology brand
- Recruits & retains top engineering talent

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OPS at MISSION MOTORS
What the Ops team does

• Biz Ops – keep the company running with minimal administrative overhead (HR, Purchasing, IT, etc…)

• Operations Strategy – Make vs. Buy, Capacity and CapEx planning

• Shop-Floor Mfg – building products and process improvements

• Facilities – continuously improving the lab and shop space optimized for engineers / employees
Our Approach to Ops

- Continuous Improvement is everyone’s responsibility

- Everyone is empowered to improve their workspace and work style

- Everyone is Lean Trained and participates in Kaizen Days

- Create new process only when it helps, improve process when it slows the team down
Life at a Start-up

• Passion is the heart of this company and work is a never-ending rollercoaster

• Ambiguity is everywhere – figure it out

• Always Resource Constrained – priorities, contingencies and creativity

• Growing Pains come fast and often – intents and explanations

• Lots of Leadership Opportunities
Get it Done

Results are everything at a start-up
• No one will give you money for a good effort
• Every milestone impacts the company

Do what you like and this other thing

Celebrate accomplishments

Yay, More Pie!
LGO = Jack of All Trades

Half Business / Half Engineer

- Take on many roles because it's necessary

Operations Strategist, Manufacturing Engineer, Quality Control, Assembler, Machinist, Facilities Manager,

Technology Strategist, Engineering Manager, Engineer, Technician, Mechanic, Race Crew Chief

Market Strategy, Business Development, Grant Writer, Program Manager

Financial Modeler, Financial Analyst, Controller, Accountant, IT, HR

Chef/Cook/Flipping Burgers, Cameraman, Chauffeur, Translator, Plumber

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Building and Retaining Culture

In order to recruit and keep a highly intelligent, talented and passionate team…

- TGIF – Transparency is important
- Bullpen Seating – Open Communication

- Weekend Rides – because we like it
- Bike to work – because we live nearby

- Dogs – because they help us relax
- Stand-up Desks – flexible workstyle

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How LGO helped / continues to help me

• Network to learn from and relax with

• Thinking about Leadership

• Thinking about Lean

• Business Basics
  – Finance / Strategy / Frameworks
  – Sales Club
  – Negotiations
Questions ?
Thank You

For more info, please contact me:

ray@ridemission.com

And check out our website:

www.ridemission.com