MIT Electric Vehicle Team: 
Charging into the Future

Irene Berry, EVT Graduate Team Leader
EVT designs, builds, tests, and demonstrates advanced EV technologies

The Mission of EVT is to:

• *Research & demonstrate* electric vehicle technologies using full-size EVs as test platforms

• Provide *educational opportunities* for MIT students through *project-based learning*,

• *Inform the public* about electric and other advanced vehicle technologies.

web.mit.edu/evt
EVT is a multidisciplinary group of undergraduate and graduate students

• Roughly 20 students from all majors
• Based out of Sloan Automotive and Electrochemical Energy Laboratories
• Advised by Prof. Yang Shao-Horn

Current Sponsors
• Valence Technology
• Exponent, Inc
• Maniv Energy Capital, LLC
• National Instruments
• MIT Electrochemical Energy Laboratory
• MIT Sloan Automotive Laboratory
The Porsche 914 EV demonstrates advance Li-ion battery technology

Key Components
- 18- Valence Technology Lithium-ion batteries (230 Volts, 100 Amp-hours)
- Azure Dynamics AC motor (50 kW)
- Original 5-speed manual transmission

Performance Specifications
- 100 mile range
- < 20 sec 0-60 time
- 8 hour charge time

Milestones
- March 2008: First test drive
- Summer 2009: Endurance test/demonstration
“No-Compromise” EV will demonstrate rapid-charging capabilities

**Vehicle Goals**
- 10 minute charge time
- 200 mile range
- < 9 sec, 0-60 time
- mainstream vehicle styling

**Additional Project Goals**
- Research electricity storage and charging infrastructure
- Education and outreach, public demonstration
Potential 2.007-EVT Projects are important for both vehicles

• **Driver Information Center** *(Porsche 914)*
  – Utilize sensors and data buses to display vehicle-level and consumer information to the driver
  – Design and implement the display center into the vehicle console

• **Waterproof and Cooling System** *(Porsche 914)*
  – Waterproof the Porsche 914: identify, design, implement
  – Identify cooling system requirements; design and implement system to cool batteries, motor, and motor controller/inverter

• **Charging systems** *(Porsche 914 and No-Compromise EV)*
  – Select and implement a 4-hour charging system for the Porsche
  – Research and design a 10-minute charging system
Potential 2.007-EVT Projects are important for both vehicles

- **Efficiency** *(Porsche 914 and No-Compromise EV)*
  - Use vehicle modeling to identify areas for efficiency improvement
  - Design vehicle changes to increase efficiency by ~10 percent

- **Outreach and Hands-on Demonstration**
  - Design and build a hands-on demonstration of EV technologies for use at poster sessions and other outreach events
  - Lead and organized outreach events throughout the semester; plan for summer events

- **Bring Your Ideas to Us**
We will expect from you...

• Work with ~5 other 2.007 students under the supervision of an EVT graduate student

• Work out project details with us

• Be part of our team for the semester
  – team meetings: Monday, 8:00
  – contribute to team discussions; report on the status of your project; ask questions, get answers

• Be safe and professional; respect EVT and Sloan lab rules
  – Attend an EVT electrical safety training next week
  – Represent EVT well
You can expect from us...

• Access to our team
  – Anything we know about EVs, you know about EVs (and we know a lot)

• Access to team resources
  – Lab (restrictions will apply); our tools, equipment, and supplies; an awesome EV that works; books and manuals on EVs and vehicles; vehicle modeling tools

• Appreciation and respect for your contributions, opinions, and ideas