

Advanced Electric Drive Vehicles – A Comprehensive Education, Training, and Outreach Program

Mehdi Ferdowsi

Missouri University of Science and Technology

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Project ID #
ARRAVT034

Overview

Timeline

- Project start date: 01/21/2010
- Project end date: 01/20/2013
- Percent complete: 8.3

Budget

- Total project funding
 - DOE share: \$5,000,000
 - Contractor share: \$1,256,324

Barriers

- Lack of Readily Available, Objective, and Technically Accurate Information
- Lack of Educated Trainers and Training Opportunities
- Disconnect between information and dissemination

Partners

- University of Central Missouri
- Linn State Technical College
- St. Louis Science Center
- Project lead: Missouri S&T

Relevance

- Objectives:
 - Prepare automotive engineers, technicians, and personnel for the new field of transportation electrification
 - Promote public awareness about electric drive vehicles and their energy saving benefits
 - Create outreach programs and provide education for pre-college and high school students in order to develop a pipeline of well-qualified individuals to pursue careers in the field of advanced automotive energy systems
 - Create a technology transfer model to foster research and educational collaborations between the electric drive vehicle industries and academic institutions
 - Conduct and disseminate educational research, which explores factors that mediate learning outcomes

Relevance

- Relevance to ARRA Goals
 - Create new jobs
 - Save existing jobs
 - Spur economic activity and invest in long-term economic growth.

Approach

- Develop an Advanced Automotive Technology Minor Degree Program
- Develop an Electric Drive Vehicle Technology Graduate Certificate Program
- Develop an Associate of Applied Science degree option
- Develop hands-on educational tools and interactive exhibits for science centers and museums
- Organize summer camps for high school and pre-college students
- Initiate strategic partnership with the automotive industry
- Conduct a systematic-iterative evaluation of learning and educational activities
- Disseminate the developed materials

Approach - Milestones

Budget Period / Phase	Milestones
Year 1/Phase 1	<ul style="list-style-type: none">• develop the required course, training, educational, and teaching materials,• preparation of lecture notes, presentation slides, tests, assignments, lab manuals, and other course materials,• iterative evaluation of prototype materials with small samples of participants, and• initial dissemination and outreach.

Approach – Go/No-Go

Decision Point	Go/No-Go
Year 1/Phase 1	Successful completion of (or progress toward): <ul style="list-style-type: none"><li data-bbox="774 462 1553 648">• develop the required course, training, educational, and teaching materials (at least two new courses will be developed at each institution),<li data-bbox="774 665 1572 905">• preparation of lecture notes, presentation slides, tests, assignments, lab manuals, and other course materials (lectures will be prepared so that distance education would be feasible),<li data-bbox="774 922 1599 1062">• iterative evaluation of prototype materials with small samples of participants (all of the course offered will be evaluated), and<li data-bbox="774 1079 1599 1219">• initial dissemination and outreach (SLSC has a comprehensive evaluation plan already in place).

Accomplishments and Progress

- The subcontracts with the University of Central Missouri, Linn State Technical College, and St. Louis Science Center were prepared and executed.
- The team has identified the major equipment that needs to be purchased. The orders are currently being processed by the procurement office.
- The parts and supplies needed have already been purchased. Some of them have already arrived.
- The team is currently finalizing the recruitment process for a secretary position. Due to hiring freeze at Missouri S&T, this task has taken longer than expected.

Accomplishments and Progress

- This spring semester, there are five classes being taught.
- EE 301 Electric-Drive Vehicles
- # of students: 17
- EE 353 Power Electronics
- # of students: 42
- EE 353 Power Electronics Laboratory
- # of students: 6
- EE 402 - Advanced Theory of Electric Machines
- # of students: 13
- ME 378 Mechatronics
- # of students: 21

Collaborations/Partnerships

- University of Central Missouri (sub)
- Linn State Technical College (sub)
- St. Louis Science Center (sub)

- Smith EV (strategic partner)
- Dow Kokam (strategic partner)
- Chrysler (strategic partner)
- A123 (strategic partner)

Future Work

Budget Period / Phase	Milestones
Year 1/Phase 1	<ul style="list-style-type: none">• develop the required course, training, educational, and teaching materials,• preparation of lecture notes, presentation slides, tests, assignments, lab manuals, and other course materials,• iterative evaluation of prototype materials with small samples of participants, and• initial dissemination and outreach.
Year 2/Phase2	<ul style="list-style-type: none">• regionally implement and evaluate the newly developed learning materials in pilot classes and outreach activities• dissemination and outreach involving Missouri S&T, University of Central Missouri, Linn State Technical College, St. Louis Science Center, and high schools in Missouri.

Summary

- This project is at its early stages.
- The students have well received the related courses
- The progress of the work is according to the plan