US Electric Drive Manufacturing Center

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Overview

Timeline

- Start: April 2010
- End: June 2013
- % Complete: 47%

Barriers

- Acceptance of product by the consumer
- Implementation of new advanced vehicle technology
- Product affordability

Budget

- Total project funding
  - DOE share: $105 M
  - GM Share: $ 141 M

Partners

- None

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Objectives

- Construct and validate high-volume production capability for electric motor and electric drive manufacturing
- Develop domestic electric motor design, engineering, and manufacturing capabilities
- Enable the US to establish a leadership position in electric drive technologies

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Relevance

- Contribute to US economic recovery by creating domestic, advanced technology engineering and manufacturing jobs
- Create more than 200 advanced technology manufacturing jobs in the White Marsh, Maryland facility at planned production volume
- Create or retain jobs throughout the domestic supply base, including production part suppliers, engineering and construction services, and manufacturing equipment providers

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Relevance

- Support Advanced Vehicle and Advanced Propulsion Technology
- Make significant new investments in the domestic manufacturing base
- Offer a portfolio of energy solutions for full range of vehicles
- Contribute to US national goals of energy independence
- Reduce petroleum consumption and greenhouse gas emissions

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Approach

- Utilize lessons learned from first generation electric drive technology to improve product performance, quality, reliability, and durability
- Develop domestic knowledge and capability required to manufacture current and future electric motors and electric drive components at high quality and low cost
- Design and build a lean, agile, flexible “world class” manufacturing system
- Perform simultaneous value engineering for the high-volume manufacturing system
- Utilize proven, industry standards and internal processes to achieve a flawless manufacturing validation and production launch

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Milestones

Milestone	Date	Criteria
Concept Confirmation Gate	October 2011 February 2012	Production design released
Phase III Go/No Go Decision Point	April 2012	Exit Phase II of the project, Proceed to Phase III
Equipment Installation at Manufacturing Site	April 2012	Installation of long lead equipment begins
Product and Process Validation Quality Valve	June 2012	Product and Process qualified and validated
Electric Motor Manufacturing Facility Building Dedication Ceremony	July 2012	Facility construction completed
Final Approval Gate	August 2012	Manufacturing system and equipment operational
Pilot Quality Valve	September 2012	Production parts approved

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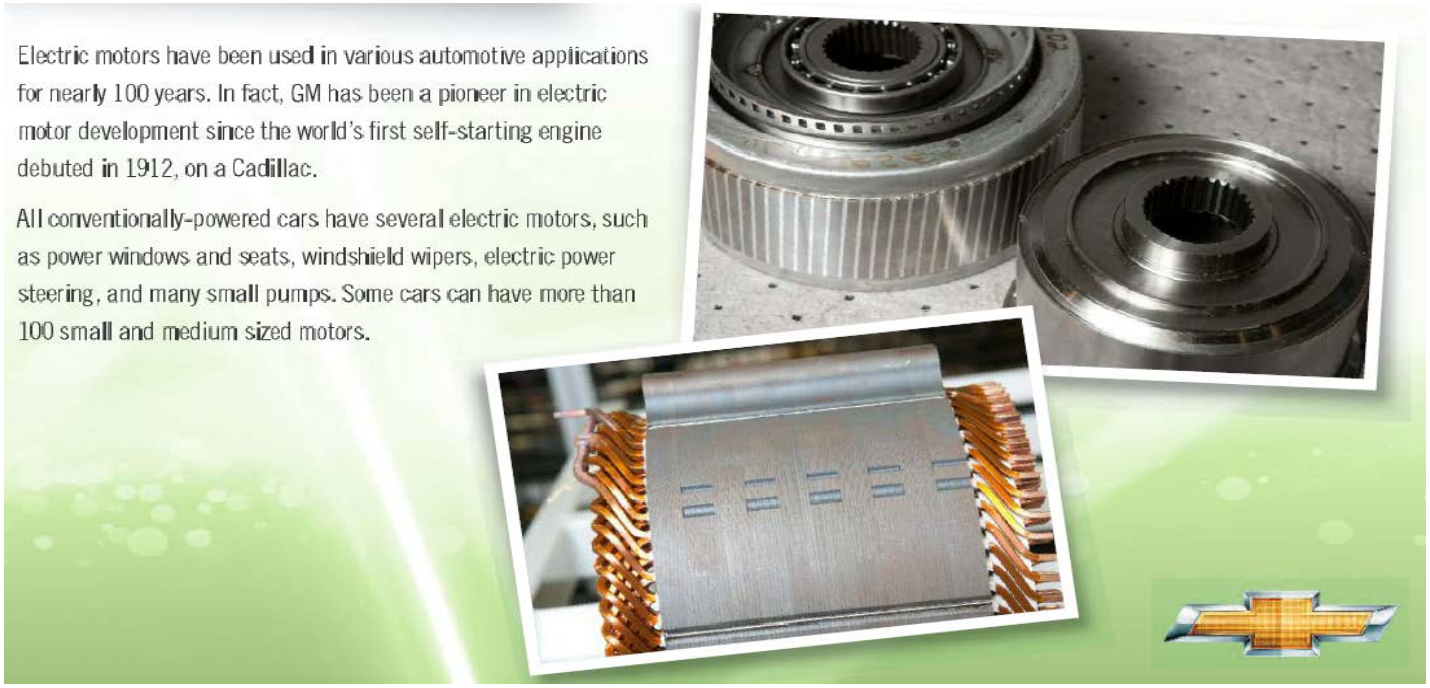
Technical Accomplishments

- Electric Motor Manufacturing Validation Center operational
  - Prototype builds delivered on-time, 630 total electric motors built through FY2012 Q1
  - Chevrolet hosts news media at the Validation Center, Spark EV electric motor showcased



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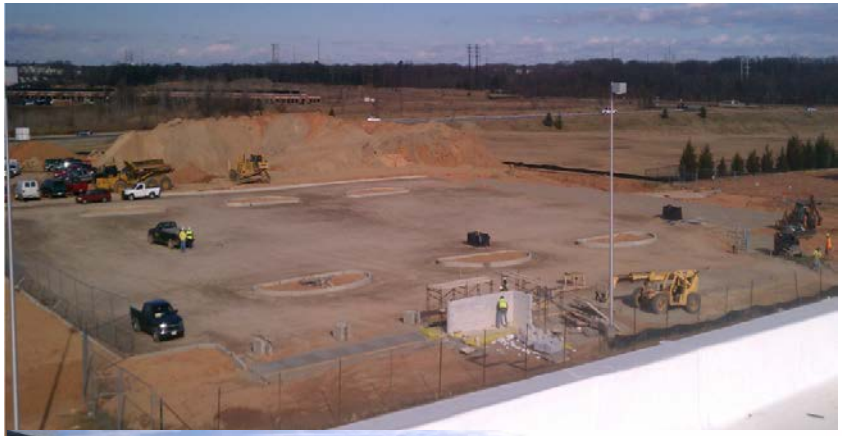
Technical Accomplishments

- Electric Motor manufacturing facility construction underway
  - Soil stripping, foundations, underground sanitary, structural steel, masonry, roofing, siding completed



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Technical Accomplishments

- Electric Motor manufacturing facility construction underway
  - Electrical and mechanical interior underway

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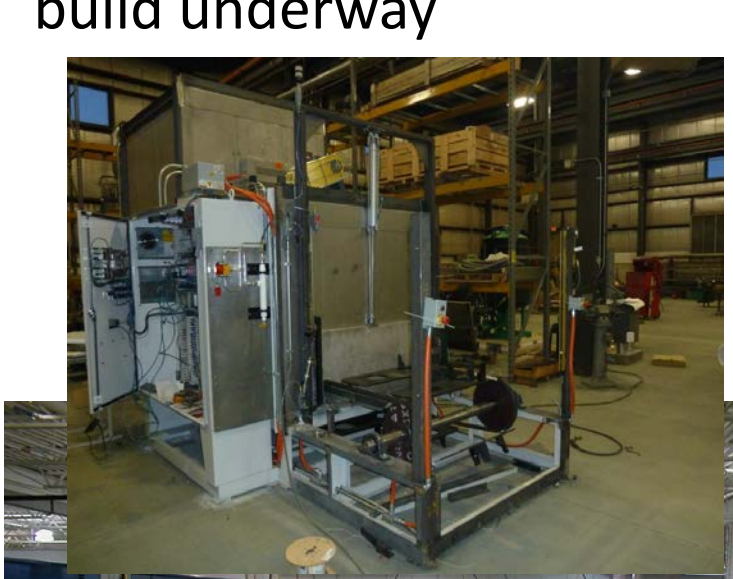
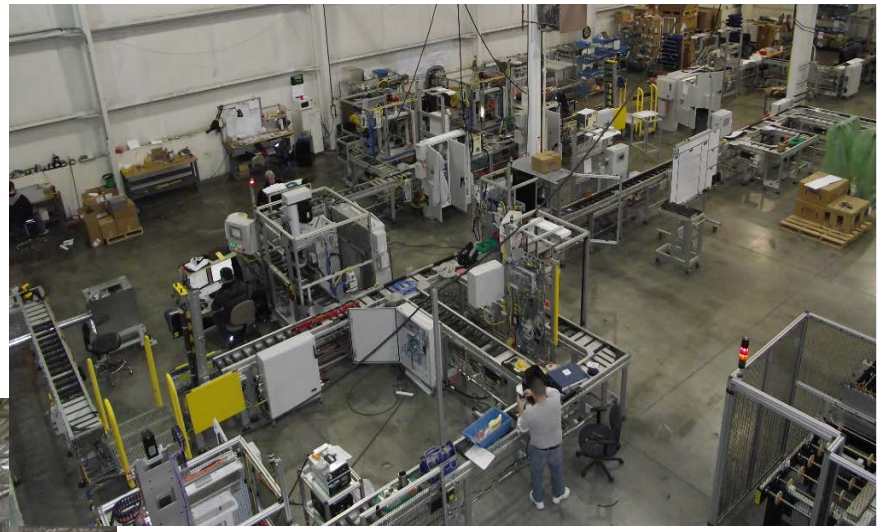
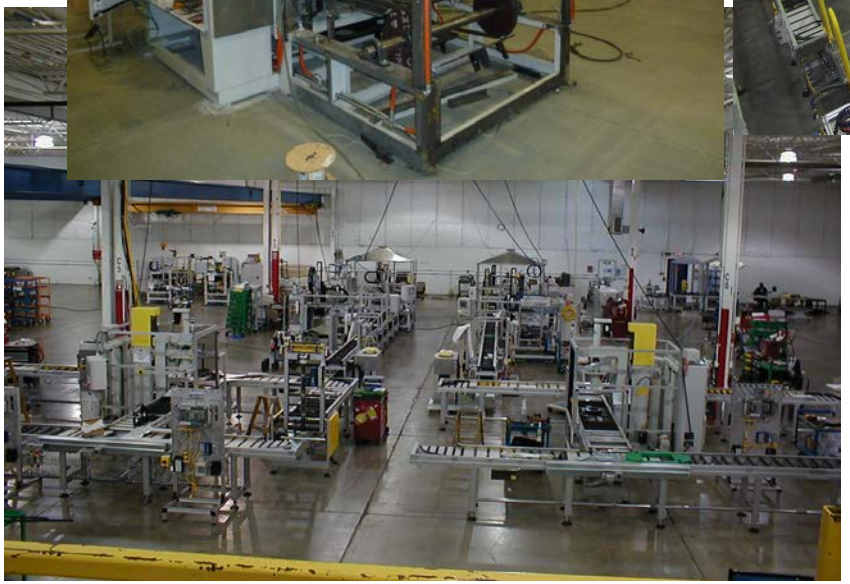
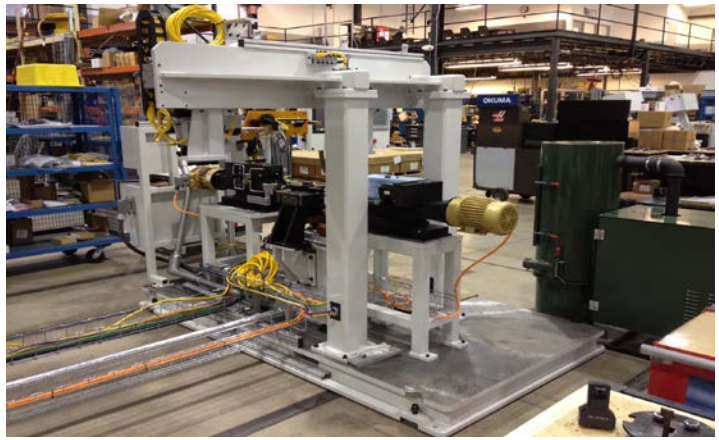
Technical Accomplishments

- Electric motor manufacturing system equipment design and build underway









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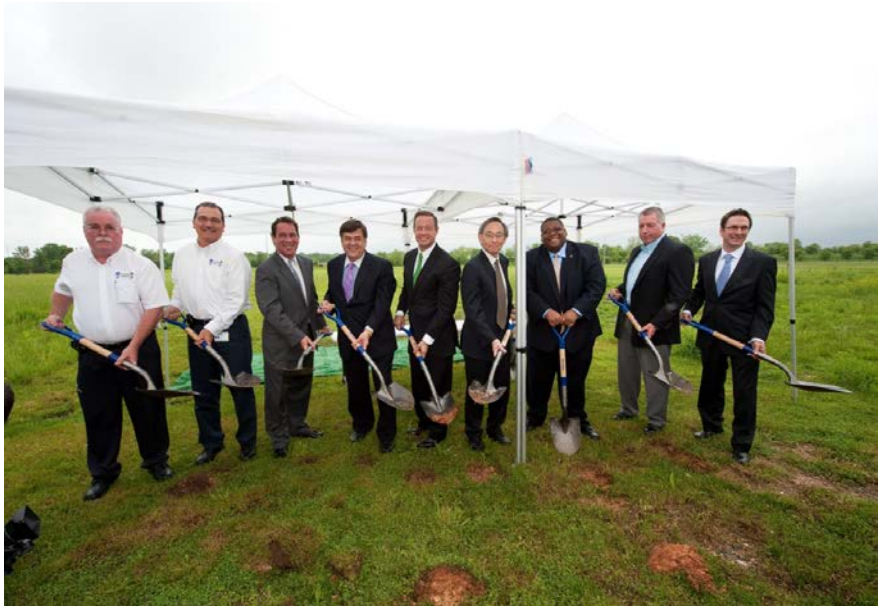
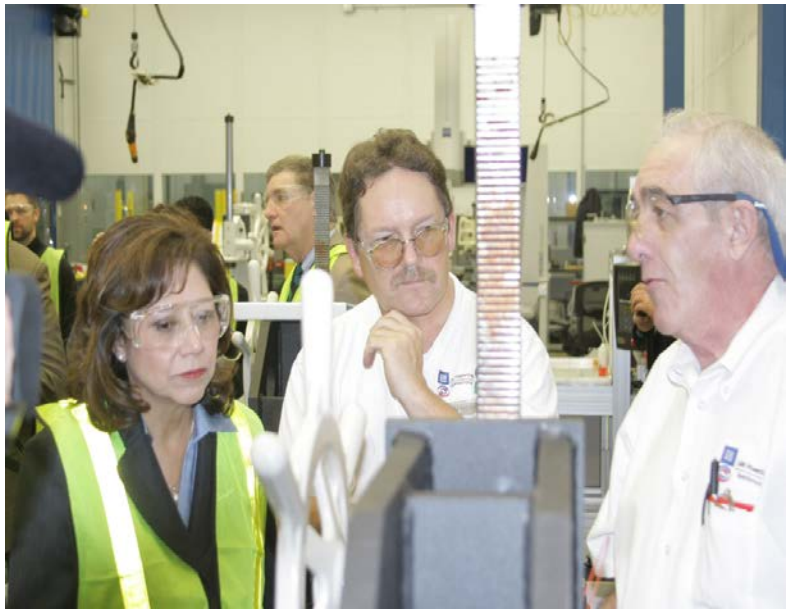
Technical Accomplishments

- Participated in Project Events
  - Electric Motor Manufacturing Facility Ground Breaking Ceremony
  - Vehicle Technology Program FY2012 Kickoff Meeting for Advanced Power Electronics and Electric Motors R&D
  - Visit by Secretary of Labor Hilda L. Solis



Groundbreaking Ceremony May 17, 2011



Secretary of Labor Hilda L. Solis
February 15, 2012

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Technical Accomplishments

- Engineering and Construction staffing
  - Jobs retained or created based on ARRA guidelines: 42.8 FTE as of FY2012 Q1
  - Averaging 75 construction workers per day
- Technical reports submitted
  - All program reporting completed on time

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Collaborations/Partnerships

- No other external collaborations aside from Department of Energy assistance provided for this project

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Future Work

- 2012
  - Phase III Go/No-Go Decision Point
  - Building Dedication Ceremony for electric motor facility
  - Runoff & validate manufacturing equipment at supplier facility
  - Install & qualify manufacturing equipment at plant
- 2013
  - Validate Manufacturing Process
  - Complete Production Part Approval Process
  - Witness Performance Test
  - Start of Production
  - End of ARRA Project Period
  - Phase IV Close Project

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Summary Slide

- This is the second Annual Merit Review for this project. Guidance from the meeting will improve the FY13 activity
- The project supports advanced vehicle technology, establishes high-volume manufacturing capability, creates and retains jobs, and contributes to energy independence
- Our approach to develop engineering and manufacturing capability will enable the U.S. production of electric drive components at high quality and low cost
- We have accomplished all objectives for Phase II of the project
- The project cost, schedule, performance and technical deliverables are on track

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