US Electric Drive Manufacturing Center

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General Motors LLC (GM)

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Overview

Timeline

- Start: April 2010
- End: June 2013
- % Complete: 90%

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
  - Federal Funds Expended: $72 M

Partners

- None

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

Relevance

- Contribute to US economic recovery by creating domestic, advanced technology engineering and manufacturing jobs
- Create 29 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

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

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

Milestones

Milestone	Date	Criteria
Electric Motor Manufacturing Occupancy	July 2012	Installation of process equipment begins
Final Approval Gate	September 2012 January 2013	Manufacturing system meets the program requirements
Production Approval Gate	November 2012	Program is ready and meets the requirements to start production
Start of Production	January 2013	Start of running production begins at the manufacturing site
Phase IV Go/No Go Decision Point	April 2013	Exit Phase III of the project, Proceed to Phase IV
Component Performance Test	October 2012 April 2013	Test conducted and test results submitted
End of Project Period	June 2013	Project Period ends
Close Project	September 2013	Exit Phase IV, finalize cost and technical deliverables

Technical Accomplishments

- Electric Motor Manufacturing
  - Prototype and production builds delivered on-time, 1143 total electric motors built through FY2013 Q1

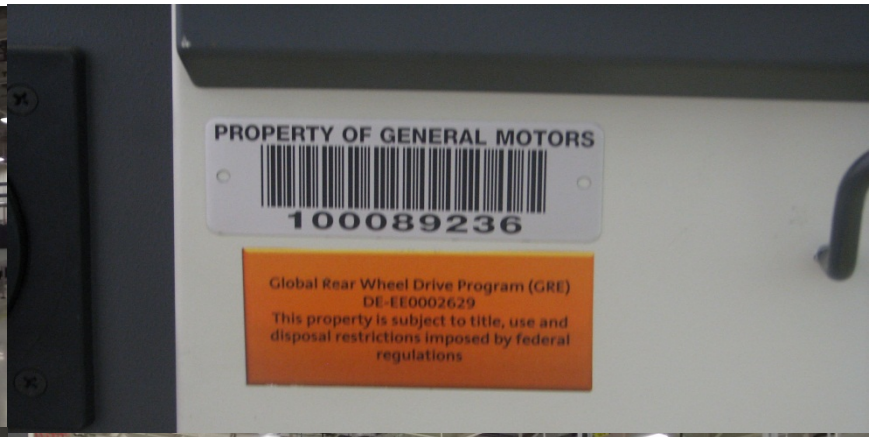
- Electric Drive Unit Manufacturing
  - Prototype and production builds delivered on-time, 741 total electric drive units built through FY2013 Q1

Technical Accomplishments

- Electric Motor manufacturing facility construction completed

Technical Accomplishments

- Electric motor manufacturing equipment installed and validated at manufacturing site



Technical Accomplishments

- Electric drive unit manufacturing equipment installed and validated at manufacturing site

Technical Accomplishments

- Engineering, Construction, and Production staffing
  - Jobs retained or created based on ARRA guidelines: 75 FTE as of FY2013 Q1
  - Averaging 20 construction workers per day
- Technical reports submitted
  - All program reporting completed on time

Collaborations/Partnerships

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

Future Work

- 2013
  - Complete Production Part Approval Process
  - Start of Production
  - Conduct Component Performance Test
  - End ARRA Project Period
  - End Phase IV of Project
  - Finalize cost and technical deliverables

Summary Slide

- This is the third Annual Merit Review for this project
- 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 allow GM to produce current and future electric drive components at high quality and low cost
- We have accomplished all objectives for Phase III of the project
- The project cost, schedule, and technical deliverables are on track