Chevrolet Volt
Development Story of the Pioneering Electrified Vehicle

By Lindsay Brooke
Preface

GM on the Critical Path
Four years of Volt development

Chapter 1
Why Volt?
After 48 months' development, the 2011 Chevrolet Volt has entered series production. The pioneering "E-REV" is as important to the mobility industry as it is to GM.


Chapter 2
Creating the Heart of Volt
GM's battery requirements meant creating a new state-of-the-art in-vehicle energy storage—and doing it in less than four years. Top GM and supplier engineers reveal how they did it.

Q&A: Prabhkar Patil, Compact Power Inc.

Voltec Battery Design and Manufacturing. Lead author Robert Parrish; SAE Technical Paper 2011-01-1360.

Voltec Battery System for Electric Vehicle with Extended Range. Lead author Roland Matthe; SAE Technical Paper 2011-01-1373.

Chapter 3
Engineering with a Maniacal Focus
A dedicated, cohesive team and a conservative engineering approach put this innovative vehicle into production at moon-shot speed.

Chevrolet Volt Development Timeline

OnStar deployed as a tool for Volt engineers

Chapter 4
A Unique Electrified Transaxle
Hybrid or not? Definitions aside, what really matters is GM wisely leveraged its next-generation Two Mode propulsion technology to give Volt greater overall efficiency.

Q&A: Mahendra Muli, dSPACE
Q&A: Dr. Uwe Krueger, Behr America

The Voltec 4ET50 Electric Drive System. Lead author Khwaja Rahman; SAE Technical Paper 2011-01-0355.

The GM "Voltec" 4ET50 Multi-Mode Electric Transaxle. Lead author Michael A. Miller; SAE Technical Paper 2011-01-0887.

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Codifying the Car  
Model-based design was one of the key enablers to Volt's rapid development

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Sweating the Body Details  
Extensive wind-tunnel work gave Volt a shape that's slicker than it looks. But engineers aren't happy with the curb weight.  
Q&A: Paul Haelterman, IHS Automotive


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Q&A: Dan Milot, TRW Automotive


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Q&A: Chris Preuss, OnStar

202 Chevy Volt debuts GM's Global A electrical architecture

205 Voltec Charging System EMC Requirements and Test Methodologies. Lead author Vipul M. Patel; SAE Technical Paper 2011-01-0742.


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