2013 Passenger Car Yearbook

Other SAE books of interest:

We Were The Ramchargers

By David Rockwell
(Product Code: R-384)

**Chevrolet Volt—Development Story of the
Pioneering Electrified Vehicle**

Edited by Lindsay Brooke
(Product Code: PT-149)

**Pioneers, Engineers, and Scoundrels:
The Dawn of the Automobile in America**

By Beverly Rae Kimes
(Product Code: R-358)

For more information or to order a book, contact SAE International at
400 Commonwealth Drive, Warrendale, PA 15096-0001, USA;
phone 877-606-7323 (U.S. and Canada only) or 724-776-4970
(outside U.S. and Canada);
fax 724-776-0790;
email CustomerService@sae.org;
website <http://books.sae.org>.

2013 Passenger Car Yearbook

by the Editors of
Automotive Engineering International

Warrendale, Pennsylvania
USA

400 Commonwealth Drive
Warrendale, PA 15096-0001 USA

E-mail: CustomerService@sae.org
Phone: 877-606-7323 (inside USA and Canada)
724-776-4970 (outside USA)
Fax: 724-776-0790

Copyright © 2013 SAE International. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, distributed, or transmitted, in any form or by any means without the prior written permission of SAE International. For permission and licensing requests, contact SAE Permissions, 400 Commonwealth Drive, Warrendale, PA 15096-0001 USA; e-mail: copyright@sae.org; phone: 724-772-4028; fax: 724-772-9765.

ISBN 978-0-7680-8035-3

Library of Congress Catalog Number 2013913566

SAE Order Number ET-001

DOI 10.4271/ET-001

Information contained in this work has been obtained by SAE International from sources believed to be reliable. However, neither SAE International nor its authors guarantee the accuracy or completeness of any information published herein and neither SAE International nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that SAE International and its authors are supplying information, but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

To purchase bulk quantities, please contact:

SAE Customer Service
E-mail: CustomerService@sae.org
Phone: 877-606-7323 (inside USA and Canada)
724-776-4970 (outside USA)
Fax: 724-776-0790

Visit the SAE International Bookstore at

books.sae.org

Table of Contents

Preface	vii	Cadillac XTS First U.S. Car with R-1234yf A/C	38
Acura ILX.....	1	Cadillac's 2013 Safety Belt Buzzes Drivers with Crash Warning.....	41
ILX Is Acura's New Compact Sedan.....	1	XTS Improves Touch Screens Right on CUE.....	42
Acura RDX.....	2	Chrysler Viper.....	45
New Acura RDX Crossover Bucks Trend with V6 power	2	Chrysler Relaunches the Viper.....	45
Acura RLX	4	Dodge Dart	48
Novel Aluminum/Steel Hybrid Door Launches on 2014 Acura RLX	4	Dart Nameplate Returns as Dodge C-Size Entry.....	48
Aston Martin Vanquish.....	6	Fiat Panda.....	50
Vanquish is Aston Martin's Fourth Generation of VH Chassis Architecture.....	6	Fiat Expands the Panda.....	50
Audi A3	9	Ford B-Max	52
Audi Tackles 'Huge Challenge' of Lightweighting the A3.....	9	High Vmax for Ford's Three-Cylinder B-Max	52
Big Picture: Audi A3.....	12	No Conventional B-Pillars for New B-Max.....	55
BMW ActiveHybrid 3.....	15	Making an Impact Safely: Ford's B-Pillarless B-Max Gets a Battering.....	57
BMW Brings 3 Series Sedan and ActiveHybrid 3 to Detroit.....	15	Ford Fusion.....	60
Buick Enclave	17	Ford's 2013 Fusion Is a Tech Blockbuster	60
2013 Buick Enclave Makes Debut in New York	17	Ford Cuts Rare-Earths Use in New Hybrid System	62
GM Puts Taillights Aglow with New LED Technology.....	19	Designers Using GPS Data for Powertrains, Apps, Other Systems	63
Buick Encore.....	20	Ford Works to Lessen Drivers' Traffic Jam and Parking Stresses.....	64
Buick Encore Takes a Bow	20	Hydroformed Pillars are World's First in 2013 Ford Fusion.....	66
Cadillac ATS.....	22	Ford Taurus.....	68
A Compact Cadillac to Beat the Bimmers.....	22	2013 Taurus Gets a Major Upgrade.....	68
Big Picture: Cadillac ATS	24	Ford Transit Connect.....	70
GM's New Ecotec 2.0-L Turbo Unit Debuts in Cadillac ATS	29	Transit Connect to Become a 'Mini' Minivan.....	70
GM's New Global RWD Body Architecture Is Light and Stiff.....	30	GMC Acadia	72
2013 Cadillac ATS Designed to Take on BMW 3-Series.....	31	GMC Acadia Gets Industry-First Airbag.....	72
2013 ATS Led GM's New Approach to Improving Driver Visibility	33	Honda Accord.....	73
Cadillac XTS.....	34	Honda Accord: the 9th Generation.....	73
2013 XTS Is Cadillac's New Technology Flagship	34	New Honda Accord to Feature Next-Gen Powertrains Including Plug-In Hybrid	78
		New Honda Catalyst in 2013 Accord Uses Less Rhodium	80

New IP Process Helps U.S. Take Lead Global Role for Honda Manufacturing.....	81	Mercedes' New E-Class Nudges Gasoline Efficiency Toward Diesel.....	124
Honda Accord 2014	84	Mercedes-Benz SL	127
Honda's 2014 Plug-In Hybrid Accord Has Three Drive Modes	84	Mercedes' 6th-Generation SL is Light in Weight, Heavy on Technology	127
Honda Civic	87	Big Picture: Mercedes-Benz SL.....	130
Fast Refresh for 2013 Civic Includes Revisions for IIHS Small Overlap Frontal Crash Test.....	87	2013 Mercedes SL550 Embraces Aluminum	132
Hyundai Santa Fe.....	89	Nissan Altima	134
Hyundai Santa Fe Crossover Becomes a Twosome.....	89	Nissan's 2013 Altima Brings 38-MPG Efficiency to D-Segment	134
Infiniti JX.....	91	Jatco's New CVT8 Is Key to 2013 Altima's 38-MPG Efficiency.....	136
Infiniti Targets True Seven-Passenger Utility with JX Crossover.....	91	Nissan Altima Rearview Camera Performs Four Functions with One Lens	137
Jaguar F-Type	93	Nissan Debuts NASA-Inspired 'Zero Gravity' Seats.....	138
Jaguar Finally Reveals a Production F-Type.....	93	Nissan Pathfinder.....	140
Land Rover Range Rover	96	2013 Nissan Pathfinder Switches to Unibody	140
Aluminum Range Rover Slims Down by 420 Kg	96	Opel/Vauxhall Adam.....	142
Lincoln MKZ.....	100	Adam: A First from Opel/Vauxhall	142
2013 MKZ Represents Rebirth for Lincoln	100	Porsche Boxster	144
Maserati Quattroporte	102	Porsche Boxes Clever with the New Boxster	144
Maserati Quattroporte Is Entirely New under the Skin.....	102	Scion FR-S	147
Mazda CX-5.....	105	2013 FR-S Is Scion's Halo Car	147
Mazda CX-5 Gets Skyativ Treatment	105	Shelby American GT 500.....	150
Mazda Mazda6	107	Shelby Shows Three Golden Anniversary Models, One with up to 800 HP	150
Shaking up the Midsize Segment	107	Subaru Forester	151
2014 Mazda6 Will Offer Low-Compression Diesel	108	2014 Subaru Forester Includes Direct-Injection Turbo	151
Mazda Introduces Supercapacitor-Type Regenerative Braking	110	Toyota Avalon.....	153
Mercedes-Benz A-Class	112	2013 Avalon Styling Surprises in New York.....	153
Mercedes-Benz Introduces a 'Horizontal' A-Class.....	112	2013 Avalon Hybrid Shoots for 40-MPG Overall EPA Rating.....	155
Big Picture: Mercedes-Benz A-Class.....	114	Volkswagen Golf	156
A-Class Adopts a Low Profile	118	Golf Closes the Gasoline/Diesel Gap, Loses Mass, Gains 'Premiumness'	156
Mercedes Designer Answers Call for Daring A-Class.....	120	Seventh-Generation Volkswagen Golf.....	159
Mercedes-Benz E-Class.....	122	Volkswagen Jetta	161
Mercedes Updates 2014 E-Class with Driver Assistance Systems, Four-Cylinder Diesel with AWD	122	Jetta Hybrid Has Pure EV Mode.....	161
		Volvo V40	163
		Volvo Introduces Five-Door V40	

Preface

Each year, carmakers release new models with increasingly advanced technology intended to attract consumer interest and satisfy increasingly stringent government regulations. Some of these technologies are firsts-of-their-kind or leading-edge, and start trends that more companies soon follow—with the innovations becoming adopted across the board. In this book, we explore the technologies from an OEM and supplier perspective of the new production vehicle models released for the 2013 model year.

This *2013 Passenger Car Yearbook* begins the first in a series of books that provide snapshots of the direction of the automotive industry. Each year, the editors of *Automotive Engineering International* publish many articles focused on the technology and engineering innovations of the new cars, and these articles have been collected for the first time into this volume as a yearbook. We wanted to provide the reader with a complete overview of the key advances that took place over the course of one model year.

Each car manufacturer has its own chapter in which its new models are explored in depth. The *2013 Passenger Car Yearbook* is the beginning of a collection, just as a new car model is one part of a broader body of work. With each new edition of the Passenger Car Yearbook series, we look to capture both the trends and the innovations that make the automotive industry fascinating to both the engineer and the customer.