Concepts in Turbocharging for Improved Efficiency and Emissions Reduction

Other SAE books of interest:

Automotive 2030—North America

By Bruce Morey
(Product Code: T-127)

Design of Racing and High-Performance Engines 2004-2013

By Douglas Fehan
(Product Code: PT-157)

Introduction to Internal Combustion Engines, 4th Edition

By Richard Stone
(Product Code: R-391)

For more information or to order a book, contact:

SAE INTERNATIONAL
400 Commonwealth Drive
Warrendale, PA 15096

Phone: +1.877.606.7323 (U.S. and Canada only)
or +1.724.776.4970 (outside U.S. and Canada)

Fax: +1.724.776.0790

Email: CustomerService@sae.org

Website: books.sae.org

Concepts in Turbocharging for Improved Efficiency and Emissions Reduction

Edited by Mehrdad Zangeneh

Warrendale, Pennsylvania, USA

400 Commonwealth Drive
Warrendale, PA 15096
E-mail: CustomerService@sae.org
Phone: +1.877.606.7323 (inside USA and Canada)
+1.724.776.4970 (outside USA)
Fax: +1.724.776.0790

Copyright © 2015 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: +1-724-772-4028; fax: +1-724-772-9765.

Library of Congress Catalog Number 2014947146

SAE Order Number PT-156

DOI 10.4271/PT-156

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.

ISBN-Print 978-0-7680-7976-0

ISBN-PDF 978-0-7680-8149-7

ISBN-epub 978-0-7680-8151-0

ISBN-prc 978-0-7680-8150-3

To purchase bulk quantities, please contact

SAE Customer Service
e-mail: CustomerService@sae.org
phone: +1.877.606.7323 (*inside USA and Canada*)
+1.724.776.4970 (*outside USA*)
fax: +1.724.776.0790

Visit the SAE Bookstore at

books.sae.org

Table of Contents

Introduction	vii
Two-Stage Turbocharging	
Challenges for Increased Efficiency through Gasoline Engine Downsizing—2009-01-1053	1
Variable Geometry Compressors	
The Potential of Variable Compressor Geometry for Highly Boosted Gasoline Engines—2011-01-0376	19
Turbocharging of Downsized Gasoline DI Engines with 2 and 3 Cylinders—2011-24-0138	33
Variable Geometry Diffuser of Turbocharger Compressor for Passenger Vehicles—2003-01-0051	49
Unconventional Compressor Configurations	
Parametric Studies of the Impact of Turbocharging on Gasoline Engine Downsizing—2009-01-1472	57
Electrically Assisted Turbocharging	
Coordinated Electric Supercharging and Turbo-Generation for a Diesel Engine—2010-01-1228.....	69
About the Editor	81