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
# 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