



Vehicular Engine Design (Powertrain)

By Kevin Hoag, Brian Dondlinger

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This book provides an introduction to the design and mechanical development of reciprocating piston engines for vehicular applications. Beginning from the determination of required displacement and performance, coverage moves into engine configuration and architecture. Critical layout dimensions and design trade-offs are then presented for pistons, crankshafts, engine blocks, camshafts, valves, and manifolds. Coverage continues with material strength and casting process selection for the cylinder block and cylinder heads. Each major engine component and sub-system is then taken up in turn, from lubrication system, to cooling system, to intake and exhaust systems, to NVH. For this second edition latest findings and design practices are included, with the addition of over sixty new pictures and many new equations.

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Editorial Review

From the Back Cover

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About the Author

Kevin Hoag is an Institute Engineer in the Engine, Vehicle and Emission Research Division at Southwest Research Institute. Prior to joining Southwest Research Mr. Hoag was Associate Director of the University of Wisconsin Engine Research Center and a program director with the Department of Engineering Professional Development. He has more than 35 years of experience in internal combustion engine development, 16 years of which were with Cummins Engine Company, prior to joining the university. He joined the University of Wisconsin in 1999, where he was active in research, consulting, course development and teaching in continuing engineering education. He continues to teach Engine Design, and Engine Performance and Combustion, in Wisconsin's Master of Engineering in Engine Systems program. Mr. Hoag has been an active member in the Society of Automotive Engineers throughout his career. He was twice awarded Outstanding Younger Member and is a recipient of the Arch T. Colwell Award for technical publication pertaining to Second Law analysis of I.C. engines. He currently co-teaches SAE's Turbocharging Internal Combustion Engines course and serves as a session organizer on engine thermodynamics modeling. Mr. Hoag holds bachelors and masters degrees in mechanical engineering from the University of Wisconsin-Madison. He is the author of two books, and over 30 technical papers. He holds two patents pertaining to internal combustion engine development.

Brian Dondlinger is a Global Business Process Manager of Product Development at the Harley-Davidson Motor Company. He has sixteen years of experience in the motorcycle industry including roles in design, manufacturing and process development. He holds five patents pertaining to internal combustion engine design.

Mr. Dondlinger holds bachelors and masters degrees in mechanical engineering from the University of Wisconsin-Madison and is a licensed Professional Engineer in the state of Wisconsin. While at UW-Madison, he competed in the SAE student design competition Baja SAE, and currently volunteers as a design judge for both Baja SAE and Formula SAE competitions. He has continued his love of racing by competing in Rally America and as an SFI certified Technical Inspector. He has taught continuing education seminars on Internal Combustion Engine Design and Mechanical Development.

Users Review

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