

Southwest Research Institute®

Consortia for Industry

Research, Development and Engineering Services for the Automotive Industry

Southwest Research Institute® (SwRI®) currently operates six cooperative research programs to support automotive industry clients. Participants in these consortia pool financial resources and share research results. One advantage of consortium membership is that the impact of the yearly contribution is multiplied by the number of participants, increasing the value of the program and providing substantially more precompetitive research than would be possible through funding from a single member. Also, SwRI's internal research programs involving related technologies are shared with consortium members. These efforts often form the basis for focused research under the respective consortia.

Clean Diesel V



Clean Diesel V is the fifth cooperative research program at SwRI where diesel engine performance and emissions are being improved to meet future needs. The program builds on 19 years of successful Clean Diesel programs at SwRI and seeks to meet foreseeable emissions goals worldwide while providing ultra-high engine efficiency. The program includes studies for all major diesel engine classifications, including heavy-, medium- and light-duty. Current project work includes a high-EGR heavy-duty engine with no NO_x catalyst, stoichiometric diesel engines, new injection systems for the future, and combustion system enhancement technologies and advanced aftertreatment.

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High-Efficiency Durable Gasoline Engine (HEDGE II)



The HEDGE program was established to develop a high-efficiency, durable gasoline engine and improve gasoline technology for heavy-duty applications. Enabling technologies for efficiency improvement will include variable valve actuation, variable compression ratio, high EGR tolerance, aggressive knock mitigation, and high boost. Engine durability targets will be addressed through modeling and computations.

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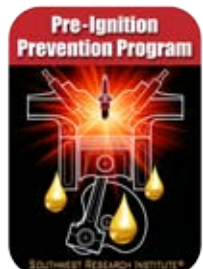
Powertrain Consulting Service (PCS)



The Powertrain Consulting Service is offered to manufacturers in the international engine, driveline, and powertrain fluids industries. Program services consist of technical update review reports containing the latest developments in engines, fuels and lubricants; onsite updates on the latest powertrain-related technologies; and individual consultation on powertrain-related issues that are important to individual participants.

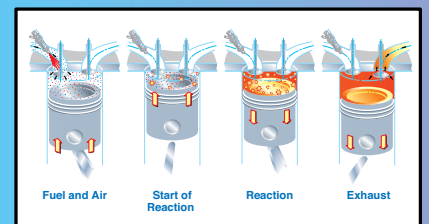
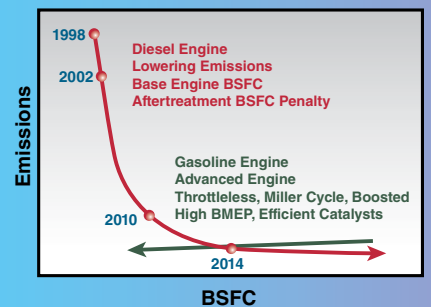
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Pre-ignition Prevention Program



As a result of several successful SwRI internal research projects, a new consortium called the Pre-ignition Prevention Program is being formed. The objective of this consortium is to determine the cause of and find a solution for pre-ignition in today's modern, downsized, and turbo-charged gasoline engines. This is an industry-wide problem that is resulting in warranty claims for manufacturers that already have advanced gasoline engines in production. Understanding this phenomenon and developing solutions will help protect lean-burn engines from potentially catastrophic failure. The consortium will begin in January 2011.

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Diesel Aftertreatment Accelerated Aging Cycles (DAAAC)

The Diesel Aftertreatment Accelerated Aging Cycles–Heavy Duty (DAAAC-HD) initiative for diesel exhaust emissions controls began as a response to the EPA Final Rule for Emissions Durability Test Procedures published in December 2005. The rule provides a Standard Bench Cycle (SBC) for accelerated aging of emissions control system components. The SBC can be used in place of the Standard Road Cycle that required vehicles to be driven for 120,000 miles, with periodic emissions measurements. The SBC process saves time, fuel, and expense while satisfying the regulatory agencies requirements by accelerating exposure of the aftertreatment system to thermal and chemical deactivation mechanisms.

The EPA made an exception for diesel-fueled vehicles, requiring them to go the distance to determine the actual performance deterioration over the emission warranty period. However, based on input from industry, there was a strong desire to have a similar Diesel Aftertreatment Accelerated Aging Cycle (DAAAC) for diesel exhaust emission control components. SwRI responded to this need by forming the DAAAC-HD Consortium in December 2008. DAAAC-HD currently has nine members representing U.S., Japanese, European, and Korean OEMs and suppliers. Members of the consortium have commissioned SwRI to closely coordinate the technical activities with EPA as well as the European Union.

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Energy Storage System Evaluation and Safety (ESSES)

The Energy Storage System Evaluation and Safety (ESSES) Consortium will begin in January 2011. The Consortium will provide transparency in the automotive battery market as a means to advance the development of energy storage systems. The mission will be met by developing chemical storage systems across a diverse number of manufacturers and products, and by performing research to advance the testing methodologies used to benchmark batteries, making tests faster, cheaper and more significant. The program will provide data on performance, abuse, life cycle and consistency of manufacturing tests for member-selected sets of battery cells in a private, independent, third-party laboratory format.

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Benefiting government, industry and the public through innovative science and technology



Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops and offices for more than 3,000 employees who perform contract work for industry and government clients.

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