

Micro-Oxidation Test

Diesel engine manufacturers have long been concerned with lubricant quality and engine deposits. To achieve higher performance, lower fuel consumption and lower emissions, new engines require high-performance lubricants.

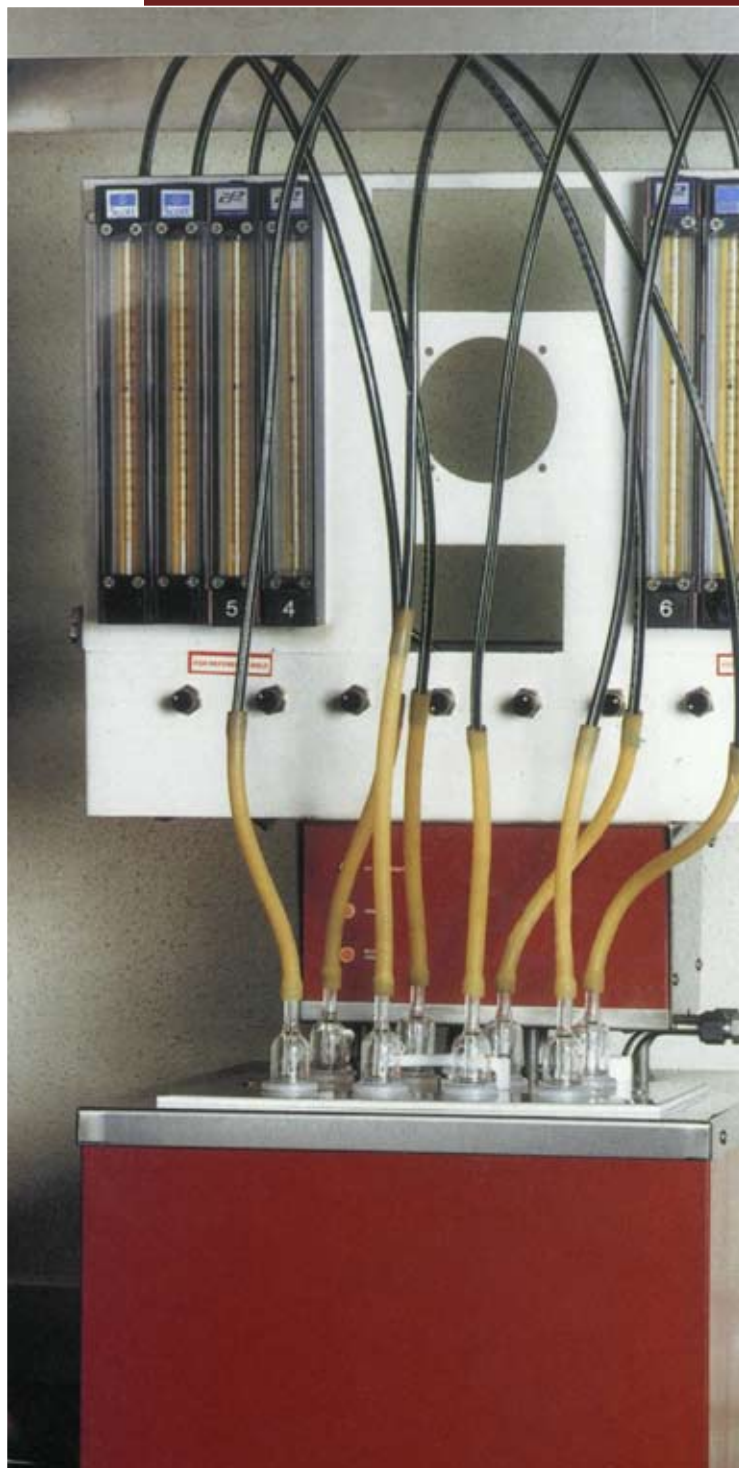
To meet these needs, Southwest Research Institute® (SwRI®) scientists and engineers are designing faster and more economical lubricant evaluation methods. The Micro-Oxidation Bench Test is a laboratory test used to predict lubricant deposit-forming tendencies. The test is performed at a fraction of the cost and time required to run a full-scale engine test, and it provides data that correlate with full-scale engine test results for locomotive, marine and railroad lubricants.

Lubricant samples are subjected to specified temperatures under a blanket of air at a set flow rate to oxidize the lubricant and cause deposit formation. Based on the weight of the accumulated deposits, SwRI analysis can predict a lubricant's induction time, the point at which oil forms deposits



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Coupons or specimens (approximately 1" in diameter), made of the same steel alloy used in diesel engine pistons, are weighed to determine the net weight increase of the coupon/specimen and the amount of deposit formed by the oil.



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In the Micro-Oxidation Bench Test, oil samples are tested in a temperature-controlled bath to predict lubricant deposit-forming tendencies.

Quality Accomplishments

The Office of Automotive Engineering (OAE) at SwRI is certified to ISO 9001:2008, "Quality Management Systems – Requirements," accredited to ISO/IEC 17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories," and certified to ISO 14001:2004, "Environmental Management Systems." The OAE has also achieved Ford Tier 1 status for providing engineering services and the Engine, Emissions and Vehicle Research Division has received the Ford Q1 Quality Award. In addition, the Petroleum Products Research Department is a Nuclear Procurement Issues Committee (NUPIC)-approved laboratory and the Fuels and Lubricants Research Division has maintained its status as an American Chemistry Council (ACC)-approved laboratory.



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 3,200 employees who perform contract work for industry and government clients.

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