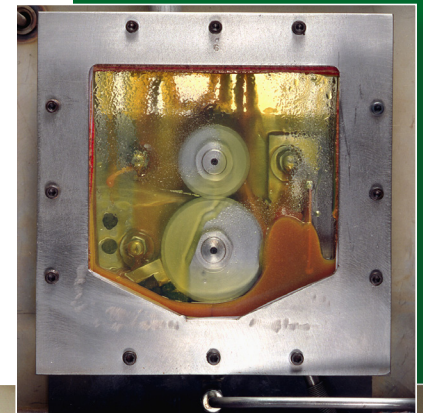


Wind Turbine Lubricant Tests

In any gearbox, lubrication is just as important as the hardware. In wind turbine gearboxes, it is imperative that the lubricant not only protects gearbox components, but also maintains a significant design life. Changing the oil in gearboxes in the turbine tower is inconvenient, time-intensive and costly. Wind turbines are also subject to conditions that range from extremely low temperatures to contaminants such as salt or dust in the air.

Southwest Research Institute® (SwRI®) has been conducting automotive lubricant tests for more than 60 years. SwRI performs many of these standardized gear lubricant evaluations as wind turbine lubricant tests. Along with standardized testing, SwRI works with OEMs and additive companies to develop specialized tests for components and full gearbox systems.

Test Name	Standard
Rust Test	ASTM D-665
Copper Strip Corrosion Test	ASTM D-130
Four Ball EP Test	ASTM D-2783
Four Ball Wear Test	ASTM D-4172
Timken EP Test	ASTM D-2782
Falex EP Continuous Load	ASTM D-3233
FZG A/8.3/90	ASTM D-5182
FZG Micropitting Test @ 60°C FVA 54/7 Pass Stage	FVA Proc No. 54
FZG Micropitting Test @ 90°C FVA 54/7 Pass Stage	FVA Proc No. 54
FAG FE8 Test (Stages 1,2,3,4)	DIN 51818-3
Oxidation Test	ASTM D-2893
L-60-1 Thermal Oxidation Test	ASTM D-5704
Demulsibility Test	ASTM D-2711
Foam Tendency Test	ASTM D-892
Viscosity Index	ASTM D-2270
FZG Scuffing	DIN 51534
Water Separability	ASTM D-1401



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DE105545

SwRI conducts specialized lubricant testing to identify lubricant performance parameters such as oxidation and extreme pressure loading using the oxidation and four ball test stands shown above.



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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 3,000 employees who perform contract work for industry and government clients.

We welcome your inquiries.

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Test Stand Development

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