

# Gas Turbine and Centrifugal Compressor Performance Testing

In the gas transmission and power generation industries, machinery performance is often directly related to the bottom line. As increased pressure is put on companies to deliver additional gas, produce additional power and meet new environmental standards, it is prudent to seek to maximize machinery capabilities using proven techniques and state-of-the-art instrumentation, with a team of specialists having extensive experience. For more than 50 years, Southwest Research Institute® (SwRI®) has been helping companies to assess and improve the performance of their power generation and compression equipment.

## Independent Performance Assessment and Documentation

As an independent entity, SwRI provides a unique scope of services to companies needing an unbiased assessment of their machinery performance. Services include:

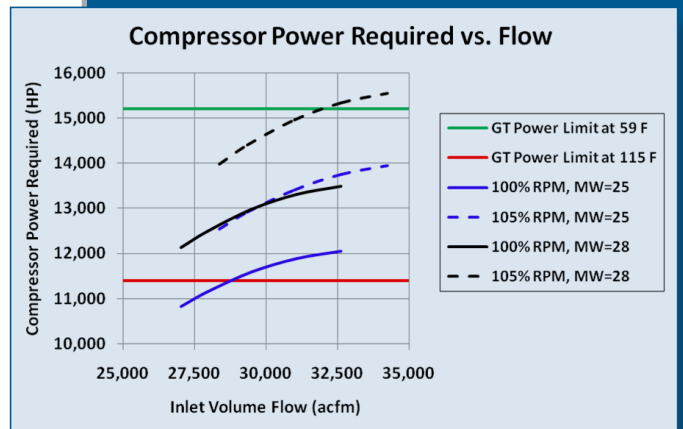
- ❑ **Performance documentation in support of revenue agreements.** SwRI's testing services provide the independent testing needed to document performance in order to maximize the return on units of power generated.
- ❑ **Performance deterioration assessment.** SwRI has assisted several companies to make replace-vs.-upgrade decisions for their aging equipment and in response to changing operating conditions.
- ❑ **Independent verification of performance guarantees.** SwRI's independent third-party status allows unbiased evaluation of machinery in the field or on the test stand to enable operators to confirm that their equipment is meeting manufacturer performance guarantees.
- ❑ **Audits of existing processes and procedures.** SwRI has helped gas producers to troubleshoot instrumentation and control system faults that have led to unnecessary maintenance and interruption of production. This service has included development of complementary tools that help to optimize plant performance relative to specified operating requirements.

## Complementary Capabilities

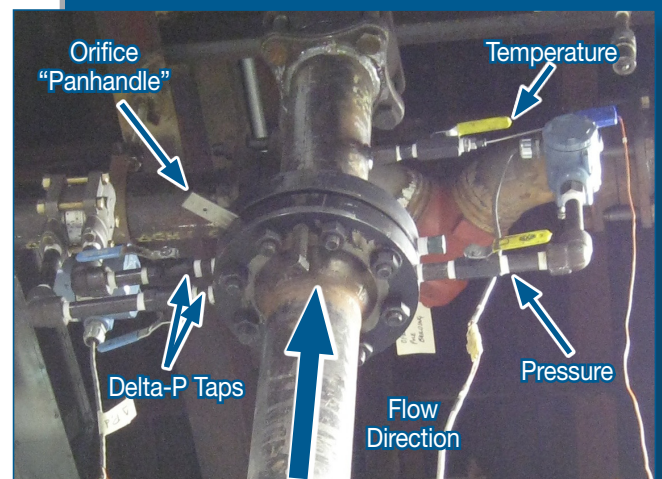
- ❑ Worldwide rapid-response field testing to diagnose problematic vibration, strain, noise and pulsation in machinery and complementary system components
- ❑ Transient and steady-state analysis of pipeline operation and transient surge events
- ❑ Acoustic analysis of dynamic pulsation in piping systems
- ❑ Computational fluid dynamic analysis
- ❑ Dynamic and static finite element analysis
- ❑ Lateral and torsional rotordynamic analysis and field diagnostics
- ❑ Root cause failure analysis



SwRI has extensive experience in testing the performance of gas-turbine-driven compressor trains.



Field testing results can be used to predict changes in machinery performance at a variety of operating conditions.



SwRI's state-of-the-art calibrated transducers can be mounted in parallel with installed sensors to ensure high accuracy and to diagnose installed instrumentation faults.



*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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