Advanced Power Generation Research and Development

For more than 50 years, Southwest Research Institute® (SwRI®) engineers have been helping clients assess and improve the performance of their power generation equipment. The Machinery Department has extensive experience with advanced power cycle systems, including the design, analysis, prototype fabrication, and testing of turbomachinery including turbines, compressors, pumps, wind turbines, and motors from the kW-scale to utility-scale. Our technical depth and breadth can be a valuable asset to smaller organizations without sufficient staff for prototype development and to larger organizations that need help to meet their engineering requirements.

As an independent organization with nine multi-disciplinary technical divisions, SwRI is active in a wide range of advanced power generation areas and can handle a variety of client needs.

**Improved Fossil Energy**
- Advanced gas turbine cycles
- Supercritical CO₂ (sCO₂) power cycles
- CO₂ sequestration
- Waste heat recovery
- Natural gas-based fracking
- Oxy-combustion

**Energy Storage**
- Pumped heat energy storage
- Pumped hydro-system evaluation
- Thermal energy storage and heat exchangers
- Compressed air energy storage
- Hydrogen compression, combustion, and storage

**Renewables**
- Concentrated solar power with hybrid-air Brayton or sCO₂
- Wind

**Distributed Power**
- Micro-turbomachinery
- Modular sCO₂

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**Pumped heat energy storage (PHES)**

**Charge Mode: Heat Pump**
- Hot Source Tank
- Hot Heat Exchanger
- Work\textsuperscript{in}
- Charge Turbine
- Cold Heat Exchanger
- Cold Storage Tank
- Cold Source Tank

**Discharge Mode: Heat Engine**
- Hot Source Tank
- Hot Heat Exchanger
- Discharge Compressor
- Work\textsuperscript{out}
- Discharge Turbine
- Cold Heat Exchanger
- Cold Storage Tank
- Cold Source Tank
We welcome your inquiries.
For more information, please contact:

**Machinery Development**
Jeff Moore, Ph.D.
210.522.5812
jmoore@swri.org

Tim Allison, Ph.D.
210.522.3561
tallison@swri.org

**System Development**
Aaron McClung, Ph.D.
210.522.2677
amcclung@swri.org

**Machinery Department**
**Mechanical Engineering Division**
Southwest Research Institute
6220 Culebra Road • PO Box 28510
San Antonio, Texas 78228-0510

[www.machinery.swri.org](http://www.machinery.swri.org)

10 MWe sCO2 turbine
Overall length: 49 in.
Rotor weight: 180 lbm

Southwest Research Institute is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world’s most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies 1,200 acres, providing more than 2.3 million square feet of laboratories, test facilities, workshops, and offices for more than 2,600 employees who perform contract work for government and industry clients.

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