

STEP Into Tomorrow's sCO₂ Energy Solutions

Construction of a novel Supercritical Transformational Electric Power (STEP) pilot plant is underway at Southwest Research Institute to demonstrate supercritical carbon dioxide (sCO₂) technology. SwRI is a leader in sCO₂ power cycles and has conducted more than 20 U.S. Department of Energy projects, including the development of a patented, highly efficient sCO₂ power cycle. SwRI is working with GTI and GE to create the first-of-its-kind STEP plant.

The goal is to replace water with sCO₂ as the thermal medium in power cycles, to reduce fuel, water, emissions and capital costs.

60%

30+

35%

10%



STEP Efficiency

- 60% of U.S. power comes from fossil fuels.
- Conventional power plants are often 30+ years old & maxed out at 35% efficiency.
- sCO₂ could offer a 10% increase in efficiency.

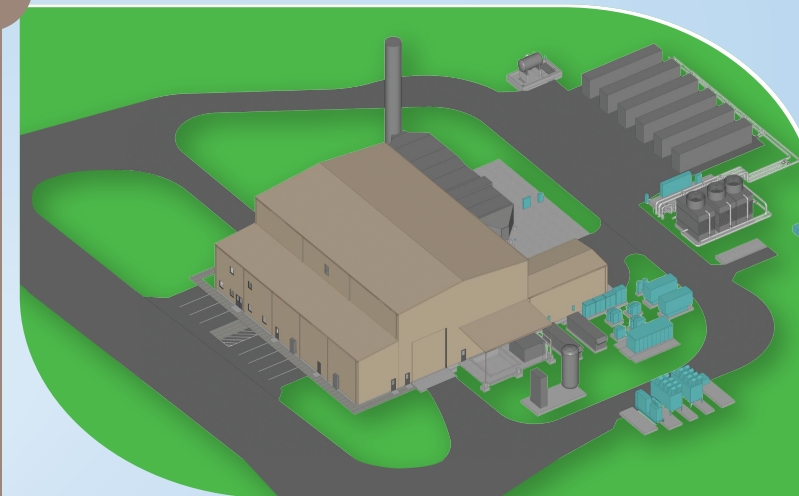


STEP 10 MW Pilot Plant

- 15-acre site at SwRI
- \$119M in costs (\$80M DOE)
- 2020 completion

STEP Goals

- Refine the sCO₂ power cycle
- Demonstrate performance & scalability to 50 MW
- Support variety of technologies



STEP

SUPERCritical TRANSFORMATIONAL ELECTRIC POWER

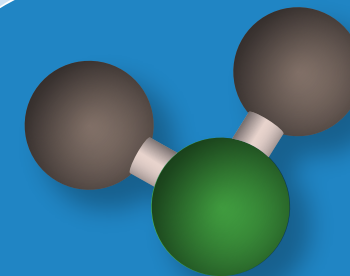


sCO₂ Physical Footprint

- 1/10 the size of conventional components
- Desk-sized sCO₂ turbine could power 10,000 homes
- Shrinks the size of power plants & their capital costs

sCO₂ Carbon Footprint

- Increased fuel efficiency decreases emissions



sCO₂ Medium

- CO₂ held above a critical temperature & pressure
- Acts like a gas with the density of a liquid
- Small temperature/pressure changes = large density changes
- Stable, nontoxic & nonflammable



Texas Power Play

- Attracts jobs
- Secures R&D funding for 25+ years
- Cements role as a technology leader