

Mechanical storage system

Compressed-air energy storage (CAES) is a commercialized electrical energy storage ...

Covers advances in mechanical energy storage systems, both electricity and ...

Block diagram of mechanical energy storage systems.

An illustration of pumped hydroelectric storage [8].

An illustrative topology of a CAES [8].

An illustrative topology of a FES [8].

Advanced science. Applied technology.

Mechanical energy storage works in complex systems that use heat, water or air with compressors, turbines, and other machinery, providing robust alternatives to electro-chemical battery storage. The energy industry as well as the U.S. Department of Energy are investing in mechanical energy storage research and development to support on-demand renewable energy that can be stored for several days.

Mechanical energy storage research and development at Southwest Research Institute (SwRI) is helping to develop and commercialize several emerging technologies. Our services span the spectrum of energy storage with expertise in fluids, machinery, chemistry, materials and electrical engineering. Mechanical energy storage integrates with several disciplines, including:

Science and engineering services that support development of mechanical storage and other emerging energy storage technologies include:

Pumped heat energy storage converts electric energy from the grid into thermal energy that is stored as a thermal potential. At full capacity, the system can store energy in tanks for hours or up to several weeks before converting it back to electrical energy. The system can then provide greater than 10 hours of electricity at rated power. The capacity of the system can also be extended by increasing the volume of the storage tanks.

SwRI is currently building a pumped heat energy storage demonstration system with the support of the U.S. Department of Energy, and also has broad expertise in the design, development and operation of supercritical carbon dioxide power systems that are also compatible with energy storage systems.

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