



Enis Renewable Energy Systems, LLC

Transportable Compressed Air Energy Storage (T-CAES)

ENIS EnerGen will license its technology to customers, as well as optimize the performance of T-CAES plants and provide technical support throughout the T-CAES project design, development and construction process. Potential clients include electric utility companies, independent power producers, wind and solar developers and transmission owners.

Our patented innovative and highly flexible T-CAES technology provides the capability to pneumatically store energy generated by any source (Wind, Solar, Electric Grid, Nuclear, Geothermal and others) when power demand is low, for later use when power demand is high.

In its basic mode of operation, the T-CAES system uses power from any of the above sources to drive a compressor that pressurizes air in storage tanks or in a long pipeline to 1,200-psig for later use when electrical power is required, a control valve releases 200-psig air to the intake of a turboexpander that, in addition to driving a turbogenerator to produce electric power, also produces, as a byproduct, super-chilled air that has many useful applications. For each 1 MW of electrical power there is 1 MW of thermal chill power.

ADVANTAGES OF CONVENTIONAL CAES

- Rapid power response rate, which is critical to enhancing grid stability and compensating for the intermittency of renewable energy resources such as wind and solar;
- Ability to take advantage of the difference between off-peak and on-peak power prices, a difference that has been increasing over time
- Enlarge and modify existing underground caverns for high pressure air storage

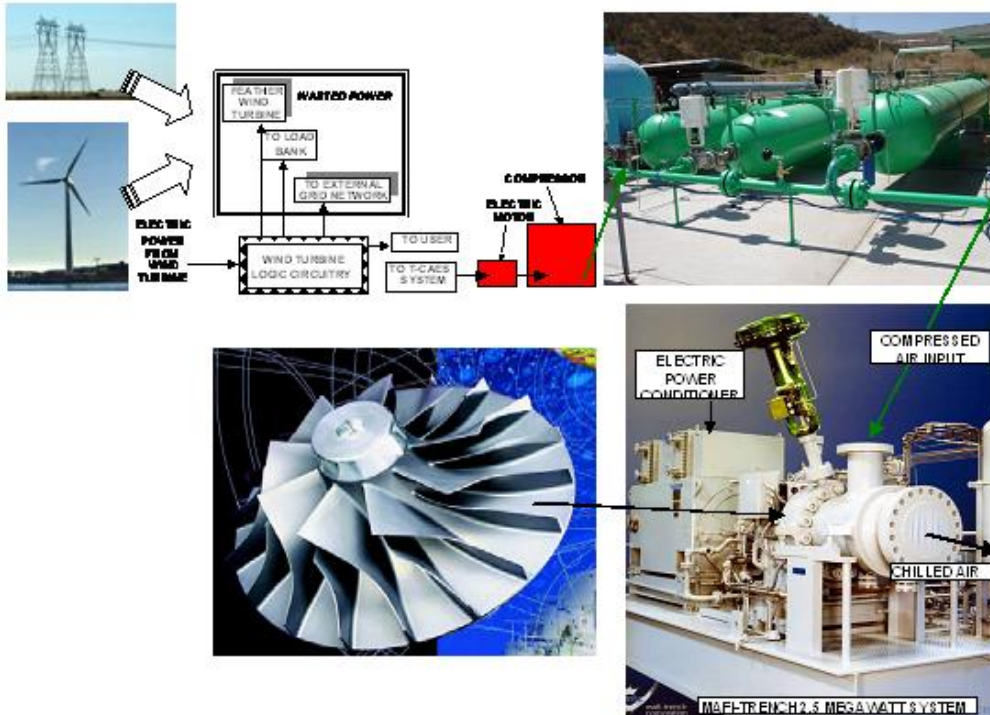
ADDITIONAL ADVANTAGES OF T-CAES

- The use of proven, standard components applied in a novel configuration.
- Placement of storage tanks/pipes not limited
- Net present value (NPV) performance of the T-CAES system exceeds that of conventional batteries and water dams for power requirements over 10 MW and discharge times to 6 hours.
- A major contributor to the NPV is that there is no need for fuel consumption.
- A combined solar or wind power source and a T-CAES system will require no fuel combustion... no pollutant emissions.
- The major components of the T-CAES system have up to a 50-year lifetime.
- There are no toxic, corrosive or explosive elements used by T-CAES robust hardware.
- For each 1 MW of electrical power there is 1 MW of thermal chill power.
- Super-chilled air by-product is useful for:
 - HVAC, Cold Storage Facilities and Enhanced GenSet Performance
 - Desalination using a Eutectic Freeze Crystallization (EFC) method:
 - Saltwater, Brackish water, Waste water and Mineral recovery from saltwater
 - Solidification of gaseous CO₂ emissions from coal-burning power plants

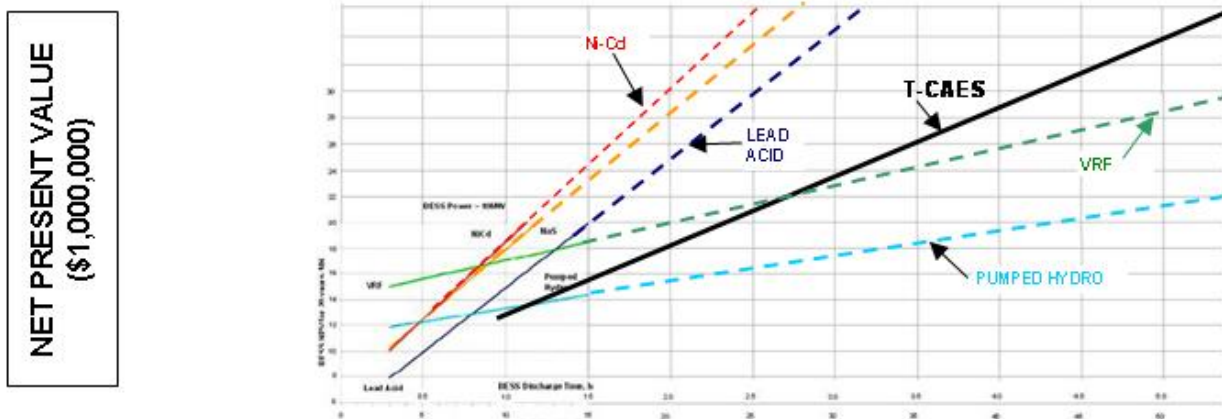


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10 MW BATTERY SYSTEMS, 0 TO 5.5 HOURS DISCHARGE



Oudalov, D., Chartouni, C. and Ohler, G. Linhofer, "Value Analysis of Battery Energy Storage Applications in Power Systems" ABB Switzerland, IEEE PSCE 2006 p.2207

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