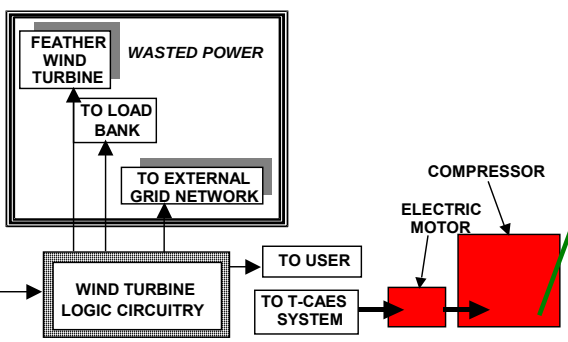
TRANSPORTABLE - COMPRESSED AIR ENERGY STORAGE SYSTEM
Advanced, Flexible and Affordable Technology

The T-CAES system uses either wind turbine electrical power or electrical grid electrical power 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, the control valve releases 200-psig air to the intake of a turboexpander impeller. The high rotational speed impeller expands the intake air from 200-psig to >0-psig, and causes the turboexpander shaft to rotate a rotor inside a stator to generate electricity.

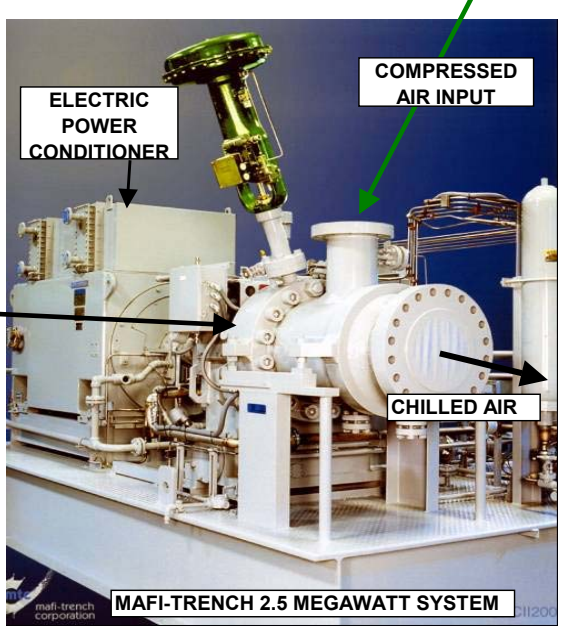
For those instances where there is little demand for electric power at night, either electricity from the grid or from the wind turbine is used to compress air into the storage tank. This energy is released during the daytime when there are undesirable peaks or undesirable lows in the delivered power to the user.

For those instances where the wind turbine generates excess electrical power during the day, the energy can be stored to be released later in the day when there is a low power delivery in a period of higher user demand.

The work performed by the impeller produces exhausted air that is at extremely cold temperatures. This high mass flow of chilled air can be used for air conditioning, frozen food storage and desalination.



SEQUENTIAL ARRANGEMENT OF T-CAES SYSTEM COMPONENTS

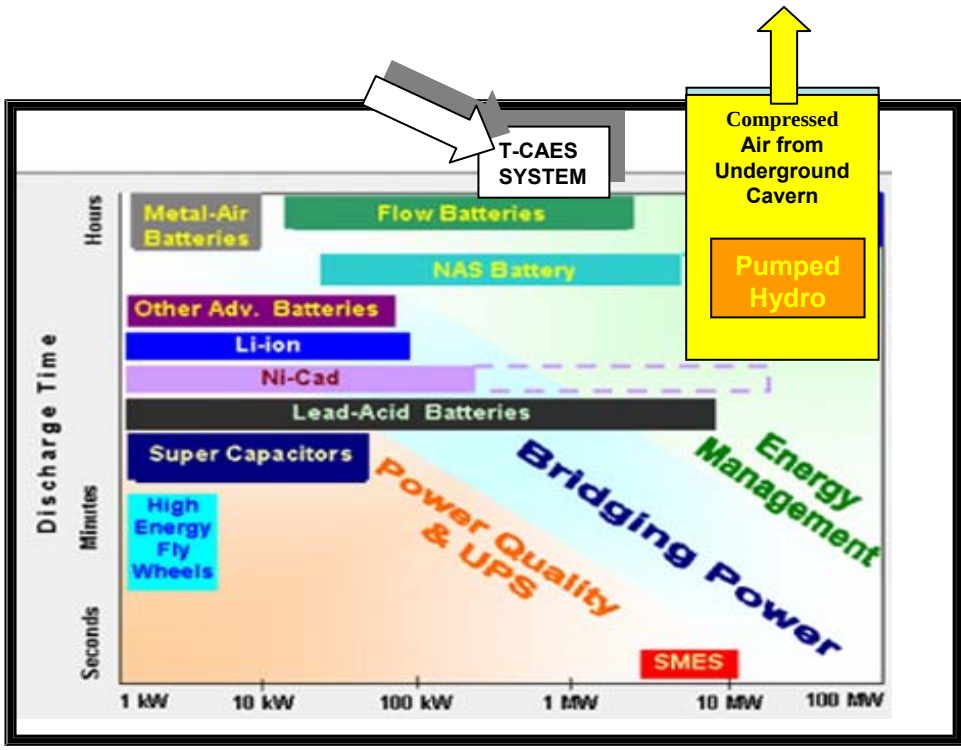


T-CAES SYSTEM DISCHARGE TIMES FOR 500 kW POWER OUTPUT

TURBOEXPANDER INLET TEMPERATURE (F)	THREE T-CAES SYSTEMS	MINUTES DISCHARGE AT 500 KILOWATTS	
		85% EFF	72% EFF
70	NORMAL	54	46
280	WASTE HEAT	81	69
490	FUEL	102	88

8.4 FT DIAMETER AND 100 FEET LONG CYLINDER
OPERATES BETWEEN 1,200 AND 200 PSIG
DELIVERS 200 PSIG COMPRESSED AIR TO TURBOEXPANDER

PERFORMANCE PARAMETER REGIMES OF VARIOUS ENERGY STORAGE SYSTEMS, AND THE UNIQUE POSITION OF THE T-CAES SYSTEM IN TERMS OF POWER AND DISCHARGE TIME



COMPARISON OF OUR SMALLER AND TRANSPORTABLE T-CAES SYSTEM TO THE EXISTING LARGE UNDERGROUND CAVERN SYSTEMS

	OUR SYSTEM			
	ABOVE GROUND T-CAES PLANNED	UNDERGROUND CAVERN HUNTORF	UNDERGROUND CAVERN ALABAMA	UNDERGROUND CAVERN OHIO
GEOLOGY	NOT RESTRICTED	RESTRICTED	RESTRICTED	RESTRICTED
LOCATION	NOT RESTRICTED	RESTRICTED	RESTRICTED	RESTRICTED
POWER	0.5 TO 2.0 MW	290 MW	110 MW	2,700 MW
DISCHARGE	0.5 TO 2 HRS	2 HRS	26 HRS	16 HRS
VOLUME	5,542 CU FT	10,594,400 CU FT	18,716,773 CU FT	353,146,667 CU FT
FUEL	NO	YES	YES	YES
HIGH PRESSURE COMBUSTOR	NO	YES	YES	YES
LOW PRESSURE COMBUSTOR	NO	YES	YES	YES
THERMAL POLLUTION	NO	YES	YES	YES
AIR POLLUTION	NO	YES	YES	YES
CHILLED AIR FOR A/C	YES	NO	NO	NO
CHILLED AIR DESALINATION	YES	NO	NO	NO

FEATURES & BENEFITS OF THE T-CAES SYSTEM

- PROVIDES BACKUP POWER WHEN GRID FAILS
- FALLS IN THE POWER-VERSUS-DURATION REGION WHERE OTHER ENERGY STORAGE SYSTEMS DO NOT APPLY
- AMENABLE TO ALL GEOLOGICAL & GEOGRAPHICAL SITES
- OPERATES AT HIGH POWER LEVELS >0.5 MW
- OPERATES IN THREE MODES FOR DIFFERENT DAILY SCENARIOS IN SAME FACILITY
  - ELECTRICAL POWER MODE
  - CHILLED AIR COGENERATION
  - DRIVES PNEUMATIC EQUIPMENT & PNEUMATIC TOOLS
- PROVIDES POWER SMOOTHING
- PROVIDES PEAK SHAVING
- HIGH OVERALL SYSTEM EFFICIENCIES
  - CAN USE BIOMASS HEAT SOURCE
  - CAN USE WASTE HEAT
  - CAN BYPASS TURBOEXPANDER/GENERATOR SYSTEM TOOPERATE PNEUMATIC SYSTEMS
- LONG LIFETIME FOR KEY COMPONENTS ~50 YEARS
- ENVIRONMENTALLY CLEAN
  - NO CORROSIVE OR TOXIC CHEMICALS
  - NO COMBUSTION AND NO COMBUSTION PRODUCTS

Main Contacts

ENIS WINDGEN™ RENEWABLE ENERGY SYSTEMS
DR. BEN M. ENIS, CHAIRMAN, CEO
HENDERSON, NEVADA 89052
(702) 617-2533
ben@eniswindgen.com

DR. PAUL LIEBERMAN, PRESIDENT
TORRANCE, CALIFORNIA 90503
(310) 371-2198
paul@eniswindgen.com

MR. IRVING RUBIN, VICE PRESIDENT
TORRANCE, CALIFORNIA 90503
(310) 370-2653
irving@eniswindgen.com

BRULIN ASSOCIATES LLC
MR. SEPTIMUS VAN DER LINDEN, PRESIDENT
CHESTERFIELD, VA 23832
(804) 639 5679
brulinassoc@comcast.net