T-CAES SYSTEM AND GENSET

T-CAES SYSTEM AND GENSET air intake cooling technologies have been used and tested in the past to cool the inlet air before it is introduced into the compressor turbine. The most common commercially available types are:

1) **Evaporative coolers,**
2) **Fogging coolers,**
3) **High pressure fogging coolers,**
4) **Wet compression coolers,**
5) **Mechanical chillers**
6) **Absorption chillers;**
7) **Liquid-air injection (research)**

The T-CAES System uses night time energy to compress air in a high pressure storage vessel. During the summer peak power rates, the T-CAES System releases both electricity and super-chilled air. The super-chilled air is combined with the hot and humid ambient air to produce 45 degree Fahrenheit air for feed to the GenSet air intake.

The waste heat from the compressor and other high speed rotating devices is fed to either a Steam-Driven GenSet or to a chiller in a Combined Heat and Power (CHP) configuration.

For the combination of (1) T-CAES System, (2) Steam-Driven Gen Set or Chiller and (3) GE LM6000 Fuel-Driven GenSet there is 50,000 kW-Hr energy input and 70,000 kW-Hr energy output or a Coefficient of Performance COP = 1.4. This exceeds energy storage by batteries, redox cells or pumped hydro.

SCHEMATIC OF SYSTEM

COOLANT WATER
COMPRESSOR
TURBOEXPANDER
GENERATOR

SUMMER
ABSORPTION CHILLER

WINTER
STEAM-DRIVEN GENSET

COOLANT WATER
IN
OUT

ELECTRIC POWER SOURCE

WIND TURBINE
ELECTRIC GRID
NUCLEAR REACTOR
GEOTHERMAL
SOLAR

COMPRESSOR

MULTI-STAGE
1,200 PSIA

HIGH PRESSURE VESSEL

ABOVE GROUND TANKS/PIPES
BELOW GROUND PIPE
SALT CAVERN

AIR
200 PSIA
70 DEG F

CONDITIONED
ELECTRIC POWER

FOR EACH 1 MW ELECTRICAL THERE IS 1 MW THERMAL

DRY, -22 DEG F AIR
PARTICLE-FREE, TO FUEL-DRIVEN GENSET

AMBIENT AIR

AMBIENT AIR

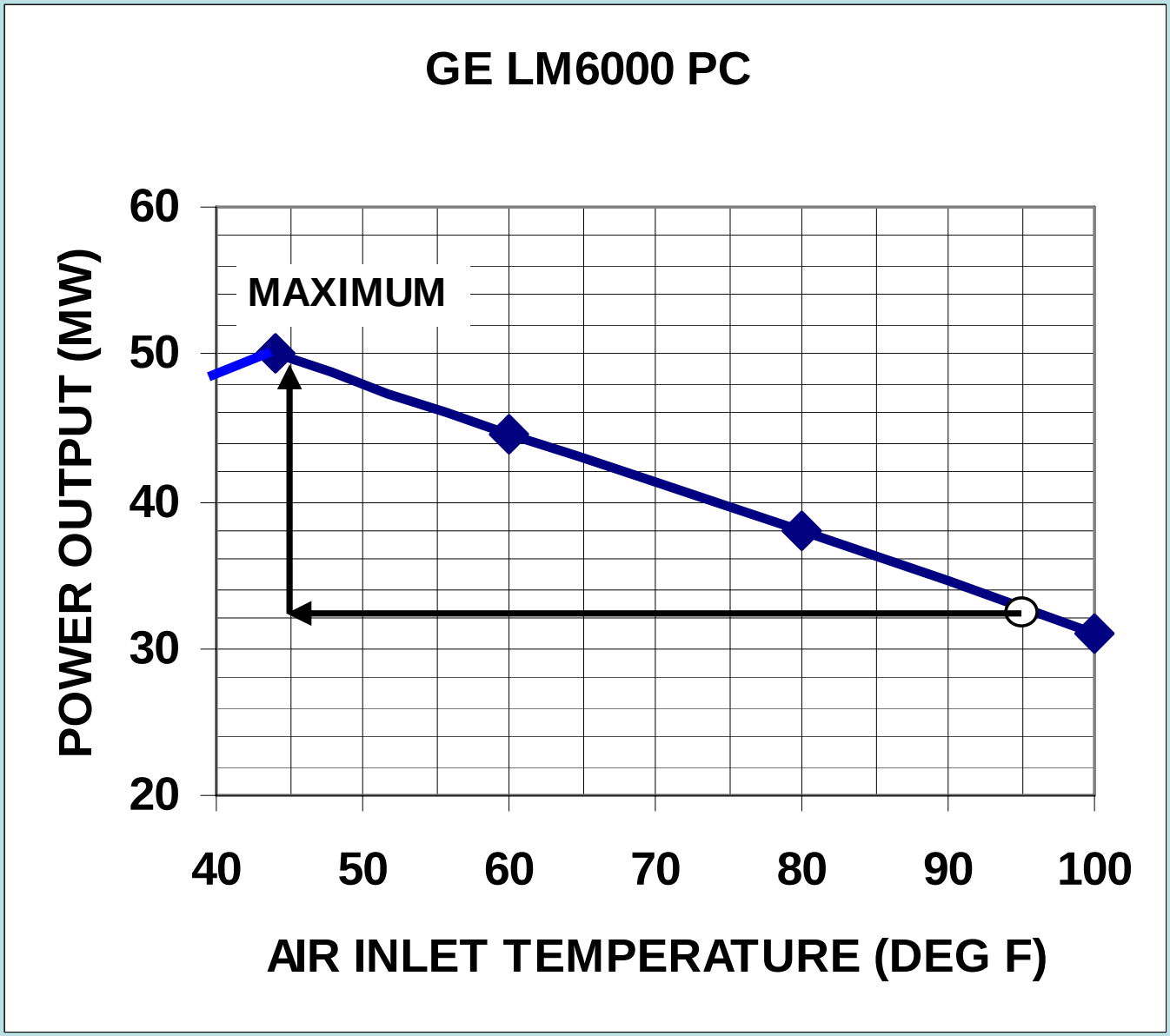
SUPERCHILLED AIR

ENHANCED
ELECTRIC POWER

PLUS
BASELINE
ELECTRIC POWER

'TURBOEXPANDER" / "ELECTRIC GENERATOR" (T/G) SYSTEM

GENSET PERFORMANCE



GENSET PERFORMANCE