

Project Profile

Ercot Facility

Generation Storage Application

TEXAS, USA



Project Facts

System Benefits:

- 90 net MW added
- Improvement in heat rate

Ambient Design Conditions:

- 95°F (35°C) dry bulb
- 75°F (24°C) wet bulb

Generation Storage System:

- 2 x 60 Hz Chiller, 7,800 TR (27,431 kWth)
- 1 x 6.1 mil gals Thermal Energy Storage (TES) Tank

Gas Turbine Information:

- 4 x GE Frame 7FA



Project Challenge

The plant is rarely offline as it supplies power to multiple member co-ops and municipal systems as well as sells into the spot market. It is critical for plant operations to maximize generation and efficiency. When the plant began design of a second 7FA-powered 2x1 for the site, options including turbine inlet chilling (TIC) to maximize the plant's output were considered.

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The Solution

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AUSTIN, TEXAS

Various solutions were discussed and studies concluded that on a hot summer day, evaporator coolers could only produce 560 MW whereas with TAS Energy's TIC packaged solution, over 600 MW could potentially be produced. It was decided that it was economical and beneficial to retrofit one unit and incorporate TIC to the new unit as well.

In addition, a 6.1-million-gal Thermal Energy Storage (TES) tank was integrated with the unit's TIC system to result in TAS Energy's Generation Storage® packaged solution. The TES tank supplies chilled water for both combined cycle Units 1 & 2 and allows the plant operator to pull electricity from the grid at night-time hours (and pricing) to chill the water and have it stored for use the following day during the peak demand.

About TAS Energy

TAS Energy provides clean and highly efficient solutions through the design and manufacturing of modular energy conversion and cooling systems for the power generation industry; district, commercial and industrial process cooling; data center/mission critical; and the renewable energy sectors.

Results

- Enhanced power capacity by cooling the inlet air to 50°F (10°C), the plant's output increased from 86% to 104% of the rated capacity during the critical hot & humid summer months.
- The change from the evaporative cooler to TIC included minimal interruption. The transition was accomplished in three weeks and during an already scheduled outage.
- The plant utilizes Generation Storage during warm days to optimize operation and therefore generate additional revenue.
- Use of Generation Storage allows the plant to use stored chilled water at the highest peak power pricing, when the ISO is at its greatest need to service ERCOT's load requirements.

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