

PROJECT PROFILE

BROOKS, CA

CACHE CREEK CASINO

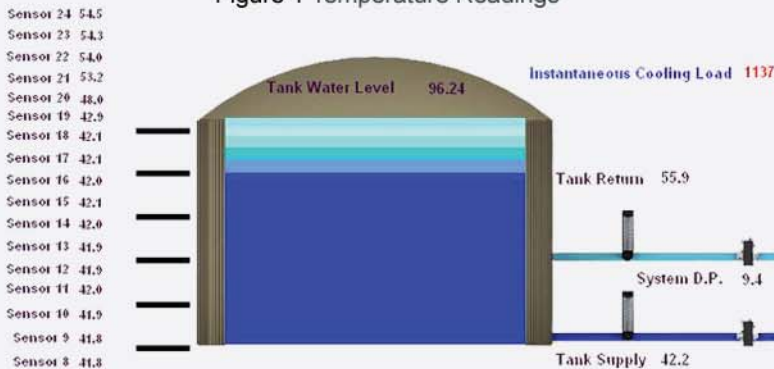
1.37 MG THERMAL ENERGY STORAGE TANK

The Trane-Northern CA team developed an energy savings project for the Cache Creek Casino Resort in Brooks, CA. Trane selected Natgun to build an energy cost savings 1,370,000 gallon concrete Thermal Energy Storage (TES) tank that Trane would integrate into the existing chilled water district cooling system at the resort. This TES system would allow the resort engineers to shift 900 KW of electric load from the peak electric period to the off-peak period. In addition, this TES system would reduce the energy consumption associated with the daily chilled water generation at the complex.



The refrigeration equipment (the chillers and cooling towers) that provide the cooling for the closed loop chilled water system operates most efficiently at night-time during cooler ambient conditions. During these off-peak night-time hours, the chillers operate at full load to “charge” the TES tank with cold water. Then during the hot daytime hours, the chillers and cooling towers are de-energized, and the cold water is “discharged” from the TES tank and circulated through a district cooling network of piping to the buildings. By operating in this way, Trane estimates that the Cache Creek Casino Resort will save annually over \$500,000. In addition to the annual energy cost savings, the resort was able to take advantage of incentives provided by their electric utility company, PG&E, through their “shift and save” program.

Figure 1 Temperature Readings



“Working with Natgun was a great experience. Their engineers were quick to respond to RFI’s and always hit their deadlines. The excavation into the hillside lead to some interesting challenges and Natgun PM’s and engineers offered creative solutions to minimize costs and time associated with such excavation.”

- Nick Hinz, Trane Account Executive

Figure 1 is a screen shot of the temperature sensor data within the tank that illustrates the stratification of the water during the discharge cycle. Over a period of several hours the TES tank was in the discharge mode. During that time the temperature sensors (mounted vertically every 18”) an energy management system recorded the readings. At any moment during the discharge cycle, it was observed that each sensor recorded a predictable rise in temperature as the warm water at the top of the tank gradually displaced the cold water at the bottom of the tank.

Natgun TES tanks are built watertight and maintenance-free ensuring owners decades of continuous service.

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