

**End User:** Winston Generator Plant

**Location:** Lakeland, Florida

**Integrator/Supplier:** Blackburn Controls

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## **Introduction:**

Electric power demand can spike at any time – especially on a hot afternoon in central Florida. The Winston Generator Plant in Lakeland, Florida is always ready at a moment's notice to fulfill increased demand. This 50 Megawatt Peaking Plant remains idle most of the time in a state referred to as "Spinning Reserve". Keeping a plant running but not actively producing electricity is very expensive, but power grid members are willing to pay hefty premiums for the availability of this reliable source of power.



## **Scope of Project:**

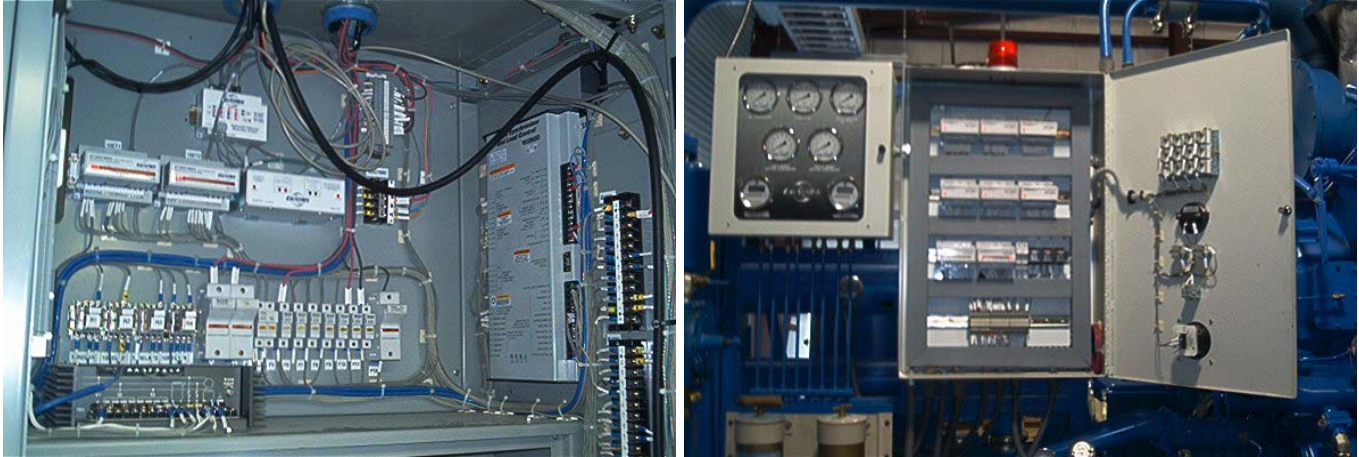
The Lakeland plant has an ingenious way to meet the short response requirement and qualify for the premium price of electricity as "Spinning Reserve" without actually running and wasting fuel when not on-line. A bank of twenty large diesel engines stands ready to spin 2.5 Megawatt generators with a spin up time of just 25 seconds. These large converted locomotive engines have heated oil circulating in them to keep them "warmed up" and ready to run. Air motors fed by compressed air tanks start these engines on a moment's notice.

## **Solution:**

Blackburn Controls worked with the designers of this high efficiency plant to create a highly reliable DCS system comprised of SIXNET process controllers, Ethernet I/O, real-time industrial Ethernet Switches and a Citect supervisory system.

Twenty SIXNET Ethernet controllers are dedicated to the control of the engines. The controllers are connected in redundant pairs, with each controller programmed and ready to take over the control of its twin's engine. Eleven SixTRAK I/O modules on each engine monitor and control the functions of these diesel engines, starting with the pneumatic valves that command the air driven starter motors into action. EtherTRAK I/O modules control auxiliary equipment such as the lubricator, water and oil circulators and the oil heater that keeps the engines in their readied state.

SIXNET ET-GT-9MS-1 Ethernet Switches in each cabinet provide a real-time connection between the redundant controllers, the I/O they control and the Citect supervisory system. The ISaGRAF programs in each controller maintain the engines in a state of readiness, start them in fast sequence when necessary and keep them running smoothly during the periods of peak demand.



### **Resulting Benefits:**

This plant went on-line in December 2001. At the time that this application story was written, this plant had been running for four years, with zero down time due to a control system failure. This complex system of twenty process controllers and over two hundred I/O modules demonstrates that an Ethernet-based open control system is both a cost effective, flexible and highly reliable solution for a mission critical engine control system. Our big system capabilities including redundancy and open systems performance with the ability to control 3rd party devices as a pass-through on the serial port of the EtherTRAK modules (resulting in a reduction in wiring costs) were key benefits.

For more information about this system please contact Gil Isaiah at +1 407-847-8848, or through email at: [gil@blackburncontrols.com](mailto:gil@blackburncontrols.com).