

Solar Turbines

A Caterpillar Company

COGENERATION PROJECT

Powering the Global Energy Demand

Bucknell University

Owner/Operator:
Bucknell University

Location: Lewisburg, Pennsylvania

Installed: June 1998

Bucknell had a long history of coal-generated power when the university began investigating more sustainable options for meeting campus needs for electrical and thermal energy, while reducing both pollution and heat-trapping greenhouse gases (GHG). The university's needs had exceeded the plant's capability, was no longer keeping buildings warm in extreme weather, and had been identified as a major source of environmental pollution. Five criteria were established for a new updated power plant:

- Long-term cost effectiveness
- Efficiency
- Environmental compliance
- Capacity for long-term energy needs
- Fuel flexibility

Bucknell selected a cogeneration system using natural gas with a fuel oil backup to ensure uninterrupted service.



The system consists of:

- One 5 MW *Taurus*™ 60 dual fuel gas turbine generator set
- 70,000 pph heat recovery steam generator
- Two 70,000 pph packaged water tube boilers
- One Back-pressure steam turbine

The *Taurus* 60, with its small footprint, high efficiency and low-emissions is at the heart of the system. Utilizing the *Taurus* 60, Bucknell was able to reuse their current building and connect to the existing distribution system.

The system generates both electricity and thermal energy and provides all the steam needs for the campus and 95% of campus electricity use. The steam is used to heat and cool the buildings, as well as heating water. Excess electricity can be stored and sold back to the local utility or on the open market, providing Bucknell with a great source of revenue.

According to Jim Knight, Assistant Director for Utilities at Bucknell, "One of the side benefits has been improved reliability of our electricity service to the campus. There have been many occasions where we've lost power from the utility company and been able to provide power to the university strictly from our own cogeneration plant, even when the surrounding area did not have power".

Finally, in comparison to the coal-fired plant it replaced, the *Taurus* 60 gas turbine generator system reduces emissions of criteria pollutants by up to 99% and GHG by 75%. With current interest in climate change mitigation, the new plant provides a much more sustainable source of heating, cooling and electrical power. And, by installing the system, Bucknell saves approximately one million dollars a year in utility costs.

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