

# Cogeneration plant: Gas turbines provide highly reliable heat and power to office high rises

Dual Fuel capability of the Vericor ASE40 Gas Turbine ensures customer is never without critical power and utility supply

## CHALLENGE

Provide daily Start-Stop power, steam, chilled water and hot water for multi-building complex in urban setting

## SOLUTION

Install two Vericor ASE40 Gas Turbines in cogeneration with a heat recovery system and absorption chiller

## RESULTS

Cogen plant with Vericor gas turbine has logged over 50,000 hours over 10 years with an equivalent energy cost that is a fraction compared to grid and other utilities

## OVERVIEW

Several modern office buildings are developed in the Shinagawa area of Tokyo, Japan. Hidden in the basement of one particular complex is a state-of-the-art cogeneration system that supplies multiple buildings with up to 5.2MW of electrical power and 16,000 kg/hr of 8.5 bar(g) saturated steam to feed an absorption chiller that produces chilled and hot water.

Vericor's packager in Japan installed three of their own ASE40 Gas Turbine Generator Sets. Two of the gensets employ cogeneration steam systems with dual fuel capability for natural gas and A-Heavy oil, and one genset is a standby unit fueled by A-Heavy oil only.

The two cogeneration plants operate on a daily start-stop schedule to provide power and heat during business hours and shut down overnight.

The ASE40 engines are capable of starting from stop to full load in less than a few minutes and can switch fuels on the fly, giving remarkable flexibility to the operators to mitigate unknown power and fuel outages in this critical application.

Shinagawa, Tokyo, Japan



The ASE40 gas turbine is used to offset expensive grid power and to convert wasteful heat to useful energy for chilling and heating applications.

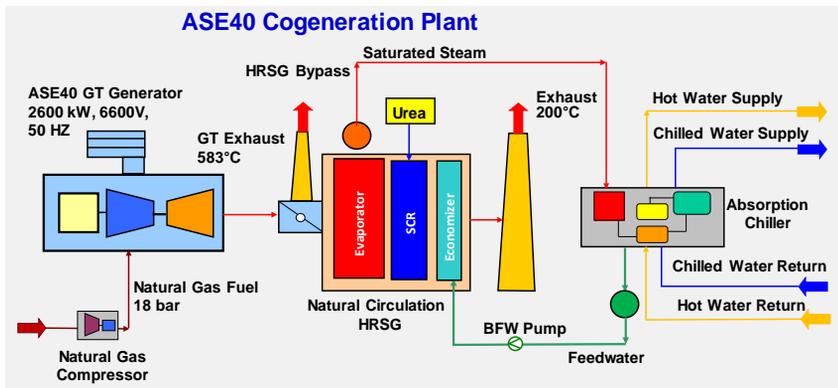


### Case Study details and the benefit of an aero-derivative gas turbine

In 2003, Vericor's packager in Japan installed a cogeneration plant to provide power and heat to a new high rise building complex. The gensets and heat recovery steam generators are housed in the basement of one building and steam is piped to an adjacent area that houses the absorption chiller. This system produces the power, chilled water, and hot water for this area using natural gas as the primary fuel.

The cogeneration plant operates 12 hours a day, 6 days a week, with the system shut down overnight while unoccupied.

A natural gas compressor boosts the fuel to approximately 250 psi and the NOx levels are controlled by a Urea Injection System.



The ASE40 gas turbine was selected as the best-fit to satisfy a heat and power requirement of this remarkable facility.

The ASE gas turbines are adapted from Honeywell's proven aero-engine designs and specifically configured for power generation use.

Advantages of using these gas turbine systems for cogeneration and power generation applications are great:

- Compact size allows for easy on site installation and change out
- High operational readiness
- Fast cold start characteristics
- Low emissions and vibration
- Flexibility to efficiently burn a variety of fuels
- High reliability and low maintenance requirements

The modular nature of these engines allows for easy inspections on site. This ease of care approach simplifies stocking of spares and lowers downtime and maintenance periods. Recommended maintenance cycles for each ASE gas turbine are 30,000 hours for a hot section overhaul and 60,000 hours for a major overhaul.

