

Solar® Turbines

A Caterpillar Company

Gas Turbine Power Plants 1-50 MW

Magic Valley Foods, Inc. and Magic West, Inc.

Developer: Joint Partnership of The Eastern Group and Catamount Energy Corp.

Operator: Eastern Power Corp., a subsidiary of The Eastern Group

Locations: Rupert, Idaho and Glens Ferry, Idaho

Installed: December 1996



COGENERATION PROJECT

In December 1996, The Eastern Group, an independent energy products company, and Catamount Energy, the non-regulated IPP subsidiary of Central Vermont Public Service, placed into service a pair of nearly identical 10-MW generating facilities at sites some 100 miles apart in south-central Idaho. The two sites, in essence, comprise a distributed power generation scheme since both supply electricity around the clock to the Idaho Power Corp. utility grid plus thermal energy, in the form of steam, to potato processing plants operated by Magic Valley Foods, Inc. and Magic West, Inc., the host sites.

This called for both installations to be extremely flexible.

The cogeneration plant for each facility was designed to meet the following criteria:

- Optimized power output, not to exceed 10 MWe.
- Varying steam load levels

keyed to the food processor's needs.

- Stringent air and noise emissions limits, which needed to be met continuously.
- High plant availability and ease of maintenance to minimize operating cost.

A STAC or Steam Turbine Assisted Cogeneration system was selected as the best solution. Each plant consists of a double-ended generator powered from one end by a Mars® 100 industrial gas turbine (equipped with dry, low-emissions SoLoNOx™ combustion technology) and from the opposite end by a steam turbine driving through a self-actuating clutch.

An unfired heat recovery steam generator (HRSG) recovers thermal energy from the gas turbine exhaust stream and uses it to produce 1310 kPa (190 psig) steam used by potato processing equipment such as peelers,

washers and dryers. When excess steam is available, it drives the steam turbine to produce even more electricity.

Each plant has an annual output of about 82 000 000 kWh annually, based on a 95 percent capacity factor. At Rupert, the steam production averages 13 600 kg/hr (30,000 lb/hr), but ranges from 12 700 to 14 970 kg/hr (28,000 to 33,000 lb/hr), while at Glens Ferry, the steam production rate averages 9070 kg/hr (20,000 lb/hr), but ranges from 7710 to 9525 kg/hr (17,000 to 21,000 lb/hr).

The cogeneration plants at both facilities were installed concurrently. Solar Turbines Incorporated — in addition to manufacturing the gas turbine generator sets — served as general contractor for both projects.

Each plant requires a staff of only 5.5 persons. A manager is shared between plants.