

**Case Study: Cogeneration – Magic Valley Foods, Inc.**  
**Locations: Rupert and Glenn Valley, Idaho**

## Idaho Potato Processors Save Energy Costs



### ***Inspecting Solar Turbine***

*One of the Solar Turbines SoLoNox™-powered cogeneration units at Magic Valley Foods Inc. in Idaho. The two installations have cut the potato processor's energy costs by 15 to 20 percent annually.*

Magic Valley Foods Inc. and its subsidiary, Magic Valley West Inc., operate potato-processing plants in Rupert and Glenn Valley, Idaho. The plants, which handle 400 million pounds of potatoes annually, require steam for peelers, washers, dryers and other machinery.

"Both Magic plants have high steam loads, which make them ideal locations for independent power producer (IPP) cogeneration facilities," says Mike Jones, plant manager for Eastern Power Corporation, Bethlehem, Pa.

Since December 1996, Eastern and its partner, Catamount Energy Corp. of Rutland, Vt., have been operating a 10MW natural gas-fueled cogeneration facility at each of the two plants. Each cogeneration unit employs a Solar Turbines SoLoNox™/Mars 100S gas turbine. Electric power is sold to Idaho Power Company, while the steam produced -- 244 million pounds annually at the Magic Valley plant and 145 million pounds at Magic West -- is sold to the plants on a 20-year agreement.

While both plants retained their old boilers, these are used only when the cogeneration units are undergoing routine maintenance. "The Rupert plant operated for 145 days continuously without a shutdown," Mike Jones says. "Even then, it was to perform routine maintenance."

Both plants produce saturated steam at 150 psig, although the heat rate for each plant varies somewhat; the Rupert plant is rated at 10,247Btu/kWh, and the Glens Ferry at 9,900Btu/kWh. The efficiency levels are 60 percent HHV and 48 percent HHV, respectively.

Both plants also incorporate dry low-emission (DLE) technology developed by the Gas Research Institute for Solar Turbines. By premixing natural gas and air for a lean fuel/air mixture prior to turbine combustion, the system achieves low NOx levels without injecting water or steam -- thus the "dry" description.

The DLE technique reduces flame temperature and prevents "hot spots" which produce NOx. In fact, the SoLoNox™ units operate at NOx levels of .33g/brake hp/hr, or 33 ppm, well below the 42.5 ppm target level.

Since implementation, the cogeneration installations have reduced the potato processor's energy costs by 15 to 20 percent annually, and the power companies project a payback period of four and a half years.