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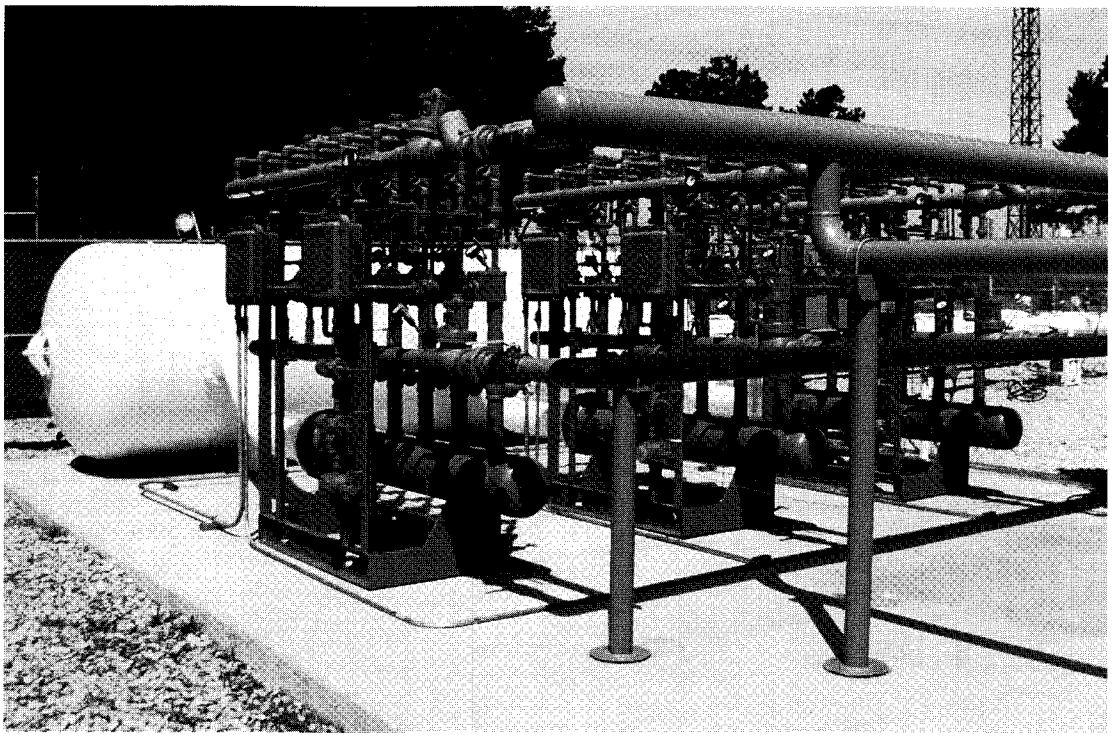
Military Bases Save $1.1 Million/Yr. With Backup Propane Systems

By ROB DOUGHERTY



A performance contract financed the installation of backup propane systems at two U.S. Army forts in Georgia. The project will cut the facilities' gas cost from $8.40 to $3.40 per million Btu.

ATLANTA—Backup propane systems installed at the U.S. Army's Forts Gillem and McPherson here are expected to result in $1.1 million in annual savings through the use of a performance contract.

According to figures supplied to the government by contractor Systems Corp., Knoxville, Tenn., total project cost for the combined 20 million-square-foot establishments is anticipated to be $4.1 million over the 20-year agreement. This cost includes labor and capital expenses of $2.7 million to install the plants at both forts plus ongoing maintenance and operation costs. The payback is under four years, and at the end of the contract the equipment will be turned over to the government.

Fort McPherson, the largest army command site in the U.S. and headquarters for Forces Command, is expected to save $300,000 a year. Fort Gillem, which provides logistic, administrative, and warehouse storage support for Fort McPherson, is predicted to save $800,000 annually. Savings will be split so that about 70 percent is retained by the contractor and 30 percent is given to the government, according to Robert Starling, energy program manager for the Army Corps of Engineers.

"That's typical of most of these contracts," he contended. "We think it's a good deal for the government because without the contractor pulling money out of his pocket and making this go, we wouldn't get anything. Sharing is what this is all about."

The project, which began in December 1995, went on line in April and allowed the forts to change from firm to interruptible natural gas as the primary energy source, according to Keith Derrington, president of Systems Corp. He explained that his company negotiated with local utility Atlanta Gas Light to reduce the forts' average cost per million Btu (MMBtu) of gas from $8.40 to $3.40. Savings are generated from the difference between the natural gas cost and the liquid propane, which is supplied to the forts at cost by the contractor. Derrington estimated the facilities' previous annual gas use at 80,000 MMBtu for Fort McPherson and 160,000 MMBtu for Fort Gillem.

"If for some reason the system does not operate, then the forts can be penalized up to $30 per MMBtu for not interrupting the gas flow when ordered to do so by the utility," Derrington explained. "It's critical to stop the flow because it can eat up the savings very quickly."

According to Derrington, the backup system stores liquid propane in tanks, vaporizes it, then blends propane and air to provide the same burning characteristics as natural gas with no burner adjustments required. It is then placed directly into the natural gas distribution system downstream of the utility meter.

"We put the propane and air into the pipe at a pressure higher than the utility supplies it in order to stop the flow of natural gas," Derrington explained. "There is a check valve installed at the meter that prevents our gas from leaving the fort and going into the utility's line."

The vaporizers and mixers were supplied by Sam Dick Industries, Seattle. Two Aquavaire vertical waterbath vaporizers, each with a maximum vaporization capacity of 1,120 gallons per hour and an output of 102 MMBtu per hour, were used at Fort McPherson. Fort

Gillem received two Aquavaire horizontal waterbath vaporizers, each with a maximum output of 400 MMBtu per hour and a vaporization capacity of 4,400 gallons per hour. According to the manufacturer, the vaporizer utilized an immersed multiple-pass heat exchanger, along with a temperature regulator and circulating pump.

To provide the proper propane-air mixture, the Sam Dick M-Series pressure-assisted mixer was chosen for Fort Gillem. Used in applications that require over 15 pounds of pressure per square inch, the blending system utilizes compressed air to properly boost pressure in the system, according to the manufacturer. A simple blending valve, also provided by Sam Dick, was all that was necessary at Fort McPherson because of that facility's lower operating pressure, Derrington told EUN.

Starling cited two main reasons that motivated the government to seek a performance contract. The first was to save money and manpower.

"There is less money in military programs to do things anymore, and less people to get them done," he noted.

The second reason was to adhere to the National Energy Conservation Policy Act of 1986, which required government facilities to save energy.

The project was not without its problems. Starling recalled that when the propane plant was installed, it didn't work well at Fort Gillem because the piping the contractor hooked the system into leaked because of the higher pressure. In response, the Army replaced the leaking lines, restoring the proper gas-to-air mixture.

The second problem pertained to an initial undersizing of the backup plants. Starling attributed this to prior moves changing heaters and other fuel-oil-fired equipment to gas. He said both the Army and the contractor underestimated the amount of gas needed to run all the converted equipment.

"After we replaced the gas lines and got a better handle on the amount of gas needed, the contractor proposed the proper plant increases, which were then implemented," Starling said.

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