

## NH Gas Propane Distribution System Gets Unique Blower Control Package

The New Hampshire Gas Company, headquartered in Keene, NH, is the only community in the country with a municipal propane gas distribution system. The existing distribution system, which essentially uses ambient air, was determined to be inadequate for dealing with the increasing demand for commercial propane customers in the town.

The challenge was how to move from a gravity-fed system to a pressurized system to meet the increasing demand. NH Gas relied on engineering design and system fabrication from Hope Air Systems to identify and construct a solution. The custom blower system engineered by the team at Hope Air Systems was designed to provide a stabilized pressure source for the propane gas distribution throughout the Keene, NH community. NH Gas is a subsidiary of Berkshire Gas Company, based in Pittsfield, MA.

Engineers at The Hope Group, a subsidiary of THG Corporation, developed a system utilizing four rotary-lobe blowers, which were linked together to provide the required controlled pressure and internal back-up and redundancy capability. A pressure and flow controller package integrates the existing digital controls for the system. A new pressure sensor was mounted on the existing line, which mixes the propane, to provide the correct ratios and proportioning to meet varying demands.

The engineers developed the software programming that permits the four blowers to operate in sequence to meet various load levels and to serve as internal

back-ups during maintenance shutdowns. The challenge was to integrate the new blower system with the non-automated pre-existing system, which relied on a series of solenoids actuated by a binary timer package.

According to David Jacques, of NH Gas, the current system used multiple venturis to provide air to mix with the propane for the correct BTU ratio. Going forward, the requirement was to provide air over a broad 50 cfm to 1,400 cfm range, with enough available capacity to maintain pressure, even if one of the blower units failed. Through a unique manifold package designed at Hope Air Systems, the four blowers were linked together with sensors to regulate the air requirements.

According to one of the sales engineers at Hope Air Systems, the propane pipeline system provided by NH Gas is highly unusual. "Keene is the only city in the country that has a centralized, underground propane distribution network to provide gas at a required pressure and ratio to an entire community. The system is not automated. It is operated through an ingenious system utilizing digital monitors and recorders to monitor gas ratios and controls," said the sales engineer.

The original inquiry from NH Gas was based on a requirement for air compressors to supply a solution to their problem. Upon evaluation by Hope Air Systems sales engineers it was agreed that a more efficient, reliable and cost-effective solution would be derived from a sequenced package of blowers.

The need for large volume, low pressure air, instead of high pressure air from a compressor, was the deciding factor. The final design included two 50 horsepower units and two 10 horsepower units, which provided the range of pressure required regardless of hot summer months or freezing winter. The units were selected for reliability and compact design. Floor space was at a premium and routine maintenance and operational requirements were factored into the selection of equipment.



*The four low pressure blowers installed at NH Gas in Keene NH were designed to cover a wide cfm range and to serve as internal back-up during routine maintenance.*



*The ambient air, gravity-fed system needed a boost from the low-pressure blowers as demand for propane gas increased from residential and commercial expansion.*

