

# Atmos Energy Offers New Vapor Extraction Technology

Special To **Pipeline & Gas Journal**

**O**ne Atmos Energy employee's innovative use of vacuum technology is helping solve an industry-wide problem. Dallas-based Marc Chapman invented the Vapor Extraction Unit (VEU), a machine that creates 850 cubic feet per minute of suction to remove natural gas trapped in the soil.

For Atmos Energy, the nation's largest natural gas-only distributor, Chapman's invention should enhance safety for the public. By using the VEU to clear the vapors from the soil faster, leaks should be located quicker. Fast action is vital when the ground is saturated with natural gas and the rotten egg smell is emanating from cracks, meaning danger could be only one spark away.

## Saving Time And Money

"The VEU should save a tremendous amount of time," said Chapman, director of operations for Atmos Energy's Mid-Tex Division. "What would take the old tube-type extraction machine a month, we can now accomplish in a few days. That allows Atmos Energy crews to focus efforts on repairing leaks, not looking for them. We are utilizing this new device daily in the Dallas-Fort Worth area."

Using the old method, it might take weeks to locate and mitigate a slow leak. To find the leak, employees would pound a three-foot metal rod, or probe, into the ground at several locations to measure the level of natural gas

in the soil. High readings meant they were getting close to the underground source. Even after the leak was found and corrected, residual natural gas was often still in the soil, which led to the use of time-consuming devices to remove the natural gas.

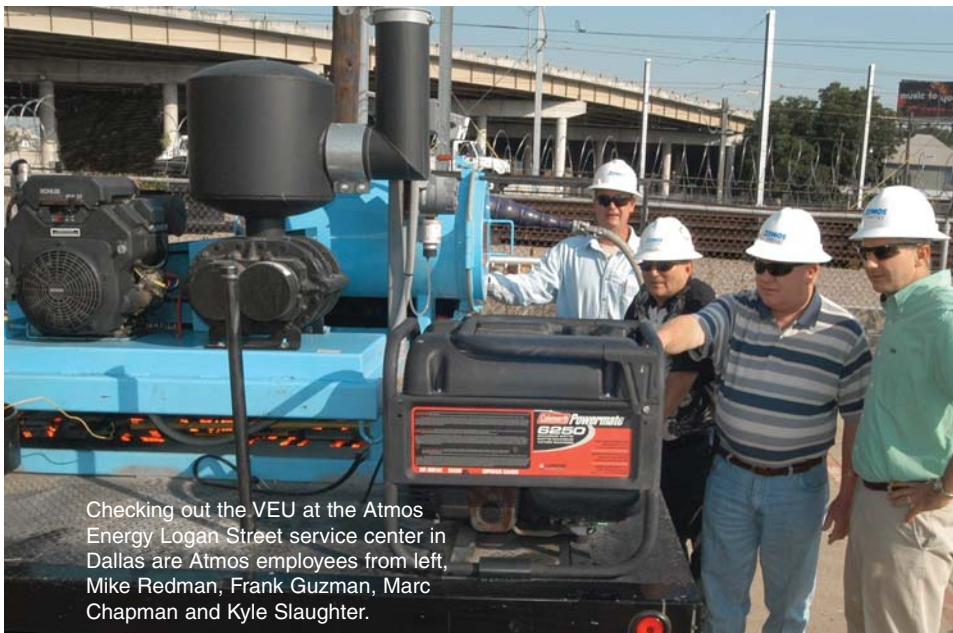
It would typically take at least three employees to survey an area for gas leaks. Sometimes, other support personnel were brought in for larger jobs. Probes would be hammered into the ground to form a circle or grid around a suspected leak area. The circle or grid was then progressively narrowed until the leak was isolated.

Once the gas-saturated area was discovered with probes, Ventura tubes were then inserted in the probe holes to extract the gas. Each ventura tube was about three feet long and one-half inch in diameter. Ventura tubes rely on positive air flow from a large air compressor blowing air across the tubes to create the suction necessary to extract the gas.

"The previous technology was very inefficient," said Chapman. "With the VEU, we are actually creating a vacuum from a pump, thus increasing the efficiency multiple times."

The VEU uses numerous suction rods with more direct vacuum power, allowing employees to swiftly remove the natural gas and isolate the leak area. Using the VEU, Atmos Energy typically uses only one employee for the same job, while the duration of the extraction process has been reduced significantly.

"We had a situation where a contractor hit a gas



Checking out the VEU at the Atmos Energy Logan Street service center in Dallas are Atmos employees from left, Mike Redman, Frank Guzman, Marc Chapman and Kyle Slaughter.

## Atmos Energy Launches Free Electronic Toolkit to Help Customers Manage Energy Costs

It might be hard to think about cold weather with temperatures recently exceeding 100 degrees, but Atmos Energy Corp. launched an online toolkit to help home and business owners make better energy decisions as they prepare for winter.

These easy-to-use energy management tools are available to help consumers manage their energy use, realize efficiencies and savings, and enjoy greater indoor comfort. The tools are free to use and available at [www.atmosenergy.com](http://www.atmosenergy.com) by clicking on Manage Energy Use under the Home Service tab.

"We initiated the online energy management tools because many of our customers have been asking for a way to manage their energy costs," said Robert W. Best, chairman, president and CEO of Atmos Energy. "Although Atmos Energy does not control the costs of the natural gas that is passed through to our customers, these tools give customers some control over their bills by helping them to use energy more wisely."

Dick Erskine, president of the company's Mid-Tex Division added: "Saving energy is good for all of us, and we want to help consumers be more energy conscious. Whatever we can do to empower consumers is good for our customers, our environment, and our company."

The suite of tools includes an Energy Profile, an Energy Calculator, and an Energy Tips tool. The Energy Profile analyzes information provided by the consumer, and it then provides a picture of where and how the consumer can save energy throughout the home. The Energy Calculator enables the user to discover how much energy a home appliance uses, as well as its average cost to operate.

"Knowing each appliance's operating costs, coupled with some simple do-it-yourself tips found in our Energy Tips section, may help a consumer shop wisely and use energy more efficiently," said Erskine.

The site also contains an Energy Library which houses in-depth material on gas and electric topics. Consumers will be able to receive prompt, personal, and confidential answers from Atmos Energy's own energy experts by sending their questions online to the Energy Advisor.

The online tools are designed for home and business owners who want to:

- Understand their energy consumption and costs
- Find energy-saving ideas for their homes and/or businesses
- Save money on their energy bills
- Compare their gas bills from month to month (residential only)
- Discover how much energy a particular home appliance uses and approximately how much it costs to operate. **P&GJ**

line and didn't tell anyone," said Chapman. "That led to a lengthy, low-pressure natural gas leak, which wasn't reported. After we spent several hours rigging up our old compression machine to extract all of the gas from the ground, I came up with the idea of using new vacuum technology to create a machine that exclusively removes vapors like natural gas from the ground.

"Being involved everyday in operations, I have been on the front line as the vacuum technology has progressed," added Chapman. "Through demonstrations and industry literature, I've seen tremendous leaps in vacuum capabilities. I studied it and toyed with different designs, and then suddenly it all clicked on how we could utilize the latest vacuum technology in a practical way to extract vapors. One idea led to another, then another and we all started to get excited about the potential."

### Industry Application

Realizing the VEU benefits were wide-ranging, Atmos Energy licensed the new process to M-B-W Incorporated, based in Slinger, WI, for development and marketing the technology's use by other companies.

"M-B-W pays Atmos Energy a small royalty for the license agreement," Chapman said. "The patent includes my name but belongs to Atmos Energy since I invented it on company time. My intention all along was for this invention to benefit the company."

"The reception from other utilities has been overwhelming," said Phil Wieggers, president of EGW Utilities, which markets the device. "Most natural gas companies across the U.S. should be using the new technology within two to three years, and then it will likely attract attention in other countries."

Atmos Energy already uses five VEUs in its Mid-Tex Division, which includes the northern third of Texas. Other Atmos Energy divisions are in the process of acquiring units throughout the company's 12-state service territory. In the Dallas-Fort Worth metro area, Atmos Energy has two units mounted on trucks for speedy response. Atmos Energy also has three VEUs assigned to its non-metro region.

While companies in densely populated areas can follow the Mid-Tex Division lead and mount the unit on a truck, other companies in less populated areas may mount it on a trailer. The first generation of VEUs, built by M-B-W, sell for approximately \$25,000. Wieggers said it should pay for itself in improved leak repair efficiencies.

Chapman credited several co-workers with improvements to the VEU and said they continue to tinker with the device.

"My co-workers have been a great help in helping develop the device," he said. "They have made vast improvements in the hoses and connectors that run from the unit to the vacuum probes."

### Future Potential

The VEU also has potential for use with a variety of vapors: natural gas, propane and other petroleum products. Propane companies

experience similar problems to natural gas local distribution companies in isolating a leak to make repairs. While the two industries often compete with one another, the VEU appears to be a solution for both.

The Atmos Energy team is still experimenting with improvements and talking about conquering different types of vapors. They say water extraction may be the next frontier for the VEU. The team is researching a methodology to extract vapors from soil saturated by water or rain. If perfected, the device could reduce the waiting time for soggy land to dry. Reducing the drying-out time could have valuable implications for construction projects, post-flooding efforts and mitigating spills. **P&GJ**