

Fourth Texas Technology Forum Highlights New Propane Applications

An array of innovative propane technologies were once again showcased at the fourth Texas/North American Propane Technology Forum, held this year at the Railroad Commission of Texas' (RRC) headquarters in Austin. The mid-September event highlighted innovative technologies to build markets for propane, as well as fostering discussion of new technologies among marketers, users, manufacturers, and research organizations.

Co-sponsoring the forum with the RRC's Alternative Fuels Research & Education Division (AFRED) was the Propane Education & Research Council (PERC), the World LP-Gas Association, San Antonio's Southwest Research Institute, and ASOCIMEX, the Mexican Propane Gas Association. On hand were engineers and entrepreneurs who are researching, testing the new equipment, and commercializing the products.

Among the new propane-fueled products exhibited were residential combined heat and power systems, hybrid technologies for on-site power generation, heat remediation to control insect pests, and use of flaming in agriculture to increase cotton and pepper crops and control pathogens in poultry houses and dairy barns.

One presentation focused on PERC-funded research to explore using composite materials in underground tank manufacturing as an alternative to steel. Still others outlined the use of methanol to control freezing in propane systems, and heavy-end deposit formation and mitigation. Attendees were also updated on the industry's Roush-upfitted Ford F-150 propane pickup and Blue Bird Vision school bus motor fuel initiatives.

About 125 participants from the U.S., Canada, and Mexico attended the forum, which was kicked off by RRC commissioner Victor G. Carillo. "I'm excited about propane's future as a clean alternative fuel," he said. Carillo noted that

incentives built into the 2005 federal Energy Policy Act and Transportation Equity Act offer new opportunities for the U.S. vehicle market. He added that he also sees propane becoming more attractive to international manufacturers of fuel cells, agricultural applications, truck and bus engines, dehumidifiers, and other low-emission applications.

Tony Dale, Ferrellgas' (Overland Park, Kan.) vice president of business development, outlined his company's effort in conjunction with PERC and HBH Gas Systems (Austin) to build and test a quiet, reliable, and durable mobile surveillance unit that can be deployed, unattended, for varying periods and then moved to a new location. The partners have been testing the propane-fueled apparatus for the U.S. Border Patrol.

The project, Mobile Propane-Powered Surveillance Unit (PERC Docket 12295), calls for engineering, construction, and testing of an enclosed, trailer-mounted working prototype for a mobile propane-powered surveillance system for border security, police use, and temporary private secu-

rity applications. The docket specifies demonstration of successful, unattended operation of the surveillance system for two months with one refueling cycle.

A ground-mounted version of the surveillance system, equipped with a digital video recorder and a thermal electric generator, was tested on the Texas-Mexico border from February to June last year. Ongoing work includes evaluating a fuel cell as a possible replacement for the thermal electric generator, Dale said, adding that once developed and successfully deployed, variations of the surveillance unit could be used to provide construction site security, to monitor parades and other events, and aid in road hazard and traffic control.

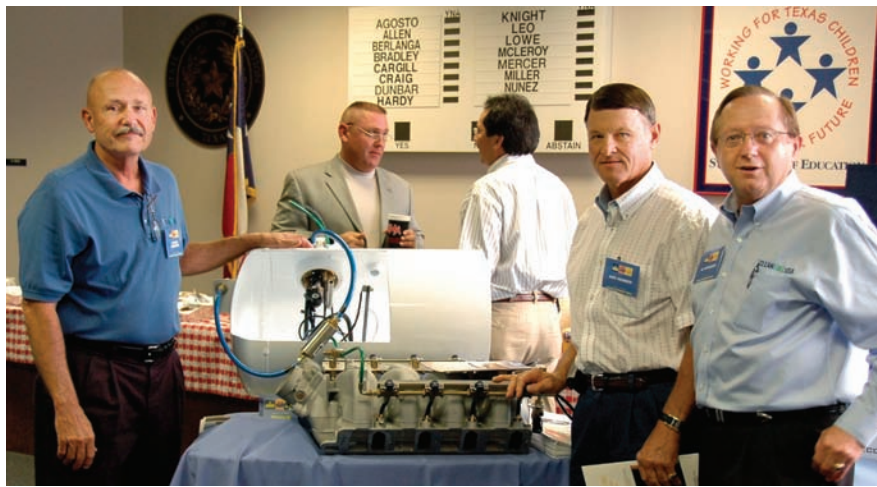
Dale noted that upcoming testing will incorporate a lightweight, compact fuel cell by NanoDynamics Energy Inc. (Buffalo, N.Y.), which was on display at the technology forum. It will charge the batteries on the unit. NanoDynamics is a developer of portable solid-oxide fuel cell systems that operate on hydrocarbon fuels such as propane rather than pure hydrogen. The fuel cell, which Dale described as about the size and heft of a working man's metal lunch pail with a full Thermos inside, could significantly reduce the weight and fuel consumption of the surveillance system and enhance its noise and heat signature, paramount to the security system's ability to operate undetected.

Dan Kelly, director of AFRED, drew attention to an ongoing PERC-funded effort presented at the forum to expand the commercialization of a gas-fired desiccant dehumidifier. The project, sponsored by TECO Peoples Gas (Tampa, Fla.) and NovelAire Technologies (Baton Rouge, La.) and administered by AFRED, builds on research conducted by the Gas Technology Institute (See *BPN*, January 2006, p. 26).

Desiccant dehumidifiers, whether installed independently or as part



A propane fuel cell (at right) will be tested to power a mobile surveillance unit. Harris Baker of HBH Gas Systems (left) and Tony Dale of Ferrellgas are heading the development team.



CleanFUEL USA's LPI system for General Motors' 8.1-liter Vortec engine took center stage at the forum's motor fuel segment. From left to right are Mike Merwarth, CleanFUEL; Wes Welch, WelchGas; Rudy DeLaGarza, AFRED; Don Heinrich, Slaton LP-Gas; and Al McFadden, CleanFUEL.

of the home's HVAC system, maintain home indoor air in a healthy range to retard mold and bacteria growth and prevent damage from condensation. The project to commercialize the units accompanies the fast-growing market for residential-scale equipment to address indoor air quality, especially in areas where extreme humidity is common, and adds to industry efforts to build marketers' off-season load.

The NovelAire ComfortDry 400, currently in operation in private homes and businesses, is scheduled for addi-

tional trials in several test homes around the country that are located in high-humidity areas. The ComfortDry has been significantly upgraded from the alpha test model, Kelly said. The result is a unit that is smaller, lighter, less expensive, and has improved performance features. The new, more compact unit is 70 pounds lighter, hand wiring has been replaced with a circuit board, and the ignition system has been upgraded. The next phase of in-home testing is aimed at heightening reliability and driving down the cost of pur-

chase to the more consumer-friendly \$1200 range.

Details on Engine Control Systems' (Trophy Club, Texas) TermiNO_x emissions upgrade kit for propane-fueled large-spark ignition (LSI) engines were provided by Larry Tatarowicz, a regional sales manager for the company. The TermiNO_x is a retrofit fuel management/emissions control system that converts open-loop LPG-fueled engines to the same level of technology that is found on today's modern automobiles, noted Tatarowicz. It can be installed on open-loop industrial engines with IMPCO, AISAN, NOLFF, or Kikki carburetion. Control of hydrocarbon, carbon monoxide, and nitrogen oxide emissions are typically reduced by 85%, according to Tatarowicz.

"The Texas Propane Technology Forum is the only event of its kind in North America that, thanks to PERC R&D, showcases the new propane technologies being developed," observed AFRED director Kelly. "It makes us all more aware that we need new technologies in order to grow our market and prosper. Some can succeed in a mature market by buying each other up," he added, "but technology is the way forward and the key to opening new markets." —John Needham