



Energy Efficiency & Customer Research & Development presents...

Customer Advanced Technologies Program Newsletter

Volume 5, Number 1, February 21, 2007

In this issue...

- From the Editor's Desk
- Technology Spotlight: HVAC Service Light Unit
- Current Research Projects

From the Editor's Desk

"You can pay me now, or pay me later."

- Arnold Palmer
Pennzoil commercial

As I drove to work, the right front wheel of my truck sang its familiar, one-note song, "Squeak...squeak...squeak!" So I promised myself to replace the brake pads later in the week, turned up the volume on my radio, and kept driving. A week later, my truck sang a new song, "Scrape...scrape...scrape!" Looking back, it would have been much better (and a lot cheaper) if I'd heeded Arnold's advice and properly maintained my truck. What does any of this have to do with emerging technologies? Plenty. Glad you asked.

Although we all know that we should have our air conditioning systems serviced on a regular basis, many of us simply forget to do so. Consequently, many air conditioning systems waste energy and break down prematurely. This quarter's featured technology, the HVAC Service Light Unit, is designed to alert customers when their air conditioner is not functioning properly and needs servicing.

Technology Spotlight: HVAC Service Light Unit

Research studies have shown that residential and small commercial air conditioning systems are usually not tested or adjusted to ensure peak performance, even during installation. Because of this, the majority of these systems operate at 10-35 percent below their design efficiency. Significant energy savings can be realized by assuring that air conditioners are properly installed and maintained. Proctor Engineering Group teamed up with SMUD, the American Public Power Association (APPA) and Beutler

Heating and Air Conditioning to design, build, and test a device that continuously monitors the performance of an air conditioner to ensure efficient operation.

The device, known as the HVAC Service Light Unit (SLU), is designed for permanent installation in any residential or small commercial air conditioning system. It performs real-time diagnostics to detect the two most common problems:

1. Incorrect refrigerant charge.
2. Insufficient evaporator airflow.

In addition to the sensors and control module, the SLU includes a warning light that is installed next to the thermostat. If the SLU detects a problem, it alerts the occupants by activating the warning light. The SLU has been successfully tested in the laboratory as well as in the field. Proctor Engineering Group is currently in discussions with prospective manufacturers. A full report, written by the Proctor Engineering Group, is now available via the CAT program Web site at www.smud.org/education/cat/index.html.

Current Research Projects

Here's a quick list of our current research projects:

- SunCache passive solar water heaters
- LED street and parking garage lights
- LED task lights (PLS)
- LED kitchen downlights
- LED refrigerated case lighting
- Dan Foss TurboCor compressors*
- Coolerado Coolers*
- Desert CoolAire hybrid air conditioners
- MicroPlanet EVR*
- Commercial kitchen hood controls
- Ice Bear TES* (residential application)
- Hybrid solar-electric lighting

* Technology Briefs (mini-reports) are available for these items via the CAT program Web site at www.smud.org/education/cat/index.html.

The information in this report is provided by SMUD as a service to our customers. SMUD does not endorse products or manufacturers. Mention of any particular product or manufacturer in this report should not be construed as an implied endorsement.

® A registered trademark of the Sacramento Municipal Utility District