

Energy Efficiency & Customer Research & Development presents...

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From the Editor's Desk

“Some like it hot!”

When I first moved to Sacramento and heard that summer time temperatures can reach 110°F or more, I was amazed. “Don’t worry -- it’s a dry heat,” my friends assured me. I’ve been here for thirty years now and I have yet to hear someone say, “Hey, it’s 110°F out here – I just love this weather.” Personally, I **don’t** like it hot and rely upon my air conditioner to keep cool. Apparently, so do many of you.

During last summer’s heat storm, SMUD set a new peak demand record of 3,299 MW – more than double our winter peak. This poses a bit of a challenge for us. To put this into perspective, imagine that ten times a year, you have to take thirteen kids to school - all at the same time and that everyone else in California does too. Consequently, you are forced to buy a fourteen-passenger van. The rest of the year, however, the van sits idle in your driveway. Meanwhile, you still have to make the van payments, pay for insurance and maintenance. Sound painful? It is for SMUD as well.

Managing peak electric demand is a challenge. Electric utilities need to have adequate power plants, transmission and distribution systems in place to handle peak demand periods, which historically occur only about forty hours per year. Since air conditioners are the primary culprit, CAT program research is placing a heavy emphasis upon low-energy cooling systems. This month’s featured technology is an emerging technology known as the Desert CoolAire hybrid air conditioner.

Technology Spotlight: Desert CoolAire Hybrid AC

According to the California Non-Residential New Construction (NRNC) database, packaged rooftop air conditioning systems provide cooling for 47 percent of commercial floor space in the United States. Ninety percent of units sold have cooling capacities of less than ten tons; five ton systems are by far the most popular. Unfortunately, since most of these units are located on hot rooftops, they operate well below their rated efficiencies – especially during periods when outside air temperatures exceed 100°F (when cooling is most needed).

Recognizing the need for low energy cooling solutions, the Northwest Energy Efficiency Alliance decided to support development of a packaged, hybrid air conditioner known as the Desert CoolAire system. In 2005, Desert Aire Corp. combined a promising new indirect evaporative heat exchanger (the Delphi HMX), with compressor-based cooling and gas heating to create a “hybrid” system. This HMX technology is the same heat exchanger used in Coolerado Coolers. The goal for this system is to significantly reduce energy use and peak electric demand, while providing the air quality benefits of a 100 percent outside air system. Desert Aire produced 12 prototype “CoolAire” rooftop units.

In 2006, SMUD expanded the research to Sacramento, and with help from the American Public Power Association’s Demonstration of Energy Efficient Developments (DEED) program, supported installation and testing of three units. Two of the units were installed at American River College; the third was installed at the offices of Stafford King and Wiese Architects.

The Desert CoolAire system shows a lot of promise but refinements are ongoing. The field study will continue through summer 2007. In the meantime, an executive summary for the 2006 effort is now available via the Customer Advanced Technologies (CAT) program Web site: www.smud.org/education/cat/index.html. The full report for 2006 project is expected to be released later this year. Stay cool!

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