Hub controls climate from afar

High-tech control room at iMonitorEnergy.com helps clients lower energy bills.

COLIN STEWART
Innovation
Register columnist
cstewart@ocregister.com

Mark Moore knows what you've done to the office thermostat. Yes, you. You felt warm, he says, so you turned down the thermostat and made all your co-workers cold. The controls are locked in a plastic case? That didn't stop you. You straightened out a paperclip and snaked it through a vent to change the setting.

Moore is a 30-year veteran of the heating and air-conditioning business with a unique perspective. From his company's high-tech control room in Lake Forest, he can see the temperature at each vent and each thermostat in 564 buildings in Orange, Los Angeles and San Diego counties.

At **iMonitorEnergy.com**'s headquarters, he can't actually see you fiddling with the controls, but he can visualize the results – shivering workers and rising electricity bills.
"It's the woman who's going through menopause. Or it's the guy who's running around, carrying boxes, getting hot." That worker turns down the thermostat, Moore says. "Then people start putting heaters under their desks because they're cold."

To combat such problems, Moore combines psychology with technical expertise. He might install an "intelligent" thermostat that looks like a normal one but doesn't respond when workers change the settings too far.

He can also tell you what usually goes wrong with the air conditioning at malls and restaurants – people doing manual work change the thermostats because they're hot. As a result, customers get the chills.

At the movies, theater owners underestimate the power of their cooling systems, Moore says, so movie-goers must wear jackets to stay warm.

COMMANDER OF COOL
The data hub that Moore built in 2000 for iMonitorEnergy.com looks like a Cold War command center keeping watch for a Soviet ICBM attack. But instead of triggering missiles, it regulates power use in client buildings.
Each client's ventilation system is represented by multiple display screens, with a photo of a galaxy providing an overview. On that screen, each star represents a building. If a star starts glowing and beeping, trouble is afoot.

One of those stars is the **Huntington Beach Hilton**, where it was quiet and comfortable last Wednesday afternoon. Screens showed that the lobby, for example, was at 70.6 degrees, with vents pumping in 59.3-degree air to combat the humid 74.9-degree air outside. Only if the outside air dropped to 65 degrees would Moore open the hotel's "economizers" – large vents that save money by bringing in cool air from outside. His goal is 69 to 74 degrees, with humidity of 35 percent to 55 percent. "That's the comfort zone," he says.

20-YEAR PLAN

IMonitorEnergy.com was an idea from the late 1970s that didn't become feasible until decades later. Moore had the basic idea for his energy-monitoring system in 1979, when he was working for the **Trane** air-conditioning company. He and a colleague devised a business plan for collecting energy data and transmitting it over telephone lines to that era's bulky computers.

All three elements in that plan – monitoring devices, telephone charges and computers – were too expensive, so Moore shelved it. He focused instead on establishing his own heating and air-conditioning business, **Ram Air Engineering**, which he founded in 1984.

Nearly 20 years after he first had the idea, he dusted those plans off again.

"In 1998, I took the summer off and went to my house in Mammoth with my 2-year-old. I relaxed and got to thinking," he says. "It dawned on me how powerful the Internet had become."

He made the old calculations again and found that costs were way down, except the cost of energy. The business plan now made sense, especially in **San Diego Gas & Electric** territory.

SDG&E rewards companies that conserve electricity more generously than **Southern California Edison**, Moore says. As a result, he has had more difficulty landing customers in Orange County.

ENERGY AUDITS

Companies hire iMonitorEnergy.com, which is one of many energy specialists, to review power use and install efficient equipment. The goal can be to save money or to certify the structure as a high-efficiency, low-pollution "green building."

Such efforts usually cut electricity bills by 15 percent to 25 percent, says Lee Overvold, Irvine-based business development manager for the nationwide **Noresco** energy services company.

He says he knows of no company other than iMonitorEnergy.com that provides such extensive monitoring and control. After an initial audit, Moore and associates typically achieve 10 cents to 15 cents of energy savings per square foot of building. They charge 3 cents to 6 cents per square foot to keep those savings intact, Moore says.

For an Orange County high-rise office building with $500,000 to $1 million in annual energy bills, Moore says, that's a reduction of $75,000 to $150,000. But the savings vanish after a year or two, says John McIntosh, business development manager for iMonitorEnergy.com.

"People have good intentions," Overvold says. "They'll install new equipment, but three or five years down the road it's not being maintained. The guy who was supposed to be doing that has left."

That's where iMonitorEnergy.com can stand out. It monitors the performance of the system 24 hours a day, year after year.

"We can take a green building and keep it from turning brown," McIntosh says.

Contact the writer: cstewart@ocregister.com or 714-796-7841