

# Stop overheating your building

If you own or manage multi-family dwellings in the New York metropolitan area, you may be overheating them without being aware of it.

There's an easy way to find out. Visit one of your buildings on a very cold day – preferably in the afternoon, after the boiler has been cycling for few hours – and check the inside temperature. Instead of a comfortable 70 or 72 degrees Fahrenheit that might be expected, the apartments may be roasting at 85 degrees. That's a temperature difference of more than 30 percent, and it means that your fuel bills are much higher than they should be.

## Need for Better Monitoring

More often than not, this waste of energy is due to inadequate monitoring and control of boiler operations. At many apartment buildings, these functions still are performed by a simple time control. Whenever the outside temperature falls below a municipally prescribed level, a time controller turns the boiler on. But this type of control is not equipped to sense inside temperatures. As a result, it does not turn the heat off when the apartments are warm enough. The boiler just continues to cycle, making the apartments too hot.

Eventually, this extra heat leaves the building. Some if it is dissipated when tenants open their windows to let it es-

cape, and some of it leaks out through the building's walls and foundation.

Heat always travels from a warmer area to a colder area. The greater the temperature difference between the warm area and the cold area, the greater the amount of heat leakage. On a cold day, a building heated to 85 degrees Fahrenheit will leak more heat than a building when inside temperature are 72 degrees.

## Computerized Monitoring and Control Systems

In order to cope with these problems, many buildings are being equipped with new automated systems that more accurately monitor and control heat and domestic hot water 24 hours a day.

Sophisticated systems, such as the OAS heat computer, eliminate fuel waste by sensing inside as well as outside temperatures and restricting boiler cycling to periods when apartments actually need heat. At buildings where they have been installed, annual fuel consumption has been reduced by as much as 30 percent. Some large management firms that have installed OAS Heat Computers in a large number of buildings report savings of hundreds of thousands of dollars on their total annual fuel bills.

## Overheated domestic hot water

Overheated domestic hot water is a widespread problem. It becomes apparent when hot water faucets drip and waste water as well as the fuel used to heat it. If left uncorrected, water that is too hot will not only destroy washers but can also burn tenants.

Building superintendents are able to stop the dripping temporarily by replacing faucet washers. But that doesn't deal with the cause of the problem. Before long, the dripping begins again.

Usually, excessively hot water is the result of an out-of-adjustment mixing valve. OAS Heat Computers pinpoint the problem by daily monitoring the minimum and maximum temperatures of the water coming out of the mixing valve.

The OAS Heat Computer also detects the cause of insufficient hot water by monitoring the temperature of the boiler water coming out of the hot water coil. If the temperatures differ too much, it indicates that the hot water coil needs cleaning.

If this information regarding the coil is not available, building superintendents may respond to tenants' complaints about insufficient hot water by raising the aquastat temperature setting. This increases the hot water tempera-

ture, but at the cost of making the boiler burn more fuel.

Another often undetected problem -- a leaking condensate return line -- can waste vast quantities of water as well as heat. In a number of cases, OAS Heat Computers have detected water losses in excess of 2,000 gallons a day from leaking returns.

## Management by telephone

OAS Heat Computers enable owners and managers to control the heating and hot water systems in an unlimited number of buildings from any location with a telephone, a modem, and a PC or laptop. Simply by dialing the phone numbers of the computers in their buildings, they can set and/or change heating and hot water temperatures and hot water usage.

They can also phone the computers at any time to check on heating and hot water system operations and problems.

The computers also produce print-outs of heat and domestic hot water temperatures. In case of tenants' complaints to a municipal agency that they are not getting the heat and/or hot water to which they are entitled, these records can be submitted as proof that the required levels were being provided or that there was a justifiable cause -- e.g. a power failure -- for a temporary interruption.

# Heat computers improve return on renovation

To an increasing extent, firms that renovate and manage multi-family dwellings are finding that they can improve their return on investment by using computers to monitor and control their buildings' heating and domestic hot water systems.

Among the most successful of the companies using this technology is Kay Management Group, Inc., an Elmont, New York-based organization formed 10 years ago by Harry Kotowitz, president, Howard Klaus, vice president, and Perry M. Finkelman, Registered Apartment Manager and Certified Property Manager.

Currently, Kay Management supervises and services 2,800 units of residential and cooperative apartments and over 140,000 square feet of industrial and commercial space and is engaged in the construction and renovation of multiple projects in New York City.

Many of these projects are renovations that will provide affordable rental housing under New York City's vacant building's program.

Late in 1991, after reviewing all the available automated systems for monitoring and controlling boiler cycling, Kay Management installed 27 OAS Heat Computers in properties it had renovated the previous year. All of the renovations included the installation of new boilers and new Windows. OAS

adapted the computers so that they could be installed cost effectively in very small as well as medium-size and large buildings.

In order to evaluate the benefits of the OAS Heat Computers, Kay Management compared the fuel bills for the 1990-1991 heating season (when new boilers and new windows were in place but prior to the installation of the OAS Heat Computers) with the bills for the 1991-1992 heating season (when the heat computers were in place), corrected for differences in degree days for the two years.

The comparison showed that the OAS Heat Computers were responsible for major fuel savings. In one building, fuel consumption was reduced by 43 percent; in another, it was reduced by 40 percent. The average annual fuel savings were 33 percent in four buildings for which records are available.

These savings stem from the way in which the OAS Heat Computer operates. Unlike time cyclers systems, which allow boilers to cycle constantly as long as the outside temperature is below levels prescribed by municipal statutes (55 degrees Fahrenheit daytime in New York City), the OAS Heat Computer measures temperatures inside apartments as well as outside temperatures and limits boiler cycling to periods when apartments actually need heat.

## Cost-Effective Management

In addition to saving fuel, the OAS Heat Computers enable Kay Management to monitor and control heating systems right from its offices in Elmont. By phoning the computers, the company can set or change heat and domestic hot water temperature settings.

Twice during every business day, Kay Management's traffic managers check up on the heating and domestic hot water systems monitored by the OAS Heat Computers by dialing the computers. This generates a print-out of inside and outside temperatures, boiler alarms, unauthorized system overrides, etc.

If a tenant calls to complain about a heating or domestic hot water problem, Kay Management immediately determines whether the problem actually exists and, if so, takes immediate corrective action.

All of the OAS Heat Computers installed in Kay Management's buildings have automatic dial-out trouble alerts. In case of burner flame failure, inadequate domestic hot water or other problems, the computer phones Kay Management during business hours. When the company's office is closed, the computer dials Kay Management's answering service, which immediately contacts the agent for the building.

## Back-Up Services

In addition to providing print-outs to Kay Management's office, all of the company's OAS Heat Computers are linked to the OAS headquarters in Dobbs Ferry, New York. As a result, OAS has a complete history of the performance of the heating and domestic hot water systems in all the computer-monitored buildings.

The OAS technical staff reviews the print-outs from Kay Management's buildings regularly, helps the company pinpoint potential and existing heat and domestic hot water problems, and monitors the progress being made to correct them.

## OAS Heat Computers Specified

Based on the fuel savings achieved in the 27 buildings where OAS Heat Computers are installed, Kay Management is including the computers as standard items in its specifications for nine new buildings it is constructing and renovating in the Bronx. The company also is considering the installation in some of its buildings of OAS Oil Tank Computers, which monitor the delivery and consumption of fuel oil.

# How to save more energy in multi-families

The installation of a new boiler and new windows are important first steps toward maximizing the energy efficiency of a multi-family dwelling.

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However, owners and managers can do much more to eliminate excessive consumption of fuel oil and/or natural gas at their buildings.

One of the major causes of fuel waste is the overheating of apartments due to inadequate control of boiler cycling. At many buildings in this area, boiler operations are controlled by a timer mechanism, which cycles a boiler on whenever the outside temperature falls below a statutory level (55 degrees F. daytime in New York City), and does not turn it off until the outside temperature rises above the turn-on point.

Since a timer does not respond to changes in inside temperatures, the boiler continues to cycle on cold days even after apartments are far too hot for tenants' comfort.

To solve this problem, Adbar Realty, a Long Island-based management firm, has replaced the timers at eight apartment buildings it owns and manages in the Bronx and Washington Heights with OAS Heat Computers. These automated systems have reduced

fuel consumption substantially at all eight buildings by eliminating overheating and restricting boiler cycles to periods when tenants actually need heat and/or domestic hot water.

### **Much Lower Natural Gas Bills**

As an example of the resulting energy savings, Robert Spring, a partner in Adbar Realty, cites a 21.5 percent reduction in gas consumption at a 104-unit apartment building in the Bronx.

"We maintain inside temperatures at 73 degrees F. during the heating season. During the year prior to the installation of the OAS Heat Computer, the building's annual natural gas consumption was 81,436 cc's. After the computer was installed, the annual consumption, adjusted for outside weather conditions, was 63,956 cc's. That is a saving of 17,480 cc's. The reduction in our fuel bills that year alone more than paid for the OAS Heat Computer," Mr. Spring said.

To a certain extent, these energy savings reflect the fact that the control of boiler cycling is transferred from the building superintendent to the OAS Heat Computer.

"At one of our buildings, the super would turn up the heat before he went off the job on weekends to avoid the possibility of tenant complaints. As a result, the apartments became uncomfortably hot and tenants began to use their windows as thermostats by open-

ing and closing them to regulate the temperature," Mr. Spring said.

### **Remote Control**

By dialing the OAS Heat Computer from his office, or any other location where there is a telephone, Mr. Spring can monitor and/or change apartment and domestic hot water temperatures.

A phone call to the computer also provides Adbar Realty with a report over the preceding 72-hour period on inside, outside and domestic hot water temperatures; unauthorized system overrides; and system malfunctions, such as flame failure, excessively high stack temperature, and excessive water consumption.

Also, the system provides on demand a daily record for the last two weeks of total daily burner run time, oil and water consumption, and high and low outside temperatures.

By scanning the computer printouts, Mr. Spring or an employee can manage the heating system by noting any parameter that departs from the norm. The indicator can be analyzed and any necessary maintenance can be scheduled.

### **Water Leak Detected**

For example, in a review of the print-outs from a recently installed Heat Computer at an Adbar Realty building, a water leak of about 800 gallons a day from an underground return line was discovered.

"The pipe was porous and leaking at a number of points, and had to be dug up and replaced, but we were not aware of the problem until it was detected by the OAS Heat Computer," Mr. Spring said.

The 72-hour printout is particularly useful in case a tenant calls Adbar Realty with a heat or hot water complaint. Even if that complaint refers to a problem that occurred hours or even days before, including nights and weekends, it can be verified by checking the printouts.

If there is no cause for the complaint, or if the problem that caused it is already being corrected, the printout helps explain matters to the tenant's satisfaction.

It is, of course, possible that a tenant, for personal reasons, might carry an unjustified complaint to a municipal regulatory agency. If so, an OAS Heat Computer printout can be submitted as evidence to answer the complaint. It was accepted as such in the case of a no-heat violation issued to another management firm by the New York City Office of Code Enforcement. The computer printout showed that, due to a power failure, the boiler in the building wasn't operating prior to the time the building was inspected. The violation was dismissed.

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*For more information and a **FREE** demonstration in your office call OAS The Heat Computer<sup>®</sup> company at 1-800-537-4106 or 914-693-9001*

## LONG-RANGE PLANNING

### The Heat Is On



With heating oil prices shooting up to near \$1 a gallon over the winter, many managers are probably looking into ways to save money during the next cold season, especially those in older buildings with a history of heating problems. Installation of heat sensors and heat computers, done now while the weather is warm, can prevent the mad scramble to heat buildings economically come January and February.

"This is the time of year you should be preparing for the next winter," advises Bram Fierstein, president of New Rochelle, N.Y.-based Gramatan Management, which manages buildings in Westchester and Rockland Counties, and the north Bronx. "It's better to contract this out

now and fine-tune it in the fall before it gets 20 below for five days straight. There's enough Murphy's Law that the last thing you want to be doing is screwing around during heating season."

Fierstein recently installed a heat sensor system in a 78-unit Yonkers co-op on Bronx River Road. Ten sensors were installed in units that had complained of heating problems. Rather than being situated outside, these heat sensors, which look much like light switches, are placed inside the individual units. Having the heat blasting when it is in the freezing temperatures outside might make sense, unless the unit-owner has his/her windows open because it is too hot.

"You can't have a 10-to-15 degree difference," says Fierstein. "Someone's getting temperatures up to 70 and others are up to the 80s. They're the ones with the windows open. You're just burning more and more oil. That was fine when oil was 50 or 60 cents a gallon, but now it's up to 85, 90 cents. The more efficient you are the better off you will be."

The heat sensors inside will activate the heating plant when the actual apartment temperature tells it to. Also, if the sensors are reporting that it is only a few units that are accounting for colder indoor temperatures, other steps can be taken, such as checking the heating lines or installing additional insulation

or radiation, and, notes Fierstein, helping to "balance the system." Because the boiler will not continuously be cycling, the system can help save buildings from 30-40 percent, adds Irwin Novick, president of Manhattan-based Novick Partners, another managing agent and proponent of the energy-saving device.

The heat computer, which can be accessed by a manager online, can also monitor the amount of hot water being used, helping to determine if the building is losing water to leakage. The more fresh water being placed in the system, the more the boiler will have to heat it to get it up to 160 degrees; therefore, the more oil being used to add more heat.

"It's a great aid," Novick says. "It'll transmit information to the manager's office so they can see what's happening. Boilers traditionally have all sorts of breakdown problems. The system can alert you to repair problems and call a repairman day or night."

For instance, there were a number of useful findings by the superintendent at a Yonkers co-op who inspected the units after readouts from the heat computer: radiators were sometimes turned off; air conditioners in the window; were largely responsible for heat loss (not the responsibility of the building); a few poorly installed vinyl windows couldn't be closed and had to be replaced; and there were a number of problems in the heating system itself.

In identifying and solving the problems at that Yonkers co-op, Fierstein wasn't alone. He had help from a program called the Total Energy Management System (TEMS). TEMS is supplied by the Community Environmental Center, a counseling group for energy conservation that had previously concentrated on low-income buildings. The TEMS package included a heating plant energy audit, a review

of heating and electrical costs, a heating distribution analysis, the installation of the heating system, and a three-month follow-up to insure the system ran smoothly. As a result, there were numerous improvements and repairs made, including overhauling the burner, replacing existing main steam vents, replacing problem radiators and riser vents, and repairing a leak in a return line.

"If all the buildings in Manhattan would use this system, we would save close to 200 million gallons of heating oil a year. I don't understand why all people don't use this," says Richard Cherry, president of CEC. With proposals currently in front of six more buildings, Cherry and Ray Hoey, a consulting engineer for CEC, have watched boards toil for months over whether to go ahead or not. "The logic is there," says Cherry, "but the committee process has slowed it down."

"This is cheap, really cheap," adds Hoey of TEMS, "but it requires an explanation. Sometimes boards get turned off when you start talking about [the issue]." Hoey should know. As board president of a 65-unit West End Avenue co-op in Manhattan, he has had to go through a long process of selling it to everybody. A hard sell at \$13 a barrel, however, has become easier at \$34 a barrel, he notes.

One of the best systems on the market, according to Cherry, is one made by Dobbs Ferry, N.Y.-based Optimum Applied Science (OAS). In business since 1968 (online at [www.oasinc.net](http://www.oasinc.net) or [www.oasinc.com](http://www.oasinc.com)), OAS has installed thousands of sensors throughout the area. The starting price is around \$4,300, with a 10-sensor model, the most common one, going for between \$7,000 to \$8,000. The price includes in-

stallation and a one-year guarantee. As more sensors are added, the price increases. New technology has allowed an almost limitless number of sensors to be installed. CEC can provide ongoing monitoring of the system for \$200-300 a month.

The total project cost for the Yonkers co-op, including the contract with CEC and installation of an OAS system, was \$11,415. Cherry predicts savings of about 20 percent in fuel usage.

OAS President Herb Viertel says there is "practically no risk" involved and the system usually pays for itself in a short time. "If you take the average building - 40 apartments - you'll probably get your money back in one or two seasons," he says. According to statistics provided by CEC, a building that consumes 40,000 gallons a year, for instance, at \$.80 per gallon, would have a guaranteed payback on the system (at 10 percent savings) in a little more than three and a half years. At 20 percent savings, the payback would be in half that time.

"The average savings are 20 to 25 percent - we advertise 10 to 30 - and I've seen as high as 50 percent," he continues. "If the building is running at a reasonable temperature, you'll save between 25 to 30 percent."

With oil prices expected to be high again this winter, Viertel says he's waiting for people to bang his door down. The computer phobia some may feel should be more than offset by the sticker shock from heating bills this past winter. "It just makes a lot of sense."

- Michael Sullivan

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