



CASE NO. 24

PROJECT: J&L Holding Corp.

LOCATION: Over 20 apartment buildings
throughout New York City

APPLICATION: Heat-Timer's Internet Control
Management System (ICMS) cuts energy costs,
increases comfort, and enhances the
manageability of multiple steam heated
apartment buildings.

NYC Property Enhances Efficiency and Reduces Other Costs with Boiler Controls, Sensors, and Remote Communications

PROBLEM: Fuel consumption and the desire to keep tenants happy are constant and sometimes conflicting concerns for any multi-unit property owner—especially in New York City where older, steam-heated mechanical systems often require constant care. Every owner worries about windows open in the dead of winter, the time his superintendents spend resolving heat problems, and if they are using fuel and water efficiently. While most worry, few owners are equipped to manage these issues sufficiently. J&L Holding Corp. is an exception to that rule.

Several years ago, this owner of over 20 apartment buildings in NYC, decided to take the guesswork out of these issues by implementing Heat-Timer MPC steam boiler controls and Visual Gold Remote Communications. Just recently, the company has upgraded the system to Heat-Timer's Internet Control Management System (ICMS). As a result, the owner has significantly cut energy cost, increased comfort, and enhanced the manageability of all his buildings.

One Supplier, Multiple Control Solutions

All of J&L's buildings, located throughout The Bronx, Manhattan, and Queens, use Heat-Timer MPC Series controls to cycle and/or sequence the steam boilers that provide heat to their tenants. There is inherent savings in the MPC since it controls boiler operation based on outdoor temperature—a more accurate method for determining and then matching the heat loss of a building. This method of control delivers more constant—and therefore more comfortable—indoor temperatures.

Several years ago, J&L stepped up control of their boiler systems by upgrading all the MPC's with Heat-Timer Visual Gold Remote Communications. This gave the owner the ability to monitor and adjust boiler systems from any remote location.

“The technology literally puts me right at the boiler control panel, whether I'm at home, at the office, or on vacation,” said Dominick Rutigliano, Sr., owner and patriarch of the family-owned corporation.

A computer with internet capability is all that is required to monitor boiler status, adjust settings, or view extensive history reports. Remote communications also allows the owner to access various temperatures and pressures from sensors located throughout the system and building. So, if the tenant in 5A is complaining about the heat, the owner can verify and troubleshoot a specific problem from his computer. Because the application is web-based, authorized users can connect with Heat-Timer controls through any internet connection, as long as they have a proper user ID and password to ensure security.

This readily accessible information makes it easier for a user to fine-tune boiler settings and set points to maximize efficiency. Control adjustments can be continuously manipulated to better match the heat loss of the building. Each Heat-Timer control has various alarms, such as boiler lockout, burner failure, etc. and can also be programmed to alarm specific personnel to certain problems by e-mail or text message.

“It makes a huge difference to any owner who has to manage multiple buildings because you can monitor and investigate individual buildings from one site,” said Mike Rutigliano, one of three Rutigliano sons who help manage J&L. “After implementing the system we were no longer running around from one building to the next investigating problems.”

Dominick Rutigliano, Sr. realized the impact the MPCs and Remote Communications were having on efficiency immediately.

“Before remote communications, we’d go into an apartment and find temperatures over 80 degrees,” he said. “Tenants get used to the high heat, and when it’s too much, they throw open a window. Meanwhile, I’m paying to heat the city of New York.”

Before the Heat-Timer controls were added, the apartments got so hot that some of the tenants actually removed their radiators. Once the heat was brought under control, these same tenants had to have their radiators reinstalled.

Even though the MPC incorporates outdoor reset, this doesn’t stop superintendents from bumping up the heat for a tenacious, cold-natured tenant. Before long,

temperatures and fuel consumption can get way out of hand. However, with the remote communication option feature, J&L Holdings can make sure that only authorized adjustments take place. Owners also like the fact that any control parameter can be “locked out” at the local control, which prevents unauthorized tampering with control adjustments.

Helping Tenants Adjust

All that said, the Rutigliano family acknowledges that it takes some time to wean tenants off of excessive heat. The ability to monitor and adjust the boiler system quickly and easily from one location helped J&L ease their tenants through this adjustment period.

“We found early on that if we programmed the system to give the tenants an extra burst of heat during the night, the complaints would subside,” said Dominick Rutigliano, Sr.

Remote communications gave J&L this ability to easily adjust heat schedules for individual buildings. This was important particularly during the transitional period. Because space temperatures are being maintained consistently, once the tenants acclimate, they are ultimately more comfortable.

Upgrading to Internet Control

In 2005, J&L decided to take remote communications a step further by implementing Heat-Timer’s Internet Control Management System (ICMS). ICMS provides all the same advantages as Heat-Timer’s Visual Gold Remote Communications plus several more.

First, web based service is faster—much faster. It’s like surfing the net via broadband versus dial up. Information provided through ICMS, i.e. space temperatures, boiler activity, etc. is all live so adjustments are even more effective than they once were. More data can be stored on the internet than on individual systems—so the user has access to larger, more detailed history reports. All this data is backed up by the server, so if a panel goes down, the history reports are still available

“Even if a panel gets struck by lightning, the user can still go to the internet and download all the data that exists for the system. So there’s more built-in security,” said Dominick Rutigliano, Jr. of J & L Holding.



J&L Holding has consistently upgraded its Heat-Timer control systems and was among the first to incorporate the ICMS.

Enhanced features of the ICMS include:

- Performance graphs which the user can program, view, and print.
- The ability to assign multiple users with various levels of access, from monitoring to changing settings. Multiple users can also view all the same data at the same time.
- Integrated communication with a variety of network and wireless space sensors (advantageous because they can be moved around easily to investigate complaints or troubleshoot problems) including oil tank meters and domestic water or boiler feed meters. Other feedback can also be incorporated including lights and doors and other equipment.
- Various alarms can be configured to respond to specific sensors or conditions. For example, if oil level drops below a certain set point, the ICMS can alarm the oil supplier via e-mail and notify multiple other parties as well.
- Downloadable history reports of panel parameters and sensors that can be generated in a spreadsheet or imported into a database. History reports can be customized and automatically e-mailed to user(s) daily, weekly, or monthly.

Does it REALLY Save?

Does all this control really benefit a property owner's bottom line? According to J&L Holdings, the answer is

an emphatic yes. The vigilant monitoring has not only increased efficiency and decreased fuel consumption; it has also helped the company avoid undue expense. One incident in particular saved J&L Holdings the expense of 4000 gallons of oil. Because the oil tanks at all of J&L's properties have fuel oil level sensors that feed back to the ICMS, operators can easily and accurately monitor fuel volume and consumption. If a discrepancy occurs, there is adequate documentation to present to the fuel company in case a refund is due. This is exactly what occurred when Gerry Rutigliano noticed a discrepancy in the oil delivered versus the oil used.

J&L routinely takes manual gauge readings on all their oil tanks; in addition the oil tank sensors are tied into the ICMS which maintains a complete history of oil levels. Over a specific period of time, J&L noticed that while their manual and electronic readings matched, they did not match what was recorded by the oil company. After presenting the data to the oil company they received a credit for 4000 gallons of oil!

Monitoring water usage can also save an owner money, especially considering that one continuously running toilet can cost an owner \$200-300.00 in a single quarter. Most utilities bill quarterly so it is easy for these problems to go undetected for as much as three months.

Real Time, Real Savings

J&L knew that Heat-Timer controls saved time and labor, and it was clear that the monitoring capability could help the owner avoid accidental expenses. But the question remained, did the control reduce fuel consumption? Data taken from three separate properties made it clear that it did.

Fuel consumption data was gathered for each of the buildings, comparing the 1989-90 heating seasons (prior to the installation of the MPC control panels and remote communications) with the 2003-2004 heating season (after MPC panels with Visual Gold remote communications was added.) Both sets of data included the buildings' K-factor which reflects the actual heat obtained from a single gallon of oil over a given period of time. This factor puts the comparisons on an equal playing field.

(See next page for explanation of K-factor calculation.)

In each case, the K-factor for these buildings was increased substantially, translating into a 16 – 39% increase in fuel efficiency after the installation of the controls. (See Table 1)

“It was clear that the monitoring and the adjustments really made a difference. Long term, this is where we will get most of our savings,” said Dominick Rutigliano, Sr.

Since upgrading to the ICMS, making educated decisions regarding adjustments is easier than ever before. Users can customize the reports they want and have them e-mailed to them in a graph form as often as they find helpful.

“Each morning I get an e-mail from the ICMS that gives me the previous day’s history,” said Gerry Rutigliano, who keeps close track of oil consumption. “Each day I make very minor adjustments based on these reports, so the system is progressively getting more efficient.”

While Heat-Timer controls are used throughout the country and especially in the northeast, J&L was one of the first property managers to apply the controls and ICMS to all its buildings. By using wireless sensors and opting to monitor both fuel and domestic water tanks, they’ve taken a highly proactive approach to energy management and eliminating waste. And it’s paying off.

Calculating “K” Factor

Oil companies use “K” factors to determine a customer’s delivery schedule.

To determine a customer’s “K” factor, you must first determine what the “degree days” are for a given period of time. A degree day is defined as one degree of temperature below 65 degrees in the average temperature of one day. Oil companies contact the weather bureau to obtain the official high and low temperature for a given day. They then average these two figures together and the resulting number is subtracted from 65. This is the number of “degree days” for that day.

Degree days are required to determine a customer’s “K” factor—or estimated usage. The K factor is the number of degree days that one gallon of fuel will last a customer at his current rate of consumption. To determine the “K” factor, divide the number of degree days over a specific period by the total number of gallons of fuel consumed during the same time. For example, if during the month of November, a client burns 200 gallons of fuel oil and there were a total of 300 degree days for that time period, the “K” factor would be 300 divided by 200, which equals 1.5. So each gallon of fuel oil provides 1 1/2 degree days of heat for this customer.

Table 1

Building 326 E. 34th Street				
Time Period	HDD	Gallons of Oil	K-Factor*	<i>Savings 16%</i>
Oct. 2004 – Mar. 2005	3471	16626	0.2087694	
Oct. 1989 – Mar. 1990	3913	21757	0.1798502	
Building 272 Bleeker Street				
Time Period	HDD	Gallons of Oil	K-Factor*	<i>Savings 20.3%</i>
Nov. 2003 – Mar. 2004	3176	9151	0.3470659	
Nov. 1989 – Mar. 1990	3600	12483	0.2883922	
Building 262 Broome Street				
Time Period	HDD	Gallons of Oil	K-Factor*	<i>Savings 39%</i>
Oct. 2003 – Mar. 2004	3398	12170	0.2792112	
Oct. 1989 – Mar. 1990	3899	19418	0.2007931	

* The higher the K-Factor the better fuel usage per gallon of oil.