HEAT-TIMER® CORPORATION

CASE NO. 29

LOCATION: New York City

OWNER/MANAGER: Beach Lane ManagEment

APPLICATION: Retrofit of multiple apartment buildings with ICMS Internet Communication Management System and Weather actuated controls

Beach Lane Management Finds Weather Actuated Control Is Key to Saving Energy in Apartment Buildings

With a tattered backpack slung over one shoulder, Jeffrey Carleton could be easily be mistaken for an NYU college student. But in fact, he is a key player in what has turned out to be a savings *boon* for Beach Lane Management, one of the largest residential property owners in New York City.

As general manager of field operations, Carleton's primary responsibility is making sure that all of Beach Lane 100+ apartment buildings run efficiently while providing adequate comfort for tenants. It is a job with many challenges, particularly since so many factors can interfere with the efficient operation of a heating system in a multi-unit building.

PROBLEM: "We tried every type of control measure we could find," said Carleton. "But we still had constant issues with tenant comfort, temperature accuracy, and equipment failure."

Carleton had even experimented with some online monitoring controls that gave him remote access to Beach Lane's building heating systems, but he found

that most of these required tedious phone line connections that made monitoring too time consuming. This is because phone line based communications only allow a user access to one building at a time. In between checking buildings, there are lengthy disconnect and connect times that make monitoring counterproductive. It is burdensome for anyone who has grown accustomed to the speed of wireless online communication.

SOLUTION: With complaints up and efficiency down, Carleton turned to Heat-Timer for a solution. He quickly learned that the thermostatic type controls that operated the boiler systems in nearly all of Beach Lane buildings were standing in the way of his goals for better energy efficiency. Heat-Timer helped him understand the value of alternative weather-actuated control.

Control That *Anticipates*

Rather than turning boilers on and off via a thermostatic type control, weather actuated controls actually *anticipate* the heat requirements of the building based on outdoor temperature. Indoor and outdoor sensors collect temperature data, which is relayed to the boiler control.

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Jeffrey Carleton, General Manager of Beach Lane Property Field Operations.

The boiler control modulates and/or sequences boiler operation based on this information.

Controlling heat input into a building using weather-actuated logic is effective because it takes the rate of temperature change within the boiler system and the building into account. So buildings are less likely to overheat and boiler systems aren't caught in a pattern of frequent on/off cycling, which not only wastes fuel, but also creates wear and tear on the equipment.

Beach Lane installed 116 Heat-Timer Platinum controls in its buildings. Most of the controls were MPC Platinum controls which operate steam boilers or steam valves and HWR controls which operate hot water boilers. Both controls vary the amount of heat to the building based on the outdoor temperature. The controls are preconfigured with an adjustable reset ratio that automatically adjusts the steam pressure or heating water temperature set points based on outside temperature. Of course, not all buildings perform the same; some lose heat more quickly. However, with Heat-Timer boiler controls, a building manager can continuously play with these set points until he finds the perfect ratio between outdoor temperature and boiler supply temperature.

For Beach Lane, the switch to anticipatory controls made for a dramatic improvement in efficiency.

"We noticed a fuel savings of 10 to 12% just by installing the Platinum Heat-Timer controls," said Carleton. This confirmed what Carleton had been told by other owners who had applied Heat-Timer weather actuated controls – that the controls typically yield a minimum 10% to 15% savings.

Savings Double With Communications

Building on the success of the Heat-Timer controls, Beach Lane took its energy initiatives a step further by implementing Heat-Timer's Internet Communications Management System (ICMS). All Heat-Timer Platinum controls include remote communications capability, so with ICMS the property manager has total remote access to all boiler activity, as well as a host of other data.

This Internet-based system requires no software upload – rather it is server-based and users simply log into their ICMS account via any Internet connection. Once logged on, the user has full charge of all the Platinum control settings, boiler activity histories, and more. Sitting anywhere in the world an authorized user can access the building boiler systems and drill down to a 3D view of the boiler room, read current sensor values, view total operational status, access history reports, and change any and all settings. It is literally like standing in the boiler room.

The benefits to this type of remote access are multi-level. Building superintendants are able to service multiple buildings without ever having to leave the office – saving time, labor, and fuel while addressing comfort and operational issues faster than ever before. Building owners immediately see the difference in their bottom line because high level monitoring allows for

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much more precise boiler management and thus efficiency. Plus, ICMS alerts superintendents, owners and managers to many costly problems such as leaks or unusual fuel consumption that might otherwise go undetected for months.

After implementing ICMS, Jeffrey Carlton saw his earlier savings with the Platinum controls double. In fact, he conducted a comparison study of the fuel consumption of 48 Beach Lane buildings in 2006 before any Heat-Timer controls were installed and 2009 after the same buildings were upgraded with Heat-Timer weather actuated controls and ICMS. He found that in 2006 these buildings were using .0381 gallons per room per degree-day. In 2009, after the controls were installed, the same buildings were using an average of .0305 gallons per room per degree-day. This was a total fuel reduction of 24.9% from 2006 to 2009. Some of the buildings showed a *drastic* improvement. See Table 1.

The Power of Monitoring
Beach Lane discovered, as many property managers have, that close monitoring is the key to enhancing building performance with ICMS. Information is everything when it comes to reducing fuel and detecting and resolving system issues before they turn into major expenses.

In addition to "virtually" putting Carleton in the boiler room of all of Beach Lane properties, ICMS can also be

116 Heat-Timer Platinum weather actuated controls were installed in Beach Lane Management properties.

programmed to alert him via text message or e-mail whenever certain problems, such as boiler lock-out or abnormally high or low domestic hot water temperatures, occur. Wireless sensors can be used to monitor any number of points within the system that clue Carleton into problems long before his tenants start to complain. They can also help facilitate the solution. For example, monitoring space temperatures at various locations within a building might help pinpoint the exact location of a faulty valve or steam trap.

ICMS also helps Beach Lane maintain their boiler systems more efficiently. By monitoring the boiler stack temperature, for instance, Beach Lane gets an early indication that a boiler may need cleaning. An unusually high temperature indicates that the boiler is dirty, which means also means it isn't operating efficiently.

All of these fine monitoring details give Jeffrey Carleton the information he needs to fully optimize all of Beach Lane's properties and that has resulted in a substantial payoff.

"We saw that our savings doubled when we monitored the systems on a daily basis.

Table 1

Building	Rooms	Fuel	2006 Usage	2009 Usage
146 W 10th St. NYC	46	#2 Oil	8,713	4,729
414 E 74th St. NYC	79	#2 Oil	11,006	7,630
310 E 74th St. NYC	-	-	30,051	22,802
265 West 81st St NYC	128	#4	23,017	15,801
159 2nd Ave NYC	86.5	#2	13230	9,625

Amazingly, these savings were realized without sacrificing tenant comfort."

Beach Lane even took ICMS a step further by developing their own software that generates and organizes reports using the ICMS data. Carleton accesses these report daily to help him identify problems with a single glance. (See Sidebar).

EPA Approved and Non-Proprietary
Unlike other controls, Heat-Timer Platinum controls are all UL-rated and approved by the Department of Environmental Protection (EPA). This is an important consideration for any property owner because of the potential liabilities associated with oil fired boiler equipment. Furthermore, Heat-Timer controls are non-proprietary, meaning that they are universally serviceable. This not only saves owners money, it eliminates the headaches associated with finding suitable controls contractors.

All in all, it has been an extraordinary success story for Beach Lane.

"Since installing the 116 Heat-Timer controls, we've had virtually no technical issues with the controls and

310 E 74th St. NYC fuel usage dropped from 30,051 gallons to 22,802 gallons with the implementation of Heat-Timer Controls and ICMS.

almost no downtime," said Carleton. "The controls make sure the apartments are warm and they alert us of any boiler safety issues or low oil levels the moment they occur. The result has been fewer heat complaints and improved service to our tenants."

What property owner wouldn't like the sound of *that*?

Beach Lane Develops -- *And Markets--* Monitoring Software

ICMS gives property managers all the information they need to keep their boiler systems operating at peak performance. Jeffery Carlton decided to take all that information and put it in an easy-to-read format that he and other property managers would readily understand. He developed this software, which helps him monitor multiple Beach Lane properties with even greater ease.

The software analyzes the building data every 15 minutes through a live data feed with the Heat-Timer services. With this software, all inefficiencies are brought to managements' attention in an extremely timely manner.

The program works so well for Beach Lane that they've begun to market it to other property managers as an accessory to Heat-Timer ICMS. Beach Lane is currently offering free demonstrations and even free trials of the software to other property managers currently using or considering using ICMS.