



## CASE NO. 27

**PROJECT:** Big Six Towers, Inc.

**LOCATION:** 47th Ave., Woodside, New York, NY

**APPLICATION:** Retrofit of existing vacuum system with new SRC Steam Reset Controls, motorized steam valves, dual vacuum pump units and ICMS (Internet Communication Management System).

## Control Upgrades Yield Remarkably High Payback at Big Six Apartments

**PROBLEM:** For almost 7 years, Mike Olech and his staff burned more than their share of calories trying to manually control the existing steam vacuum systems that heated all seven buildings of the Big Six Towers apartment complex. At the same time, Big Six Towers, Inc. was also burning excessive amounts of fuel.

The old controls, which were installed in 1981, had long since begun to drift. So for several years Mr. Olech, Chief Engineer, and his staff tried to control the system manually. They went so far as to make out a schedule to change the various steam valve positions based on outside temperature. That, of course, proved very challenging.

“We were overheating the complex and there’s only so much running around we could do,” said Mr. Olech. “We were also spending too much money on fuel.”

Mr. Olech proposed upgrading the system to the board but it was not an inexpensive venture and approval took years. Meanwhile, the system became progressively cumbersome and expensive to operate. Open windows in the dead of winter were not an uncommon site as workers tried their best to manually control the system.

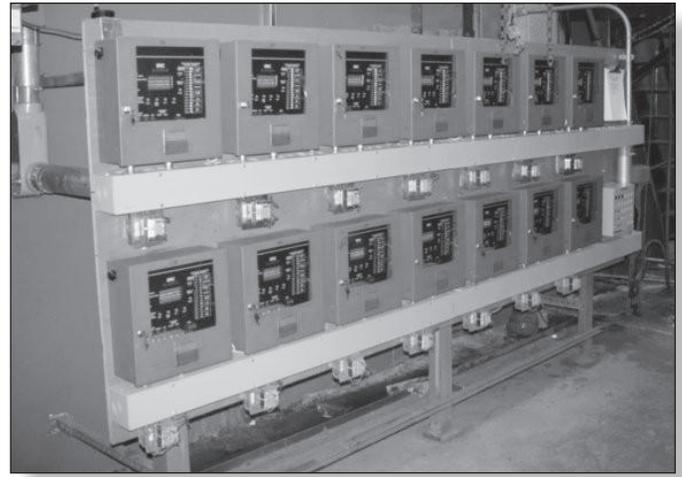
**SOLUTION:** At last the Board approved a plan to upgrade the system with a brand new control system with remote communications, in addition to replacing much of the old, poorly operating vacuum system components.

A central boiler plant supplied steam via underground piping to all of the complex’s 7 buildings. Steam supply was originally manually regulated by steam valves which were replaced with new packless 2-way steam valves provided by Heat-Timer Corporation (two valves per building to serve two zones in each building). The valve replacement was necessary for a couple of reasons. First, the equipment was old and not operating properly. Second, the packed valves made the vacuum system more vulnerable to undetected leaks which actually pull air into a vacuum system, making it less effective and less efficient. The new packless motorized valves have a completely soldered assembly which helps to prevent leaks.

To control operation of these two-way valves, Mike Olech selected Heat-Timer SRC Platinum Steam Reset Controls. The SRC regulates the amount of steam based on the current outdoor air temperature. It controls the amount of heat by continuously modulating the packless steam valve. By monitoring the outdoor air temperature, the SRC control can anticipate a heating demand increase or decrease and modulates the valve accordingly. The colder it is outside, the more steam that is allowed to enter the building’s radiation.

(continued)

There are 3 steam boilers in the central boiler plant serving all of the Big Six buildings. To increase efficiency of these boilers, Olech selected a Multi-MOD modulating boiler control to control the operation and modulation of each boiler stage to maintain precise pressure control. Regardless of the number of boilers being controlled, only one sensor, located in the common steam header, is required. Boilers are automatically rotated according to the user's specifications (i.e. first on/first off, every 24-hours, etc.) The Multi-MOD's 80-character alphanumeric digital display and easy-to-follow menus make it easy for the user to change any system setting. Password protection is available to prevent unauthorized users from making adjustments to control settings. Most important, the Multi-MOD provides accurate, seamless modulating control via PID-type logic. This enables the control to anticipate rather than react to changes in load.



Multiple SRC Platinum Steam Reset Controls, all tied into a Heat-Timer ICMS Internet Communications Management System, keep fuel cost down while drastically reducing maintenance legwork at Big Six.

All of the controls are part of Heat-Timer's Platinum Series which provides Big Six with complete remote communication capability via their ICMS – Internet Communication Management System. ICMS gives owners/operators direct access to their boiler control system via the internet so that they can continuously monitor and fine tune their boiler system from anywhere, anytime, which is extremely helpful for large multi-building properties like Big Six.

Finally a new HT Pump Specialties vacuum condensate receiver (including condensate tank, air pumps and floats) was installed in each of the 7 Big Six buildings.

### Savings Pay for Over Half of Upgrades in Less than 2 Years!

After two full heating seasons Mike Olech conducted a full energy audit to determine how much Big Six was saving as a result of the control and equipment upgrades. His findings were remarkable – particularly considering the fact that the boilers themselves were not upgraded in any way. By installing the Heat-Timer controls and the new HT Pump steam equipment, Big Six used an aver-

age of 10% less fuel than what Mike Olech had budgeted for the 2006-2008 heating season based on degree days. (See Figure 1).

"I am more than satisfied with the results," said Mike Olech. "First, the overall system operations have proved to be trouble free over the last two seasons. Also, I have noticed a great improvement in the system's steam/vacuum circulation."

More even distribution of steam throughout the complex has led to a noticeable reduction in heating complaints from tenants, according to Olech. At the same time, the total man hours required to keep the system operating have declined. So tenants are happier, fuel expenditures are down, and the system requires less maintenance.

"The ability to input changes needed to specific building zones via the control panel or over the internet connection to my computer makes adjustments quick and simple," said Olech.

Figure 1

Heating Degree Days	Budget Ccf per Degree Day	Oil Used Gals.	Gas Used Ccf	Ccf Equivalent 1 gal. = 1.4 Ccf	% of Budget
2007-2008 = 4,451	574,953			522,483	91%
2006-2007 = 4,451	574,179			503,463	88%
2005-2006 = 4,234	546,186	269,660	129,743	507,257	93%
2004-2005 = 4,614	595,206	29,510	580,586	621,900	104%
2003-2004 = 4,790	617,910	106,530	481,170	630,312	102%