

Introduction

The owners of the Winston Road Business Center in Knoxville, Tennessee, had the goal to reduce energy consumption within their building. At the time, they owned an atmospheric type boiler and struggled with a tremendous gas bill which peaked at \$68,242 in 2006. This was due primarily to two factors: first, the system used an antiquated control strategy and second, the system used an inefficient boiler that would always maintain an elevated 180°F

loop temperature year round. In 2008, significant improvements were made to the building's control strategy which produced an immediate and significant reduction in the natural gas consumption.

The building owners benefited from these savings until the latter half of 2009 when the reduction in operating temperature actually destroyed their existing atmospheric boiler.



The Patterson-Kelley Solution

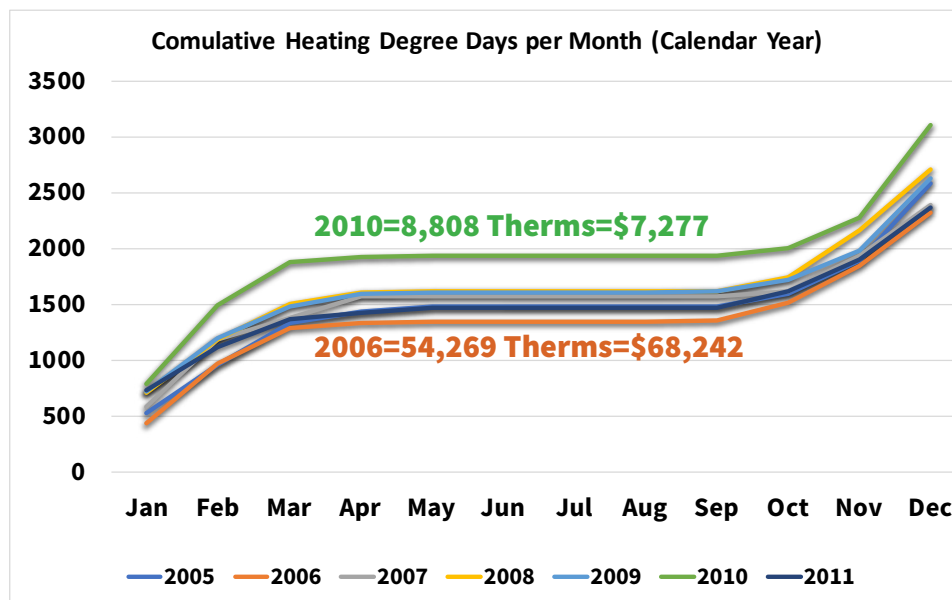
In November of 2009, the Patterson-Kelley representative installed a condensing P-K MACH® C1050 boiler to maintain the lower system temperature. This approach further reduced the natural gas bill to an all-time low of \$7,277 in 2010. This holistic approach to the heating system involved improving the controls and replacing the boiler equipment, which resulted in unbelievable savings of 90% when compared to their all-time high bill in 2006 of \$68,242.



NATURAL GAS CONSUMPTION

GAS BILL COMPARISON BETWEEN 2005 & 2011

Consumption Therms							
Month	2005	2006	2007	2008*	2009**	2010	2011
January	5,196	6,069	5,701	2,216	2,859	2,117	2,941
February	5,538	6,428	6,822	3,361	2,155	1,765	2,068
March	4,477	6,021	5,494	2,827	1,555	1,465	1,193
April	4,272	4,224	5,299	2,053	7,58	556	807
May	3,923	4,009	3,197	472	1,35	44	235
June	4,058	4,646	2,087	14	31	9	9
July	4,277	3,802	2,354	12	31	21	80
August	4,337	4,003	41	13	11	11	7
September	4,602	3,499	20	11	15	14	204
October	4,366	3,382	245	246	12	30	662
November	4,542	3,922	1,379	1,438	352	499	1,380
December	5,288	4,264	1,798	2,295	1,261	2,277	2,250
Gas Bill\$	\$55,429	\$68,242	\$42,888	\$17,968	\$10,317	\$7,277	\$8,938



*Improvements to building control strategy to correct irregularities of the equipment.
 **P-K MACH® C1050 installation to replace the old atmospheric type boiler due to catastrophic failure.