



Utility Rebates Cut Project Cost by 86%

Plymouth Police Station Project Profile

At a Glance:

Project Type: Energy Management
Vertical Market: Municipal
Location: Plymouth, Massachusetts
Size: 24,000 Square feet
Products: Trend
Installation: 2010

Customer Benefits:

- Energy savings
- Remote control and monitoring
- Improved temperature control
- Compatibility with current system

Financial Summary:

Total project cost	\$ 21,200
Electric rebate	\$ 14,840
Gas rebate	\$ 3,527
Net customer cost	\$ 2,833
Estimated energy savings/year	\$ 21,703
Simple payback	< 2 months

Project Overview

The Town of Plymouth, Massachusetts contacted FMC Technologies to evaluate the existing HVAC and control systems in the town's Police Station. The main hot water system was controlled by a stand-alone boiler control panel which provided the primary means of controlling the boilers and pumps. Additionally, the main air handling unit (AHU) was controlled by a stand-alone electronic controller which provided the primary control of the air handling unit. A central time clock provided day/night control for all of the equipment. The hot water system was manually started and stopped. There was no remote control and/or monitoring of the system.

The Solution

The goal of this project was to reduce energy usage by optimizing the operation and control of the HVAC system. FMC recommended installing an Energy Management System (EMS) for the hot water system and air handling unit. A Trend web-based direct digital controller was installed in the boiler room. Points were identified and connected to the controller and software was provided to implement energy saving strategies.

FMC was able to reduce the police station's gas consumption by applying energy management principles to the hot water plant, including; restricting boiler runtime to within certain dates, shutting off the boiler above certain outside air conditions and resetting the boiler temperature according to demand.

Strategies used to achieve efficient operation of the air handling unit include direct digital control, equipment scheduling, unoccupied setback/setup, optimized start/stop, temperature reset, economizer control, lead/lag control and trending and alarming.

The Bottom Line

By tightening control over the HVAC equipment, the town was able to save energy while improving comfort in the facility. The installed EMS will provide the town with significant energy savings, including an estimated 134,132 KWh of electricity (20.5%) and 3,125 therms in gas consumption (8.3%). The new EMS provides improved temperature control of the HVAC system. The new sensors and direct digital controllers allow more precise control over the temperature, humidity and outside air conditions which in turn creates a more comfortable working environment.

Another benefit of the system is that it provides remote control and monitoring of the HVAC equipment. Using a standard Internet browser, operators are able to connect to the HVAC control system and make changes to set points and schedules, turn equipment on and off and monitor the system temperatures and status. In addition, the new controls are compatible with the existing Trend web-based control system presently installed at other Plymouth facilities.

All this was accomplished with minimal investment from the town. The project cost was cut by 86% due to generous electric and gas rebates. The system was installed during normal working hours with no downtime of the HVAC equipment.