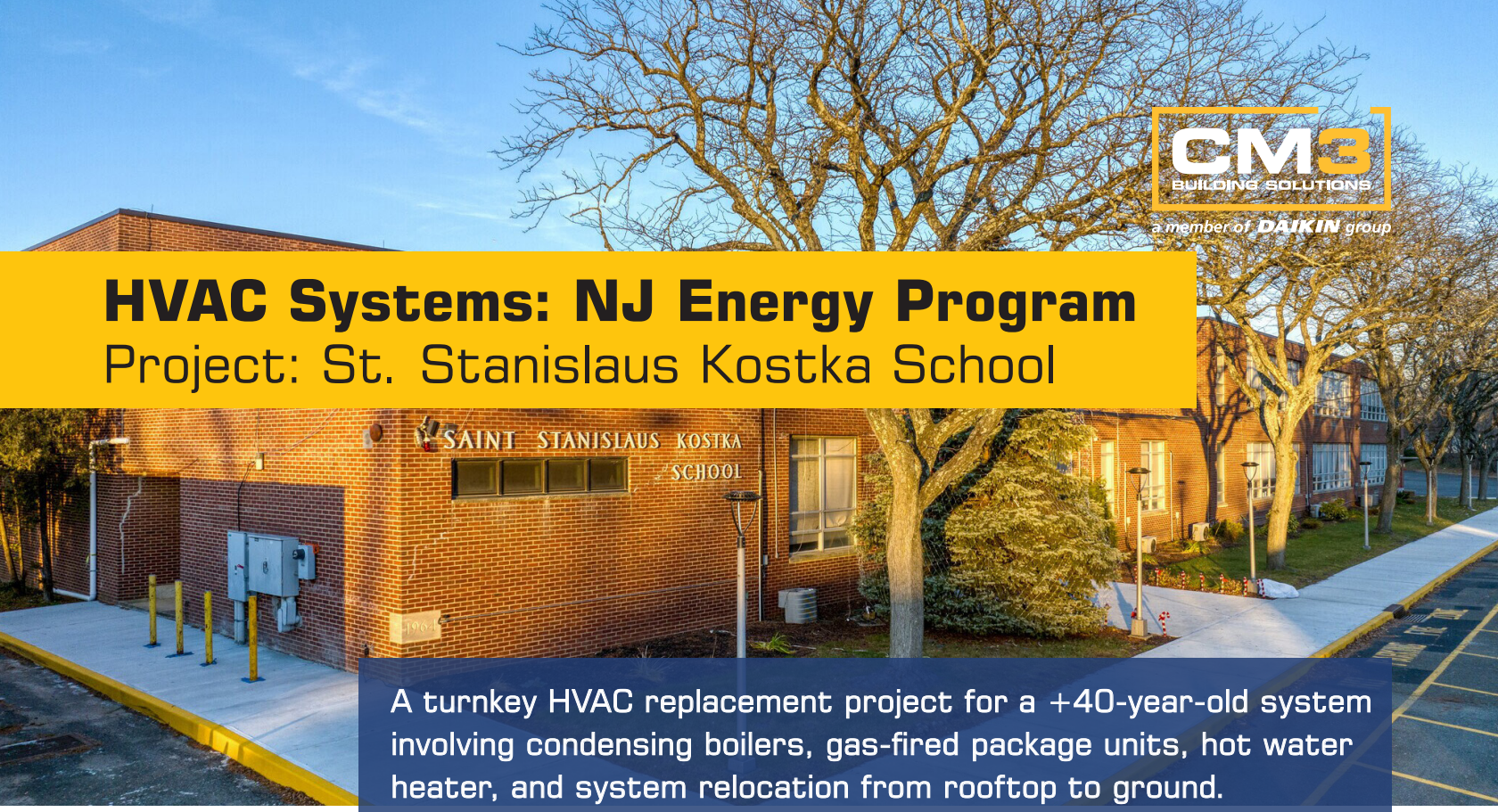

HVAC Systems: NJ Energy Program

Project: St. Stanislaus Kostka School

A turnkey HVAC replacement project for a +40-year-old system involving condensing boilers, gas-fired package units, hot water heater, and system relocation from rooftop to ground.

Background

A private school serving grades pre-kindergarten through eighth grade, St. Stanislaus Kostka School is a two-story, 400,000 sq.ft. building with a cafeteria, gymnasium, science lab, and media lab, as well as +10 classrooms.

The school was challenged with equipment that was 40-60 years' old, which resulted in energy inefficiency, operational inconsistency, and ongoing maintenance challenges.

Results

CM3 conducted an HVAC system assessment to determine what equipment needed to be replaced, how much savings could be achieved, and which equipment would qualify for rebates from the Small Business Direct Install Program.

While the total project cost was $550K, by working with local utility company, JCP&L, CM3 determined that the school would qualify for a 70% rebate under the New Jersey Clean Energy Small Business Direct Install Program thus significantly reducing the cost to the school.

> **The Direct Install Program has been essential in helping many NJ organizations achieve energy efficiency by replacing antiquated equipment with modern, efficient technology. Our customers have found it to be a hassle-free, turnkey solution, and it often covers up to 70–80% of the total project cost.**
>
> Pat Hannigan
> *Account Executive, CM3 Building Solutions*

About the Program

The Small Business Direct Install Program from the New Jersey Clean Energy Program is designed to help small organizations use less energy and save more on their utility bills. The program is particularly relevant to schools, faith-based organizations and small businesses, because participants in this program must have an annual electric demand of 300kW or less.

The program covers a significant percentage of the upfront cost to install the recommended energy efficiency measures which could include:

- LED lighting and lighting controls (interior, exterior)
- HVAC upgrades and controls
- Building automation controls
- Refrigeration equipment
- Motors and variable frequency drives
- Efficient water heating measures

Equipment

- Two condensing boilers replaced the 60-year-old equipment. The new boilers can modulate up or down on demand to produce hot water as opposed to using a fixed type of burner as they had previously. This allows the system to efficiently adjust to the hot water heating demands of the building. Additionally, CM3 aligned the size of the replacement boilers more closely with the heating demands of the existing hot water system in the building. By properly sizing the equipment, additional operational savings would be achieved.
- The two existing split systems that supplied the cafeteria and gym were nearly 40 years old. Because split systems of this size have been proven to be unreliable, CM3 recommended and installed a new 15-ton, gas-fired AC package unit and one 30-ton, gas-fired AC package unit. These new package units are self-contained, and there is no need to run refrigerant tubing from an AHU to a remote condenser on the floor below. This helps maximize reliable performance of the compressors and helps ensure minimal issues with operation.
- The hot water heater was replaced with a Lochinvar domestic water heater, including boiler pumps, gas regulators, relief valves, etc.
- A magnetic water filter, equipped with a cartridge that can be easily removed and cleaned, was also installed. The magnetic properties catch metal in the water as it passes through the filter. This ensures that any metal, mill scale, or rust do not get into the boiler and thereby reduce efficiency or shorten equipment life.

Implementation

Upon completion of the roof load evaluation, it was determined that the new packaged units should not be installed on the roof, but rather installed on concrete pads near the boiler room. This involved several project components – all of which CM3 coordinated, including sheet metal ductwork, electrical power feeders and gas piping modifications.