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Linc Mechanical Uses Creative Funding for School Building Renovations

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Posted: October 1, 2010

Economic conditions have made it difficult for school district officials across the U.S. to encourage voters to approve tax levies for many capital improvements. That was the situation facing Linc Mechanical, LLC, Pittsburgh, PA, and Energy Technologies, Drums, PA, when the state's Northwest Area School District needed to replace outdated comfort systems in a high school and two elementary schools.

Both companies — members of the Linc Service Network — partnered to provide an infrastructure funding strategy to provide the money needed to make much-needed comfort system and aesthetic improvements. As a result, students at the two locations began the school year in a more comfortable and energy-efficient learning environment.



Linc Mechanical and Energy Technologies installed new hot water boilers with a modulating firing control panel at the Northwest Area high school.

The contractors eliminated the need for a tax increase by reducing several cost centers in the school district's operating budget, which freed up \$5 million in capital funding over 15 years. The district is located in the northeast region of Pennsylvania, and serves about 1,400 students.

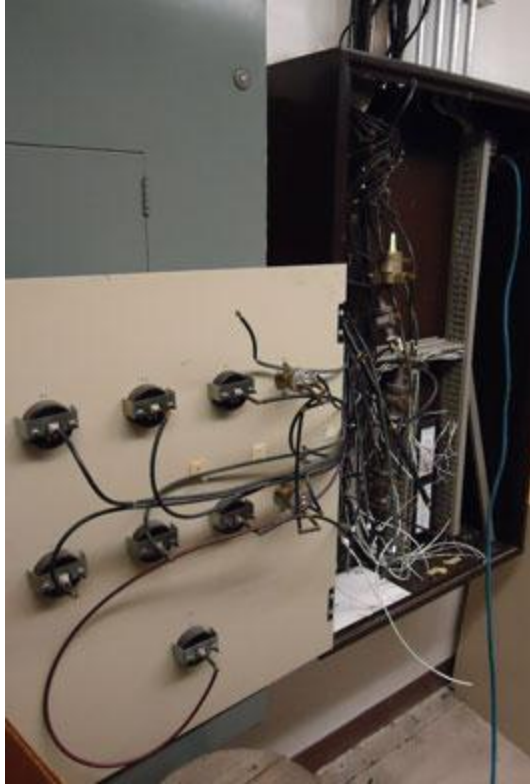


A Linc Mechanical technician installs cabinet heaters in one of the district schools.

The need for improved comfort systems and aesthetic improvements was required in part by a reorganization of the Northwest School District, in which three elementary schools were consolidated into one primary and one intermediate school.

Northwest Area Middle/High School received new hot water boilers; hot water distribution piping; new classroom unit ventilators; wireless building control systems; new high efficient lighting; window replacements; re-commissioning of the HVAC assets not replaced; electrical service expansion and upgrades; new soffits and fascia; and a secured public/student entrance system.

Northwest Area Intermediate School and the Northwest Area Primary School received a new wireless building control system; high efficiency lighting; and a full retrocommissioning of its current HVAC systems.



BACnet DDC controls will control the secondary pumps and domestic water system.

Cypress wireless pneumatic thermostats (WPTs) installed at all three schools are important components in the overall energy saving program. The WPTs were used to create a hybrid control system combining standard pneumatic controls with direct digital controls.

The WPTs are direct replacements for the existing pneumatic thermostats, which control unit ventilators and branch constant volume heating coils. They communicate wirelessly to ceiling mounted repeaters transferring data to a BACnet server. The new thermostats can help the owner achieve energy savings through night setback control, set point limitations, and time of day scheduling. The WPTs will assist in troubleshooting hot and cold calls by monitoring the branch pressure and sending alarms to the BACnet server when temperatures start to drift out of their programmed ranges.

The Heat-Net hot water heating system installed in the high school uses a combination of direct digital controls (DDC) and integration with the Heat-Net boiler control. The BACnet DDC controls will primarily control the secondary pumps and domestic water system. The Heat-Net boiler controller will monitor and control hot water reset, start/stop, runtime, temperatures, status and alarms.

The teams were aware of the time constraints required to have the majority of the project completed prior to the beginning of the school year, and acted accordingly to streamline the schedule.



Drilling newly installed hot water piping in the ceiling at the high school.

“The consolidation of the elementary schools and a timely district-wide energy project has allowed us to look forward to the start of a new school year with many new beginnings. It’ll be a refreshing change for students and parents as they arrive at the middle school and high school to see new windows, refurbished entryways, and essentially, a more comfortable learning environment,” says Nancy Tkatch, superintendent for the Northwest Area School District. “We’re thankful for what Linc Mechanical and Energy Technologies have been able to accomplish for us. They worked diligently to ensure the project timeline stayed on track, and didn’t interrupt the start of school,” Tkatch says.

Linc Mechanical worked closely with the school district through Pennsylvania’s Guaranteed Energy Savings Act (GESA) process, which provides government agencies the means to utilize guaranteed savings from their existing budgets to pay for facility improvements as a key alternative to raising local taxes. The Act allows these savings to be used over a 20-year term.

Linc Mechanical hired local companies to assist with the project for the portions not self-performed by their staff. By hiring local contractors and suppliers for architectural designs and engineering, glass, windows, and piping, Linc provided employment opportunities and reinvested in the local economy.

“As far as methodology, it’s important to note that these programs are only as good as how much the district can provide funding,” says Tom Berton, project manager, Linc Mechanical. “In our assessment, we looked at any renewable energy that we might be able to use, such as pellet fuels and geothermal. They don’t have any natural gas availability at the senior high school, so they have to continue to use fuel oil.”

It was essential that clear lines of communication be established between the Linc and Energy Technologies team, subcontractors, and school district officials. “We performed a financial analysis and

identified opportunities, and asked the district officials where they would like us to focus our efforts. Their primary focus was the middle/ high school,” says Richard Phelps, account executive, Linc Mechanical, LLC. “There were improvements made to the elementary schools, and the savings _ generated from these improvements helped augment the cost of the more extensive work being done at the middle/high school, which provided enhanced aesthetic, comfort and energy savings improvements,” Phelps explains.

“We could have performed a shorter-term solution that would get them through the next 10 years, but through this creative funding they have a solution that will last them perhaps 30 years,” adds Kevin Kovak, general manager, Linc Mechanical, LLC.

“Normally, a bundled energy solution requires a one-year to 18-month development process. Linc came in and put the program together for the school district in six months. That condensed our installation and design time for the summer session,” explains Kovak. “We were on-site for 15 weeks and completed 98% of the work by mid-September. There was a six-month sales cycle, from introduction until we had a contract under the energy solution program, followed by a 16-week design and installation - phase. We condensed \$5 million of work into 18 weeks.”

“This has been a great experience for the Linc Mechanical and Energy Technologies’ team, and has been a thorough test of our public finance acumen. The capital needs of the district were great, and the amount of available funding initially appeared to be too small. The combined efforts of the district’s staff and ours have produced a funding solution that will enrich the learning experience for generations of students,” says Dan Dowell, Linc Network’s director of energy solutions for the Mid-Atlantic region.

Dowell adds that the project provided an environmental lesson for the students to take home, a lesson they don’t normally receive as they study the Three Rs.

“We were excited to work with Ms. Tkatch and her staff on a student awareness program focused on educating the students on how they can positively affect their environment through conservation and recycling” Dowell says.