

Techna-Duc[®] Case Study

The Story

- The Pennsylvania Housing Finance Agency plays an important role in fostering the community and economic development in the commonwealth. The Agency provides capital for decent, safe, affordable homes and apartment for older persons, adults of modest means and those with special housing needs. The building was to reflect some of the historic characteristics of the surrounding properties so they decided to design a building that would model energy efficiencies and environmental sensitivity. Features such as a light-colored building with a white roof and a daylight harvesting system are just two of the buildings many great features.
- After 5 years of occupancy, the building's systems were continued to be fine-tuned and improved. One system that failed sooner than expected was the rooftop ductwork insulation. The failed system was fiberglass board with a weather barrier finish. In conjunction with the ductwork not being adequately insulated over the duct joints, poor thermal insulation values allowed for condensation to form throughout the ductwork saturating the insulation and further lowering the R-value resulting in increased energy costs.
- The Agency searched for a long term solution and discovered PTM's Techna-Duc[®] insulation system. Upon completion, energy consumption improvements were notable and summer cooling hours were reduced from sixteen hours a day to just twelve! The change was due to the high R-value of Techna-Duc[®] which improved the supply and return air temperatures by as much as 10% as well as reducing the supply fan run speeds by more than 20%. The Techna-Duc[®] system proved itself as a worthwhile investment as the projected savings over the warranty length of 20 years is showcased below.

Initial Cost Difference to Install Techna-Duc [®]	\$37,678
Estimated Savings after Installation	\$2,500/mo. = \$30,000/yr.
Return on Investment in Years	1.3 Years
Savings Over 20 Year Warranty	\$599,920
Annual Tax Base Not Required due to Energy Savings	\$299,957
20 Years of Tax Base Not Required	\$5,999,140
20 Years of 0\$ Maintenance (\$5,000 / year)	\$100,000
4 Replacements of Original System (\$110,000 each)	\$440,000
TOTAL SAVINGS OVER 20 YEARS	\$7,139,060

See Reverse Side for Actual Customer Testimonial

Looking Forward...

- Rooftop Ductwork Insulation Problem Solved
- HVAC Unit runtime decreased
- 20 Year Warranty
- No Maintenance
- No Replacement Costs
- No Headaches

Failing Insulation

Poor performance despite no obvious damage



Typical Sheet Metal and Fiberglass System

- Fiberglass Insulation
- Vapor Barrier
- Maintenance Nightmare
- R-3.9 Installed Thermal Value
- No Contractor Warranty



Techna-Duc Insulation System

- Shop Fabricated
- No Maintenance Required
- Interlocking Joint System
- Water Tight Triple Sealed
- Extremely Durable
- > 20% Energy Savings
- R-16 Installed Thermal Value
- 20 Year Warranty



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9/26/16



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Eastern Industrial Services Incorporated
401 Bellevue Road
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Dear Prospective EISI Customers:

Pennsylvania Housing Finance Agency plays an important role in fostering community and economic development in the Commonwealth. The Agency provides capital for decent, safe, affordable homes and apartments for older persons, adults of modest means and those with special housing needs. PHFA chose downtown Harrisburg for its new headquarters for good reasons. Harrisburg, located in the Susquehanna Valley of Pennsylvania along the Susquehanna River, provides a good urban home and access to all agencies of the State government. The location affords employees many center-city amenities, including public transportation, Riverfront Park and City Island. The Agency wanted the building to reflect some of the historic characteristics of the surrounding properties so we decided to design a building that would model energy efficiencies and environmental sensitivity. Examples include a light-colored building with a white roof, light shelving along the tops of the windows, daylight harvesting system, low-volume plumbing fixtures, recycled materials make-up wall fabrics and carpeting, and most importantly, WebCtrl®. Automated Logic's WebCtrl® is the building's automation control system which permits friendly user-interface and powerful control of HVAC systems. The building earned Gold certification, which is the second highest distinction on the LEED scale.

After five years of occupancy, the building's systems are continuing to be fine-tuned and improved. One system that failed sooner than expected was the insulation on the roof top units. The insulation system consisted of fiberglass board taped to the duct and finished with a vapor barrier mastic. The environmental conditions, not to mention the location seven stories up along the Susquehanna River, led to failure. The previous system became water-logged, mold and mildew built-up, eventual rusted rectangular ductwork and potential air quality issues if appropriate action not taken. To solve this problem, we wanted a long-term permanent solution. Upon investigations, we discovered Eastern Industrial Services Inc. and PTM Manufacturing's Techna-Duc®. Attractive features of Techna-Duc® include a high R-16 installed system value, the interlocking panels provide impervious precipitation penetration which would minimize air quality concerns, strength, and a twenty-year warranty behind the investment. In addition to the product, the organization was professional and completed the project in a timely manner.

Upon completion and months thereafter, we started to see building improvements from a control system and energy consumption perspective. The most prominent improvement was during the hottest times of the year in the Susquehanna Valley. Typically, the building was programmed to cool for sixteen hours now it is twelve hours for July and August. The modified change was due to the fact that the return air temperature in the ductwork improved to impure hot air of occupied space. Another improvement was reduction in supply fan operation. We could properly cool the facility with frequencies between 48 and 55 Hz instead of full tilt 60 Hz. Reduction in frequency meant less amperage draw thus a 1-2% savings in electric during cooling season. Furthermore, reduction in operating time of the supply fans reduced maintenance costs of reactive failures. Overall, the Techna-Duc® system improved the facility's performance, integrity, and rooftop aesthetics.

Sincerely,

Steven E. Moses
Facilities Engineer