

TECHNA-DUC[®]

INSULATION SYSTEM

Techna-Duc[®] Pre-Manufactured Insulation & Weather-Proofing System

Description

Techna-Duc[®] is a pre-manufactured Insulation & Weather-proofing panel system for exterior ductwork. It is manufactured as four-piece interlocking panels whose exact configuration varies to match the shape of the ductwork. The interlocking panels are fabricated from polyisocyanurate insulation, laminated in two Layers, which provide an installed R-16 thermal value. The insulation is jacketed with a Kynar finished .032" aluminum in a white as standard and sealed with vapor barrier compound. All joints are interlocked to insure a thermal seal. Panels are secured with #10 self-tapping stainless screws with weather-seal washers.

Recommended Uses

Techna-Duc[®] is for use on exterior rectangular ductwork. The interlocking panels provide a weather-tight seal and preserve thermal insulation value with a Weather-Proofing finish.

Advantages

Techna-Duc[®] is a shop-fabricated panel system built from drawings or field measurements and installed with minimum field alterations. The interlocking panels are made from polyisocyanurate insulation, which does not promote the growth of mold or mildew. The panels are laminated for ease of installation over TDC joints. The interlocking panels prevent air penetration, intrusion of water, and water vapor.

Techna-Duc[®] panels are numbered per shop drawings for ease of installation. The panels are rigid enough to avoid sagging and withstand weathering. These unique features enable us to provide a 20- year limited warranty.

Warranty

Techna-Duc[®] is backed by a limited 20-year warranty. No other insulation & Weather-Proofing system offers the consumer this level of confidence.

Insulation Physical Properties

Foil-Faced board	ASTM	Result
Density, PCF (kg/m3)	D 1622	Nominal 2 PCF (32)
H ₂ O Vapor Transmission permeance, in perms	E 96	Less than .03
Water Absorption	C 209 (24 hours)	Less than 0.3%
Flexural Strength in psi (kPa)	C 203	More than 40 psi (276)
Operating Temp Range F (C)		-100° to +250° (-73° to 121°)
2" Thick-System R*	C-236/C-518	R-16

System R-value is the sum of the stabilized R-value plus additional R-value calculated when the aluminum foil surface is installed next to a non-ventilated 3/4" air space (R-value = 2.8). All values from the ASHRAE Fundamentals Hbk.



TECHNA-DUC[®]
INSULATION SYSTEM

Available only through:

PTM Manufacturing, LLC.

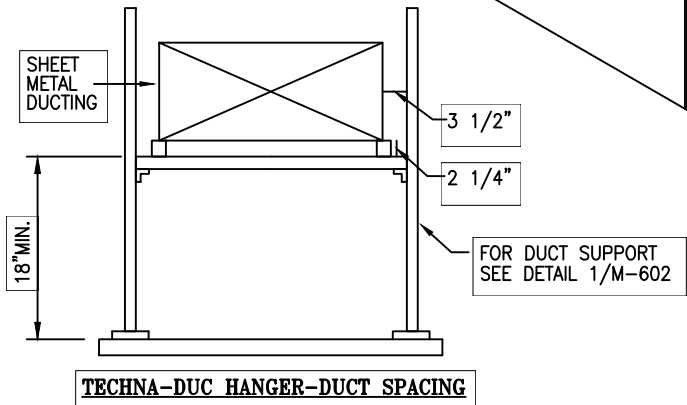
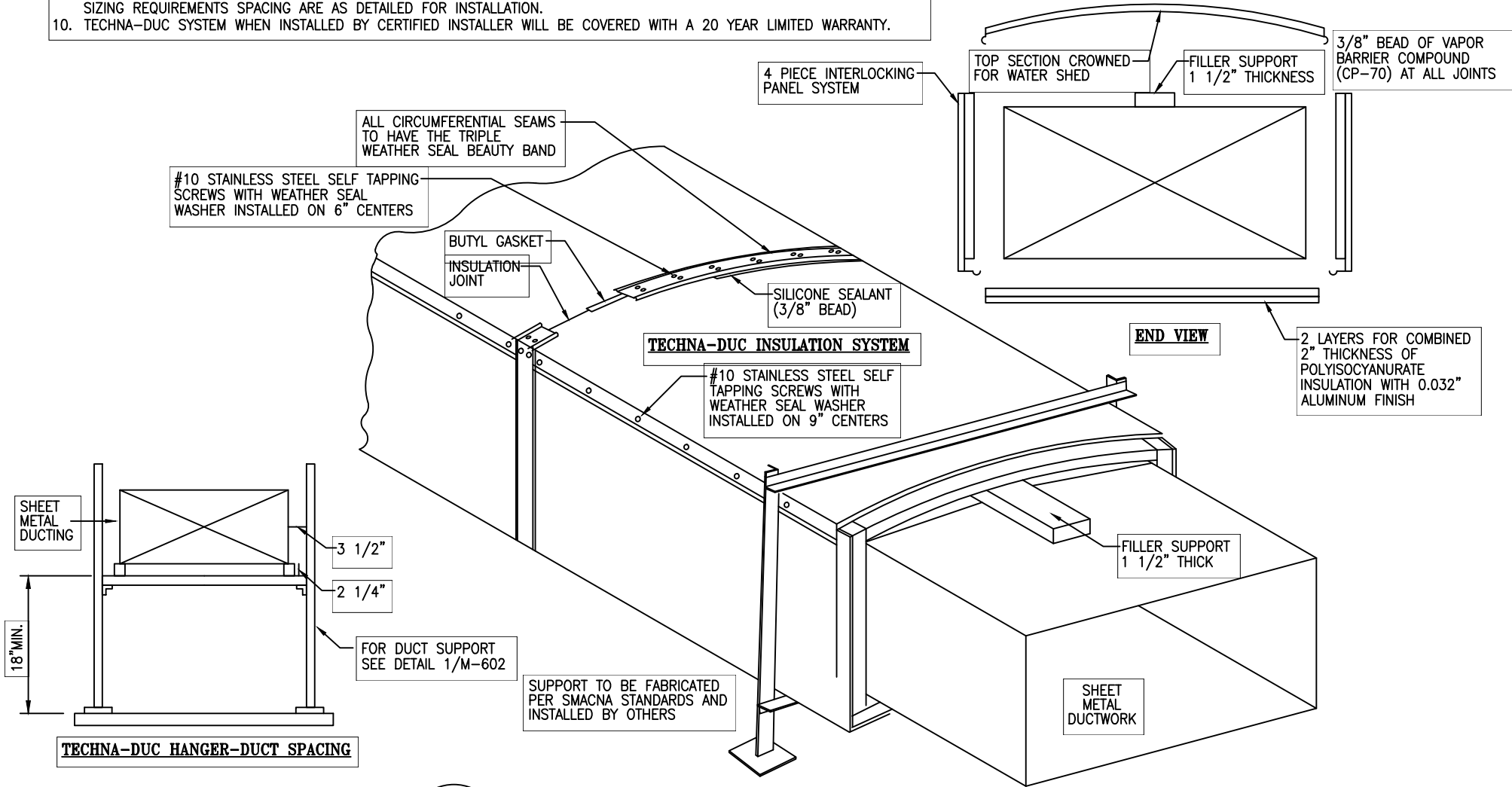
196 Quigley Blvd.
New Castle, DE 19720
Phone (302) 455-9733

U.S. Patent No. 6,360,783 B2 Issued March 26, 2002

“Pride Through Manufacturing”

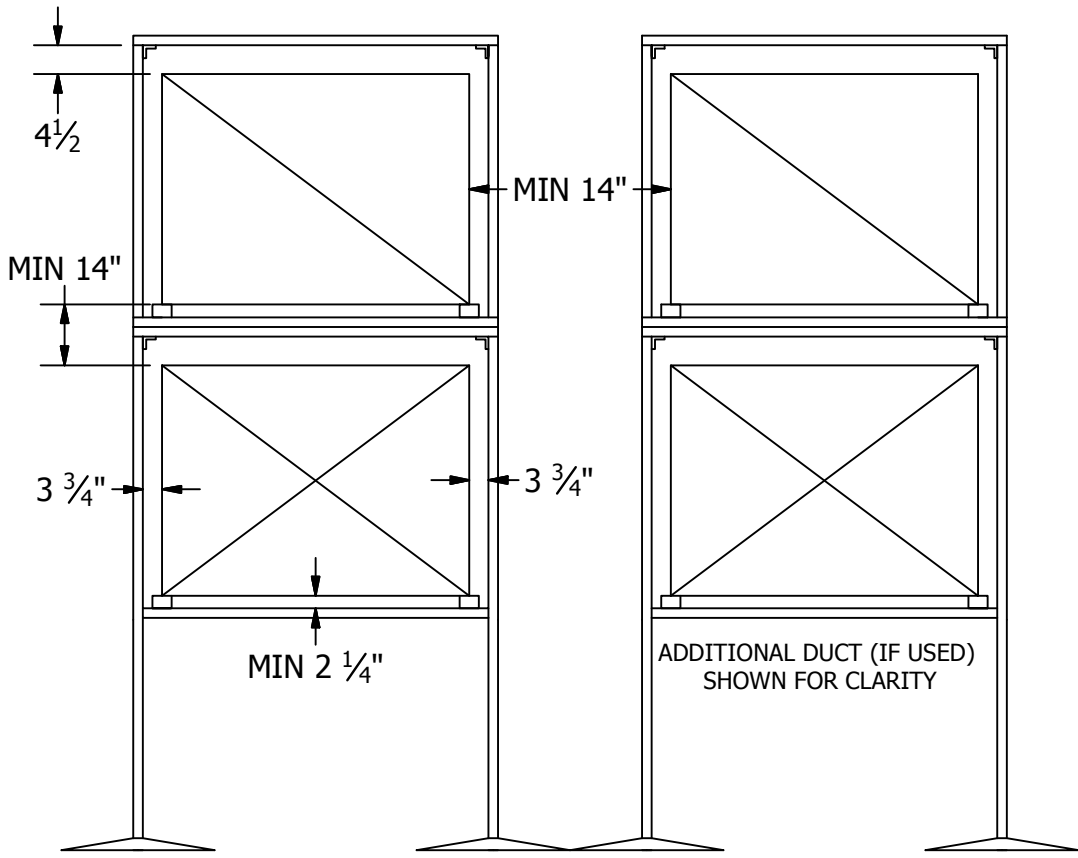
TECHNA-DUC NOTES

1. INSULATION TO BE 2 LAYERS FOR A TOTAL THICKNESS OF 2" REINFORCED THERMAX POLYISOCYANURATE
2. INSULATION TO BE INSTALLED IN 3 LAMINATED LAYERS TO ALLOW FOR INSTALLATION OVER SHEET METAL TDC JOINTS.
3. FIRST LAYER TO BE 1 1/2" THICKNESS LAMINATED TO THE SECOND LAYER OF 1/2" THICKNESS, LAMINATED TO THE OUTSIDE FACING LAYER OF WEATHER PROTECTION 0.032" WHITE ALUMINUM AS STANDARD (OTHER COLORS AVAILABLE).
4. ALL INSULATION TO BE OFFSET 2" TO CREATE SHIPLAP SEAMS VERTICALLY, HORIZONTALLY AND CIRCUMFERENTIALLY.
5. ALL SEAMS OF INSULATION TO BE SEALED WITH VAPOR BARRIER COMPOUND (CP-70) DURING INSTALLATION.
6. 0.032" ALUMINUM WILL HAVE A 2" WIDE 90 DEGREE BREAK WITH A 3/8" ROUND BEAD AS SHOWN IN DETAIL.
7. OVERLAPPING METAL SEAMS TO BE FASTENED WITH 3/4" #10 SELF TAPPING STAINLESS STEEL SCREWS WITH WEATHER SEALED WASHERS ON 9" CENTERS.
8. TOP PANELS OF ALL INSULATION OVER 30" WIDE WILL BE CROWNED FOR WATER SHED AS DETAILED.
9. DUCT SUPPORT SYSTEM TO BE INSTALLED IN A WAY NOT TO COMPROMISE THE INTEGRITY OF THE INSULATION SYSTEM. SIZING REQUIREMENTS SPACING ARE AS DETAILED FOR INSTALLATION.
10. TECHNA-DUC SYSTEM WHEN INSTALLED BY CERTIFIED INSTALLER WILL BE COVERED WITH A 20 YEAR LIMITED WARRANTY.



TECHNA-DUC DETAIL
 M-__ SCALE: NONE

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NOTES:

- 1) WHERE OUTSIDE THE INSULATION TYPE SUPPORTS ARE USED PLEASE FOLLOW THESE GUIDELINES
 - A) BOTTOM SUPPORT MUST BE MADE TO BE ADJUSTABLE FOR UP/DN MOVEMENT MIN. 4"
 - B) SIDE WALL SUPPORTS MUST BE MIN 2" FROM DUCT TDC FLANGE TO SUPPORT OR 3 3/4" FROM DUCT SIDE WALL TO SUPPORT
 - C) TOP HOLD DOWN HORIZONTAL TO BE MIN 4 1/2" TO 5 1/2" TO ALLOW FOR DUCT PANEL SLOPE FOR WATER RUN OFF
- 2) PLEASE CONTACT PTM FOR CLARIFICATION ON CLEARANCE REQUIREMENT PRIOR TO ANY SUPPORT FABRICATION
- 3) ALL SUPPORTS & HANGERS TO BE DESIGNED & SUPPLIED BY OTHERS

DRAWN JDA		TITLE DUCT SUPPORT SPACING (HORIZONTAL MULTIPLE DUCTS)		
CHECKED JLA		SIZE A	DWG NO 2x2DuctStack.dwg	REV 3
APPROVED LPF		SCALE N.T.S	SHEET 1 OF 1	

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Techna-Duc® Case Study A 24/7 Manufacturing Facility

The Story

- **2010** – A large manufacturing facility located in Newark, Delaware had a contractor install a fiberglass insulation and aluminum jacket system on approximately 12,600 sqft of rooftop exterior ductwork. One of PTM’s certified contractors also bid the same job but was \$5,000 more expensive using PTM’s Techna-Duc® system.
- **2011** – PTM was contacted to take a look at the same ductwork as they felt the insulation may have been compromised. PTM discovered that rain water had made its way through the jacketing seams and protrusions, reducing the insulation’s performance value.
- **2012** – Again, PTM provided pricing to a certified contractor to remove the existing water logged insulation system and replace it with the Techna-Duc® panel system with a 20 year warranty. At that time, the manufacturer was unable to provide the funding needed.
- **2015** – PTM was once again contacted, after the HVAC unit shut down, due to excessive moisture in the air system. The effect was \$80,000 a day loss in production. PTM was brought in to execute the proposal that was provided in 2012. PTM’s Techna-Duc® insulation panel system was completed by June. Actual building electric usage savings are shown below in Figure 1.

The Results

12,600 square feet of Techna-Duc have yielded savings of:

- 105,000 KW/hrs saved monthly
- At \$0.11/kwh = \$11,500 monthly
- Annual savings = \$136,000
- 20 Year ROI = \$2.72 million projected

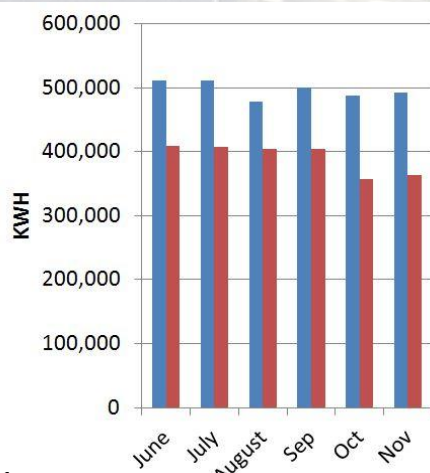


Figure 1

Looking Forward...

- HVAC Unit shutdowns eliminated
- HVAC Unit runtime decreased
- 20 Year Warranty
- No Maintenance
- No Replacement Costs
- No Headaches

Less Expensive Insulation System

- Fiberglass Insulation
- Field Fabricated
- Thin Jacket (.016" Thickness)
- Rivet Fasteners
- Maintenance Nightmare
- R-6 Installed Thermal Value
- 1yr 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
- 20yr Warranty



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Techna-Duc® Case Study A Commercial Multi-Story Building

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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