

“Fabric Duct as an Option in Warehouse”

by Christopher Grawburg

When constructing buildings with a large open space (warehouses, manufacturing, pools, gymnasiums, etc...) the HVAC sub or engineer should be considering fabric duct in virtually every instance.

Typical Warehouse Design



“Warehouse-type” buildings may use rooftop package units with drop boxes stubbing right through the roof (see photo left).



Another option is to design with exposed rectangular sheetmetal or spiral ductwork (see photo left).

Fabric Duct as an Option

Fabric duct is typically constructed of polyethylene (plastic) or polyester (fabric) and is available in different colors and sizes. The



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duct can be constructed is straight runs or with T's and elbows. The *polyethylene* duct has holes that act as air distribution. The size and location of the holes is determined by the engineer or manufacturer and pre-punched during production. Because *polyester* is a porous material, duct made from polyester may have the air “pouring” from the small holes in the material. Polyester duct may also be manufactured with a small slit down the length of the duct to provide airflow.



The main benefit of using fabric duct over metal duct is clearly cost. In my experience, there can easily be a 50% savings with fabric duct over exposed metal. Fabric duct is installed very quickly and suspends from an “airline” cable strung across the inside of the

building. In addition to the material savings, fabric duct installs much quicker than conventional metal duct so installation costs are less and project schedules can be compressed.

Fabric duct can be ordered in a large variety of colors – something not available with metal. If fabric duct gets dirty it can be taken down and washed by the owner. Also, in buildings with forklifts or gyms with high bouncing balls, fabric duct can withstand impact without being damaged.

Natatoriums are ideal buildings for fabric duct. Even stainless steel duct can deteriorate over time in a highly, chlorinated environment. However, chlorine will not react chemically with polyethylene or polyester and is much less expensive to buy and



install compared to stainless steel. Because of the short installation time, natatoriums requiring replacement of stainless duct will be closed for a shorter period if fabric duct is used as the replacement. When polyester is used in natatoriums, there is no duct surface for condensation because the air is permeating the entire circumference of the duct so the duct will not sweat.

Downside to fabric duct?

Are there any downsides to using fabric duct in a building? The biggest complaint seems to be when the air conditioning unit is off, the duct loses inflation and hangs limp. When the air is turned back on, some duct systems make a loud “bang” as the air fills the duct. One option is to keep the fan running in the unit at all times keeping the duct inflated. However, keeping the fans running is a waste of energy.

Some manufactures have developed different hanging methods that allow duct systems that are turned off to keep some of their shape thus reducing the aesthetic issues or the loud bang from duct being inflated and then deflated.



Conclusion

There are a number of manufactures producing fabric duct. A quick search on the Internet will bring you to any of their websites where you can look at pictures of installations or download submittal data.



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If your subcontractor, architect, or engineer are not considering fabric duct in warehouse buildings, be sure to bring this product to their attention.



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