Fabric vs Metal:

Six ways fabric air dispersion systems reduce lifetime ownership costs

WHITE PAPER

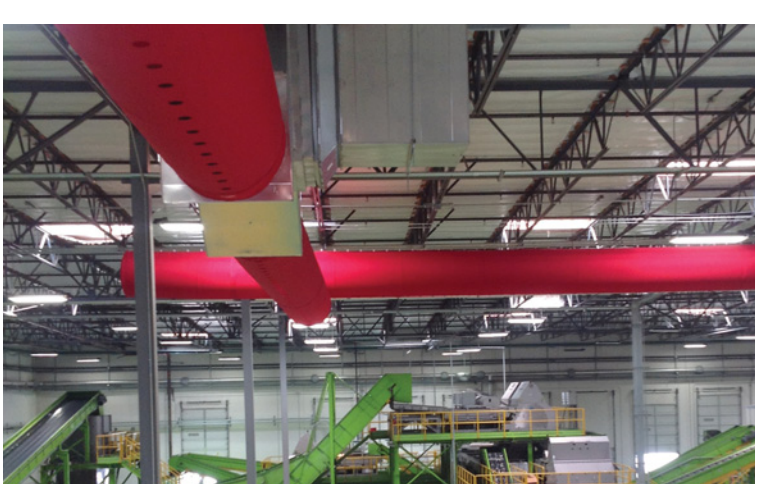
DUCTSOX®

Redefining Air Dispersion

ductsox.com

DSFLWP0118

DuctSox® fabric air dispersion systems are engineered to distribute and disperse air in open and finished ceiling architecture, critical environments and underfloor applications. They are an innovative, cost-effective and aesthetically pleasing alternative to metal ductwork or spaces with large air diffusers and no ductwork.



Systems that utilize fabric, such as DuctSox, provide targeted, precise and efficient air dispersion for new construction and retrofit projects. Additional benefits include a total lifetime ownership cost that is significantly less than a comparable metal ductwork layout and the ability for a system to be custom designed based on the application.

Targeted Air Dispersion: Increased Comfort, Reduced Energy Costs

The advantages of fabric air dispersion systems versus metal ductwork are considerable. Metal systems use duct, dampers and localized diffusers that are spaced out over the length of a run. This approach results in air drafts near the outlets plus hot and cold spots in the occupied space.

Fabric ductwork is designed to provide uniform air dispersion through a combination of air-porous fabrics, linear vents, nozzles and orifices. This method has a positive impact on energy costs as these systems heat or cool spaces faster and more uniformly to satisfy temperature set points. The result is reduced mechanical equipment runtime.

DuctSox systems are well established in the HVAC industry. They have been in use for more than 35 years in a variety of environments, including gymnasiums, pools, food processing, fitness centers, convention centers, schools and warehouses.

Technology advancements in fabric have created an opportunity for DuctSox to be used in applications where there are specific performance requirements. Anti-static fabrics are ideal for data centers and anti-microbial treated fabrics for laboratories, food processing and grow facilities.

Lowest Lifetime Ownership Costs

While uniform, precise and efficient air dispersion is one of the primary benefits of a fabric system, there are a number of additional benefits that should be considered that can have a positive impact on a project.

What is Fabric Ductwork ?

For decades, traditional metal units that moved air throughout a facility were commonly referred to as “ductwork.” Each system requires a variety of components to achieve proper airflow.

When fabric was introduced over two decades ago, it was referred to as “fabric ductwork” or “fabric ducting.” The reality is fabric provides a complete air dispersion system that is customized to match the needs of specific applications.

Weight — The difference in weight of a fabric system versus a metal system can be significant. This difference can impact shipping costs, installation time and cost, as well as the overall load on the ceiling structure. In addition, fabric can be advantageous where code compliance (seismic or snow loads) must be addressed.

Noise — A properly designed fabric system will deliver air quietly without the resonation found in metal. Fabric can also absorb noise in certain applications. When there is mechanical noise coming from the air handling unit, a fabric sound attenuator can be installed for additional noise reduction.

Condensation — Non-insulated metal ductwork has the tendency to drip condensation and potentially rust in humid applications or climates. Based on the nature of the material, a porous fabric system is not prone to condensation or rust issues.

Aesthetics — DuctSox fabrics are available in a variety of standard colors, patterns and custom colors. They can also be personalized with company logos, mascots or taglines. A DuctSox system can blend into an environment or be used to help create a unique look and feel.

Fabric vs. Metal: Airflow

Traditional metal ductwork is heavy, rigid and can only disperse air through spaced out diffusers restricting airflow to localized areas.

Fabric systems are lightweight, flexible and breathable, which allows for uniform and precise air dispersion making it comfortable, quiet and more efficient than metal ductwork.

Maintenance — Metal systems require upkeep, such as re-painting over time, periodic tightening of louvers/registers/grills and resealing of transitions. Additionally, they are susceptible to damage from impact, which can create a number of maintenance issues. Once a DuctSox system is installed, there is little to no ongoing maintenance required. What's more, a fabric system like DuctSox can be commercially laundered multiple times, which is important in applications that have hygiene standards, like those set by the U.S. Department of Agriculture.

DataSox: Solutions for Data Centers

Data centers of today consume high levels of power to maintain an optimal level of performance. Many factors contribute to the overall usage of this power. One of the most significant components is conditioning the equipment space. As the data center industry continues to grow, the following critical airflow challenges need to be addressed:

- Targeted Air Dispersion
- Temperature Consistency
- Air Containment

With these challenges in mind, DuctSox has developed the first directionally adjustable air displacement system for the data center industry. The air displacement portion of DataSox places large volumes of air within the cold aisle with low velocity, and the adjustability allows for higher-wattage server targeting. Minimal hot air entrainment is achieved, eliminating or reducing the need for physical containment structures, while lowering construction costs and getting better PUE (Power Usage Effectiveness) ratings.

If you have not worked with fabric ducting on any previous projects, now is the time to start!

Flexibility in Design — While metal ductwork is usually round, or sometimes square, DuctSox fabric systems come in four distinct shapes: Round, half-round, quarter-round and oval. A fabric system can be hung with cables, tracks or hoops, depending on the application. For more complex layouts, there are multiple types of fittings, such as elbows, Ts, transitions and crosses.

Taking it one step further, shape and suspension flexibility allow a fabric system to be installed in almost any space, regardless of potential obstructions. Fabric ducting can be installed in smaller spaces, like bars, classrooms and fitness centers, or large spaces, like airports, convention centers and sports arenas.

In addition to all of those benefits, fabric can help earn Leadership in Energy and Environmental Design (LEED®) credits or other types of "green" or sustainability recognition.

Next Steps

When designing a fabric system, DuctSox engineers will detail performance and design requirements while creating a custom solution for your application. In addition to design assistance, DuctSox provides:

- Building Information Modeling (BIM) and architectural specifications
- An extensive design guide
- Return on investment (ROI) reports
- Case studies
- Technical documentation

Like most major purchases, total cost can play a major role in the final buying decision. A DuctSox system can be 20 to 60 percent less than a comparable metal system when you factor in all the variables, such as raw material, shipping, installation, painting, balancing and ongoing maintenance. Not only will a fabric system cost less, it will also provide targeted, precise and efficient air dispersion.

Whether for a new building or retrofitting an existing space, fabric air dispersion systems, like DuctSox, just make more sense than metal ductwork.

To request more information about DuctSox products or find a rep in your area visit us at:
info.ductsox.com/contact
or call DuctSox at: **866-382-8769.**

Fabric vs. Metal: Inside the Numbers

	Things to Consider	Metal	Fabric
Delivery	On a foot-to-foot comparison, metal is 10 times the weight of fabric	Requires coordinated delivery with concerns for off-loading and on-site storage	Packaged in boxes, whole order ships complete
Installation	A fabric system takes half the time to install as a comparable metal system	A metal system requires additional bracing and securing of all seal joints	Clips to a suspended support
Painting & Balancing	Metal systems need to be balanced and in some cases painted	Involves additional disciplines or contractors and site visits	Fabric ships designed and engineered for airflow, with custom colors or patterns. Each system is automatically balanced when the system is operated.
Total Cost	20″ diameter and 50′ run with one elbow	$3,808	$1,977

DuctSox Corporation
4343 Chavenelle Rd
Dubuque, IA 52002

Phone: 563-588-5300
Toll-free: 866-382-8769
Fax: 563-588-5330

ductsox.com

DUCTSOX® Redefining Air Dispersion