UFSox are the best solution for UFAD Systems to supply air to perimeter and special high-heat load zones. The key advantages of UFSox are:

**Better Air Dispersion for Underfloor Plenums**

- **Lower Total Cost.** UFSox Systems can be evaluated from both the initial investment and the lifetime ownership cost. Initial cost advantages of UFSox includes the cost of materials and installation related considerations (shipping, storage, handling, and installation labor). Lifetime ownership benefits are realized through efficiency of operation of the UFAD system. UFSox systems improve temperature consistency through floor devices and can reduce incidents of costly destratification. Consistent temperature within the UFAD plenum improves pressurization (balanced distribution), efficiency, and employee comfort.

- **Even Air Dispersion.** This continues to be a significant feature and advantage of fabric air dispersion systems versus metal. Engineered vents and/or orifices and variable nozzles are designed to meet your application providing high entrainment ratios and uniform air dispersion patterns (flow velocity).

- **Air Porous Fabrics.** UFSox reduces heat loss (permeable fabric, heat loss, even extended distances and to perimeter zones. Additionally, porous fabrics eliminate the risk of condensation to the ductwork.

- **Simple Assembly & Installation.**
  - Lightweight, easy to handle and install
  - Modular and zippered straight sections and fittings to meet the standard access floor height cavities from 12” to 18” (304mm to 458mm)
  - UFSox lay on the floor and are positively located using tension cables at ends of straight runs and elbows
  - Reconfigurable: Modular zippered sections allow for future re-design

- **Air Porous Fabric Installation Cost**


ductsoxfabricinstallation.png

- **Tests done at the Bio-Environmental and Structural Systems (BESS) laboratory at the University of Illinois quantifies the temperature gradient or thermal barrier around the circumference of the ductwork.

- **Air Dispersion Air Porous Fabric**


ductsoxfabric.png

- **Smoke Test of air permeable fabric showing thermal barrier and mixing with air dispersion jet**

- **DuctSox products have been accepted into key industry organizations such as ASHRAE, Underwriters Laboratories (US & Canada), International Code Council, and by many building code authorities throughout the world.**

- **More than evolving our standard products, DuctSox strives to be the leader in the industry through our commitment to quality, service, and innovation.**

- **To better support our Global Distribution Network, we have expanded our production capabilities to Kunshan, China and Guadalajara, Mexico.**

- **Air Dispersion**


ductsoxfabricdispersion.png

- **Test for flammability requirements of NFPA 90A <10km> Also classified in accordance with ICC evaluation service AC167 and UL subject 2518**

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- **Our commitment to INNOVATION provides unique products for many environments.**

- **Simple and adjustable fabric air dispersion system assembled with pre-made components for open ceiling architecture.**

- **Adjustable Fabric Air Dispersion System**


ductsoxfabricadjust.png

- **Actual smoke test of air permeable fabric showing thermal barrier and mixing with air dispersion jet**

- **Actual smoke test of air permeable fabric showing thermal barrier and mixing with air dispersion jet**

- **For more information on DuctSox products, check us out at www.ductsox.com, or contact us at 866-382-8769!**

- **DuctSox Manufacturing**

- **Guadalajara, Mexico**

- **Kunshan, China**

- **Corporate Headquarters & Manufacturing**

- **Peosta, Iowa**

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- **Products may be covered by one or more of the following patents: 6565430, 6558250, 5769708, 6425417, 6626754, 6280320, 6960130, 6958011, 6953396, and 8434526. Other patents pending.**

- **A Subsidiary of Rite-Hite Holding Corporation**

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Challenges

UFAD Technology for the Built Environment and high-heat load locations in Under Floor Air Distribution (UFAD) Systems. UFAD Systems are frequently qualified for LEED ceiling, where it is either exhausted or recycled back into the space. New construction projects using UFAD Technology UFAD Models are based on Displacement Ventilation principles, requiring that the air stratifies from the floor to the pressure and temperature distribution.

Airflow from ducted or air highway systems is not flexible and can create challenges for routing cable and applications that employ UFAD design are in high tech office and business spaces and may be difficult to coordinate due to building design and floor layout limitations. One of the issues and challenges of UFAD Systems is thermal decay of the supply air to perimeter or special high heat load zones. When this occurs, occupants in the warmer zones will generally increase the amount of air supply by adjusting their floor mounted diffusers. This can often lead to over mixing the air in the space causing destratification, and possibly losing the benefits of UFAD technology. In some instances, system adjustments to accommodate perimeter zones result in overcooled interior zones.

To offset the loss in temperature and pressure for supply air over extended distances, designers have included the use of either air highways, ducts, or more supply sources (chases or air towers) to convey conditioned air to three zones. While both options have benefits, they do have drawbacks to overcome.

Adding supply chases or air towers for an entire floor plan, especially in large projects, can be very expensive and may be difficult to coordinate due to building design and floor layout limitations. Airflow from ducted or air highway systems is not flexible and can create challenges for routing cable and reconfiguring other spaces. Additionally, these systems function by dispersing the airflow at high velocities which may create uneven pressure and temperature distribution.

UFAD is a unique method for delivering conditioned air in offices and other commercial buildings. Unlike conventional overhead air-mixing systems, UFAD Systems use the space beneath the raised access floor as a plenum to introduce air into the occupied space, usually through special floor-mounted diffusers. Typical applications that employ UFAD design are in high tech office and business spaces utilizing cable for voice, power, and data transmission.

UFAD Systems are being increasingly accepted in commercial building space as the benefits, which are well documented by ASHRAE, can include:

- Improved employee comfort
- Reduced energy costs
- Improved indoor air quality
- Improved productivity and health
- Reduced floor to floor heights
- Reduced life cycle building costs

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Uniform Air Mixing for UFAD Plenums

Full-scale Thermal Performance Tests, by the Center for the Built Environment (CBE) at the University of California, Berkeley, have investigated the impact of distributing cool supply air into an underfloor plenum using DuctSox. For the test configurations studied, the results indicated that compared to an old-air-temperature design, the use of DuctSox reduced thermal decay (temperature gain) in the perimeter zones. Overall, the temperature distribution within this plenum was more uniform with DuctSox. Adding DuctSox required some increased fan power, but this is still under investigation. Due to the promising results, CBE expects to conduct additional experiments on other DuctSox configurations.

Reversing the Trend. Conventional UFAD design encourages a desire to increase distribution duct and effectiveness. DuctSox Fabric Air Dispersion Systems can increase the core of a building. In applications where cold supply air is required, DuctSox can be added to the existing air highway system in addition to improving the distribution of supply air to special high heat load zones. This can be particularly useful in high tech and office buildings where cooling the space is critical. DuctSox can be installed to improve the distribution of supply air to the perimeter of the building, increasing the effectiveness of the UFAD system. DuctSox can be used to improve the distribution of supply air to the perimeter of the building, increasing the effectiveness of the UFAD system. DuctSox can be added to the existing air highway system in addition to improving the distribution of supply air to special high heat load zones. This can be particularly useful in high tech and office buildings where cooling the space is critical. DuctSox can be installed to improve the distribution of supply air to the perimeter of the building, increasing the effectiveness of the UFAD system.

UFSox, with runs extending into the perimeter zone, moves the thermal decay inward by introducing the coolest supply airflow where it is needed. In practice, these designs have allowed end users to control temperature without overcooling the building core.

If your project or building suffers from a cold core, UFSox can most likely reverse the flow. Systems have been supplied retrofitting to existing air highway, duct, or open plenum designs. Contacting our engineering design team is the first step to improving the performance of your existing system.