

# SILENCER APPLICATION SOLUTIONS

**PROBLEM:**

**Exposed glass fiber in ducts**

◆ Concerns are growing surrounding the use of glass fiber in duct systems. While most of the myths have been dispelled about glass fiber becoming the next asbestos, there remain real concerns such as:

◆ **Coil Blockage:** The quality of acoustical duct lining installations is hard to control. This is particularly true of difficult installations (e.g. complicated fittings) and of hard to inspect locations. Unprotected internal insulation can break free from the duct walls and block coils and even enter the occupied space.

◆ **Microbial Growth:** Glass fiber acts as a medium for microbial growth. There are three elements required for microbial growth: spores, nutrients (e.g. dirt) and the proper environment (e.g. darkness, humidity). While glass fiber will not promote the growth of bacteria in ducts, it supports it better than an unlined duct system because of its absorptive qualities. (See Vibro-Acoustics' HPAC Article: "IAQ and Noise Control - Working Together")

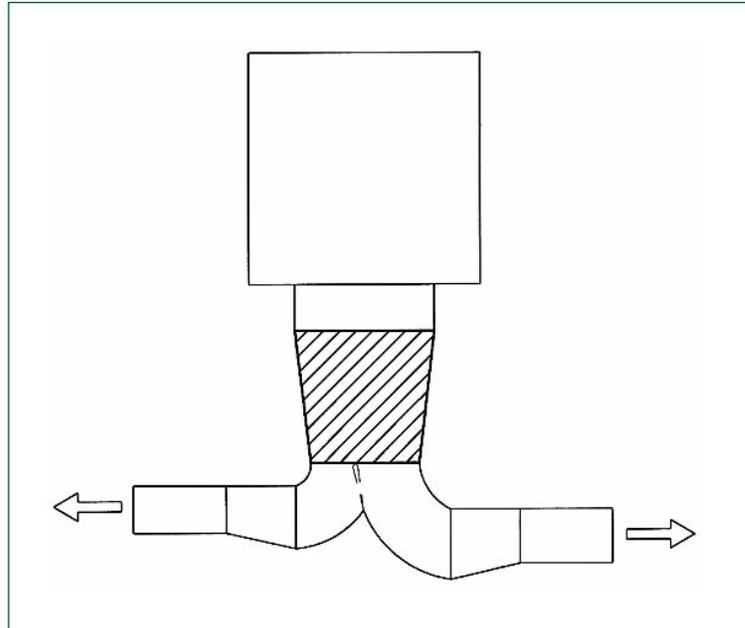
◆ **Duct Cleaning:** Internal acoustical duct liners make it difficult to clean duct systems which is an important need for Indoor Air Quality (IAQ).

◆ **Erosion:** Glass fiber particles can not be tolerated in hospital operating rooms, pharmaceutical manufacturing facilities, food processing plants, clean rooms, etc.

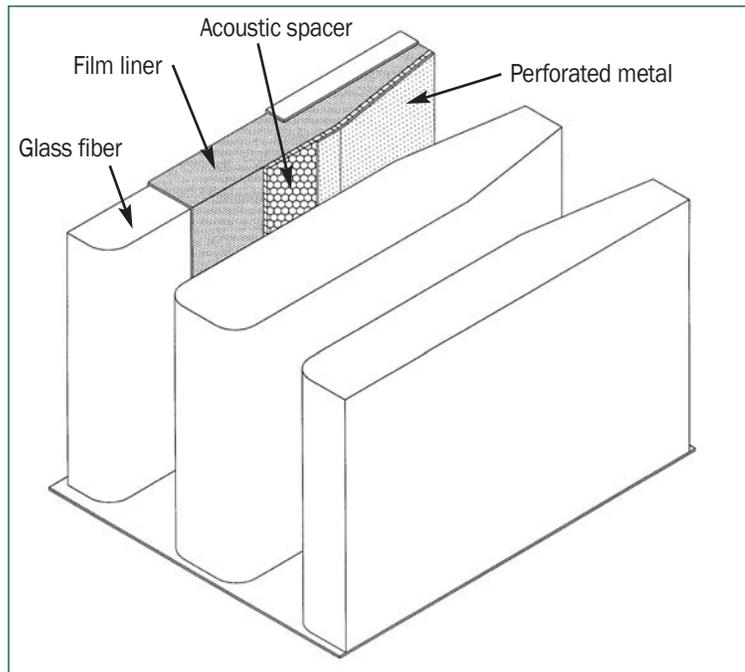
◆ **Out-Gassing:** Out-gassing of glass fiber binder material may be a problem in very critical clean rooms.

**SOLUTION:**

◆ More and more building owners are demanding the reduction or elimination of glass fiber duct liners from their duct and air handling unit systems. This can be done while still achieving the project sound criteria if the proper silencers are selected. Various types of silencers are available depending on the degree of the glass fiber usage concern:



*Pre-fabricated silencer eliminates need to acoustically line a complicated transitional tee fitting. This eliminates possible duct liner erosion and deterioration.*



*Silencer with film liner reduces possible glass fiber erosion and water retention, further reducing possible microbial growth.*

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### ◆ IAQ - 1: Replacing lined duct

◆ Dissipative silencers can be used to replace lined duct. This will drastically reduce the surface area of exposed glass fiber. They will also reduce the possibility for erosion because the silencer's glass fiber is contained in a quality manufactured product and protected by perforated metal. Silencers will also eliminate the need for lining complicated fittings which are both costly and more prone to erosion.

◆ The unlined duct system can be more easily cleaned and special options can be provided to allow the silencer to be cleaned as well. (See SS15)

### ◆ IAQ - 2: Glass Fiber Cloth Liner

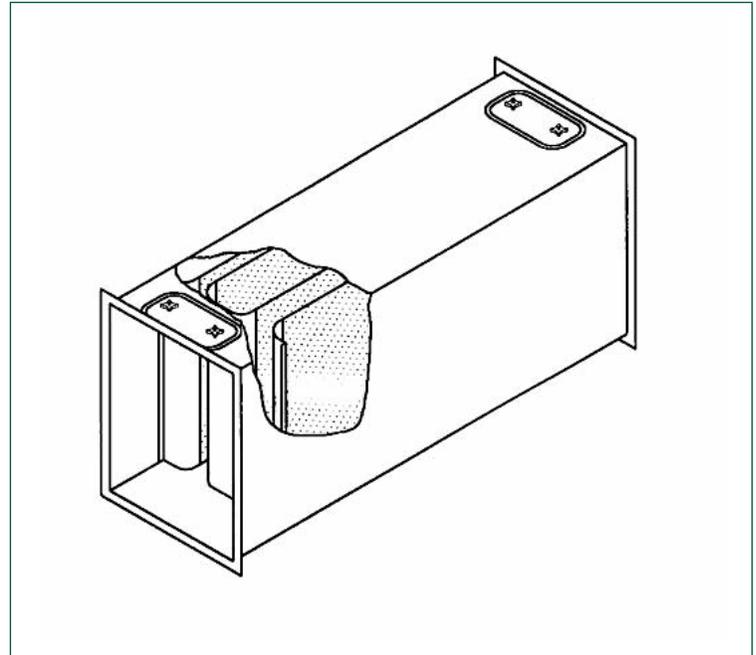
◆ Glass fiber cloth lining can be applied between the dissipative silencer's acoustical media and perforated metal facing to reduce particle erosion for high duct velocity applications (>2000 fpm). This is a standard feature in Vibro-Acoustics' AC (Axial Cone) silencers because they are normally installed in high velocity, highly turbulent regions when directly connected to axial fans.

◆ Glass fiber cloth is a tight weave cloth which is not totally impervious to airflow. Therefore it reduces BUT DOES NOT ELIMINATE possible particle erosion. However it does allow the sound waves to enter the silencer's acoustical media, and thus not reducing its acoustical performance.

### ◆ IAQ - 3: Film Lined Silencers

◆ Vibro-Acoustics' Film Lined silencers have a film liner such as Tedlar (or Mylar) over the acoustical media and beneath the perforated metal. This further reduces the possibility of glass fiber erosion. The film also provides a barrier for moisture and dirt from entering the glass fiber, limiting the potential for microbial growth. (See SS2)

◆ Film facings are impervious to airflow and provide a partial barrier to the sound waves entering the silencer's acoustical media. Acoustic performance is therefore reduced, especially in the mid frequency range.



*Silencer (with or without acoustic media) has access ports for inspection and cleaning.*

### ◆ IAQ - 4: Eliminating all fibrous materials: No-Media Silencers

◆ Vibro-Acoustics' No-Media silencers are void of any fibrous material. They operate on the principal of Helmholtz resonators. No glass fiber is present, thus none can erode, produce out-gassing or host microbial growth. (See SS3)

◆ No-Media silencers, in comparison with dissipative silencers, generally have lower insertion loss performance for a given length and pressure drop. Thus longer lengths are usually required to achieve similar acoustic performance.

### ◆ Special "IAQ" Features:

all the above silencers can be supplied with:

- ◆ access ports for in-situ cleaning
- ◆ special packaging and factory cleaning
- ◆ degreased materials