

### SILENCER APPLICATION SOLUTIONS

See Project Solution Sheet (PS#)

Primary Ref.: 8-1,2,3,4

Secondary Ref.: 2-1,2-4,3-1,5-3,7-2,9-1

#### PROBLEM:

##### Excessive pressure drop/energy consumption

- ◆ Standard silencing systems create airflow restrictions which cause the fan to use more energy and create more noise.
- ◆ Standard silencers can significantly increase operating costs for systems that run 7 days/week 24 hrs/day e.g. hospitals, police stations, communications facilities, etc.
- ◆ Fans may have been selected so that added pressure drops will reduce flow capacity. Examples include retrofit projects and packaged equipment such as cooling towers and air cooled condensers.
- ◆ Silencer pressure drops may also be limited to maintain controlled pressures in buildings

#### SOLUTION:

##### Longer Silencer Lengths

- ◆ see SAS 7

##### EX Model Silencers

- ◆ see SAS 7

##### Special Bell Mouth Fittings and Axial Cone Silencers

- ◆ Special bell-mouth fittings can be incorporated into silencers, or cone silencers can be supplied on axial fans to allow minimum energy consumption. If a fan consumes less horsepower, it generates less noise and therefore needs less silencing.
- ◆ In some cases, if carefully designed, silencers can actually improve aerodynamic conditions in close proximity to fans. Vibro-Acoustics' test data (adjacent) illustrates various silencing configurations and their effect on fan performance.

##### Acoustical Plenums

- ◆ If plenums are required for air handling design reasons, they can be an effective means of reducing low frequency fan noise. This is true, especially if the acoustic lining is thick (from 4" - 8").

##### Low Pressure Drop Silencers

- ◆ see SAS 7

#### CONCLUSIONS FROM VIBRO-ACOUSTICS' TESTS

The effects of various Free Air Silencer Inlets/Discharges upon horse power consumed by an Axial Fan in a Constant System with Constant Air Flow. Percentages are indicative only, and would differ in different systems.

