

Textile Air Dispersion Systems

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Seminar 31
Seattle - 2014



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LEARNING OBJECTIVES:

1. Become familiar with air dispersion systems.
2. Understand the advantages of air dispersion systems relative to traditional metal duct systems.
3. Learn basic design principles of air dispersion systems.
4. Learn applications where textile or metal air dispersion systems are commonly employed.
5. Compare the performance of textile and metal air dispersion systems.
6. Learn of new textile and metal air dispersion system products that are becoming available commercially.

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What are ...

Textile

Air Dispersion

Systems?



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Configuring a Textile Air Dispersion System

- Shape & Suspension/Fabric Retention
- Layout/Fittings
- Air Dispersion
- Fabric
- Options



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Shape

- Round



- Quarter-Round



- D-Shape



Suspension & Retention

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1, 2, or 3 Row Track or Cable

Easy installation & maintenance
Lowest initial cost

1 Row:

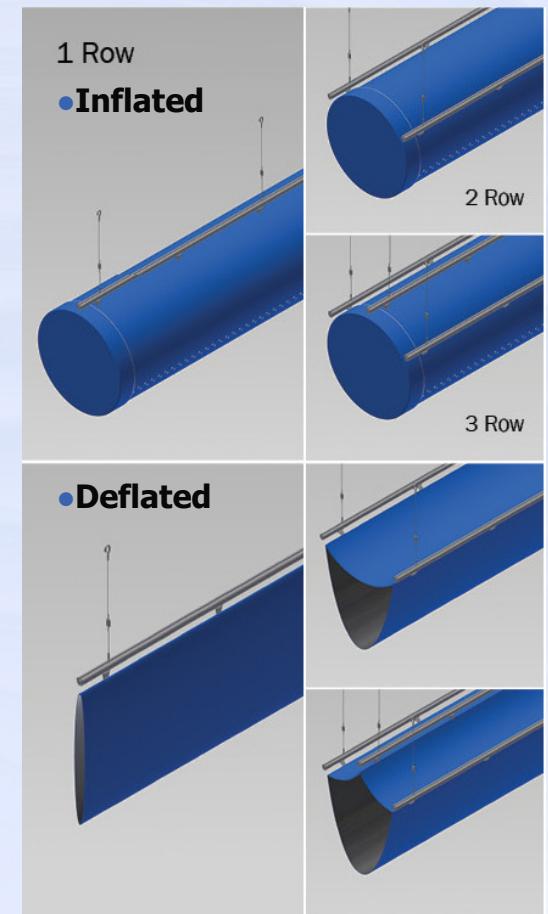
100% Deflation, Disruptive noise & fabric motion

2 Row:

45% Deflation, Noticeable noise & fabric motion

3 Row:

17% Deflation, Minor noise & fabric motion

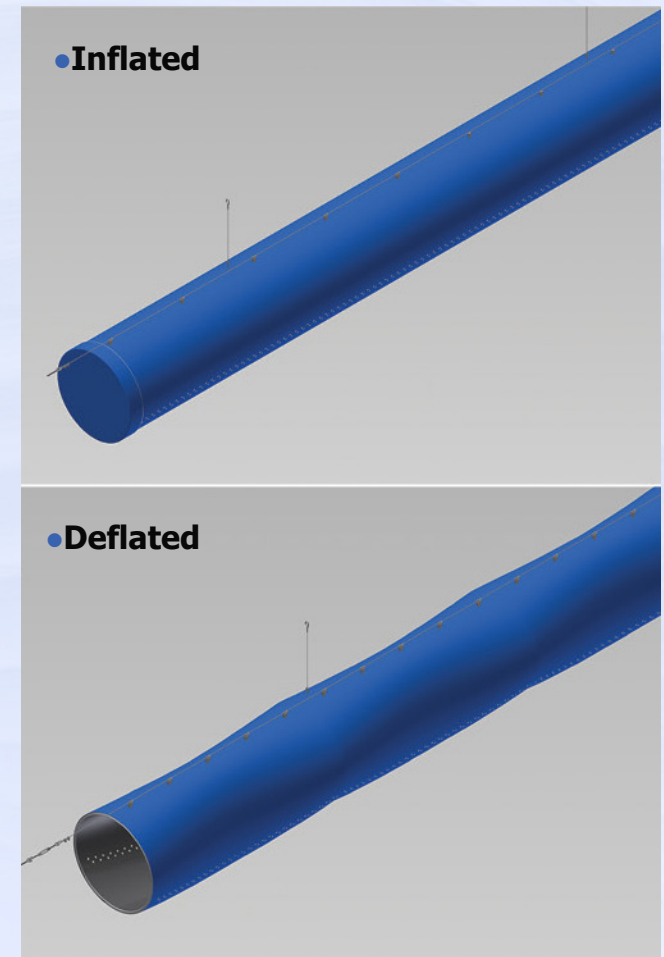


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Internal Hoop System

Minimal fabric sagging and wrinkling

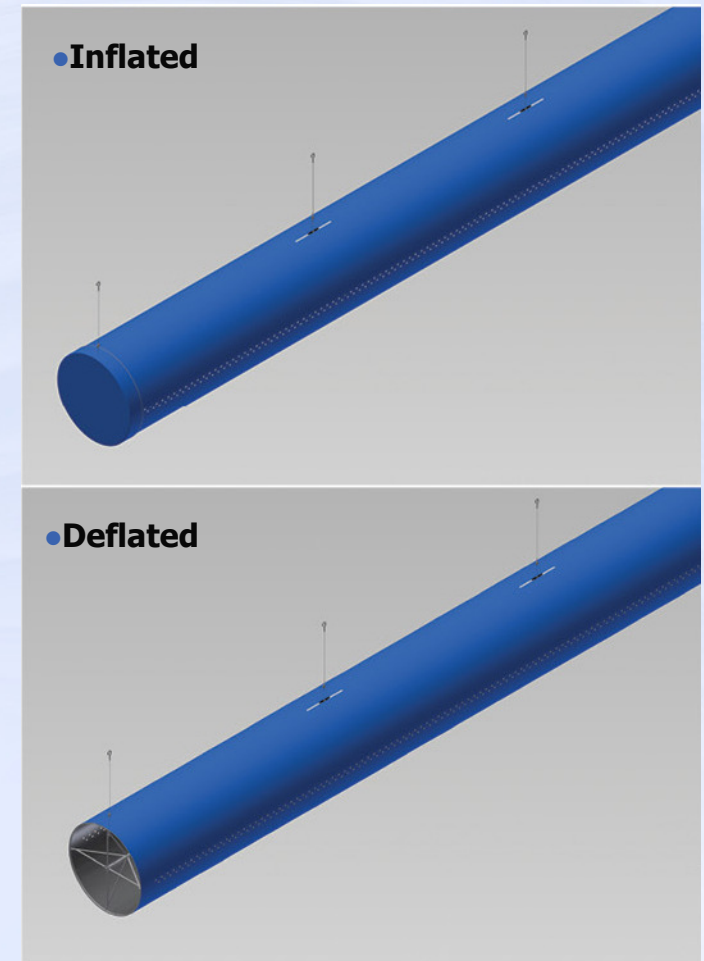
- Longer life expectancy
- VAV applications
- 1-5% Deflation
- No inflation noise
- Minimal fabric motion



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Fabric Tensioning System

- 0% Deflation
- No sagging / No wrinkles
- Longest product life
- Higher design velocities
- No inflation noise, no fabric motion
- Ideal for VAV applications



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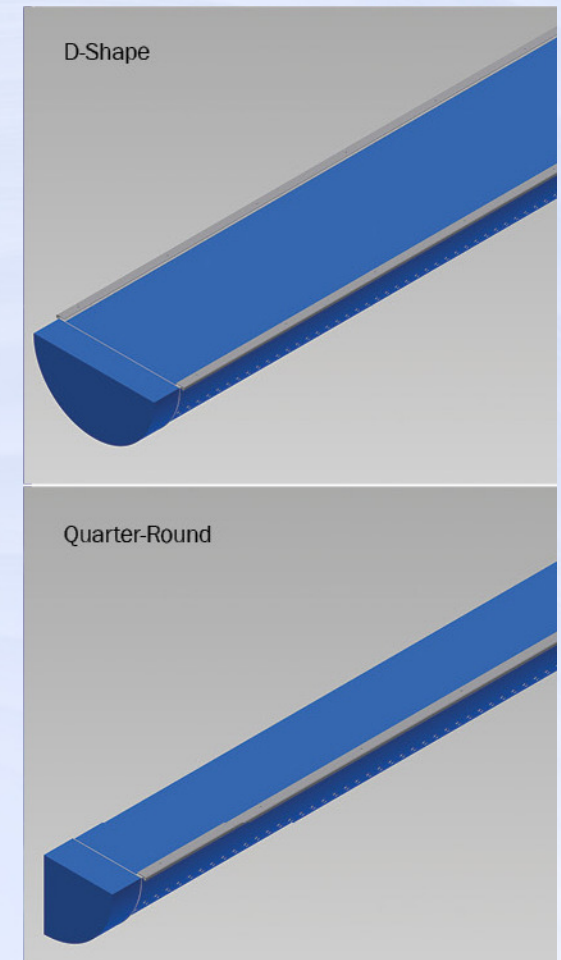
Surface Mount

D-Shape

Quarter-Round

D-Shape and Quarter-Round:

- For applications with finished ceilings or specialty airflow requirements
- 1-5% Deflation
- Minimum noise & fabric motion



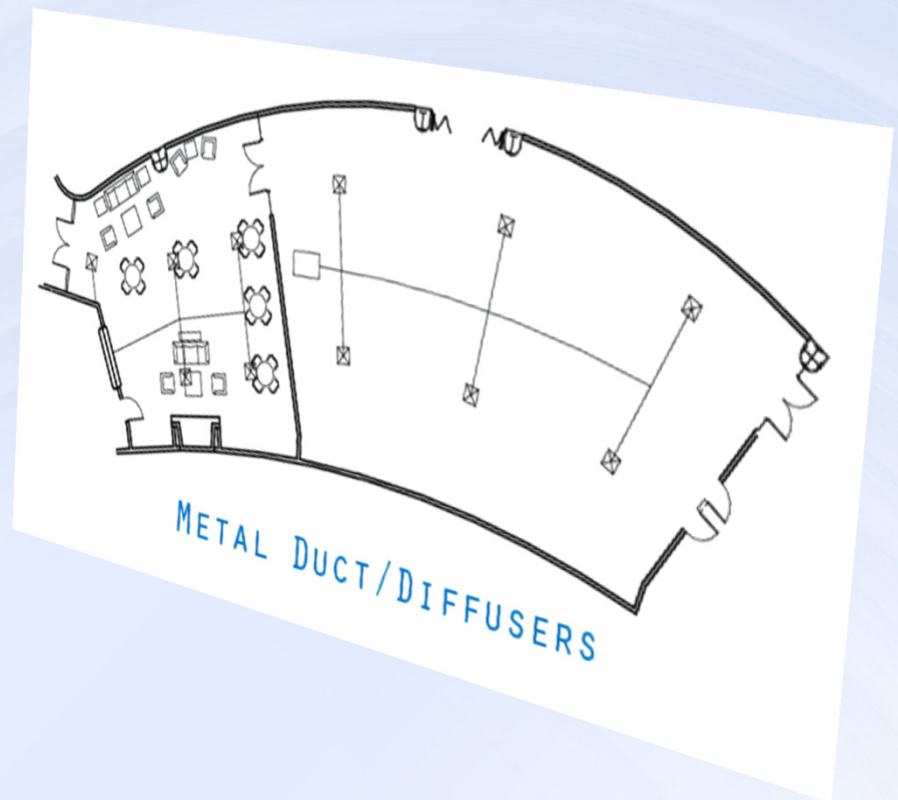
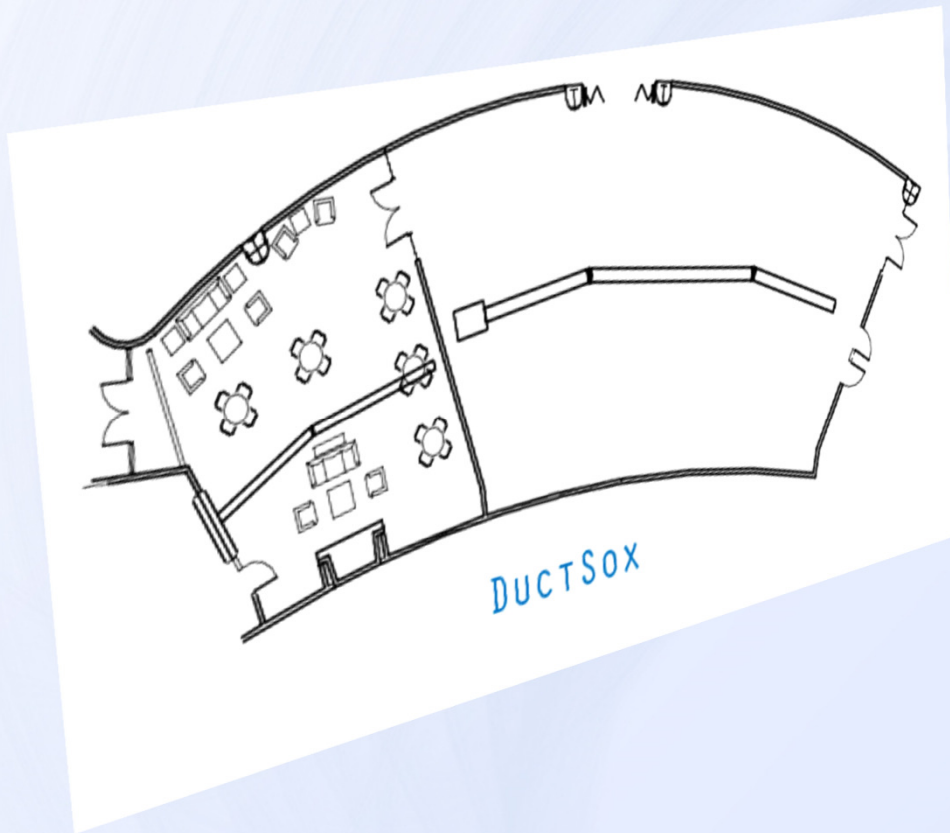
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2) Layout & Fittings

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Layout

- Simple and efficient layouts compared to metal



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Fittings

Radius Elbows



30°



45°



60°



90°

Transitions



Top-Aligned



Center-Aligned



Bottom-Aligned



Round to D-Shape

Take-Offs



Top-Aligned



Center-Aligned



Bottom-Aligned

Crosses



Top-Aligned



Center-Aligned



Bottom-Aligned

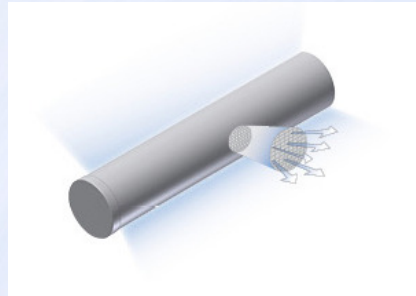
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3) Air Dispersion

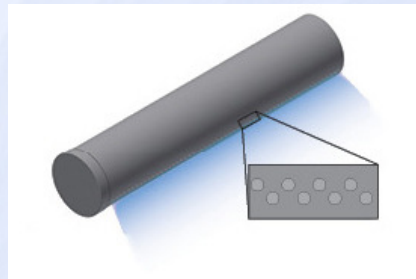
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Air Dispersion

- Air-Porous Fabric



- Linear Vents

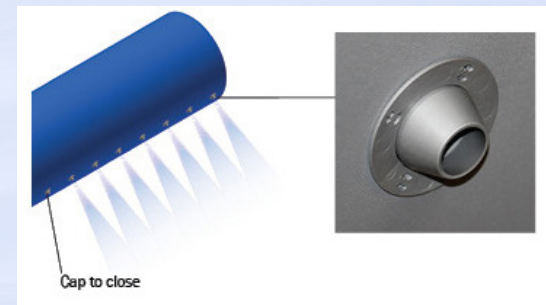


- Orifices

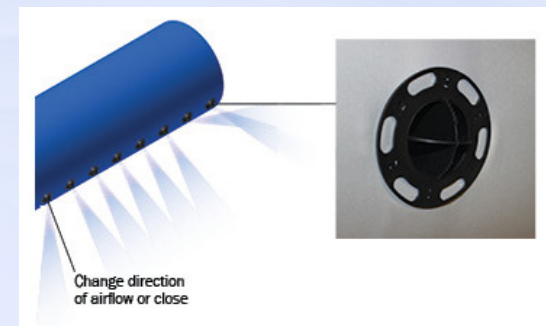


- Nozzles

Fixed



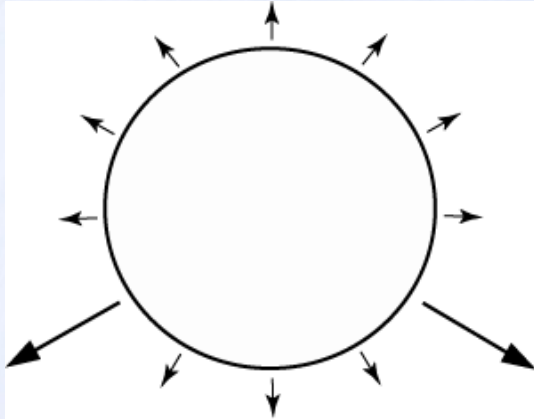
Adjustable



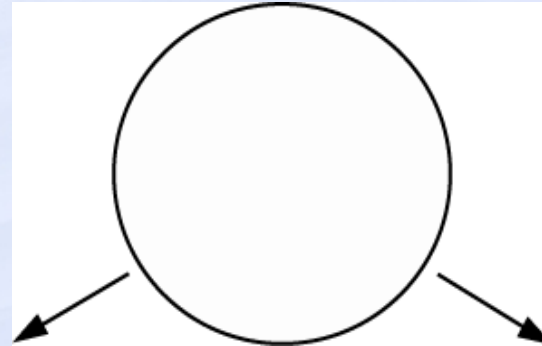
4) Fabric

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Fabric Options



- Porous: No condensation, replaces double-wall duct



- Non-Porous: Replaces single-wall duct

Fabric

- Porous: No condensation, replaces double-wall duct
- Non-Porous: Replaces single-wall duct



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5) Options

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Options

Dampers

Airflow control and helps offset effects of static regain

PLENUM

Direct airflow into branch take-offs where velocity is over 1,200 FPM (6.01m/s).

INLET

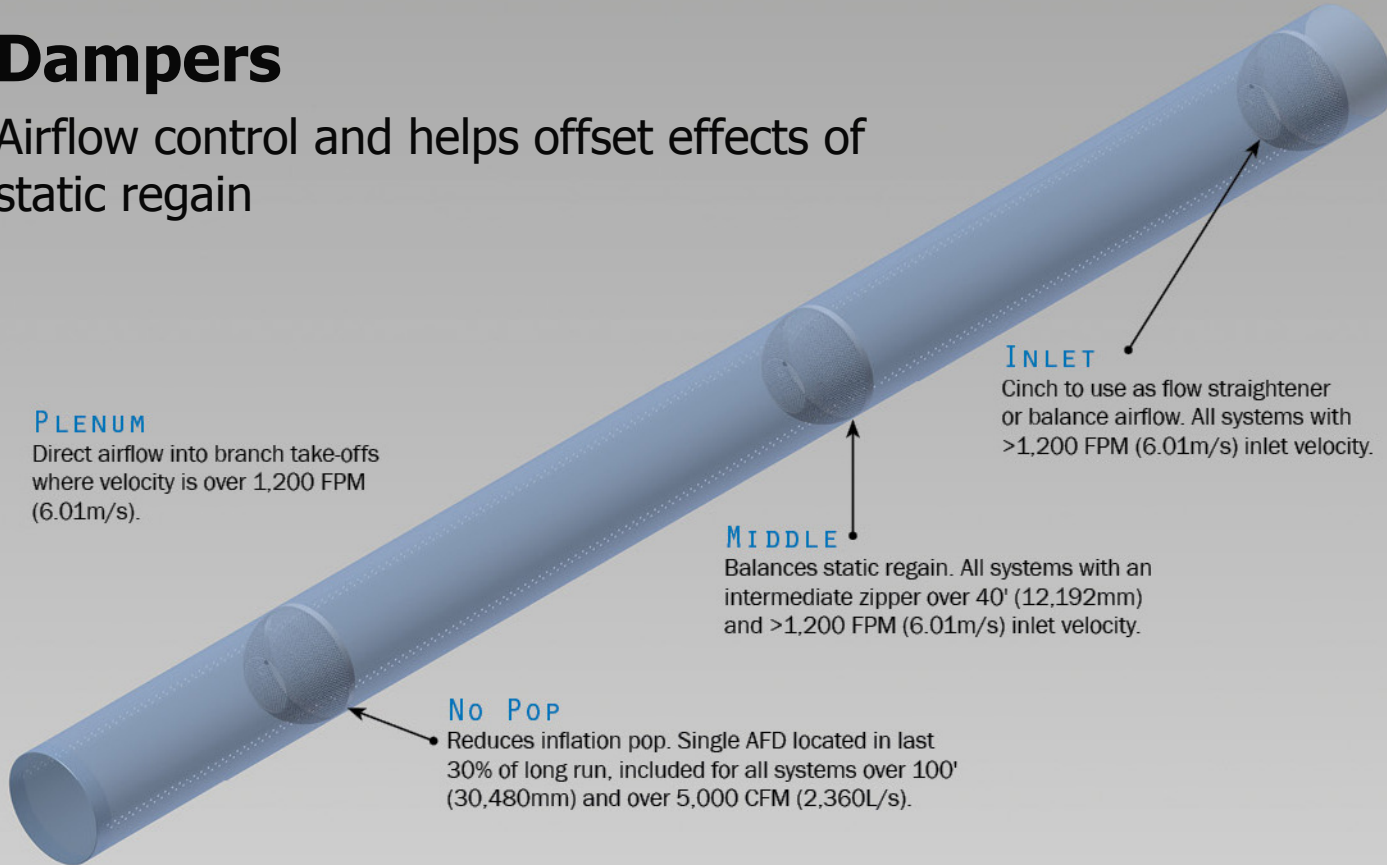
Cinch to use as flow straightener or balance airflow. All systems with >1,200 FPM (6.01m/s) inlet velocity.

MIDDLE

Balances static regain. All systems with an intermediate zipper over 40' (12,192mm) and >1,200 FPM (6.01m/s) inlet velocity.

No Pop

Reduces inflation pop. Single AFD located in last 30% of long run, included for all systems over 100' (30,480mm) and over 5,000 CFM (2,360L/s).



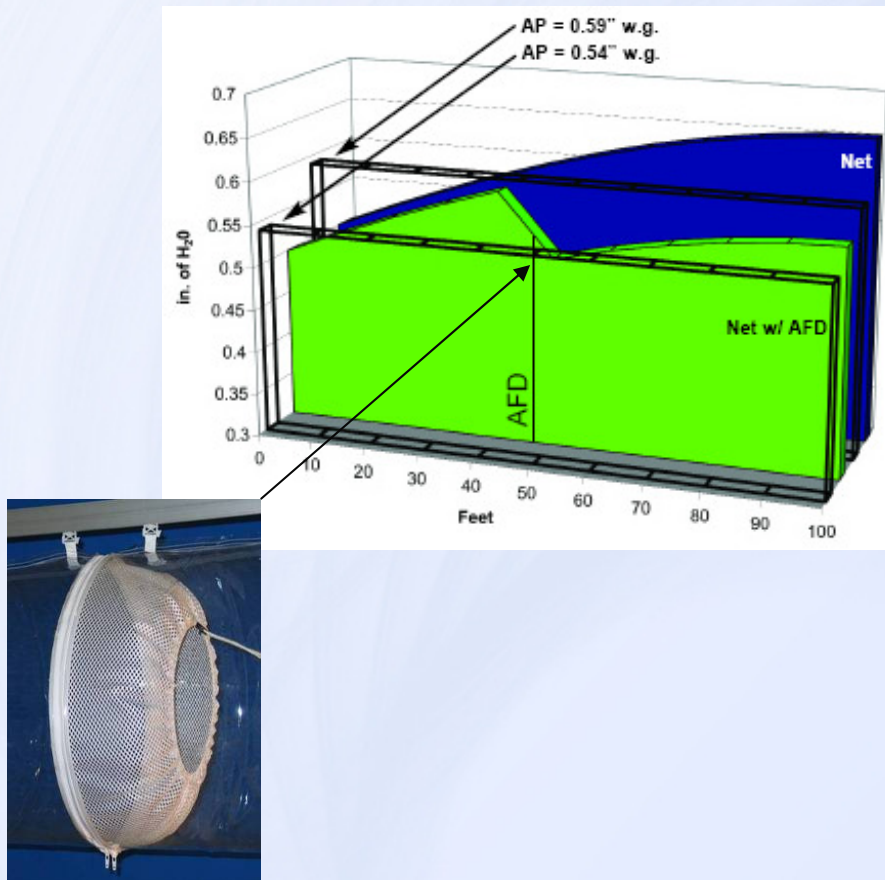
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Damper



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Damper: Uses



- Balance Static Regain
- Flow Straightener
- Stage Inflation
- Balancing

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Code Compliance

Air Dispersion Systems Shall:

1. Be installed entirely in exposed locations.
2. Be utilized in systems under positive pressure.
3. Not pass through or penetrate fire-resistant rated construction.
4. Be listed and labeled in compliance with UL 2518



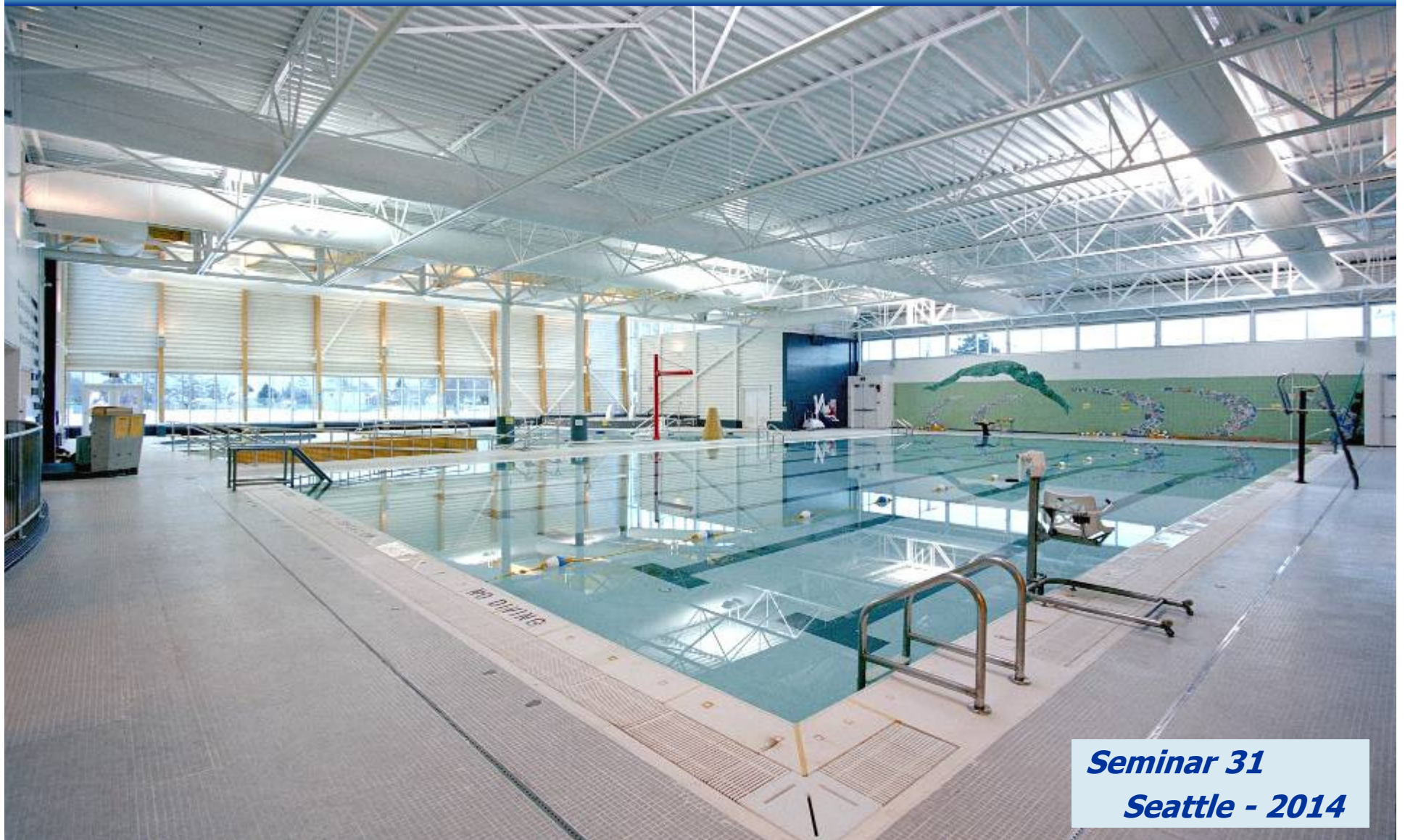
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