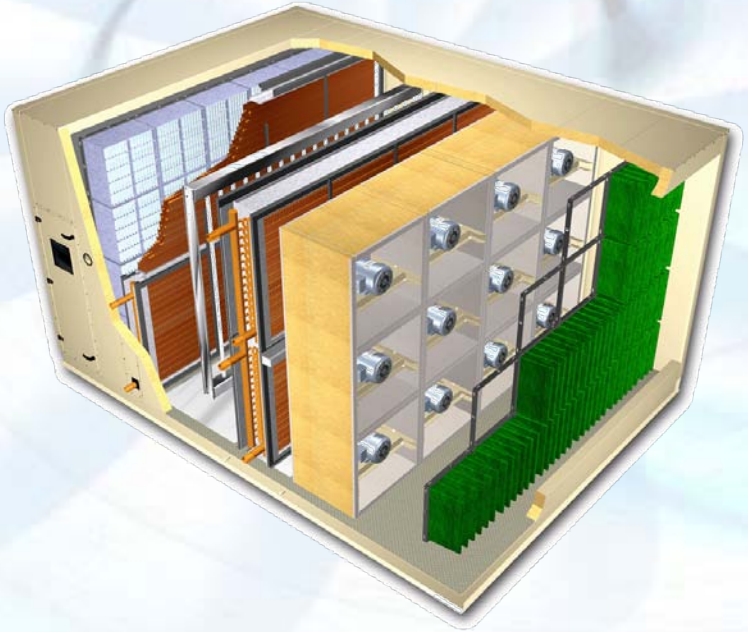
Fanwall Technology™

Reengineering How We Move Air [SM]

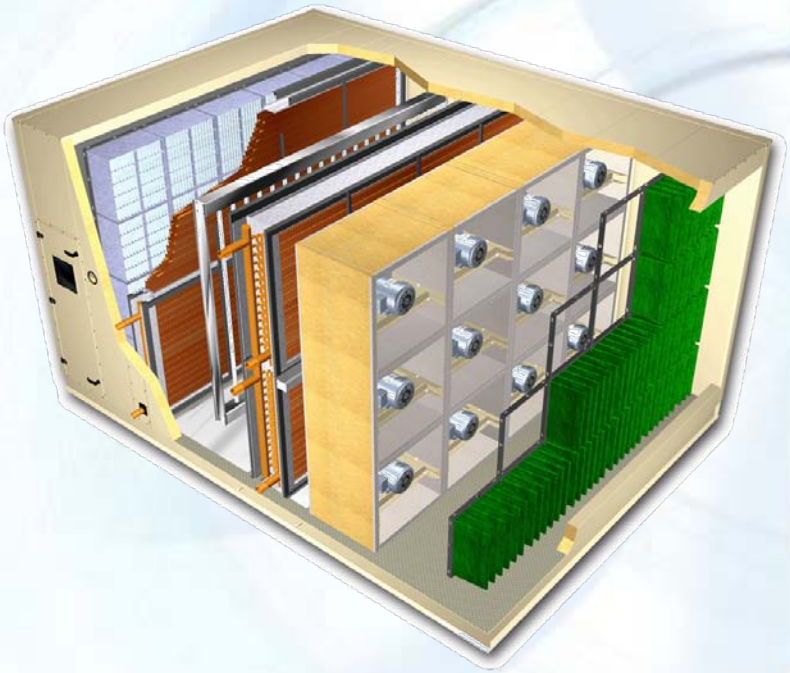


There Are Many Ways To Move Air

Common Selection Criteria

- Stable operation
- Energy-efficient selection
- Cost-effective fan
- Quiet operation
- Smallest footprint
- …

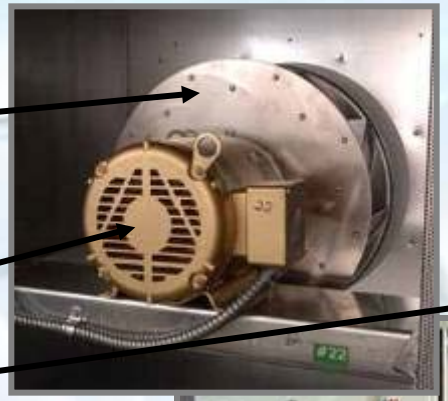
Fanwall Technology™



- Smaller footprint
- Multiple fans
- Less low frequency sound
- Smaller motors & wheels
- Acoustically absorbent fan section surfaces
- Higher efficiency fan wheel
- Easier to retrofit

Anatomy Of A Fanwall™

- High efficiency aluminum fan wheel
- Direct drive motor
- Inlet straightening grid
- Coplanar Silencer

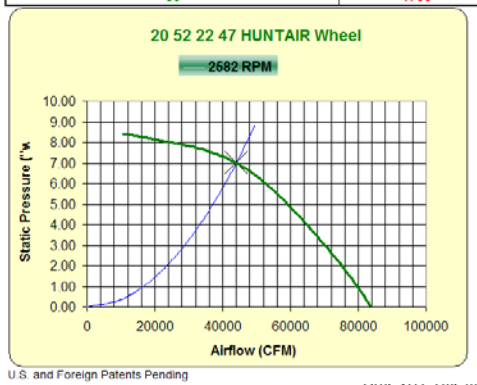


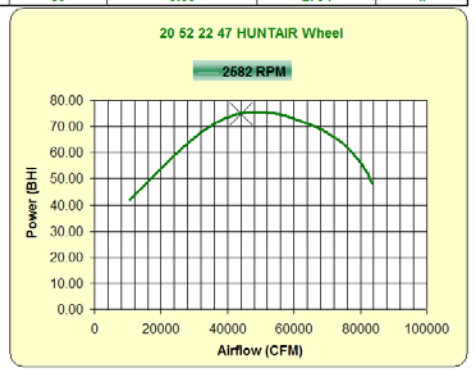
Advantages Over Traditional Air Handler Design

With Fanwall Technology™

- **Optimized Energy Usage**
  - Individual fan/motor combinations selected for peak motor efficiency
  - Lower connected horsepower for most applications

CFM (Total)	SP (in w.c.)	Operating BHP (Total)	Operating BHP (Per Fan)	Wheel Size "	Wheel Width %	Speed	# Fans
44000	7.00	74.99	5.00	20	52	2582	15
Peak SP (in w.c.)	**Minimum Wheel Housing "**		**Altitude Ft**	**Temperature °F**	**Density**	**Standard Air BHP**	
8.42	26.67		0	70	0.0750	5.00	
% of Peak Static Pressure			**Motor Name Plate RPM**	**Operating Hz**	**Motor HP Recommended**	**Max RPM for Class**	**Wheel Class**
83			1750	89	5.00	2794	II

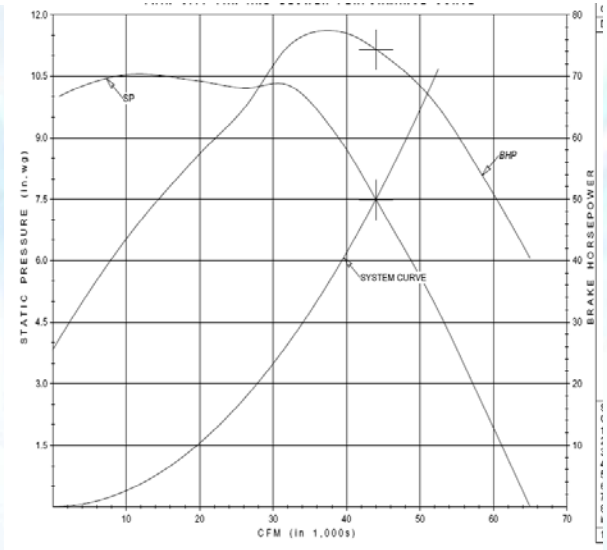




U.S. and Foreign Patents Pending

Fanwall™ – 15 Fan Array Air Handler

Conventional Air Handler -



Advantages Over Traditional Air Handler Design

With Fanwall Technology™

- **System Reliability –**
  - Arrangement 4 fans eliminate belts, sheaves, and fan bearings
  - Multiple fans provide unparalleled redundancy without the need for standby units
  - Greatly reduces / eliminates the exposure of downtime due to mechanical failure
  - Standard “off-the-shelf” motors

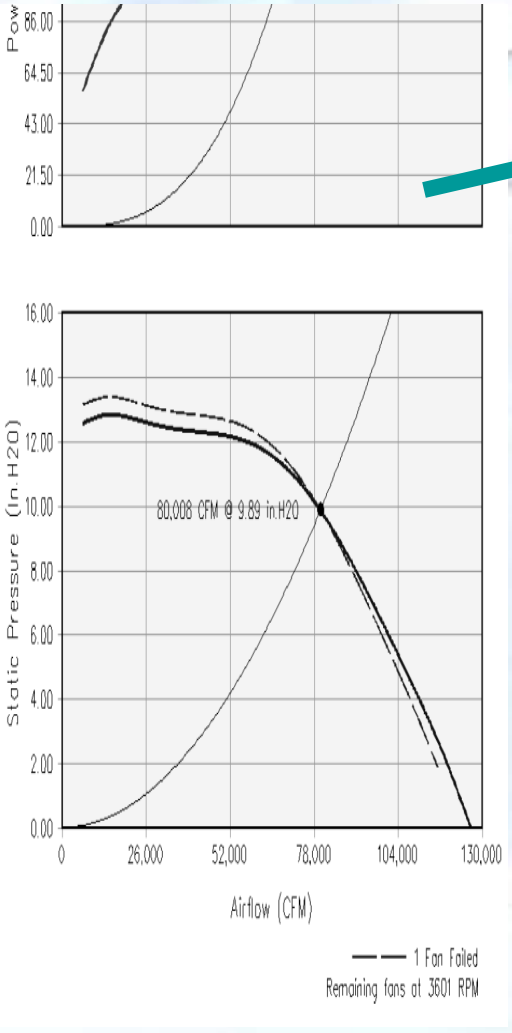
FWT with Inactive Fan

Performance		
Total CFM	80,000	80,008
CFM per Fan	4,211	4,445
TSP	9.89	9.89
Peak SP	12.55	
% of Peak SP	79%	
Total BHP	172.70	174.42
BHP per Fan	9.09	9.69

Fan Wheel		
Diameter	18	
Width	57%	
RPM	3525	3601
Balancing	1 Plane	

Quantity / Configuration		
Active Fans	19	18
Redundant Fans	1 (Not Wired)	
Array	5 Rows x 4 Cols	
Cell Size	35.375 H x 40.250 W	
Fan Wall Depth	33.500	

Motor	
HP Each	10
Total Motor HP	190.0
RPM	3525
Frame	215T
Enclosure	TEFC
Voltage / Phase	460V / 3 Phase

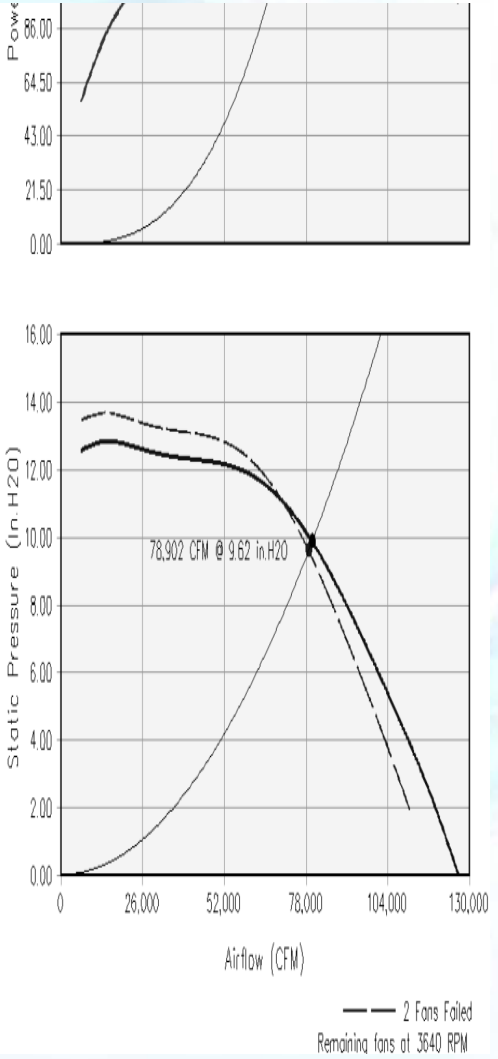


Performance		
Total CFM	80,000	78,902
CFM per Fan	4,211	4,641
TSP	9.89	9.62
Peak SP	12.55	
% of Peak SP	79%	
Total BHP	172.70	170.00
BHP per Fan	9.09	10.00

Fan Wheel		
Diameter	18	
Width	57%	
RPM	3525	3640
Balancing	1 Plane	

Quantity / Configuration		
Active Fans	19	17
Redundant Fans	1 (Not Wired)	
Array	5 Rows x 4 Cols	
Cell Size	35.375 H x 40.250 W	
Fan Wall Depth	33.500	

Motor	
HP Each	10
Total Motor HP	190.0
RPM	3525
Frame	215T
Enclosure	TEFC



Advantages Over Traditional Air Handler Design

With Fanwall Technology™

Ease of Maintenance –

- Identical fan cartridges can be used for multiple units.
- Replacement fan assemblies can be installed in 30 min. or less
- Reduces the amount of time and cost associated with service and replacement.

Maintenance Comparison

- Housed Fans:
  - Belts
  - Sheaves
  - Set screws
  - Belt Guards
  - Motor bases
  - Springs
  - Lubrications
  - **One fail fail: 0 cfm**
- FWT Fan:
  - None

Advantages Over Traditional Air Handler Design

With Fanwall Technology™

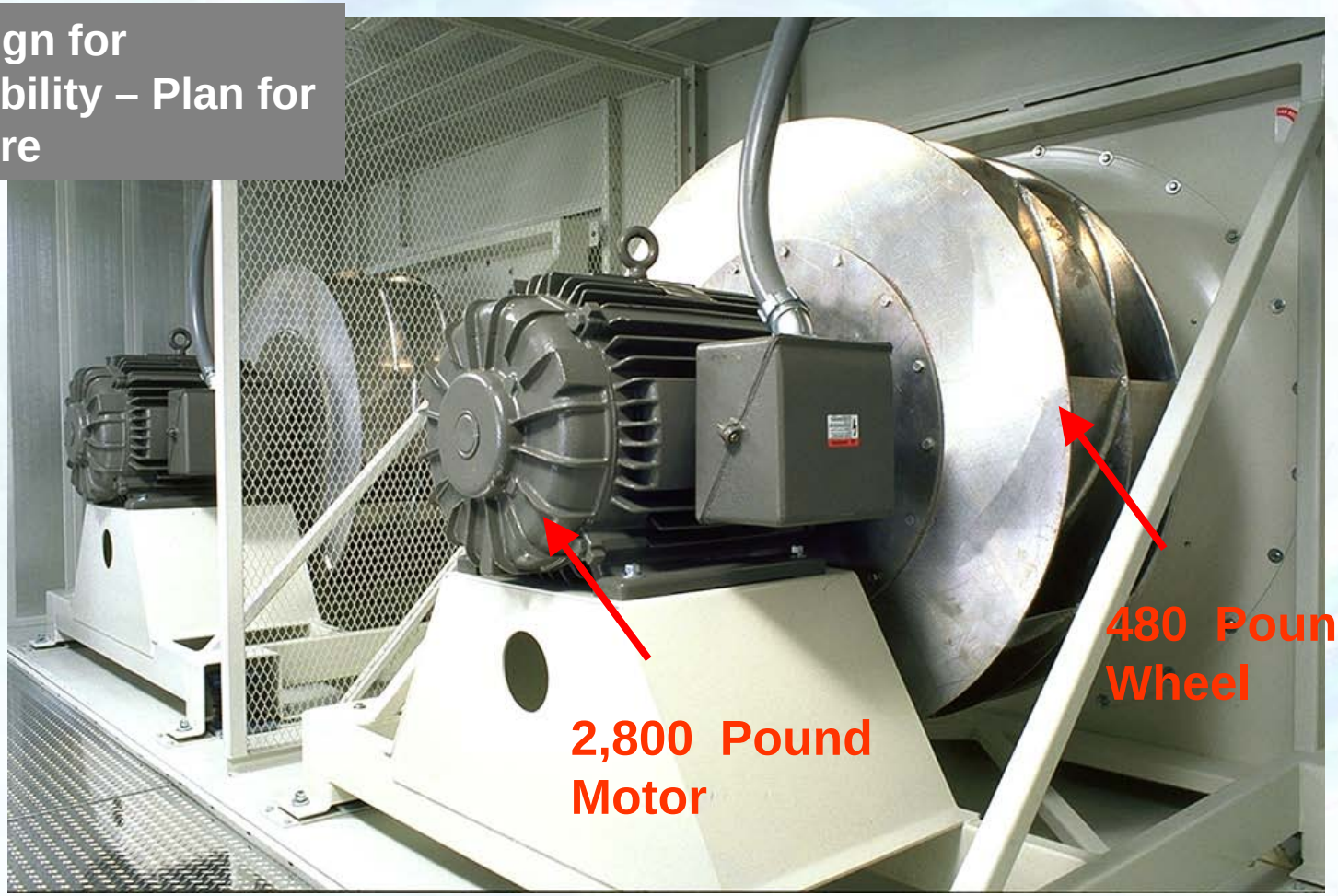
Ease of Maintenance –

- These twin 125 HP motors were in units that were stacked in a well in the center of a roof opening. To remove a motor from the roof, a crane with a boom that could extend into the building 200 feet would be required.
- With FWT, the fan / motors could be removed by two technicians from the unit and off the roof.

Advantages Over Traditional Air Handler Design

With Fanwall Technology™

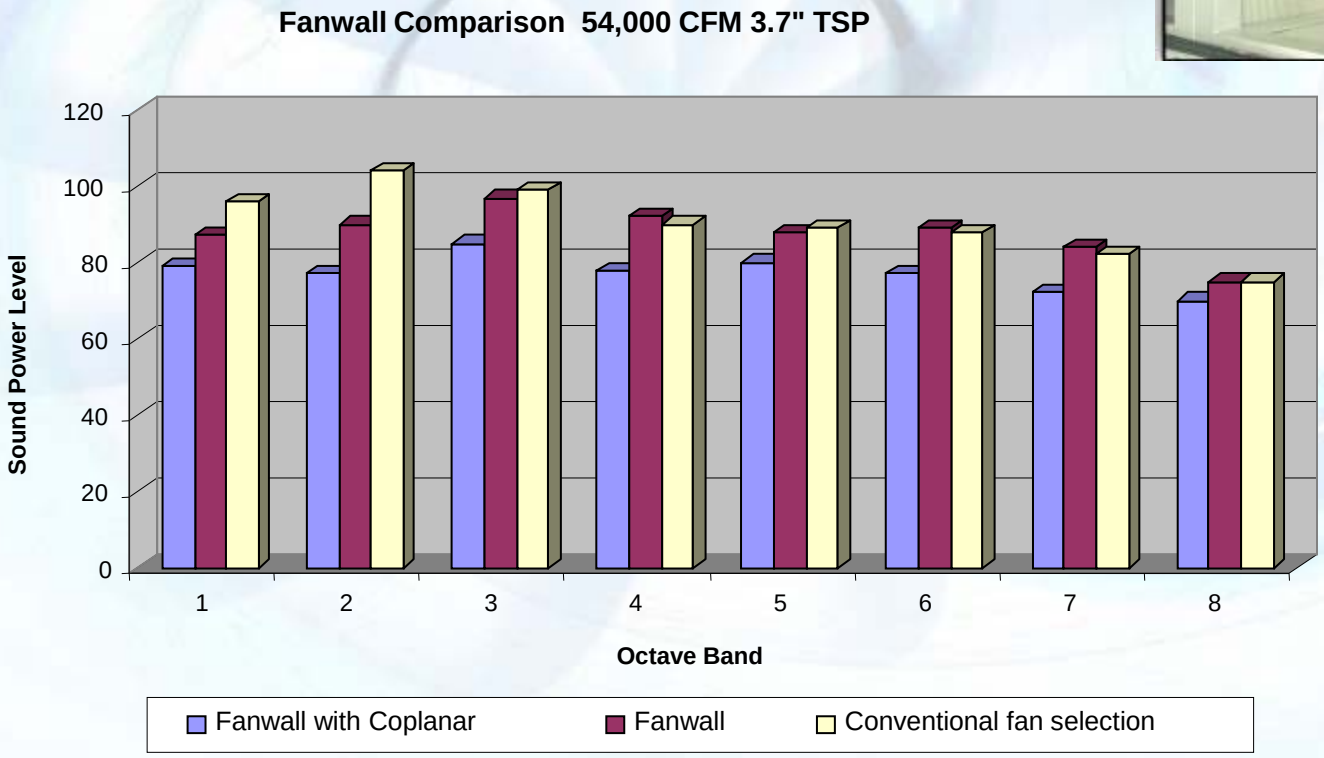
Design for reliability – Plan for failure



Coplanar Silencer

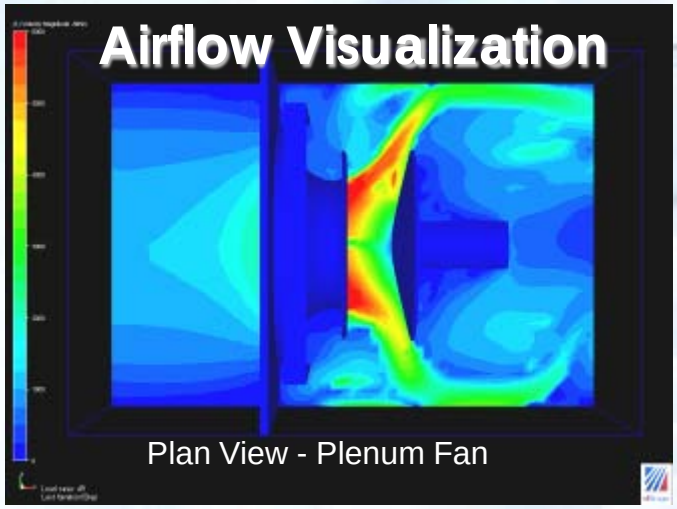
Silencer Package

- No added airway length for splitters
- No added pressure drop
- Relatively low cost

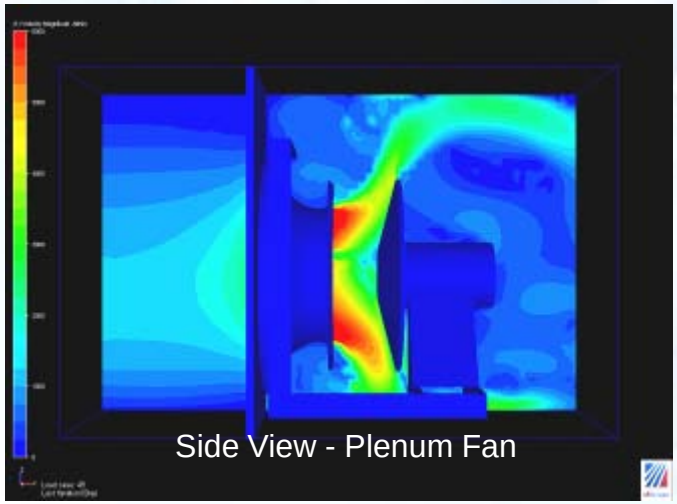


Less Turbulence = Less Noise

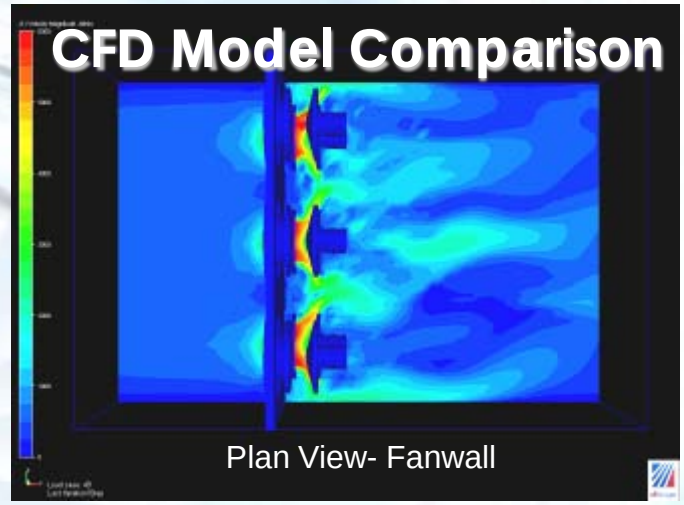
Conventional Fan



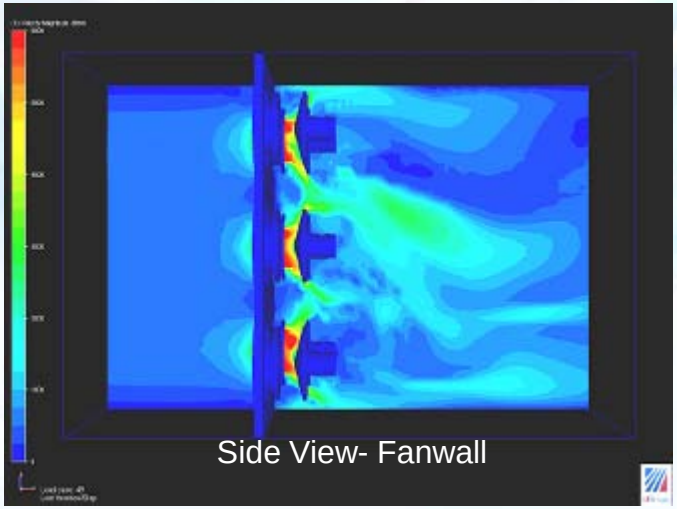
Plan View - Plenum Fan


Side View - Plenum Fan

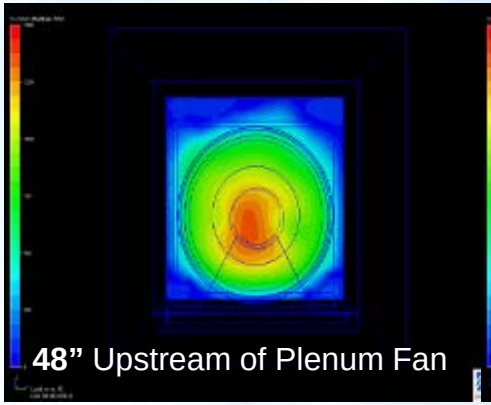
Fanwall™

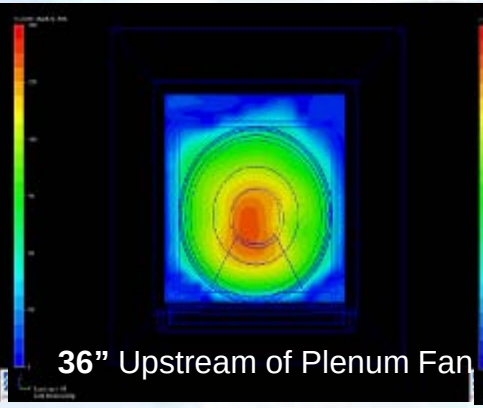


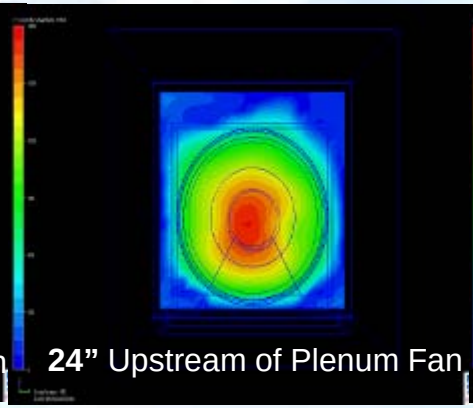
Plan View- Fanwall

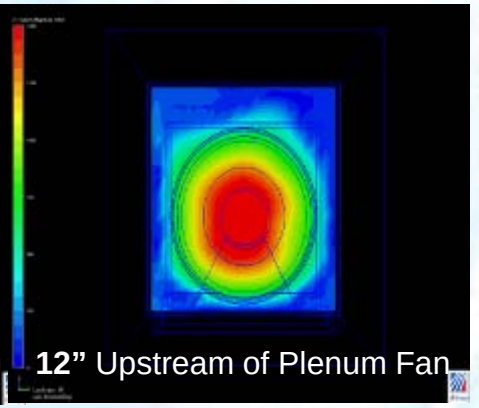

Side View- Fanwall

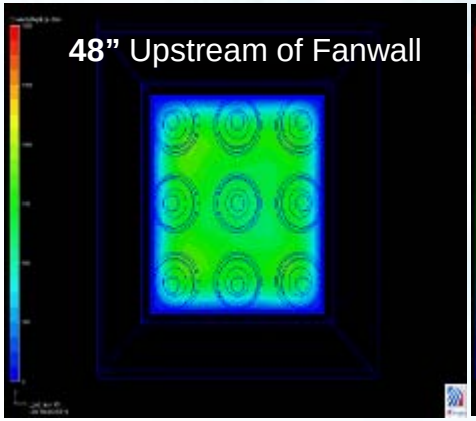
CFD Model Comparison

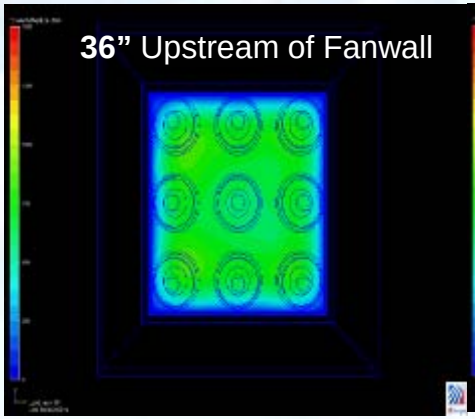


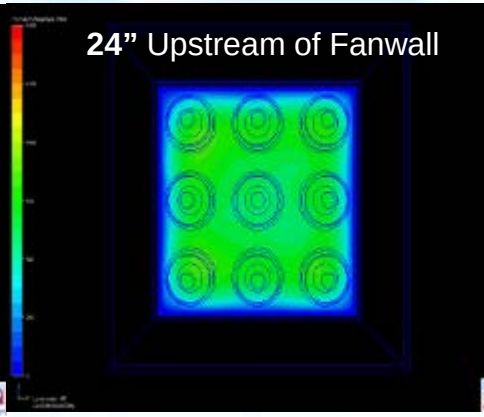


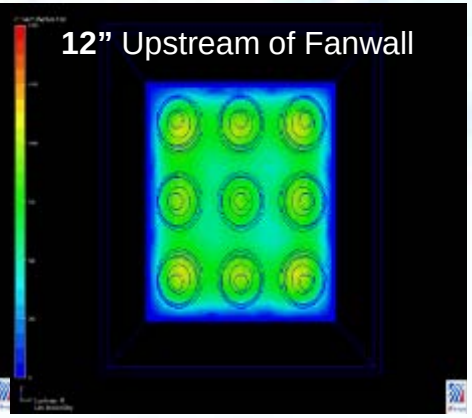






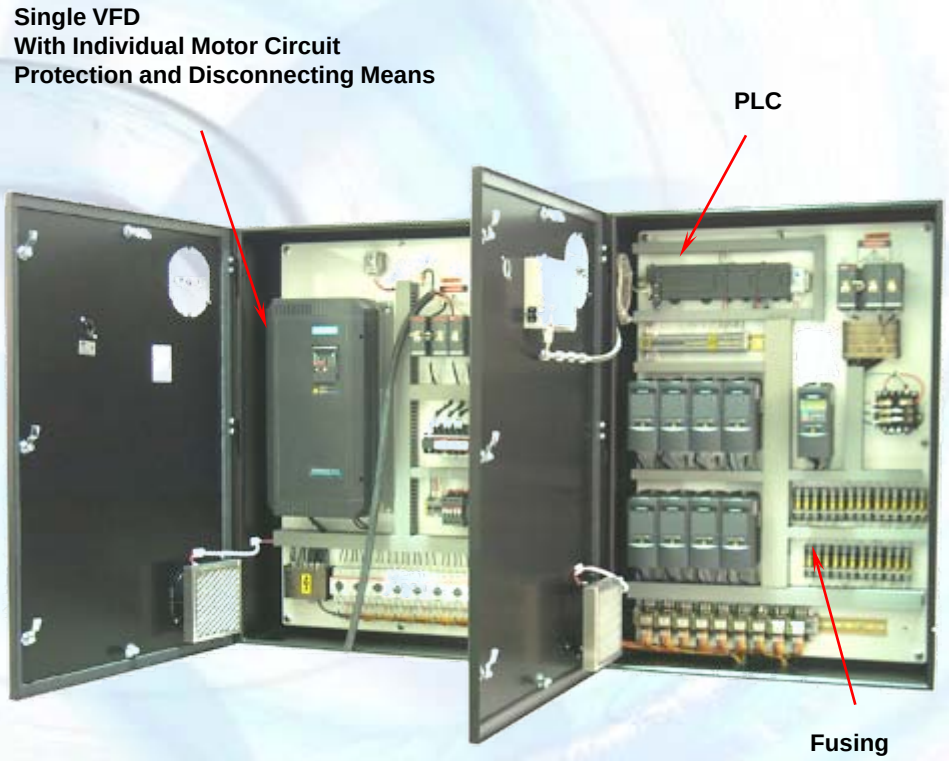






Control Options

- Single Variable Frequency Drive Controlling Multiple Fans.
- Single Variable Frequency Drive Controlling Multiple Fans With Bypass Contactor Option.
- Single Variable Frequency Drive Controlling Multiple Fans With Bypass VFD.



Single Variable Frequency Drive
SVFD

Multiply Variable Frequency Drive
MVFD

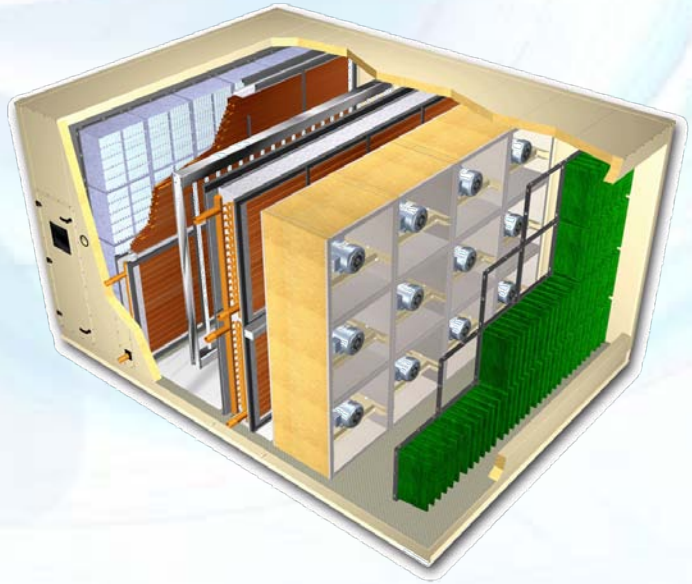
Full Service Electrical Department

Factory wired, ETL listings
for Type-1, 3R, 4, & 12 enclosures and
wiring custom control packages

Fanwall Technology™ 2.0

FANWALL® 2.0 adds to FANWALL®

- AMCA Certification for FANWALL® fans
- Zero Pressure drop BDD , the FBD
- System Optimization controls
- Micro Drive configuration
- Incremental HP motors



Fanwall Backdraft Damper

The FANWALL® Backdraft Damper

Contoured Flow Fan Inlet Back Flow prevention Damper.

Fanwall Backdraft Damper

FANWALL® 2.0 includes

1) A revolutionary new back draft damper design

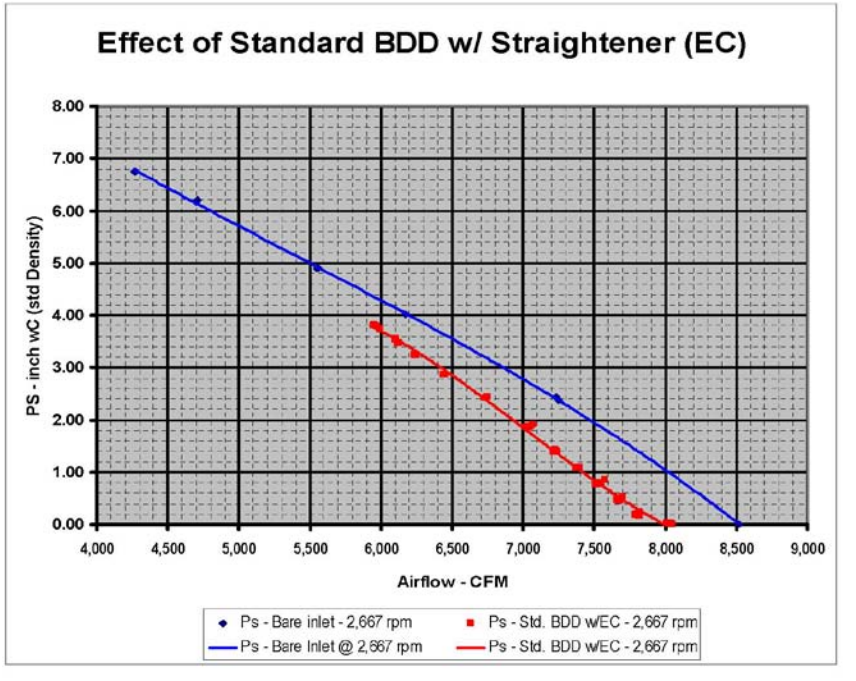
2) A practical and better functioning back flow prevention device that is clearly a necessary element of any successful FANWALL® installation. The design actually creates *static regain and contributes "zero system effect", in other words, no pressure drop!!!*

FBD Back Draft Damper

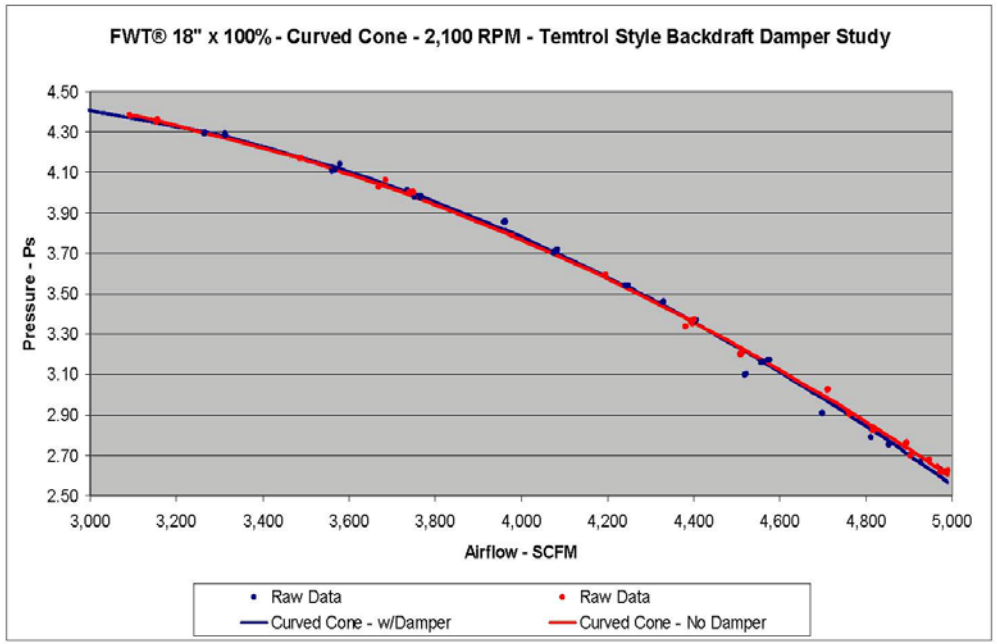
Fanwall Backdraft Damper

FBD Damper

- Zero net system effect!



Industry Standard BD Damper



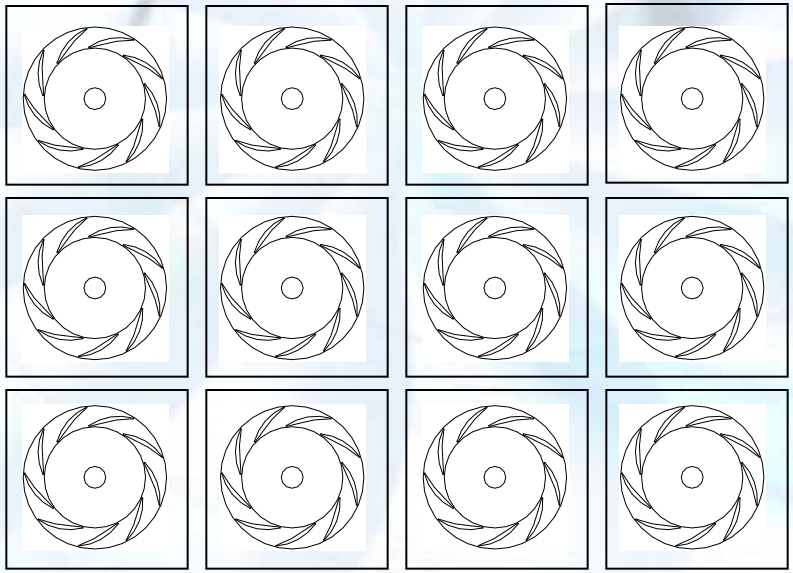
FBD Damper

19

Fanwall System Optimization

FANWALL® 2.0 includes
System optimization controls

reconfiguring of active fans in an array to achieve substantially peak efficiency



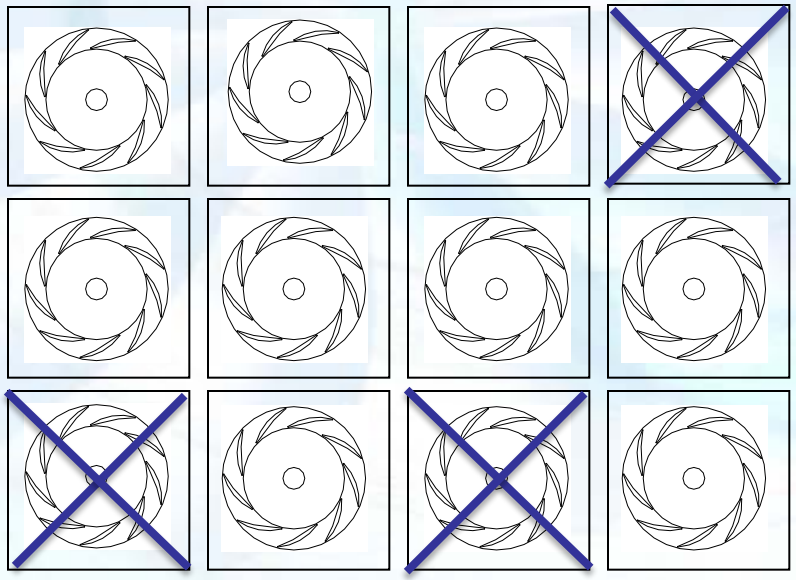
Fanwall Backdraft Damper

FANWALL® System Optimization

1) **When possible, fans will be manually or automatically disabled in the array to achieve substantially peak efficiency for the actual system conditions.**

2) **Optimized performance from minimum to maximum system loads.**

3) **Perfect for those systems with dynamically changing system curves**



Fanwall Technology™ 2.0

***FANWALL® 2.0* also features**
AMCA Certification for Huntair FANWALL® fans

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

Huntair PL 10

Models:
12 , 14 , 16 , 18 , 20 , 22

Catalogs:
HUNTAIR FAN SELECTOR PROGRAM V1.0 (Electronic), April 2010

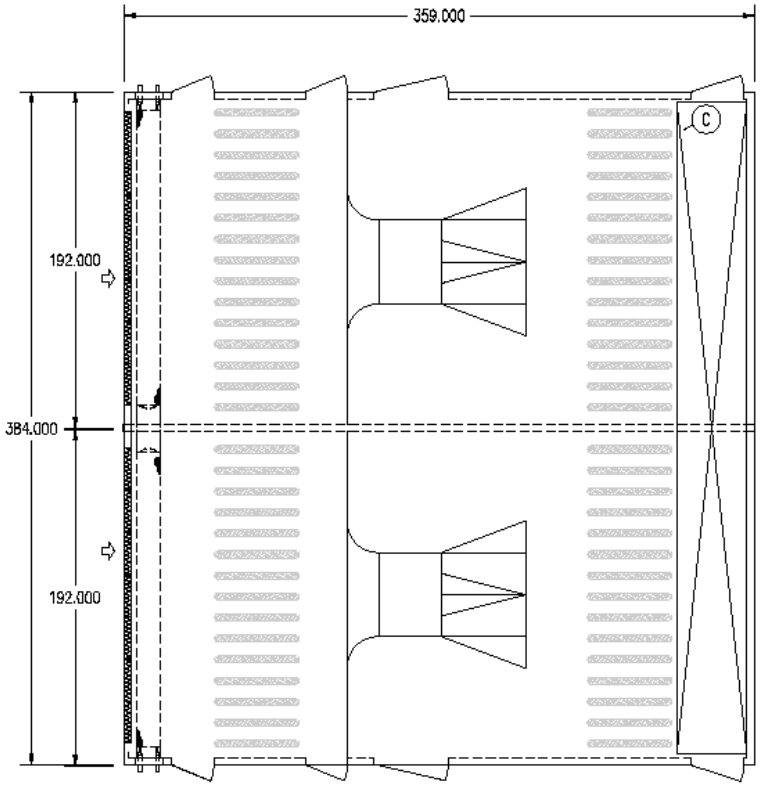
Certification date:
April 19, 2010

Fanwall Technology™ 2.0

- **Certified FANWALL® Fan Static efficiency**
- **72% Static Eff.**

Conventional Air Handler - 200,000 CFM

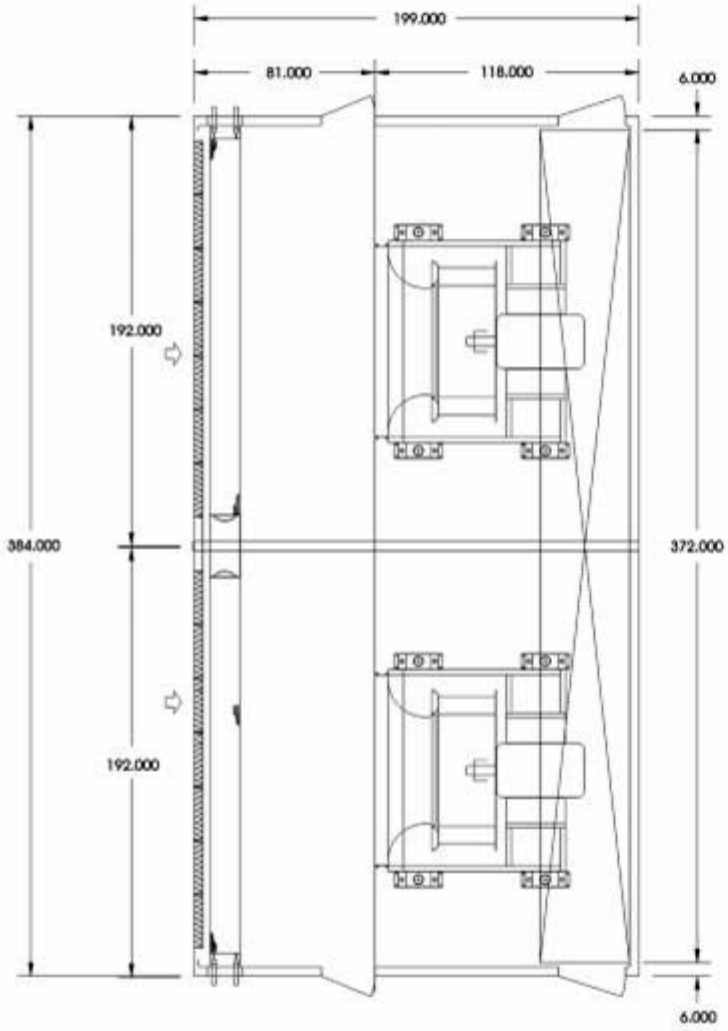
Vane Axial Fans



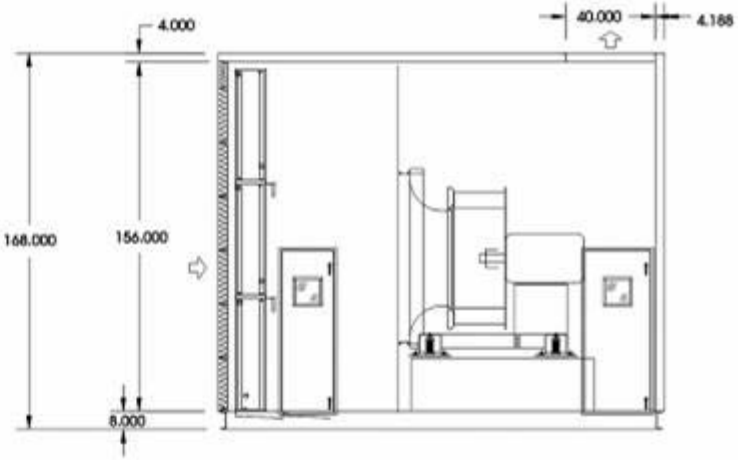
Vane Axial unit
359-inches

Conventional Air Handler - 200,000 CFM

Direct Drive Plenum Fans

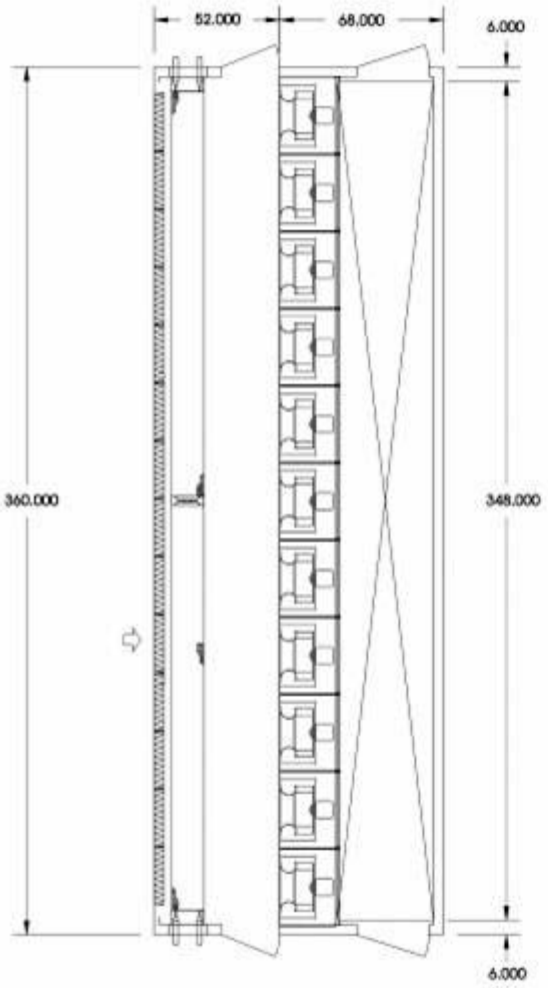


Fan Section
199-inches



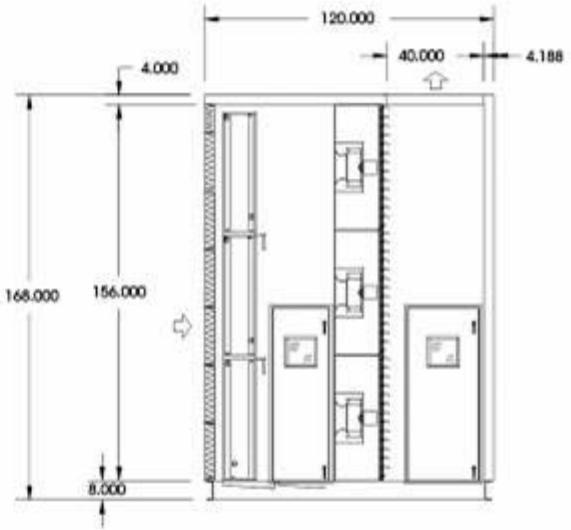
Fanwall Air Handler - 200,000 CFM

Fanwall *Technology*™



FANWALL UNIT: 120-inches

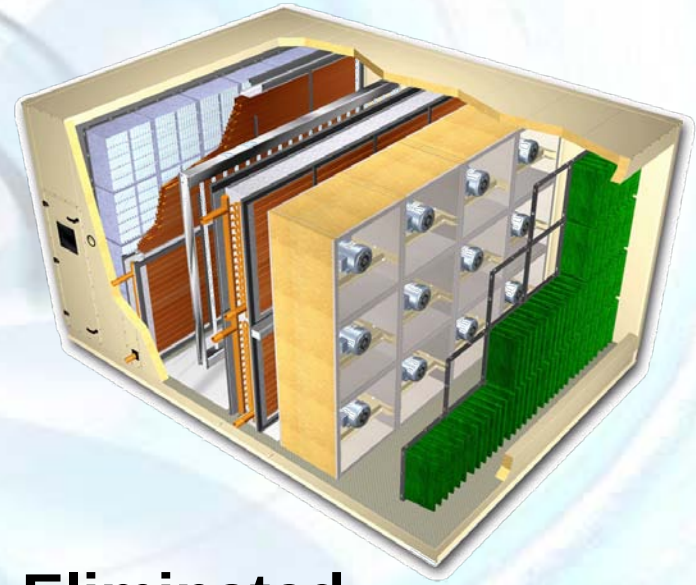
359”-120” = 239” savings (20’)



- **Lower Noise at Critical Frequencies-**
  Fanwall Technology is based on using small high efficient fans operating at higher speeds than traditional designs. Higher speeds result in less low frequency noise and a reduction in the amount of sound attenuation required in the system.

Fanwall Technology™ Benefits

- Greater Flexibility in Unit Dimensions
- Less Floor Space Required
- Acoustical Benefits
- Optimized Energy Usage
- System Reliability
- Lower Total Cost of Ownership
- Ease of Maintenance
- Seismic and Vibration Concerns Eliminated



FACT

The heart and soul of *FANWALL*® is a very efficient small diameter fan. One that is more efficient than any other that is currently available from any other source.