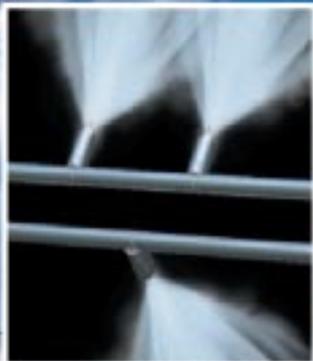


GAS TURBINE Inlet Air Treatment Systems



Cleanly making a difference...



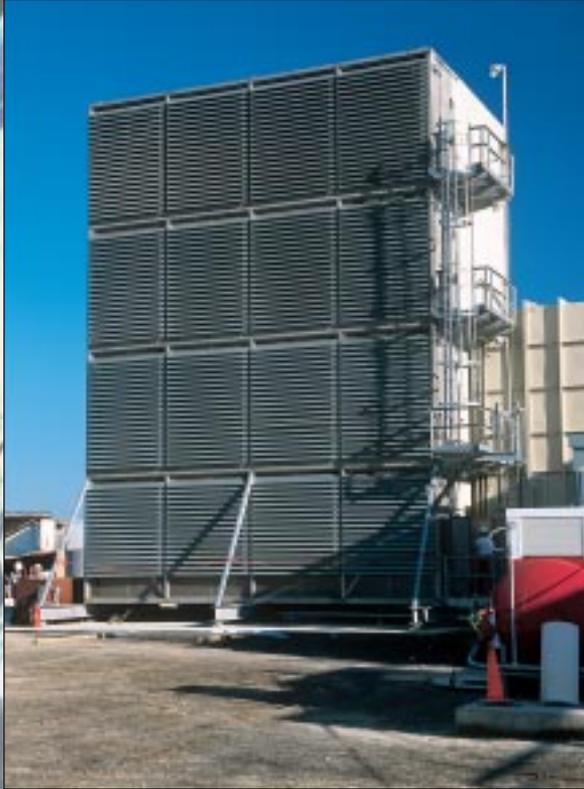
**BRADEN
MANUFACTURING, LLC**

A GLOBAL POWER EQUIPMENT GROUP COMPANY



Braden Has The Global Experience Necessary For Gas Turbine Inlet Air Treatment

From replacement components and efficiency upgrades, to complete design, fabrication and installation of Air Treatment Systems, Braden's Filtration Team offers you experience which maximizes your energy production and insures clean air with reliable operation.



Barrier filter with evaporative cooler for a Westinghouse 501F in Texas, USA.



Barrier filter for a GE frame 6B in Thailand.



Barrier filter with cooling coils and an anti-icing system for an ABB 11N1 in Nebraska, USA.

Installations & Worldwide Fabrication Capabilities

With fabrication partners in over 25 countries, Braden will meet your “local content” requirements and provide cost-effective fabrication throughout the world.



Barrier filter with anti-icing for Siemens V94.3A in Argentina, SA.



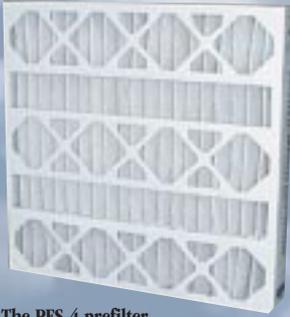
- Braden installations worldwide.
- Sales and engineering offices.



Prefilters & Coalescers

PFS-4™

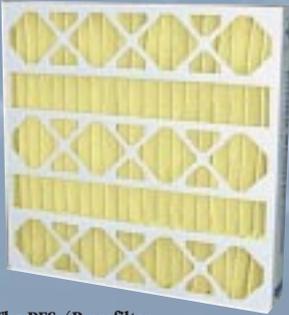
Braden's PFS-4™ prefilter is designed to collect the majority of airborne particulate mass prior to the air entering the TriCel™ high efficiency barrier element. The synthetic media in the PFS-4 prefilter is pleated with wire mesh backing and is enclosed in a rigid channel frame. Strength and integrity are provided by the lattice work cross strips. These cost effective design features combine to provide low pressure drop with a high dust-holding capacity, which in turn contributes to long life.



The PFS-4 prefilter with rigid channel frame.

PFS-4B

Braden's PFS-4B prefilter is designed in an enclosed frame, cut from two pieces of moisture resistant heavy duty beverage board. This filter includes a rigid channel, which is an integral part of the frame. The synthetic media is pleated with wire mesh backing and the surface is bonded to the frame to ensure proper pleat spacing and retention. This will eliminate the possibility of air by-pass through the filter. These cost effective design features combine to provide low pressure drop with medium dust-holding capacity, which in turn contributes to long life. The PFS-4B is classed as a medium efficiency, totally disposable filter offering extended service life to Braden's TriCel final filters.



The PFS-4B prefilter with bonded strength.

PFS-4-P

Braden's PFS-4-P utilizes the same pleated media as the PFS-4 and PFS-4B enclosed in a two part plastic frame which provides superior resistance to airborne moisture for environments with a high moisture content. The reusable frame permits easy media replacement providing significant cost savings over time.



The PFS-4-P prefilter with reusable all-plastic frame.

CLS-2G

This coalescer / prefilter combination is designed to remove the majority of airborne moisture and particulate mass prior to the air entering the TriCel final filter. Braden recommends this superior coalescer / prefilter combination where excessive moisture affects the performance of a standard prefilter. The CLS-2G contains 3" of glassfiber media compressed into a two part, re-usable, 2" plastic frame gasketed on the clean air side. A drain hole is positioned at the bottom of each frame to allow drainage of collected air stream moisture.



The CLS-2G coalescing filter with reusable plastic frame.

Series	ASHRAE		Delta P (WG/Pascals)			Airflow (CFM/m ³ /sec)		
	Efficiency	Nominal Size	Low	Med	High	Low	Med	High
PFS-4	90%	24" x 24" x 4"	0.35/88	0.50/125	N/R	2000/.94	2500/1.2	N/R
PFS-4B	89%	24" x 24" x 4"	0.29/73	0.39/98	N/R	2000/.94	2500/1.2	N/R
CLS-2G	99%*	24" x 24" x 2"	0.25/63	0.40/100	N/R	2000/.94	2500/1.2	N/R

*Moisture removal efficiency ASHRAE does not apply.
NR = Not Recommended

TriCel™ Barrier Final Filters

Braden's TriCel™ high efficiency barrier filter is specifically designed for gas turbine air intake applications. Using the latest manufacturer's techniques in filter media and pleating, the TriCel filter provides high volumetric air flow with extremely low pressure drop.



Strong, Compact Design

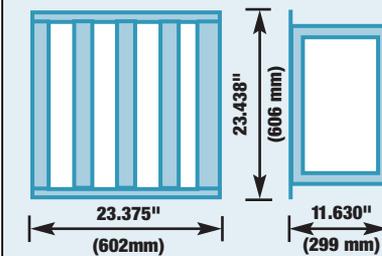
The TriCel filter's superior design includes high burst pressure ratings, extraordinarily strong filter elements, and compact size for ease of shipping. The filter's glass fiber paper media is stable, without the fiber problems common to other media. The paper media is formed into pleat packs, which are then sealed into a plastic frame. The TriCel all-plastic frame can be completely

disposed of by incineration. Each TriCel filter ships with new gaskets pre-mounted to the air leaving face of the header. TriCel filters fit most commonly used filter frames, utilizing existing latching mechanisms.

Matched For Your GT's Environment

TriCel filters are available in three different efficiency ranges (85%, 95% and 98%), so Braden can make the most economical selection for your operating environment. ASHRAE Test Procedure 52.1 is used by an independent laboratory to verify TriCel filters' efficiencies, operating characteristics and design features.

Actual Dimensions



Series	ASHRAE Efficiency	Nominal Size	Delta P (WG/Pascals)			Airflow (CFM/m ³ /sec)		
			Low	Med	High	Low	Med	High
TriCel-85	85%	24" x 24" x 12"	0.30/75	0.45/113	0.65/163	2000/.94	2500/1.2	3000/1.4
TriCel-95	95%	24" x 24" x 12"	0.38/95	0.52/130	0.7/175	2000/.94	2500/1.2	3000/1.4
TriCel-98	98%	24" x 24" x 12"	0.62/155	0.80/200	N/R	2000/.94	2500/1.2	N/R

NR = Not Recommended



ExCel™ Self-Cleaning Pulse Filter Systems

Long-Life Cartridges

At the core of Braden’s pulse-cleaning system is the ExCel cartridge - a highly efficient filter designed to be pneumatically cleaned. The media is either cellulose/synthetic blend or 100% synthetic, corrugated and pleated to form a conical or cylindrical media pack. The media pack is supported by a zinc-plated expanded metal liner on the inner and outer face of the filter. Hot melt adhesive bonds the media pack to both liners. The liners and media pack are then sealed into the end caps. The top cap has a pre-mounted, solid-rubber ring gasket to provide the clean air seal between the cap and the system’s header plate. Braden also offers this filter with all metal parts using 304 or 316 stainless steel for corrosive environments.

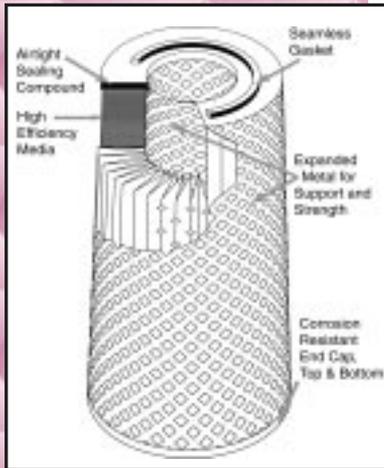


Fast, Powerful Cleaning

Upon initiation of pulse cleaning, a solid state timer is activated which, in turn, fires the solenoid/pneumatic valves. The pneumatic valves send a sharp burst (or “pulse”) of compressed air through the blow pipes and into the cartridges. This sharp burst of compressed air produces a shock wave and a momentary reversal of normal airflow. The collected particulate matter is dislodged, cleaning the cartridge media.

High Filtration Performance

AC Fine/NaCl tests have proven that ExCel filters have efficiencies of 99.95% or higher. With particles of 10 microns and up, efficiencies of essentially 100% are recorded, with correspondingly high efficiencies in the range of .4-100 microns. The ExCel filter has successfully passed the ARAMCO test.



Complete Pulse Filter Systems

ExCel systems include the following components, arranged in the most economical and space-saving design:

- Weather Hoods with Birdscreens
- Controls, Electricals & Instrumentation
- Filter Modules with ExCel Cartridges
- Service Platforms & Ladders/Stairs
- Clean Air Plenum
- Complete Support Structure
- Pneumatic System

Additional Inlet Air Treatment Systems

Fog Cooling Systems

Braden fog cooling systems are a series of stainless steel tubing arrays precisely distributing demineralized water under high pressure to specialized nozzles. The resulting micron size water droplets cool the inlet air, making it more dense, maximizing gas turbine power output.



Heating/Cooling Coils

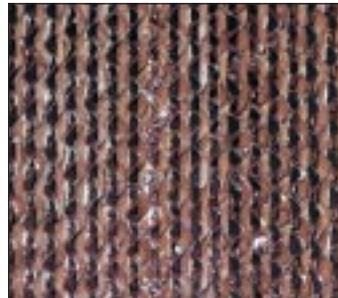
Braden can supply heating/cooling coils to increase/lower the dry bulb temperature and provide a greater mass flow of air to the gas turbine during cold/hot seasons using a different type of medium such as water and water glycol.



Evaporative Cooling

Evaporative coolers are available to provide cooling of the inlet air to improve the overall efficiency of the gas turbine cycle. These evaporative coolers use corrugated cellulose or PVC media and distribution pads for either recirculating or non-recirculating systems.

Evaporative Cooling Media



Anti-Icing Systems

Anti-Icing Systems can be designed using compressor bleed air to raise the entering air temperature when icing conditions exist.





Braden Retrofit and Construction Expertise

Cost-effective designs for the improvement of filtration and turbine performance. Braden offers you a complete retrofit engineering staff to assist in considering all of your options. Whether it's new replacement filter elements, anti-icing systems, evaporative cooler upgrades or a total replacement of an existing system, we'll meet your needs.



Before (GE Frame 5).

After refurbishment
by Braden
(GE Frame 5).



Siemens V94.2 in
South America.

Siemens V84.3A
Barrier Filter with
Anti-Icing System in
Connecticut, USA.





Braden's experience is your key to meeting critical milestones when installing filtration equipment. When you can't afford to miss a deadline, let Braden's decades of expertise provide you the confidence that it will be done right and on time!



Braden Construction: evaporative cooler installation, Siemens V94.2, South America

Two-stage Barrier Filter House



Braden Fogging System located at a Texas gulf coast chemical company sized for a frame 7EA gas turbine



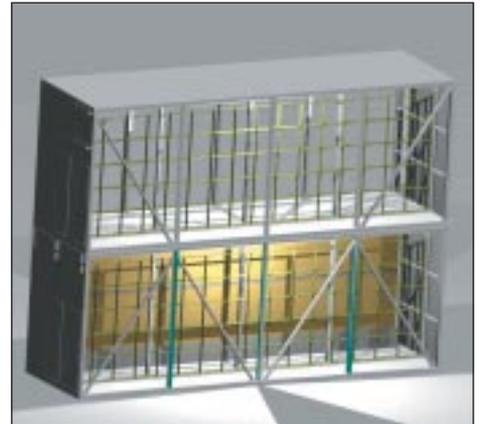


Comprehensive Design & Engineering Capabilities

Braden's technical capabilities are extensive. Our experienced engineering staff uses the most modern software to provide specific compliant designs to meet specific inlet air application criteria.

Braden has the following design engineering capabilities:

- 3-D Solid Modeling of Complex Shapes
- Computational Fluid Dynamics (CFD)
- Structural Design Analysis
- Thermal, Buckling, and Vibration Frequency Analysis
- Finite Element Analysis (FEA)
- Acoustical Testing and Analysis



Braden Manufacturing Facilities



Braden's Fort Smith, Arkansas manufacturing facility.



Braden's Monterrey, Mexico manufacturing facility.



Braden's international headquarters in Tulsa, Oklahoma.

World Class Manufacturing Quality

With ISO 9001 certification as the baseline for our quality programs, every manufacturing process is strictly monitored to insure our customers' expectations are met. Six Sigma Process Improvement Methodology is the core of our Continuous Improvement Program.



Filterhouse material preparation bay in Tulsa, Oklahoma plant.



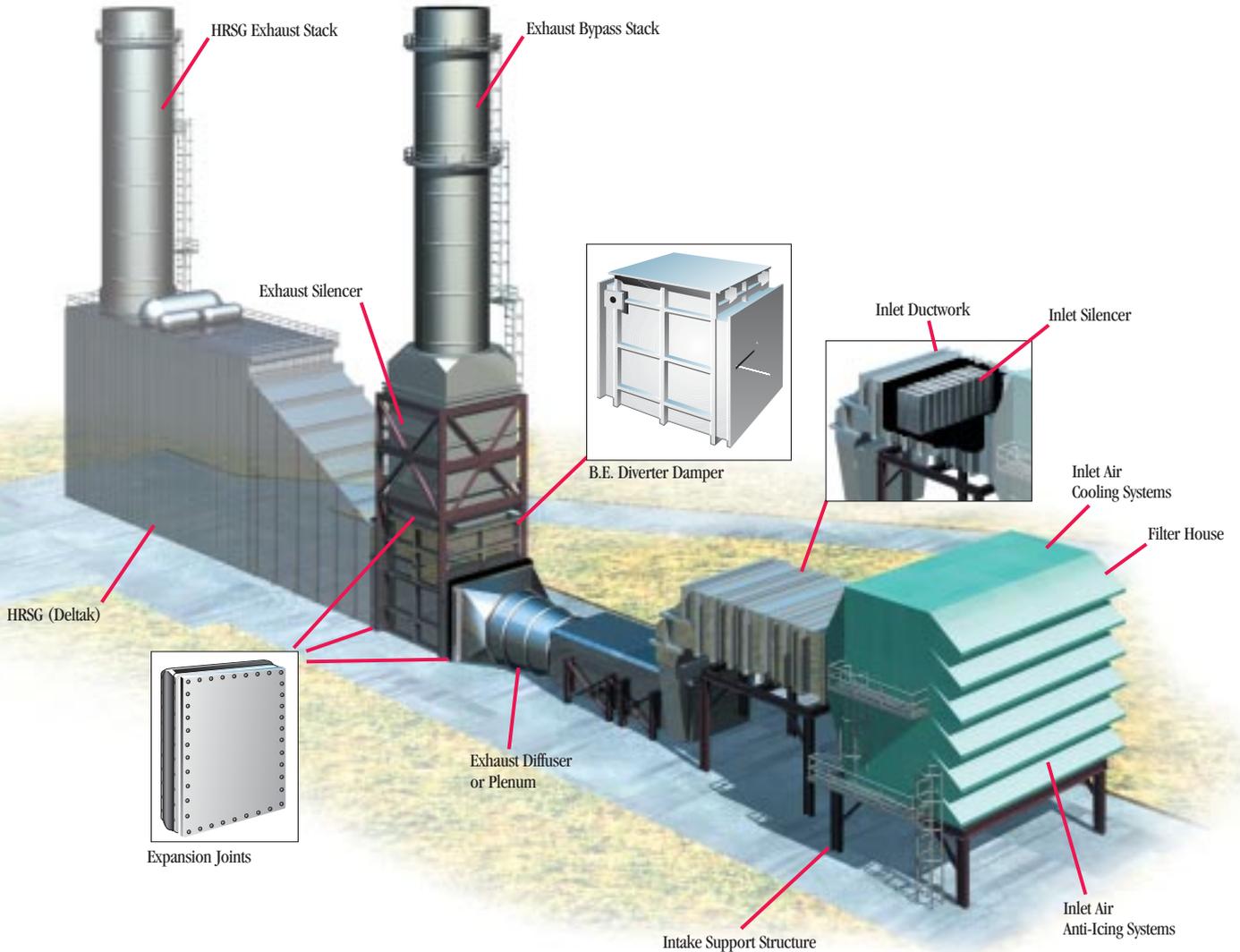
The interior of Braden's manufacturing facilities in Monterrey, Mexico.



GE Frame 7FA filterhouse modules in production.



Braden Systems For Gas Turbines



Braden Manufacturing, LLC

5199 North Mingo Road
Tulsa, Oklahoma 74117 USA

Tel: 918-272-5371
Fax: 918-272-7414

E-mail: Sales@braden.com
Websites: www.braden.com
www.bradenfilters.com

Braden-Europe B.V.

Grasbroekerweg 114
6412 BH Heerlen
The Netherlands

Tel: 31-(0) 45-5615-420
Fax: 31-(0) 45-5726-161

E-mail: BradenEurope@BradenEurope.com

Other Global Power Equipment Group Companies:

Deltak - Heat Recovery Steam Generators

2905 Northwest Boulevard
Suite 150
Minneapolis, MN 55441 USA

Tel: 763-557-7440
Fax: 763-557-4700

E-mail: boilers@deltak.com
Website: www.deltak.com

Deltak Asia

Representative Office
10 Anson Road
#25-12 International Plaza
Singapore 079903

Tel: 65-227-6823
Fax: 65-227-8375

Consolidated Fabricators, Inc.

Old Laurens Highway
RR 3, Box 581
Clinton, SC 29325
Tel: 864-833-4472
Fax: 964-833-4899

17 St. Mark Street
Fairfax Industrial Park
Auburn, MA 01501 USA
Tel: 508-832-9686
Fax: 508-832-7369