



Donaldson[®]
Filtration Solutions

GDS Filtration System

Advanced Static Inlet Air Filter System
for Large Gas Turbines



- ☑ *Compact, Modular Construction
Yields Various Configurations*
- ☑ *Sustained Low Pressure Drop
During Operation*
- ☑ *Standard Media : High Efficiency
Spider-Web[®]*
- ☑ *Add Prefilter Wraps to Create
2-Stage Filter in Harsher Environments*



*Filter pairs,
mounted horizontally
within filter house*

GTS-112
rev 2/01

The Donaldson GDS Inlet Air Filtration System for gas turbines delivers high filtration efficiency and high dust holding capacity at airflows high enough to satisfy large turbines -- all in a compact, modular package.

The GDS System is a static filter system that employs high efficiency filter pairs. Prefilter wraps may be added for a 2-stage filtration effect. When designed so, it can be easily retrofitted to be a Donaldson GDx self-cleaning (pulsed) air inlet filter system.

High Efficiency Filtration

Donaldson GDS filter pairs are available in your choice of filter media:

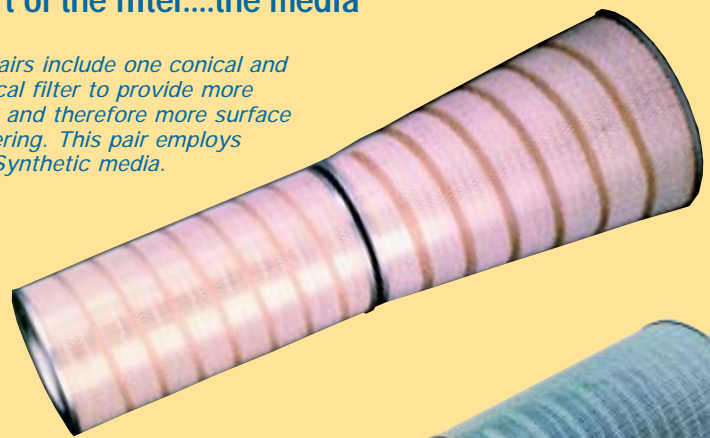
- **Duratek®**, our special blend of synthetic and natural fibers, designed to resist the intermittent moisture that power plants and oil/gas field operations so often deal with, such as moving fog and coastal storms; or
- Premium protection **synthetic** media. Also designed with moisture resistance, but using man-made fibers with controlled fiber diameter and pore size, resulting in superior dust-holding capacity and low ΔP .

For either substrate media, Donaldson's exclusive **Spider-Web®** fine fiber technology is an option.

Spider-Web® provides maximum protection against very small dirt/dust particles -- those that typically cause blade fouling -- without adding significant ΔP . This proprietary technology consists of a fine, even web of submicron diameter fibers applied to the surface of the filter media substrate. The fine web enhances the surface-loading characteristics of the media, thereby increasing filter efficiency.
Bottom line: Spider-Web delivers cleaner air to the turbine and thereby protects it better than any other filter media currently available.

The heart of the filter...the media

GDS filter pairs include one conical and one cylindrical filter to provide more filter media, and therefore more surface area for filtering. This pair employs Donaldson Synthetic media.



The blue media on this GDS filter pair shows that it contains media with Spider-Web® treatment. (See explanation at left.)



2-Stage Filtration Option: Adding Prefilter Wraps

If you're dealing with a particularly harsh environment, you may want to use the option that makes the GDS into a 2-stage system: prefilter wraps. Wraps are a low-cost and very effective way to add a first stage that captures most of the larger particulate, such as seeds, ash, sticks, and many seasonal or situational types of debris. Air is then fine filtered through the primary filters.

The GDS is designed with modules that are the building blocks for creating a variety of configurations to meet specific application requirements. The modular design enables:

- a relatively small system footprint,
- shipment via standard shipping containers,
- easy & fast on-site erection,
- reduced on-site space requirements.

GDS System design provides longer filter service life, less turbine downtime, and lower maintenance costs. Here are some of the main reasons why:

(1) GDS filter pairs have a conical design that allows more filter media to be packed into a small package, and therefore more dust-holding capacity. More capacity means longer intervals between filter changeouts.

(2) The pairs are designed to ensure positive gasket sealing, eliminating the leakage and corrosion concerns commonly associated with panel filter systems.

(3) With prefilter wraps in place, much of the larger dust particles are trapped before reaching the primary filters. These simple wraps are inexpensive to change, allowing you to get longer life from the primary filters. Prefilter changeout can be done while the turbine is running.

Air Inlet Treatment

Air inlet treatment accessories can be used to overcome specific problems in your unique environment. GDS inlet hoods are designed to easily accommodate a variety of air treatment accessories available from Donaldson to provide just the right performance in different operating conditions.

- Remove fog with Donaldson D-Fog™ elements, designed to fit into the inlet hoods.
- Remove mist with moisture eliminator panels in the inlet hoods. These can double as bird/trash screens, ensuring that large objects are kept away from the filters.
- Inlet heating systems can prevent ice from forming and blocking the inlet system.
- Coalescers or seasonal prefilters can be fitted into GDS hoods to handle special site conditions.

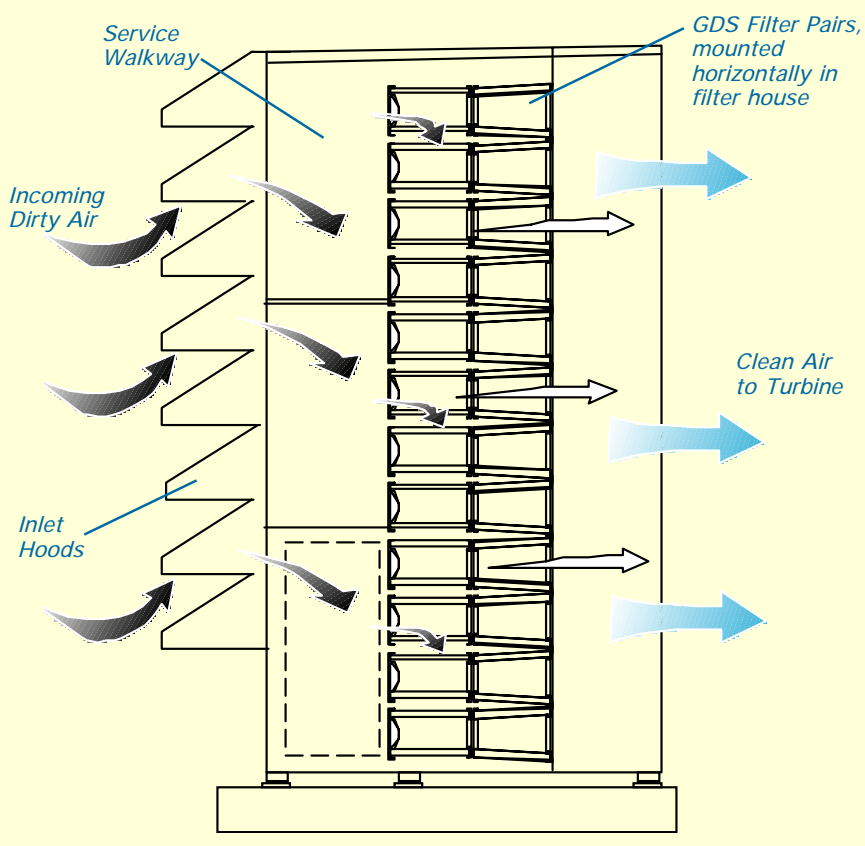
For more information on any of these options, access the 'products & services' area of our website (www.donaldson.com), or call the Donaldson office nearest you.

How It Works

Ambient (dirty) air is drawn into the GDS system through inlet hoods that protect the filter elements from the effects of rain, snow and sunshine. If a moisture eliminator or some other inlet treatment is used, its effect is seen at this stage. The incoming air is then directed through the prefilter wrap (if used) that covers each of the primary

filters. Here, most of the larger particles are removed before they can reach the GDS primary filter pairs. The partially-cleaned air then passes through to the high efficiency filter pairs for fine filtration.

A walkway behind the inlet hoods provides accessibility to the filters as well as to any inlet treatment accessories.



Service

How often a GDS filter system needs service depends on the type and amount of contamination in the site environment; typically, GDS elements need to be changed only every 2 to 3 years. Washing and re-using filter elements is never recommended because of the risk of damage to the filter media.

How to Make it Self-Cleaning

The GDS is not a self-cleaning filter; it is static. To protect a turbine in a harsher environment, consider our self-cleaning filtration system, the Donaldson GDX. Or, tell us at the beginning that you'd like the ability to retrofit to a GDX later, and we'll build it such that retrofitting will be quick & uncomplicated.

Global Capability

Donaldson Gas Turbine Systems has developed a network of qualified vendors to complement Donaldson's worldwide production and engineering capabilities. We have the ability to meet local content requirements through the combination of the vendor network and our own facilities located throughout the world.

World Class Quality

Air filtration systems and filter elements are produced in Donaldson's own facilities in Europe, India, Japan, and the U.S. Metal fabrication and/or filter element production is also performed in more than 10 other countries worldwide.



Donaldson quality control systems and quality engineering staff ensure that our products meet world class quality levels. Donaldson operations in Europe, India and the U.S. have been qualified to ISO 9000 standards.

The GDS system is designed for:

- Gas turbines needing airflow up to 1.2 million *cfm*
- Continuous duty and/or standby gas turbine applications
- Variety of climates & environmental conditions.



Typically, GDS filter houses are mounted well above the ground to reduce the amount of ambient dust drawn into the filter section.



This GDS filtration system protects a turbine operating in a Middle Eastern city.

Where to Find Us:

website: www.donaldson.com

email:
filterinfo@mail.donaldson.com
gts-europe@mail.donaldson.com
gts-asiapacific@donaldson.com.sg

Donaldson Company, Inc.
 Gas Turbine Systems
 P.O. Box 1299
 Minneapolis, Minnesota 55440 USA
 Phone 952-887-3543
 Fax 952-887-3843
 Parts/Elements 800-431-0555

Donaldson Europe N.V.
 Research Park Zone 1
 Interleuvenlaan, 1
 B-3001 Leuven, Belgium
 Phone 32-16-38-3940
 Fax 32-16-38-3939

Donaldson Filtration Asia Pacific Pte Ltd
 No. 9, Changi South Street 3, #07-01
 Singapore 486361
 Phone 65-546-4400
 Fax 65-546-4325

Donaldson Far East Ltd.
 Unit A, B & C, 21/F CDW Bld.
 388 Castle Peak Road
 Tsuen Wan, N.T. Hong Kong
 Phone 852-2402-2830
 Fax 852-2493-2928

Donaldson Shanghai
 Unit F2, 6/F
 Zhao Feng Universe Building
 1800 Zhong Shan West Road
 Shanghai 200233
 Phone 86-21-6440-1808
 Fax 86-21-6440-1639

DI Filter Systems Pvt. Ltd.
 D-44, Gulmohar Park
 New Delhi 110-049 India
 Phone 91-11-6865534
 Fax 91-11-6569534

Nippon Donaldson Ltd.
 13-2, 5-chome, Imadera
 Ome City, Tokyo 198 Japan
 Phone 81-428-31-6399
 Fax 81-428-31-7076

Donaldson Australasia Pty. Ltd.
 Lucca Rd, Wyong, New South Wales
 Australia 2259
 Phone 61-02-4352-2022
 Fax 61-02-4351-2036