

# Do Spider-Web Replacement Filters Really 'Cost' Extra? *Analysis Shows How Savings from High Performance Far Outweigh a Premium Price*

General Electric says that on the Frame 7EA, every 4" of pressure drop (DP) at the filter costs 1.4% turbine output. That's why we at Donaldson feel that the edge you get with Donaldson Spider-Web® filters is worth their premium price. Because of its fine fiber media technology, Donaldson Spider-Web® helps maintain low DP for the life of the filter. However, beware of less efficient filters that may offer low initial DP while actually letting more contaminant pass through the filter (and into your turbine!) Donaldson Spider-Web® offers powerful filtration on even the smallest (sub-micron!) particulate and good airflow for low DP over the life of the filter.

**EXAMPLE:**

*GE Frame 7EA Turbine*

0.1" DP = .025 X 1.4% X 86 MW  
 = 0.03 MW or 30 KWhr  
 Assume 1 KWhr = 5¢

Figure: 30 KWhr X 5¢ = \$1.50 per hour. If a set of premium replacement filters (Donaldson Spider-Web®) helps maintain lower DP over the life of the filters, but costs about \$8000 more than 'brand X' filters, divide \$8000 by the \$1.50/hr. This results in 5333 hours, or only about 7½ months of operational time, to make up the extra outlay. If the average pressure drop is 0.2" less, the payback is less than 4 months!

**Not much when you consider the premium performance of the filter, with their average life of 2 to 3 years!**

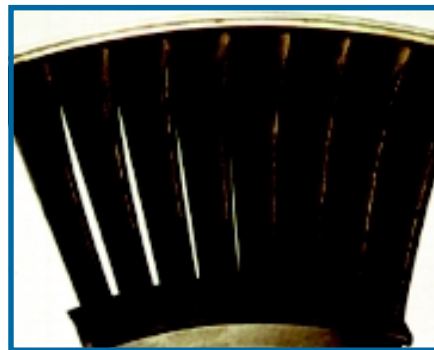
**PROBLEM:** Fast fouling on compressor blades leads to loss of turbine output -- which means loss of revenue!

**SOLUTION:** Donaldson filter cartridges made with Spider-Web®, (our exclusive fine fiber media technology), which captures the majority of the very fine dirt particles that foul compressor blades.

**EXAMPLE:** One of our customers in Canada tested Donaldson Spider-Web® filters side-by-side next to 'brand X.' After 2360 operating hours, the compressor blades on the turbine behind brand X were black with fouling (see photo A below.) At the same time, the blades behind Spider-Web® were clean & shiny! (photo B below)

The conclusion is simple: Donaldson Spider-Web® filters protect your turbine and its output capacity better than other filters can!

Actual photos taken by our customer of a section of blade from the 3rd stage of the compressor



**A)** After 2360 operational hours, the blades behind 'brand X' are fouled -- and causing turbine output loss!



**B)** After 2360 operational hours, the blades behind the filters with Donaldson Spider-Web® are still clean -- and maintaining turbine output at optimal levels!

*Donaldson filters with Spider-Web can also save you money on water washing...see example on other side.*

**PROBLEM:** Excessive water washing -- costs something, even when de-min water seems 'free.'

**SOLUTION:** Donaldson filter cartridges made with Spider-Web®, (our exclusive fine fiber media technology), protect turbine blades so well that on-line water washes can be reduced, significantly in many cases.

**EXAMPLE:** GE Frame 7EA Turbine. Daily Water Washing  
De-min water produced by plant = 5¢ per gallon  
X 500 gallons per wash = \$25. per wash, per day  
X 360 wash days = **\$9,000 per year COST**

What if this site used a top quality, fine fiber filter (Donaldson Spider-Web) that enabled reducing water wash to every other day?

De-min water produced by plant = 5¢ per gallon  
X 500 gallons per wash = \$25. per wash, per day  
X 180 wash days = \$4,500 per year  
= **\$4,500 per year SAVINGS**  
*over daily water washing*

What if this site used a top quality, fine fiber filter (Donaldson Spider-Web) that enabled water wash reduction to only 1X per week?

De-min water produced by plant = 5¢ per gallon  
X 500 gallons per wash = \$25. per wash, per day  
X 52 wash days = \$1,300 per year  
= **\$7,700 per year SAVINGS**  
*over daily water washing*

**Does the premium cost of Spider-Web cartridges actually cost extra? NO! Because of its superior performance, it can SAVE you expenses throughout the year!**

Example:

864 Spider-Web cartridges @ \$10 more than non-Spider-Web filters  
= \$8640 more every 2 to 3 years (average filter life)

**Compare this (about \$2880 per year) to the potential water-wash savings shown above (\$4,500 to \$7,700 per year!)**

*Donaldson filters with Spider-Web can also save you money because they maintain a low DP over the life of the filter...see example on other side.*

## Where to Find Us:

Website: [www.donaldson.com](http://www.donaldson.com)

Office:

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  
E-mail: [filterinfo@donaldson.com](mailto:filterinfo@donaldson.com)

Donaldson Europe N.V.  
Research Park Zone 1  
Interleuvenlaan, 1  
B-3001 Leuven, Belgium  
Phone: +32 16 38 39 40  
Fax: +32 16 38 39 39  
E-mail: [gts-europe@donaldson.com](mailto:gts-europe@donaldson.com)

Donaldson Filtration Asia Pacific Pte Ltd  
No. 9, Changi South Street 3, #07-01  
Singapore 486361  
Phone: +65 546 4400  
Fax: +65 6546 4325  
E-mail: [gts-asiapacific@donaldson.com](mailto:gts-asiapacific@donaldson.com)

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: +91 124 629 0350  
Fax: +91 124 629 0311

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

