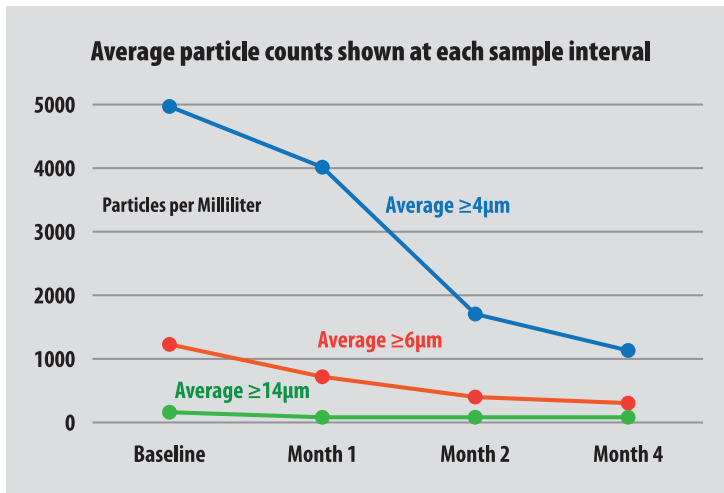


\$300,000+ in Potential Savings with **FILTERMAG**[®]

Wind Turbine Gearbox



- **78% Reduced Oil Contamination**
- **50% Longer Bearing Life**
- **30% Longer Gear Life**

Three 1.5 MW wind turbines with a history of gearbox oil analysis were each fitted with one pair of FilterMag XT8s on the existing filter housings. Hydac 5 μm filtration was used on each turbine. Oil sampling was conducted at 1 month, 2 months, and 4 months after the FilterMag installation.

78% reduction in total particles was demonstrated after four months. Average ISO 4406 particle counts changed from 19/17/14 to 17/15/12.

A change of two code drops would indicate that bearings could last 50% longer and gears could last 30% longer (Noria data).

What Does Downtime Cost You?

FILTERMAG[®]
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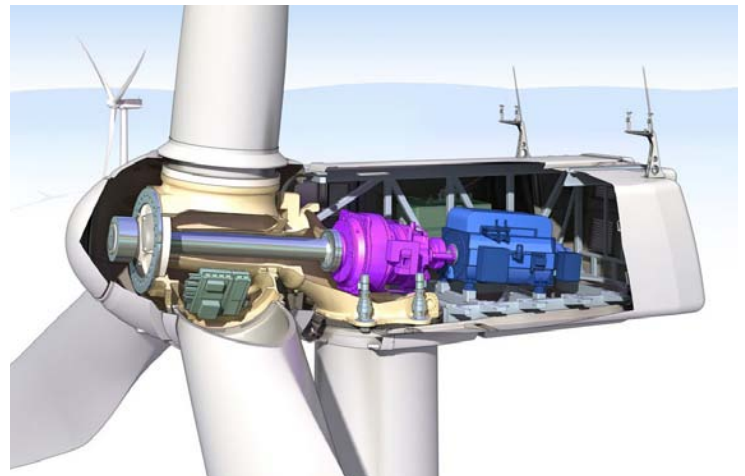
Up-Tower Bearing Change in Lieu of a Gearbox Change?

According to the National Renewable Energy Laboratories (NREL), gearbox problems are the number one cause of turbine downtime. The number one cause of gearbox problems is high speed shaft (HSS) bearing failure. Currently, most bearing failures eventually result in a gearbox exchange.

It is generally accepted that if a bearing failure is detected early and damage to the rest of the gearbox can be controlled, then the bearing can be replaced instead of having to exchange the gearbox. Condition monitoring, in conjunction with an early borescope evaluation, can identify a bearing problem early. FilterMag can mitigate the collateral damage to the rest of the gearbox by capturing the debris generated by the slowly failing bearing. (The most damaging particles are less than 10 μm in size. Small enough to pass through standard filtration.)

According to NREL, the average cost for changing a HSS bearing up-tower is approximately \$46,000. The average cost to exchange the gearbox is approximately \$424,000. **Using FilterMag to capture the debris from a failing bearing, along with early detection, could save an operator more than \$300,000 for a single bearing failure.**

Saving one gearbox would more than pay for FilterMags installed in an entire wind farm.



Typical FilterMag XT8PR Installation on the gearbox oil filter. A stainless steel band clamp is used to secure the XT8s to the aluminum filter housing.

092115

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Reduce Wear • Mitigate Damage • Increase Reliability • Extend Equipment Life

Spin-on Filters USE **CT**



Applications:

- Gas and Diesel Engines • Rotating Equipment
- Hydraulic Systems • Diesel Fuel Filtration
- For most spin-on filter applications

Order part # based on oil filter diameter

Pairs		Fits Spin-on Filter Diameters		Dimensions			
Part #	Qty.	Minimum	Maximum	Height	Thickness	Arc (Max)	Weight
CT3.2PR	2-ea.	2.9 in (74 mm)	3.5 in (89 mm)	2.65 in (67 mm)	.34 in (8.6 mm)	360°	18 oz (.52 kg)
CT3.8PR	2-ea.	3.6 in (91 mm)	4.4 in (112 mm)	2.65 in (67 mm)	.35 in (8.9 mm)	360°	28 oz (.80 kg)
CT4.9PR	2-ea.	4.5 in (114 mm)	5.5 in (140 mm)	2.95 in (75 mm)	.36 in (9.1 mm)	360°	38 oz (1.08 kg)

Cartridge Filters USE **XT**



Applications:

- Rotating Equipment • Hydraulic Systems
- Gas & Diesel Engines • For most cartridge filters

Order part # based on outside diameter of filter housing

Pairs		Fits Outside Housing Diameters		Dimensions			
Part#	Qty.	Minimum	Maximum	Height: Faceplate/Endcap	Thickness: Faceplate/Endcap	Arc (Max)	Weight
XT4PR	2-ea.	3.8 in (96 mm)	4.8 in (122 mm)	2.7" (68mm)/3.24" (82mm)	.9"(23mm)/1.4" (36mm)	330°	7.0 lb (3.2 kg)
XT5PR	2-ea.	4.8 in (122 mm)	5.8 in (147 mm)	2.7" (68mm)/3.24" (82mm)	.9"(23mm)/1.4" (36mm)	340°	9.0 lb (4.1 kg)
XT6PR	2-ea.	5.8 in (147 mm)	6.8 in (173 mm)	2.7" (68mm)/3.24" (82mm)	.9"(23mm)/1.4" (36mm)	344°	11.0 lb (5.0 kg)
XT7PR	2-ea.	6.8 in (173 mm)	7.8 in (198 mm)	2.7" (68mm)/3.24" (82mm)	.9"(23mm)/1.4" (36mm)	348°	13.0 lb (5.9 kg)
XT8PR	2-ea.	7.8 in (198 mm)	8.8 in (224 mm)	2.7" (68mm)/3.24" (82mm)	.9"(23mm)/1.4" (36mm)	350°	15.0 lb. (6.8 kg)

Easy CT Installation: SNAP ON, SLIDE OFF, REUSE



1. Install two or more FilterMags on each spin-on filter opposite each other near the threaded end.
2. Reuse FilterMags by sliding them off the old filter and snapping them on a new one when the filter is changed.

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