CLEAN OIL
BRIGHT IDEAS

Gear Oil
GE 1.5 ESS, Wind Turbine Gearbox

CJC™ Application Study

Application Study written by:

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USA

2012

CUSTOMER

North American Wind Research and Training Center, Tucumcari, New Mexico, USA

SYSTEM

System:	Gearbox
Turbine Type:	GE 1.5 ESS
Oil Type:	Castrol A320 Gear Oil
Oil Volume:	70 Gal (265 L)

PROBLEM

After 2 years in operation, using only the O.E.M. **10-micron in-line filter**, the wind turbine gearbox oil showed a particle count of more than 500,000 4-micron particles per/100 mL. The oil analysis showed high particle count (ISO 20/18/15).

SOLUTION

CJC™ Filter:	Offline Fine Filter HDU 15/25 PV2-7-4 1x120V, 60hz incl. air bleed hose
CJC™ Insert:	BG 15/25, 3 Micron
Flow Rate:	¼ gpm (57 L/h)

TEST

The CJC™ Offline Oil Filter HDU 15/25 PV2 was installed in November 2010, configured to draw oil from lowest point (drain plug) and return oil to top of gearbox.

RESULT

After 110 days of continuous, 3-micron, offline filtration, the gear oil showed the below reduction:

- 92.76% in 4-micron particles
- 92.78% in 6-micron particles
- 93.10% in 14 micron particles

COMMENTS

Wind Energy Technology, John Hail Jr. Directorat North American Wind Research and Training Center:

"Since adding our C.C.JENSEN Offline Oil Filter, our oil analysis has showed considerable improvement, and our gearbox haven't had a single bearing failure, vibration analysis alarm, or high-heat signature. Other wind sites near us operating the same wind turbine make and model have had several gearbox bearing failures due to particle wear, and have even replaced two of their 2-year-old gearboxes.

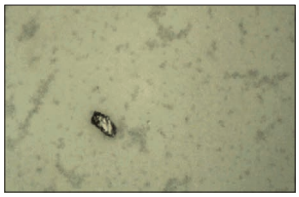
Major repairs like those can cost over

$900,000

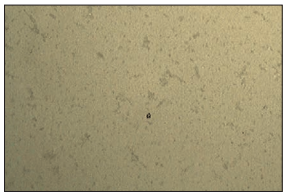
Thank You, C.C.JENSEN."

CJC™ Fine Filter HDU 15/25 PV2 installed at North American Wind Research and Training Center

OIL SAMPLE



*Oil sample taken **BEFORE** installation of CJC™ Oil Filter ISO 20/18/15*

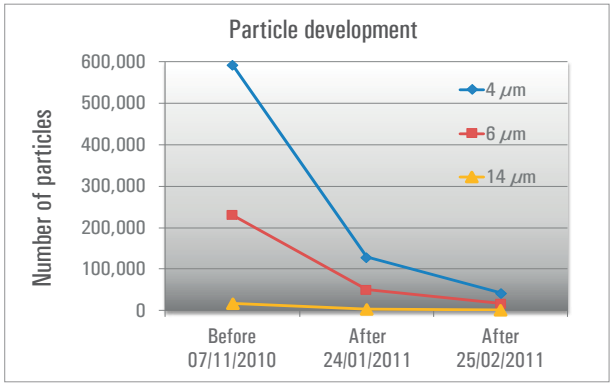


*Oil sample taken 110 days **AFTER** installation of CJC™ Oil Filter ISO 16/15/11*

RESULT

Date (mm/dd/yyyy)	07/11/2010	24/01/2011	25/02/2011
> 4 micron	591,500	129,200	42,800
> 6 micron	230,000	50,300	16,600
> 14 micron	17,400	3,800	1,200
ISO Code	20/18/15	17/16/12	16/15/11

pr. 100 ml



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