



Test Case from Gas turbines gas transport distributed from Germany throughout Europe





**Prevent failures and varnish build-up
by filtering out harmful substances
such as Contamination
and water using
Offline bypass filtration**



Test Case: ATEX OLFS Filter systems
Location : Germany ERDGASVERDICHTER STATION MALLNOW
Customer: Wingas
Application: Gas turbines
Brand Model: MAN FT- 8 Gasturbine
Filtersystems : OLFS 58-1 and OLFS 58-6 pack ATEX

The gas turbines are used to distribute gas from Russia and Germany throughout Europe.

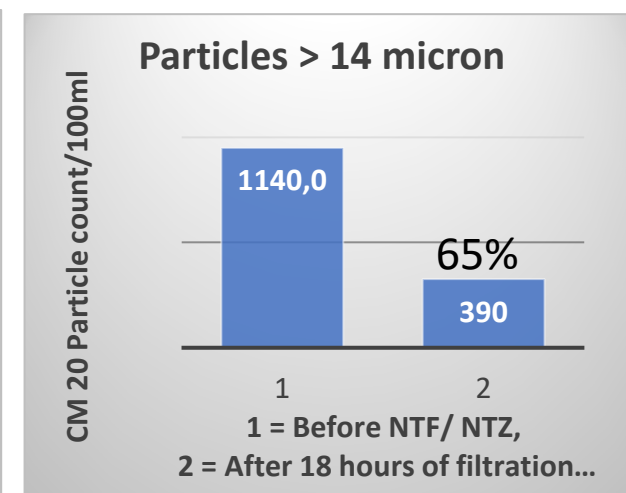
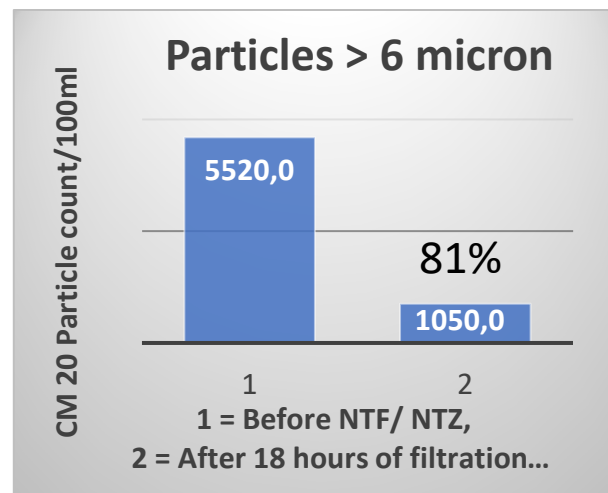
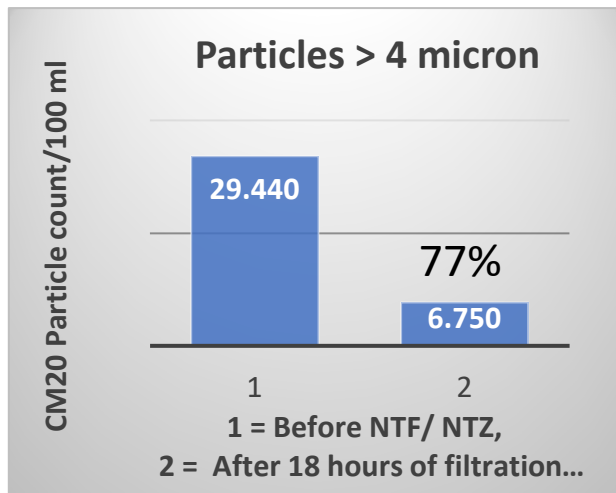


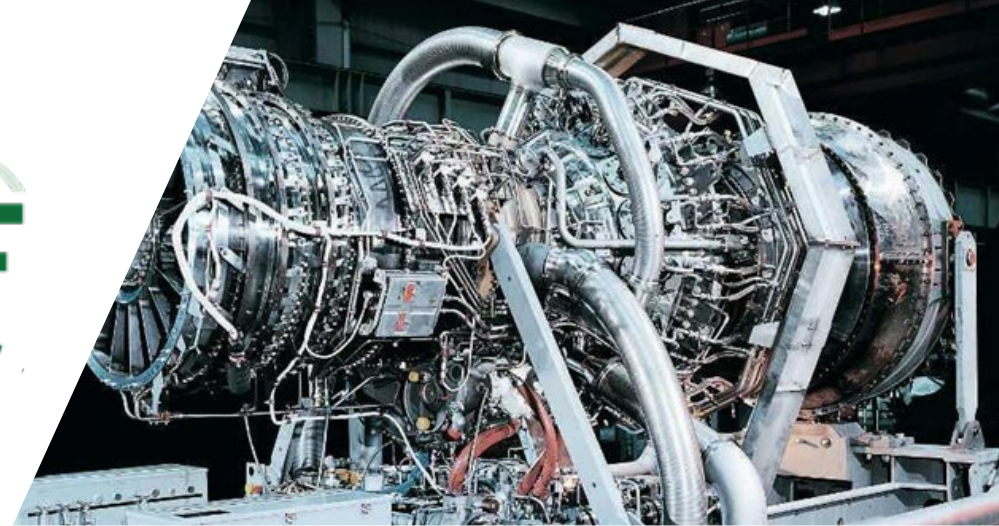
Field test case OLFS ATEX system

Anzahl der Verdichter:	3
Verdichterleistung:	ca. 75 MW (3 x 25 MW)
max. zul. Betriebsdruck:	100 bar
Kapazität:	3,34 Mio. m ³ /h (im Normzustand)
Antriebsart:	Gasturbine
Öl	Mobil Jet 245 (26,4 cSt @ 40 C)
Filter	OLFS-58/1-A-3,2 400 ATEX



75% Dirt reduction in 18 hours ISO 15/13/11 to ISO 13/11/9






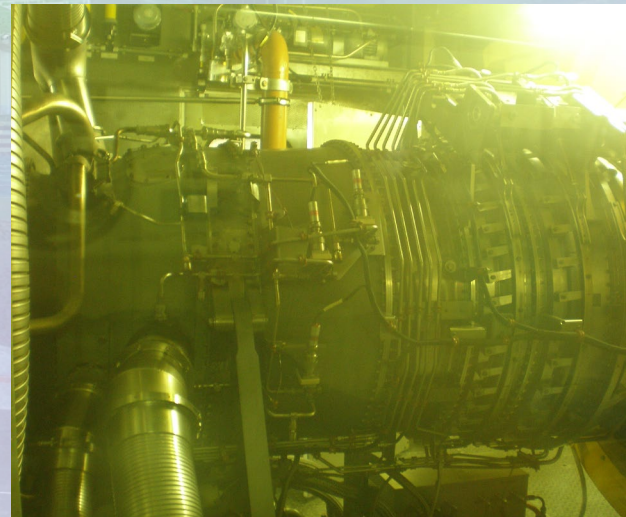
Field test case OLFS ATEX system

Wingas has experienced that installing the fine filter systems will prevent varnish build-up. Because the water and the smallest dirt particles are removed from the oil. As a result, they have less downtime and the gas turbines have less wear and therefore a longer service life.

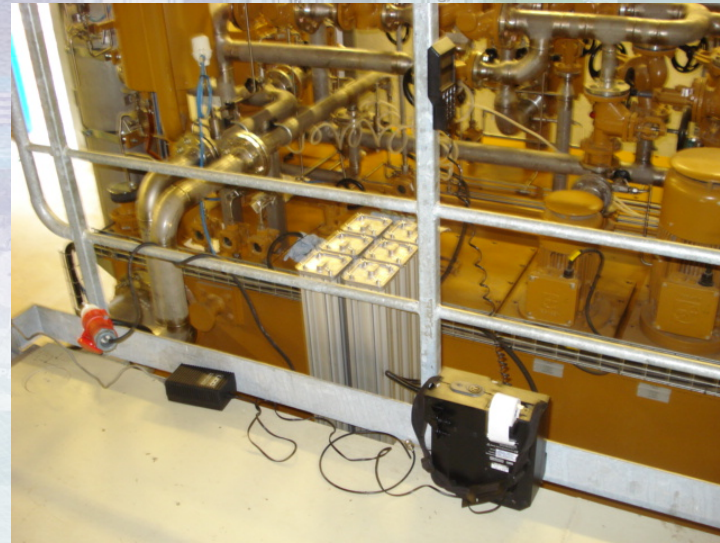
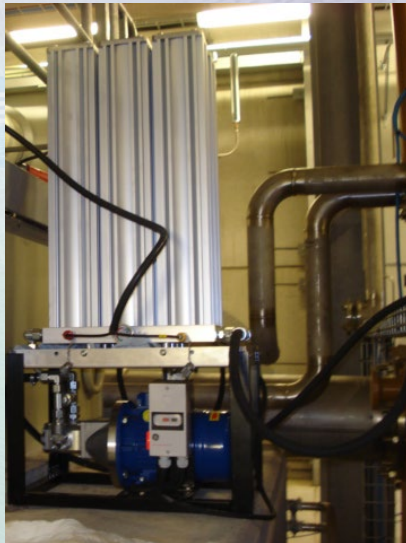
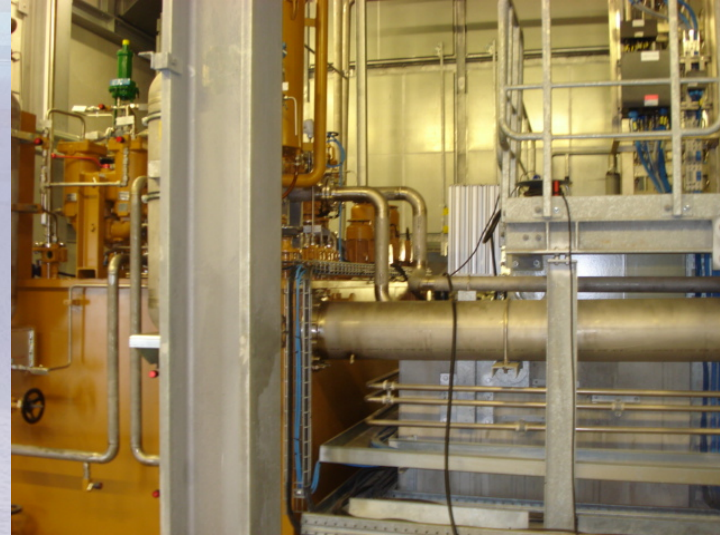
limit value ISO 18/16/14 Water 1000 ppm TAN 2,0 mg KNO/g												
MAN Spezifikation der FT-8 Gasturbine				Öl analysen								
Untersuchungsparameter	Prüfverfahren	Masseinheit	Grenzwerte	MAN		Wingas Mallnow			Wingas Rückersdorf			Wingas Reckrod
				Aggr. 1	Aggr. 2	VH1	VH2	VH3	VH1	VH2	VH3	VH5
Verschmutzungsstufe	ISO 4406-99	-	18/16/14	16/15/9	16/15/9	13/12/7	13/12/8	12/11/8	12/11/8	12/11/7	13/12/7	12/11/8
Wassergehalt nach KF	Water gehalt (ppm)	ppm	max 1000	16	34	89	194	283	198	145	140	84
Gesamtsäurezahl (TAN)	ASTM D 664	mg KOH/g	max. 2,0	0,26	0,48	0,44	0,32	0,42	1,28	0,34	0,39	0,44

	Spezifikation Schmierstoff – Condition Monitoring der FT8 Gasturbine	Dokument Nr.:	Rev.:
		10000370914	00
TQM T.2		Seite 4 von 4	
5 Messverfahren und Grenzwerte für Gebrauchttöle der FT8 – Gasturbine			
Untersuchungsparameter	Prüfverfahren	Grenzwerte für Gebrauchttöle	Maßeinheit
Dichte b. 15°C / 40°C	DIN 51757 / ASTM D 7042	-	g/cm³
Viskosität b. 40°C	ASTM D 7042	+25% / -10%	mm²/s (cSt)
b. 100°C	"	-	"
Viskositätsindex (VI)	ASTM D 7042	-	-
Wassergehalt nach KF	DIN 51777	max. 1000	ppm
Gesamtsäurezahl (TAN)	ASTM D 664	max. 2,0	mg KOH/g
Verschmutzungsstufe	ISO 4406 - 99	18 / 16 / 14	-
Element/Metallanalyse			
Fe	ASTM D 5185	≤ 5	mg/kg (ppm)
Ag, Al, Cr, Cu, Si	oder EP 3052 *)	≤ 2	"
Mg, Mn, Mo, Ni, Pb, Sn, Ti, V, Zn		≤ 1	"
Membranfiltration und mikroskopische Auswertung	Interne Untersuchungsverfahren	-	-

Field test case OLFS ATEX system



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Fluid Intelligence

Fluid Eye®

This next case was done by one of our partners in Finland **Fluid Intelligence Oy** specializing in machine maintenance and contamination management.

They have installed an OLFS 58A / 2 on a turbine to make the contaminated oil cleaner, prevent malfunctions and increase the lifespan and efficiency.



OLFS 58A / 2
NTF Radial Micro Filter
with a Retention value of
0,5 micron
and an official ratio
on 4 micron of
Beta (β) 4 > 10649
and
99,97 % efficiency
@ 2 micron particles



This was an OLFS 58/2 application on a turbine lubrication system from our partner Fluid intelligence in Finland maintenance specialists



PUHTAUSANALYYSI

5.12.2019

Tuote	Kohde	Näyte
Puhtaus	Turbiiniöljy	Mobil DTE Medium

Asiakas Pohjainen Suomi

ISO 4405 sovellettu puhtauslausunto

Puhtausanalyysissä 100 ml öljyä valutetaan 0,8µ suodatinkalvon lävitse ja suodatinkalvoa tarkastellaan mikroskoopilla. Puhtausanalyysissä voidaan tunnistaa eri epäpuhtaudet ja määrittää niiden määrä.

Näytteet ovat otettu ennen suodatusta ja n. 3 kk suodatuksen jälkeen.

Mikroskooppitarkastelussa havaittiin:

Mikroskooppi tarkastelussa havaittiin vain äärimmäisen pieniä (<mikronin kokoisia) yksittäisiä epäpuhtauksia.

Lausunto

Suodatus on onnistunut. Puhdistetussa öljyssä ei juuri havaittu mitään.

ISO 4406:1999 luokka	Ennen suodatusta	22/19/15
ISO 4406:1999 luokka	Jälkeen suodatuksen	15/13/10

English translation

- In the purity analysis, 100 ml of oil is drained through a 0.8µ filter membrane and the filter membrane is examined under a microscope. Purity analysis can identify and quantify different contaminants. Samples were taken before filtration and about 3 months after filtration.
- Microscopic examination revealed: Examination under the microscope revealed only extremely small (<micron size) single contaminants.
- Filtering successful. Little was observed in the refined oil.

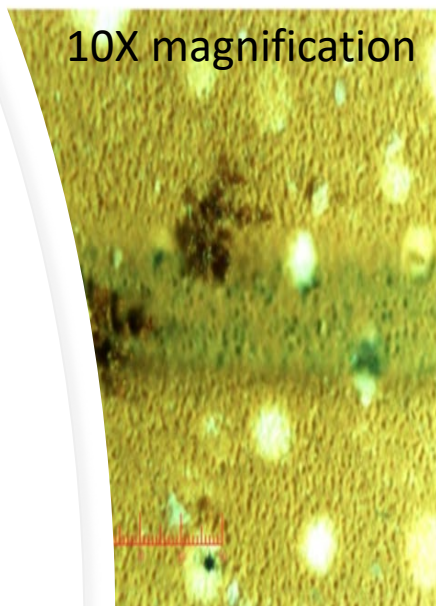
ISO 4406: Before filtering 22/19/15
ISO 4406: After filtration 15/13/10

"Easiest overhaul ever" They said

Once in a while the turbine must be overhauled. Normally this takes a long time to do. But now that the filter is installed on it and therefore the oil is constant clean, the overhaul was finished much faster and this has saved a lot of costs in spare parts, man hours and downtime from the turbine.

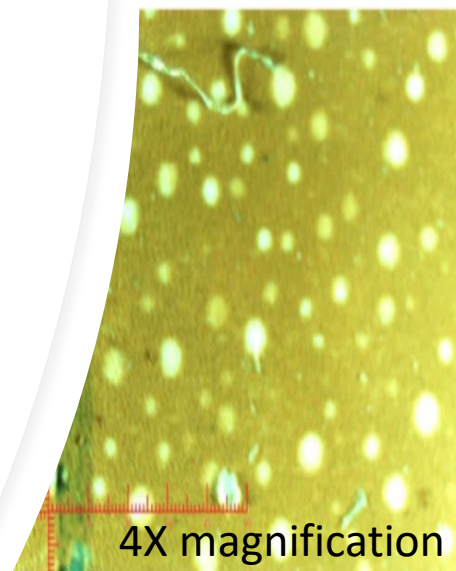
From ISO 22/19/15 to 15/13/10
4 micron 99,2% cleaner
6 micron 98,4% cleaner
14 micron 68% cleaner
Average of 88,5% cleaner oil!

Mikroskooppikuva 3. 27.2.2019, ennen puhdistusta



10X magnification

Microscopic image
before filtering
ISO 22/19/15

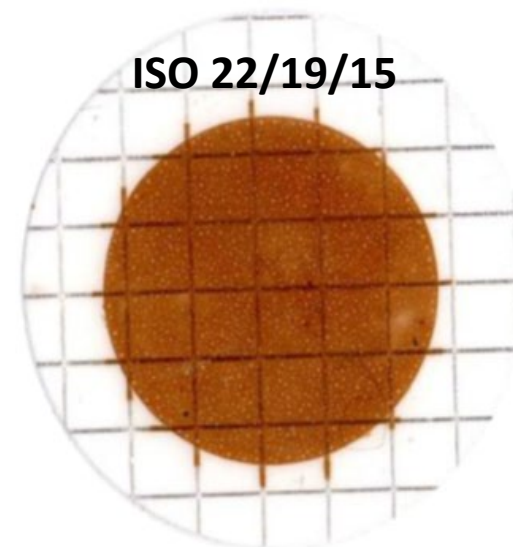


4X magnification

Mikroskooppikuva 4. 9.5.2019, jälkeen p.



Microscopic image
after filtering with NTF Filter
ISO 15/13/10



ISO 22/19/15

Membrane. 2/27/2019, before filtering

Membrane. 2/27/2019, after filtering



ISO 15/13/10

Membra. 27.2.2019, ennen suodattamista

Membra. 27.2.2019, jälkeen suodattamista

Conclusion

Installing the fine filter systems will prevent varnish build-up.

Because the water and the smallest dirt particles are removed from the oil.

As a result less wear and therefore less malfunctions and downtime and thereby a longer service life of the turbine.

All this together makes the TCO a lot cheaper!

With NTF filter machines live longer





**Contact your local dealer for
more information
or visit
www.ntf-filter.com**

