

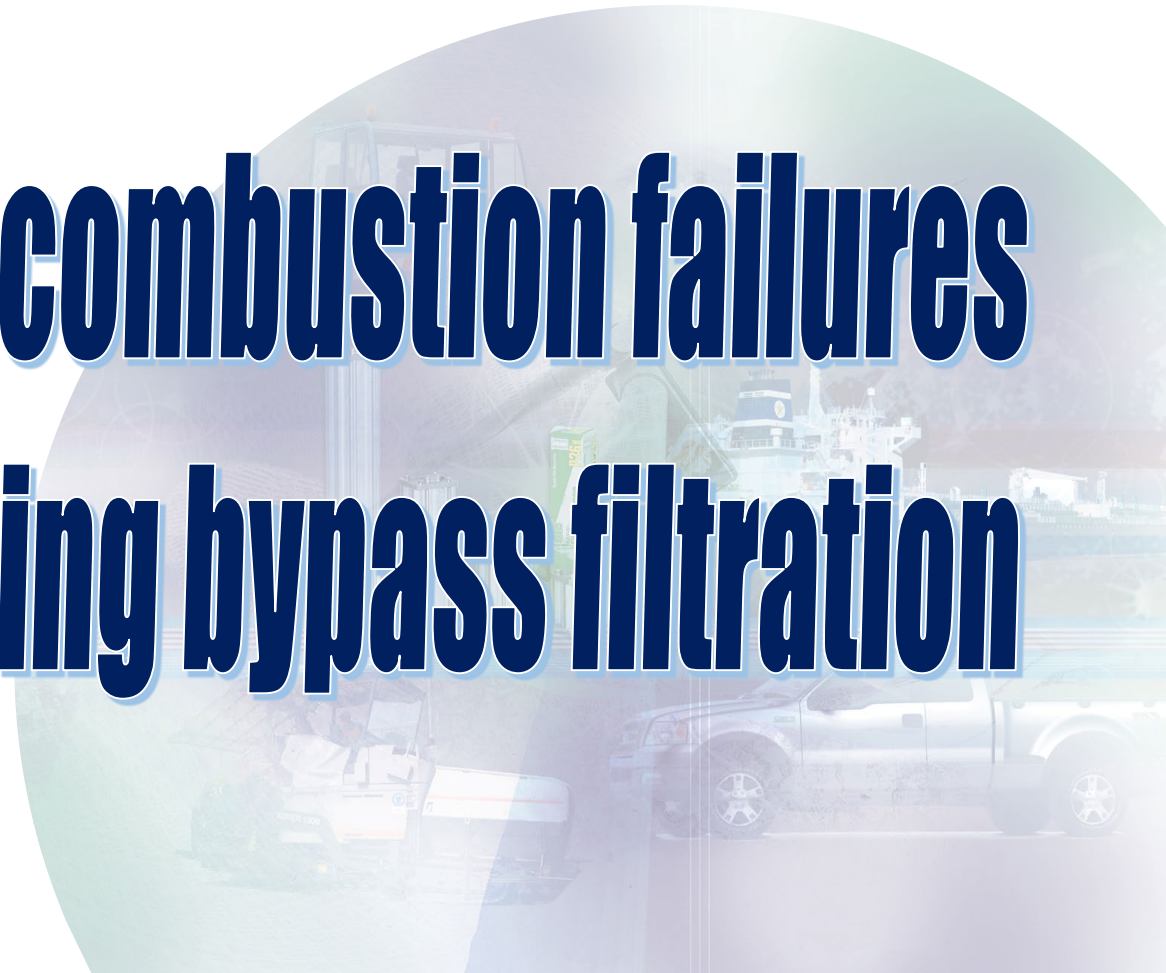


**Field test cases from
Fuel applications:
Volvo EW 150
mobile cranes
Road construction
Maritiem
Gas stations**





**Reduce combustion failures
using bypass filtration**



silicon carbide



Field Test Case Fuel ESD-SIC BV

ESD is a chemical company where Silicon Carbide is made by fusing a mixture of very pure sand and petroleum coke at a temperature of about 2500 degrees Celsius. Silicon Carbide is used among to make cast iron stronger, for grinding wheels, sandpaper and turbos.

Three Komatsu's WA600-6 and a Caterpillar 390F and a dozen small 15 to 20 tons cranes and shovels are also running to transport and process the silicon.

Silicon Carbide gives a high wear image on the machines.

In the Volvo a Perkins engine was placed with a centrifugal fuel pump which they could not even run for 1000 hours, because of the fine silicon dust.

NTF Radial Micro Filtration solved these problems!





To NTF / NTZ Filter,

ESD is a chemical company where Silicon Carbide is made by fusing a mixture of very pure sand and petroleumcoke at a temperature of about 2500 degrees Celsius. As one of the largest factories in the world, we are also by far the most environmentally friendly and energy-efficient producer. Silicon Carbide is used among other things to make cast iron stronger, for grinding wheels, sandpaper and turbos. It has the property that a turbo can become red-hot without deforming.

Large ovens have to be built using large machines including three Komatsu's WA600-6 and a Caterpillar 390F with a boom of 25 meters. In addition to this large machine, a dozen small 15 to 20 tons of cranes and shovels are also running to transport and process the silicon.

In 1996 ESD decided to replace two Komatsu caterpillar cranes with Volvo EW 150 mobile cranes as they were much cheaper in maintenance. the wear and tear of the caterpillars. Silicon Carbide gives a high wear image on our machines. In the Volvo a Perkins engine was placed with a centrifugal fuel pump with which we could not even run for 1000 hours, because of the fine silicon dust, which is widely available, and therefore also with the fuel in the tank sneaks and by the original filters came into the pump, the pump was not offered a long life.

At that time we were a client at PB Venema, which had a fuel pump department, and we were advised to try NTZ filters. Jan Zwartbol then came into the picture and he thought of everything to apply NTZ filters to the engine oil hydraulic transmission and, most importantly in this case, to the fuel supply of the machines. Since then the fuel pumps have not broken down and we have continued to sample all the oils that contain the machines. This had the pleasant side-effect that after a year we had the engine oil so clean that we could adjust the change from 250 to 500 hours, so one day profit in the maintenance cycle excluding the costs of the filters and labor.

With the above experience, I can also advise anyone who has to work in a dusty environment to use these filters. It is a preservation for the machine.

Sincerely,

U.Detmers

ESD-SIC bv
Kloosterlaan 11-13,
9936 TE FARMSUM,
The Netherlands



**Reference letter ESD U. Detmers
responsible for all machinery**

“Installed NTZ filters to the engine oil hydraulic transmission and, most importantly in this case, to the fuel supply of the machines. Since then the fuel pumps have not broken down and we have continued to sample all the oils that contain the machines.”

“This had the pleasant side-effect that after a year we had the engine oil so clean that we could adjust the change from 250 to 500 hours, so one day profit in the maintenance cycle excluding the costs of the filters and labor. ”



Field test cases

**NTF Radial
Micro Filtration
Fuel applications
Road construction**

Field Test Cases

NTF/ NTZ achieves remarkable results: less breakdown and wear, improved performance, extended life-time. These results all add up to structural costs savings according NTF/ NTZ Nederland bv.

Willem Versendaal, manager of the Dutch based international road construction company Koop Tjuchem, has a lot of experience on the subject.

“When NTZ filters where introduced on the market, I have tested these system together with Dutch Royal Shell. The filter system appeared to function very well.

So well in fact, that Koop Tjuchem could skip half the service intervals...”





Quoted by W. Fersendaal

“In road construction maximum productivity is of utmost importance. With these filters we only need to change oil of our trucks and machines during frost periods and the yearly holiday period. By than they have reached appr. 1000 operating hours against maximum 500 hours before.

Versendaal applied NTZ-filters on engines, hydraulic installations and automatic transmissions on trucks and construction machines.

“If you also use UCC LCM-20 particle counters, the condition of the oil can be constantly monitored. Including all costs of filters, installation, etcetera a saving of 50 euro cents per operating hours can be achieved. Provided that a high quality (semi-)synthetic oil is used.”



Solving Fuel problems

“Later on we experienced problems with our machines equipped with the latest generation of diesel engines, with common rail technology.

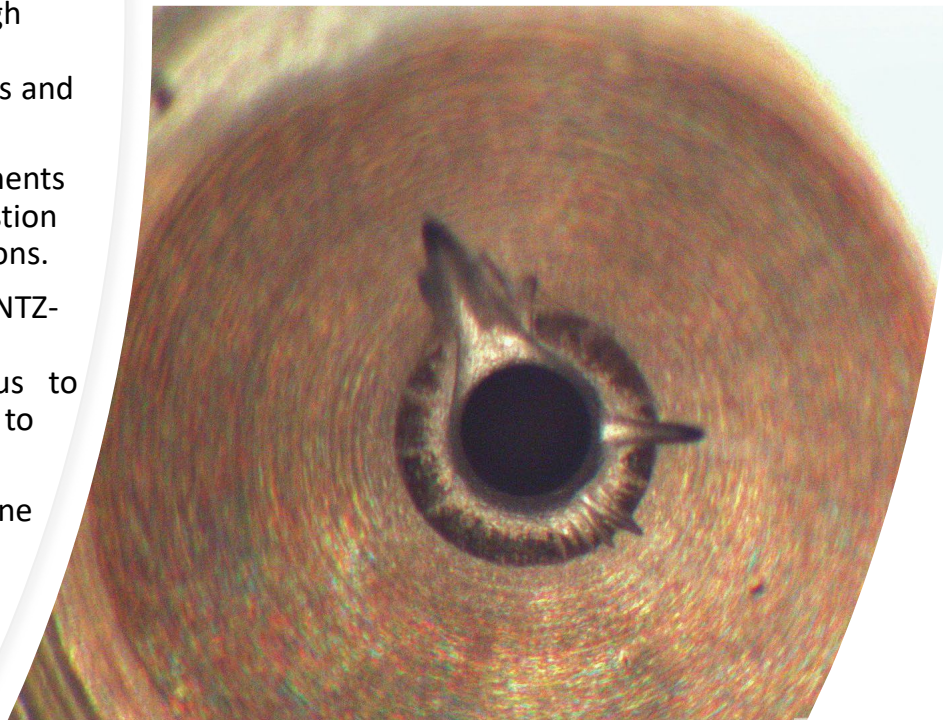
It even occurred that a new engine needed new pumps and fuel injectors after only 500 operating hours. Total costs; a couple of thousands of Euro’s.

Research showed that the combination of high pressure, 2000-2800 Bar and particle contaminated gasoline was fatal to the pumps and fuel injectors.

Due to the ever increasing emission requirements these high pressures are mandatory; Combustion under high pressure results in cleaner emissions.

Since we had excellent experience with NTF/NTZ-filters on engines and hydraulics, these new problems with contaminated gasoline urged us to test these filter systems in the main feed line to the engine.

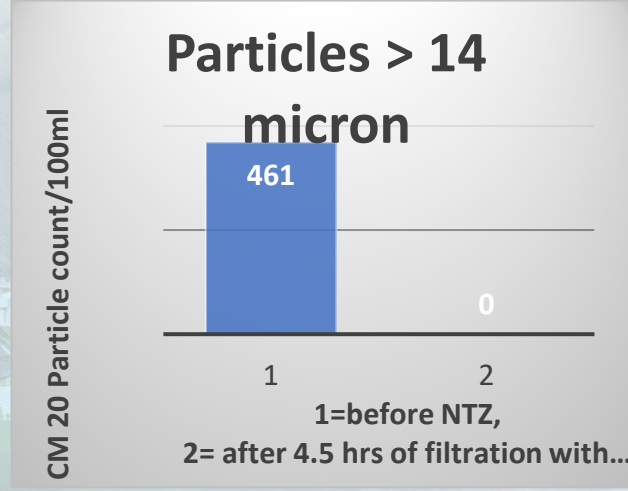
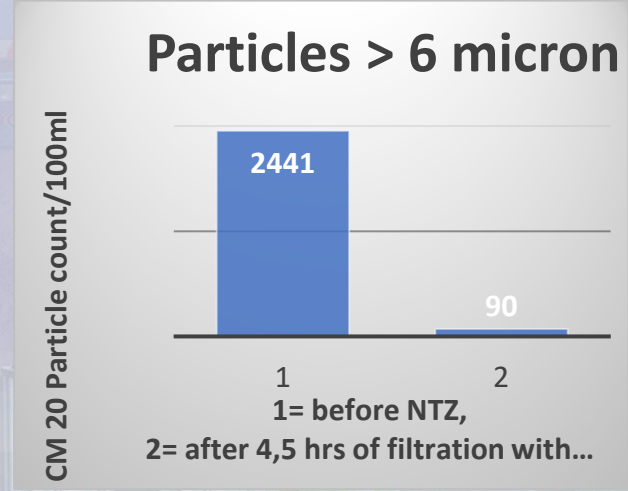
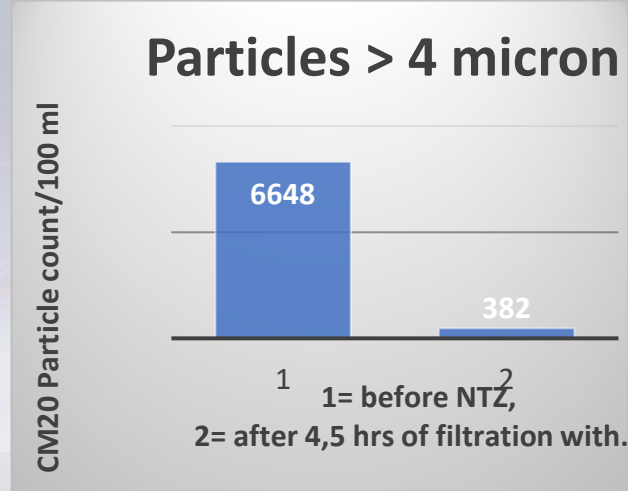
The results met our expectation; Clean gasoline and no more problems.



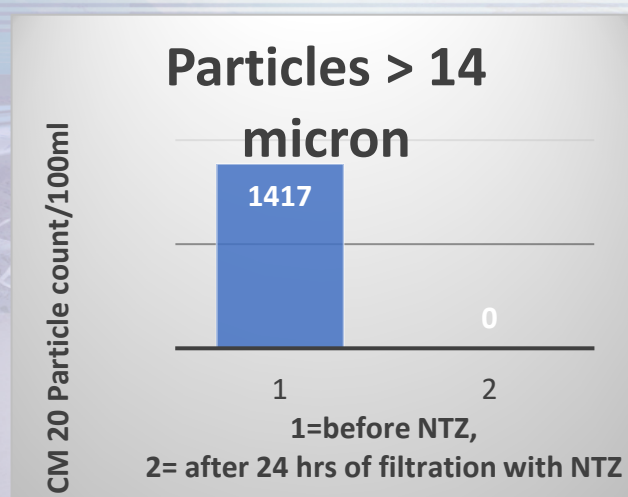
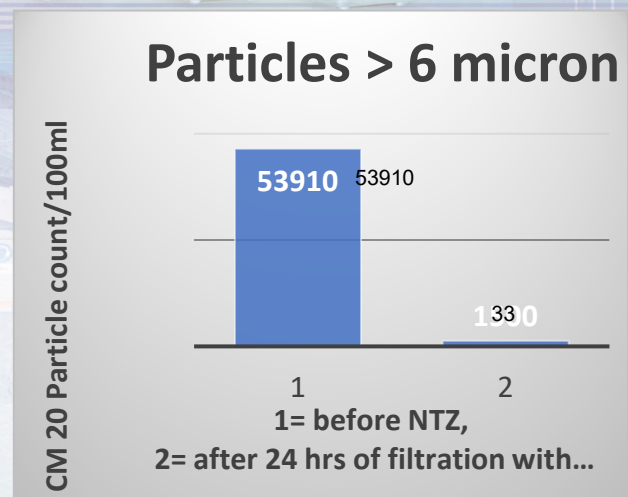
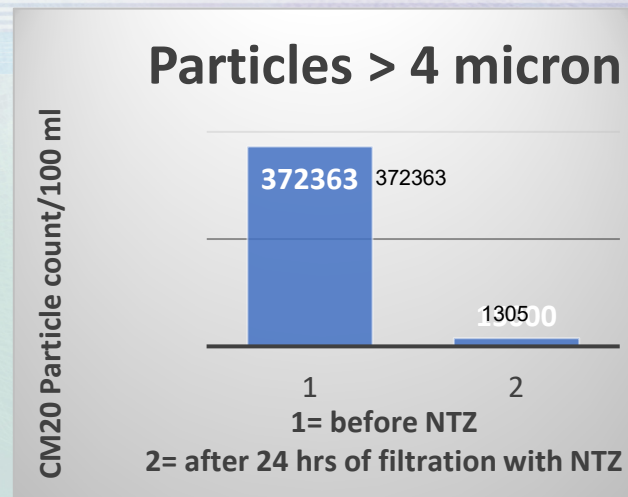
Field Test Case Fuel



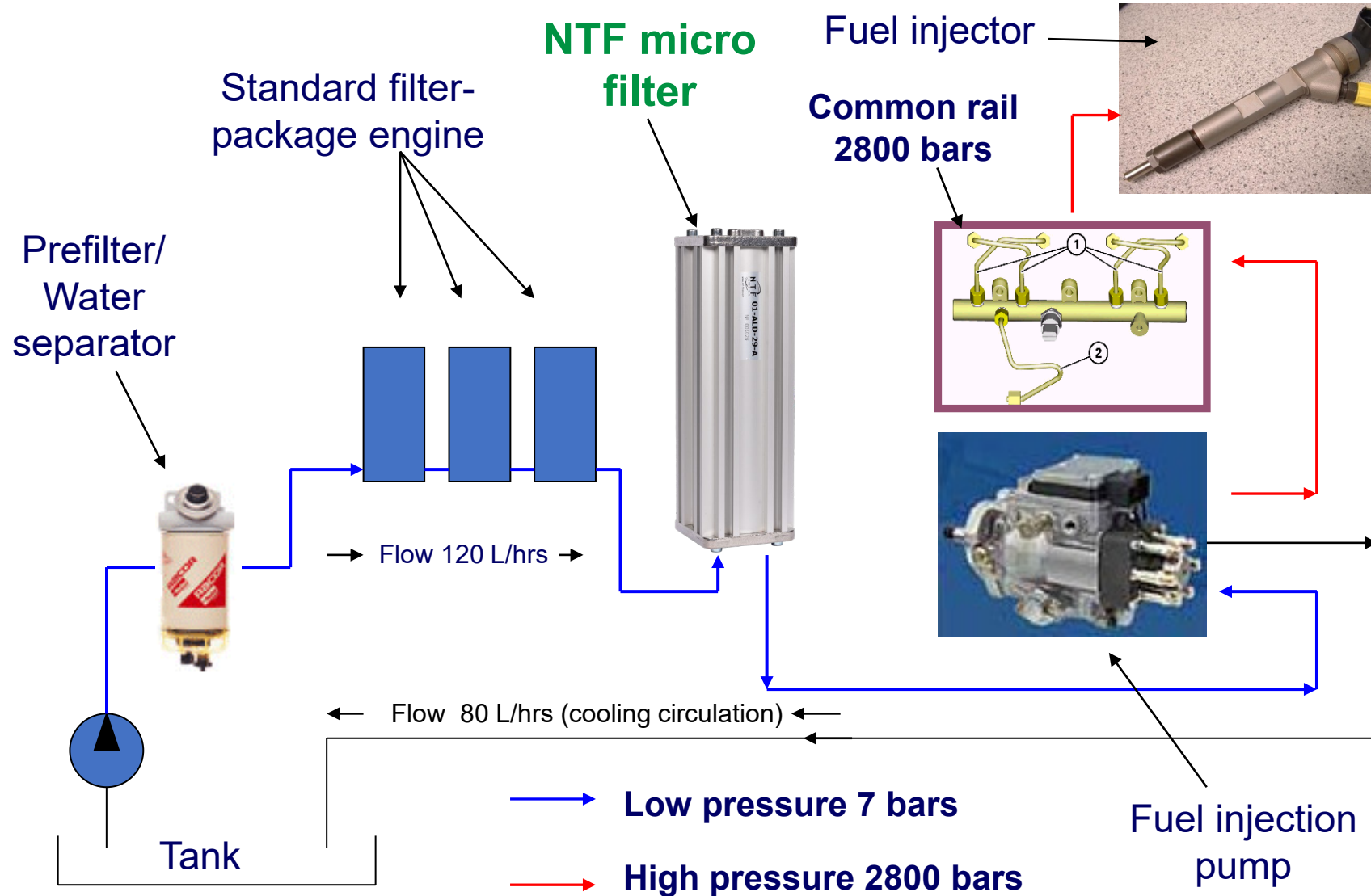
DAF CF 75 J. van Dijk , sump volume 1500 liter:



Vogele 1900, sump volume 400 liter gasoline, fresh oil:



How does it work





**NTF Radial Micro Filtration
FUEL applications
Maritiem**

MV Catherina Papendrecht



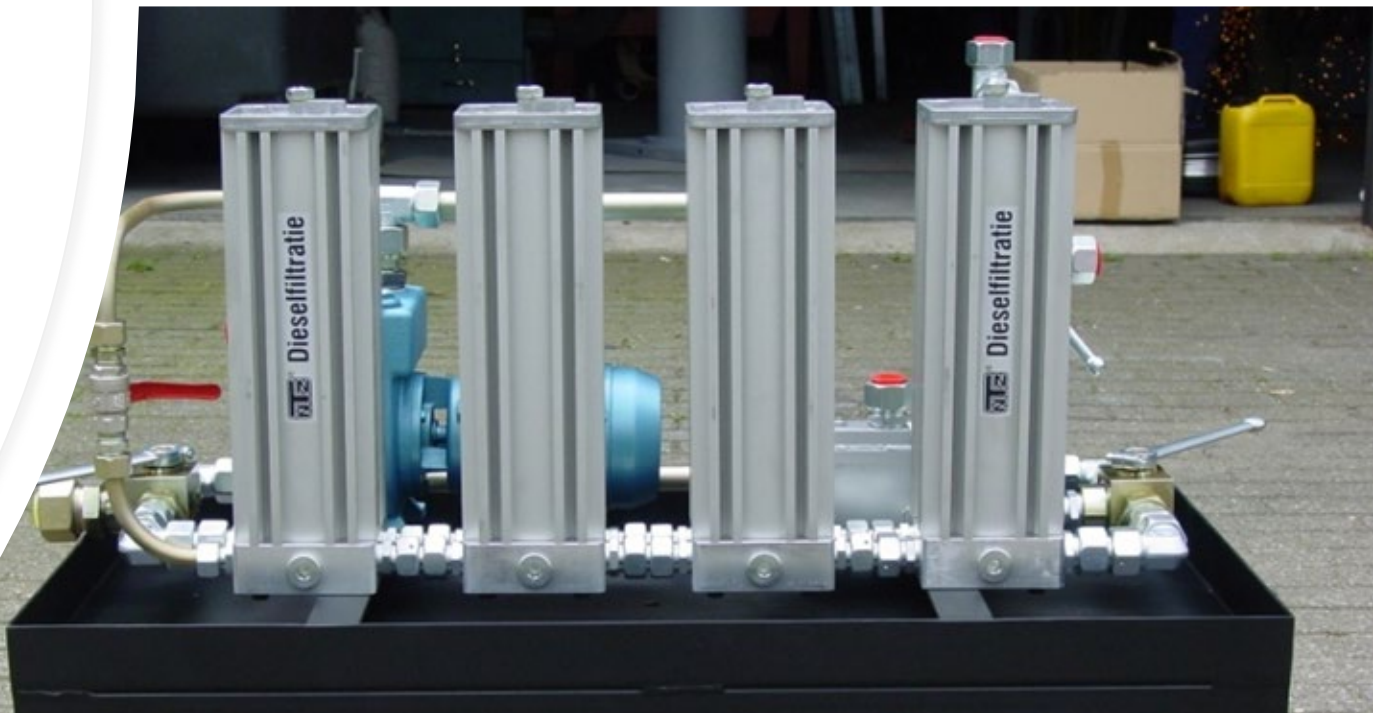


Solving Fuel problems

The high level of contamination in Diesel fuel causes major failures in the fuel systems of modern engines.

Samples of different brands were taken at various gas stations and the contamination level was Checked using a Laser Particle counter.

Then the diesel was filtered in a single pass through an NTF/NTZ micro filter type ALD29 and again the contamination was measured according the ISO 4406 Standard for 2, 5, 15 25, 50 and 100 micron particles per 100 mil of fuel.





BEFORE

NTZ FILTER ROTTERDAM	
online CM20 particle test	
Sample from bunker	
DIESEL	
Date:	18-5-2005
testrun:	37
Time:	13.44
ISO:	22:21:18
Count/100ml	
2µ	2714535
5µ	1119892
15µ	151391
25µ	43650
50µ	6570
100µ	406
NOTES	

**Dirt reduction in one
circulation:**

ISO 22/21/18

to ISO15/12/08

**In percentage over
99,995%**

**Reduction in solid
particle contamination**

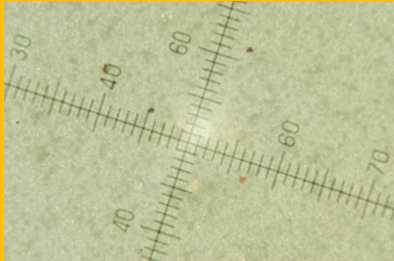
AFTER NTF Filter

NTZ FILTER ROTTERDAM	
online CM20 particle test	
Sample after 1 pass	
DIESEL	
Date:	18-5-2005
testrun:	43
Time:	16.42
ISO:	15:12:08
Count/100ml	
2µ	18000
5µ	2936
15µ	135
25µ	22
50µ	11
100µ	0
NOTES	

Protect your costly fuel pump and injectors !

Extend the life of your standard fuel filters

Diesel sample
after 1 pas
through
NTF/NTZ Filter



Dirt reduction in one
circulation:

ISO 22/21/18

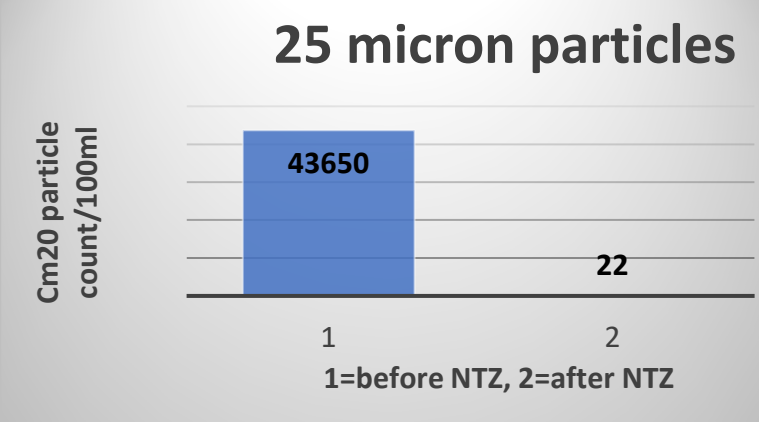
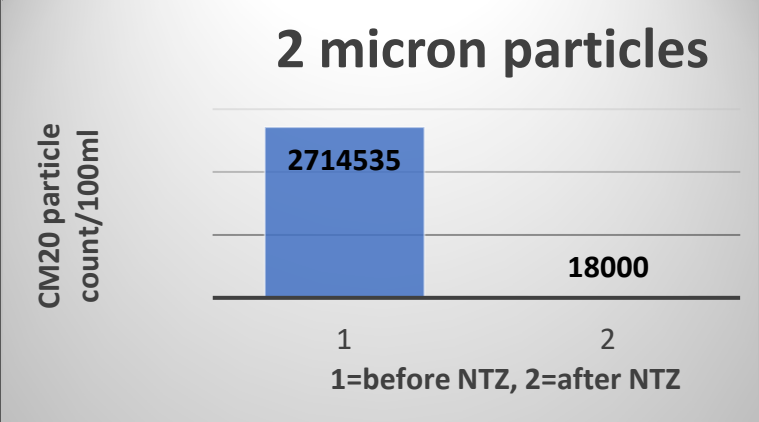
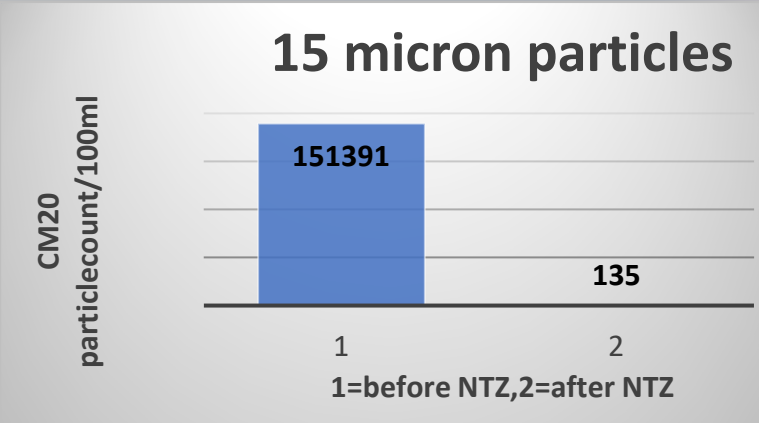
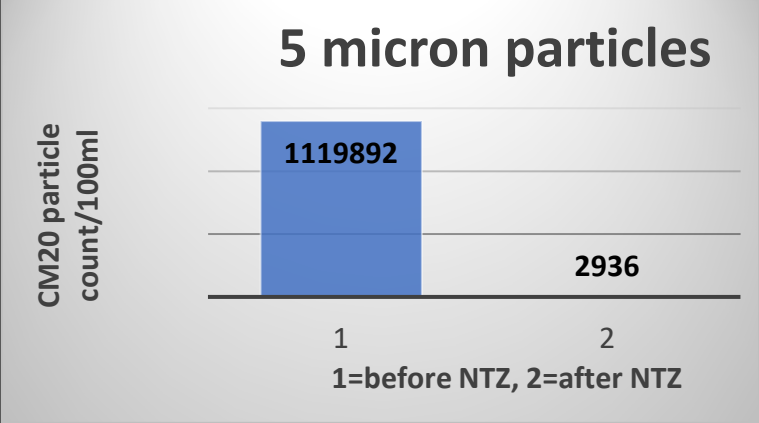
to ISO15/12/08

2 micron 99,44% cleaner

5 micron 99,73% cleaner

15 micron 99,91% cleaner

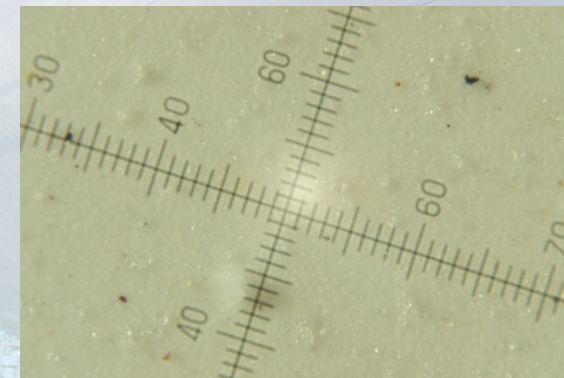
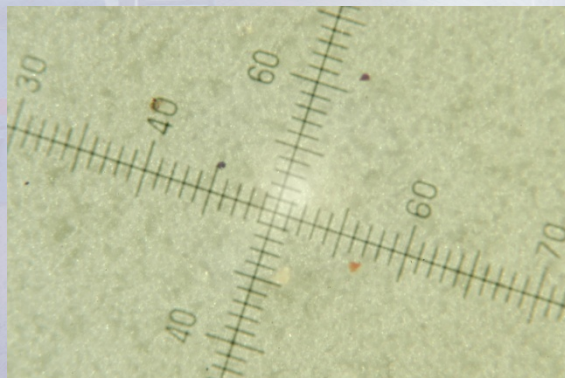
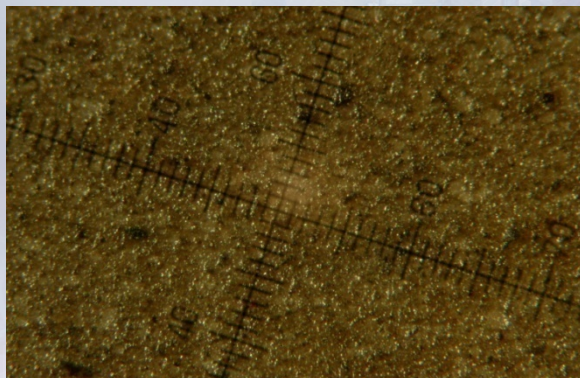
25 micron 99,44% cleaner



Field Test Cases Fuel SA Ecuador



Diesel test Dargen SA Ecuador



Sample: N1D

Diesel sample taken from Repsol gas station in Ecuador

ISO : 22/20/14*

Water : 104,8 PPM

Remarks:

- **Strongly contaminated with metal, sand and plastic parts**
- **Heavy varnish formation**

Sample: N2D

Diesel sample N1D after 1 pas through NTZ –ATF09 filter

ISO : 16/15/11

Water : 38,5 PPM

Remarks:

Cleanliness level ok

Sample: NL

Diesel sample taken from BP gas station in Holland

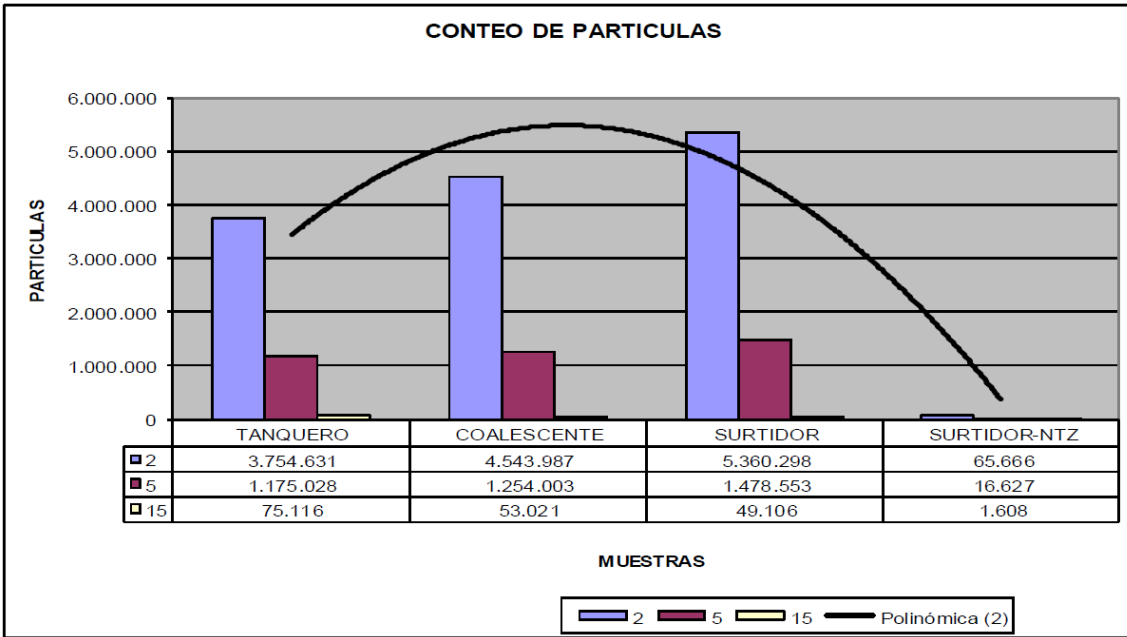
ISO : 18/17/14

Water : 30.3 PPM

Remarks:

- **Slightly contaminated with metal, sand and plastic parts**
- **Particle count is influenced unknow parts (possible parafine)**

Field Test Cases Fuel SA Ecuador



RESULTADOS DIESEL MAMUT

MICRAS	TANQUERO	COALESCENTE (Mobil)	SURTIDOR	FILTRO NTZ
2	3'754.631	4'542.987	5'360.298	65.666
5	1'175.028	1'254.003	1'478.553	16.627
15	75.116	53.021	49.106	1.608
ISO	22/21/17	23/21/16	23/21/16	17/15/12
RANGO INTERNAC RECOMENDADO	18/16/13			



De los resultados obtenidos podemos observar que el nivel de contaminación se incrementa luego de pasar por la coalescente y el surtidor, sobre todo en los niveles mas críticos, es decir en los de mayor cantidad de partículas abrasivas (2 y 5 micras), mejorando, levemente, en la retención de partículas de mayor tamaño, es decir en 15 micras, con lo cual se evidencia que tanto la coalescente como el surtidor no retienen partículas menores a 5 micras, en cambio con el filtro NTZ se obtiene una disminución significativa en todas las medidas alcanzando un nivel ISO optimo, inclusive por debajo del rango internacional recomendado, evidenciando de esta manera el alto grado de eficiencia de los filtros NTZ.

TANQUERO

UCC CM20 TEST
ON-LINE
TEST NUMBER 056

Date 06-08-09
Time 19-06
ISO: 22/21/17

Count/100ml
>2µ 3754631
>5µ 1175028
>15µ 75116
>25µ 15266
>50µ 3003
>100µ 186

NOTES

Coales Mobil

UCC CM20 TEST
ON-LINE
TEST NUMBER 058

Date 06-08-09
Time 19-15
ISO: 23/21/16

Count/100ml
>2µ 4543987
>5µ 1254003
>15µ 53021
>25µ 7931
>50µ 1147
>100µ 71

NOTES

SURTIDOR

UCC CM20 TEST
ON-LINE
TEST NUMBER 061

Date 06-08-09
Time 19-45
ISO: 23/21/16

Count/100ml
>2µ 5360298
>5µ 1478553
>15µ 49106
>25µ 5681
>50µ 540
>100µ 33

NOTES

SURTIDOR

NTZ

UCC CM20 TEST
ON-LINE
TEST NUMBER 065

Date 06-08-09
Time 20-07
ISO: 17/15/12

Count/100ml
>2µ 65666
>5µ 16627
>15µ 3003
>25µ 1608
>50µ 618
>100µ 38

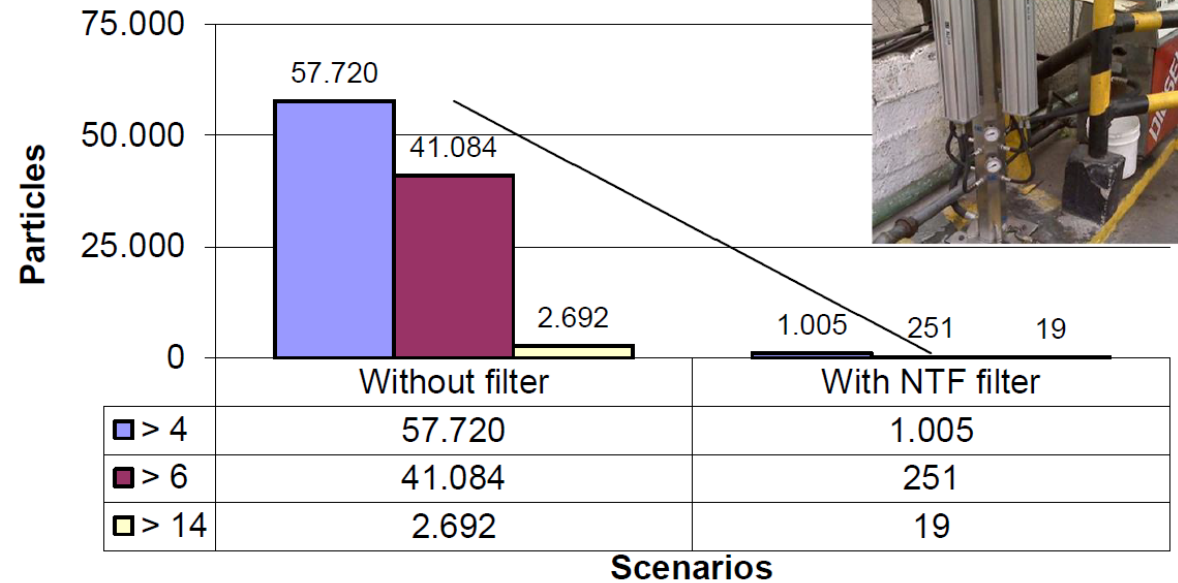
NOTES

English translation:

From the results obtained, we can observe that the level of contamination increases after passing through the coalescer and the dispenser, especially at the most critical levels, that is, in those with the highest amount of abrasive particles (2 and 5 microns), improving, slightly, in the retention of particles of greater size, that is to say in 15 microns, with which it is evidenced that both the coalescent and the supplier do not retain particles smaller than 5 microns, instead with the NTZ filter a significant decrease is obtained in all the measurements reaching an optimum ISO level, even below the recommended international range, thus demonstrating the high degree of efficiency of NTZ filters

ANALISIS DE RESULTADOS DIESEL FUEL DISPENSER (DIESEL)		
DATOS GENERALES		
Date	24-sep-10	21-sep-10
Code	R440-40267-0115	R440-40270-0140
With NTF filter	NO	SI
Fuel	Diesel	Diesel
ISO 4406 - $\mu\text{m}(c)$ -1 ml		
Micras	Lab results	
	Without filter	With NTF filter
> 4	57.720	1.005
> 6	41.084	251
> 14	2.692	19
ISO CODE	23/23/19	17/15/11
International cleaning code	18/16/13	

Comparative analysis results



NTF filters due to their high degree of efficiency and performance, allow to reach optimum levels of cleaning and comply with the international standards of cleaning ISO 18/16 /13.

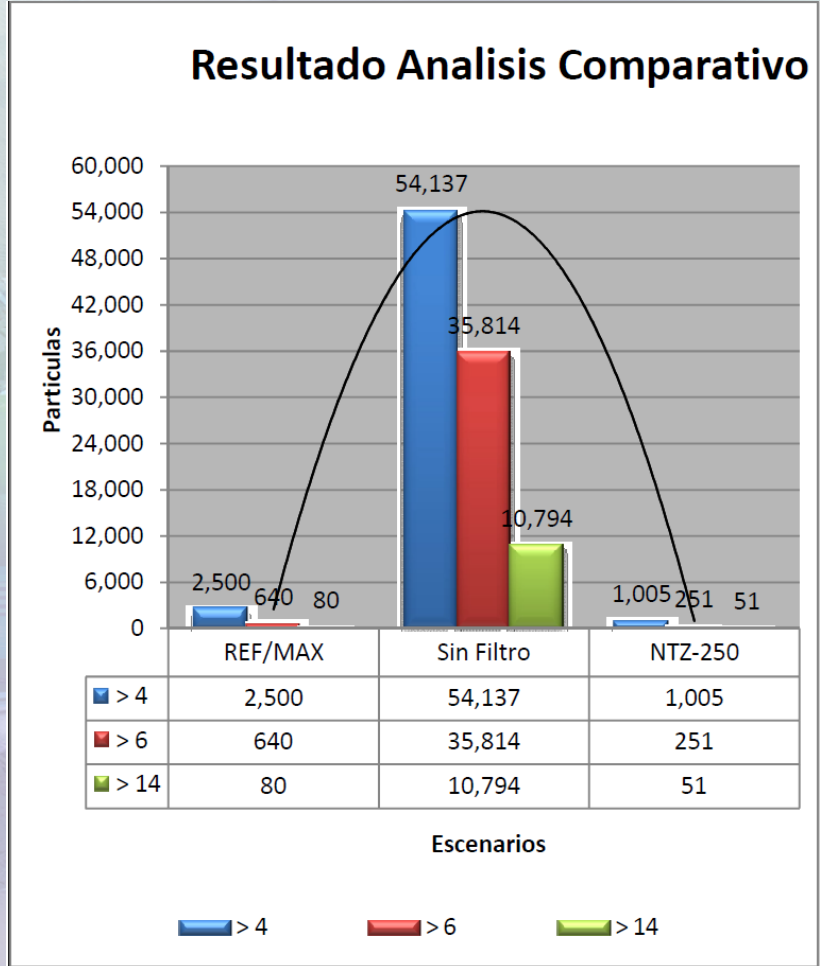
Field Test Cases Fuel SA Ecuador



Field Test Cases Fuel SA Ecuador



ANALISIS DE RESULTADOS - DIESEL RESGASA			
DATOS GENERALES			
Fecha	24-Sep-10	27-Sep-10	
Codigo	Referencia	40267-0114	40267-0140
Con Filtro	NO	NO	NTZ
Horas de uso	0	250	250
ISO 4406 - µm(c) -1 ml			
Micras	REF/MAX	Sin Filtro	NTZ-250
> 4	2,500	54,137	1,005
> 6	640	35,814	251
> 14	80	10,794	51
ISO CODE	18/16/13	23/22/19	17/15/11





Not only expensive repairs can be saved by installing an NTF ALD fuel filter systems. But fuel consumption will also be reduced through better and cleaner combustion allowing more power to develop so more Miles/ Km with less fuel.

To protect your valuable fuel system against unnecessary malfunction or excessive fuel consumption, you need NTF Micro filters.

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



NTF

FILTER B.V.



www.NTF-FILTER.com