



# Reliability of ALGAE-X Fuel Conditioner

## TECHNICAL REPORT 13 October 2003

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### 1) Objectives

**The objective of these tests was to determine the effectiveness of a new Algae-X Fuel Conditioner and the impact on an engine when equipped with this conditioner unit.**

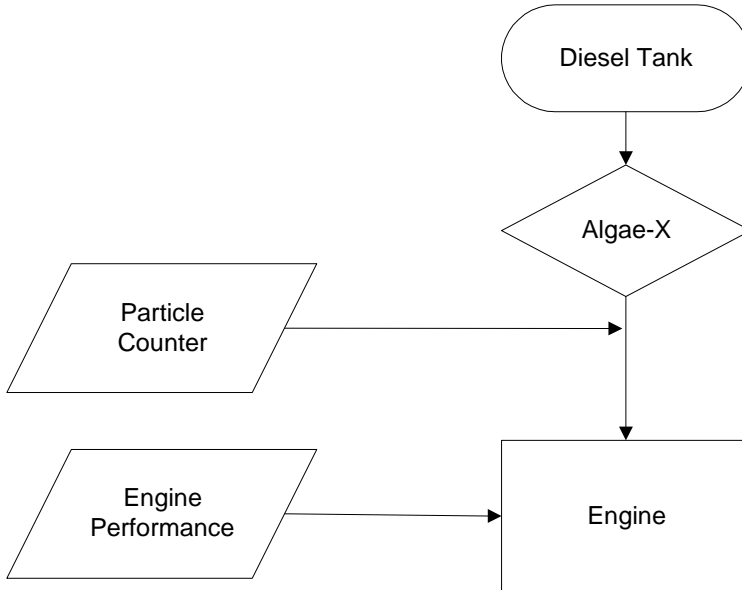


## 2) Tests

### 2.1) With Fuel Conditioner connected in fuel supply line

#### Description

An ALGAE-X conditioner was fitted in the fuel line of an engine during a Dynamometer test. (See schematic)



#### Procedure

Contaminated fuel ran through the fuel condenser to the engine on the dynamometer.

- 1) Engine performance (kW), fuel burn rate and exhaust gas temperature was measured.
- 2) Fuel cleanliness levels were measured.

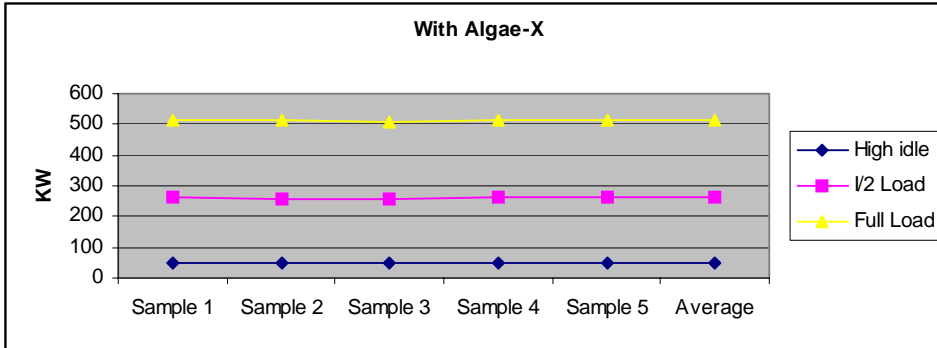
Readings were recorded at five intervals.

#### Test Results

##### 1) Engine Performance (kW)

Power kW	High idle	½ Load actual	Full Load actual
Sample 1	49	262	516
Sample 2	52	260	513
Sample 3	50	259	511
Sample 4	49	262	514

Sample 5	50	264	516
Average	50	261.4	514



Fuel consumption at Full load (L/h)	
Sample 1	133
Sample 2	139
Sample 3	138
Sample 4	135
Sample 5	137
Average	136.4

Exhaust Gas Temperature at Full Load	
Sample 1	442
Sample 2	440
Sample 3	440
Sample 4	440
Sample 5	441
Average	440.6

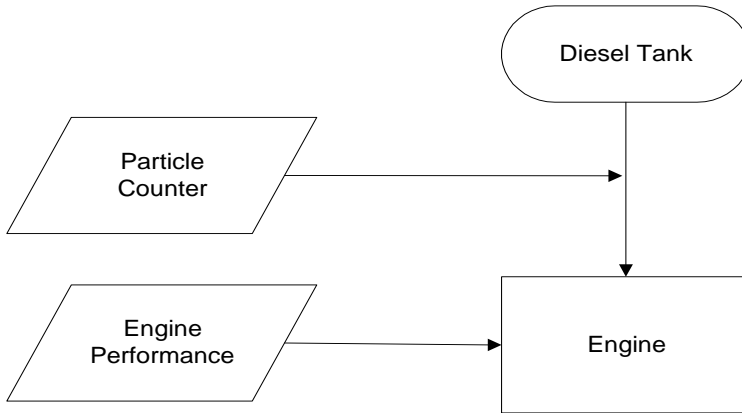
## 2) Fuel cleanliness

Without Algae-X	2 μm	5 μm	15μm	25μm	50μm	100μm
Sample 1	144990	11193	596	56	0	0
Sample 2	87277	5996	258	0	0	0
Sample 3	83261	2913	78	33	11	1

## 2.2) Without Fuel Conditioner

### Description

No ALGAE-X conditioner was fitted. (See schematic)



### Procedure

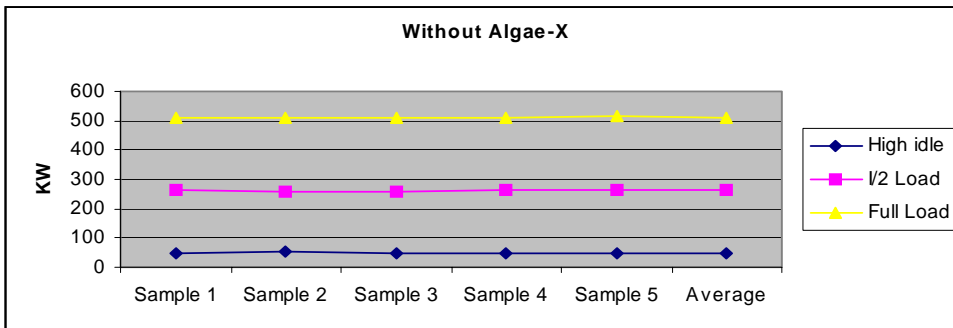
Contaminated fuel ran directly to the engine on the dynamometer.

- 1) Engine performance like power, fuel burn rate and exhaust gas temperatures was measured.
  - 2) Fuel cleanliness levels were measured.
- The average reading was taken at five intervals.

### Test Results

#### 1) Engine Performance

Power kW	High idle	1/2 Load	Full Load
Sample 1	49	262	513
Sample 2	52	260	513
Sample 3	50	259	510
Sample 4	49	262	512
Sample 5	50	264	516
Average	50	261.4	512.8



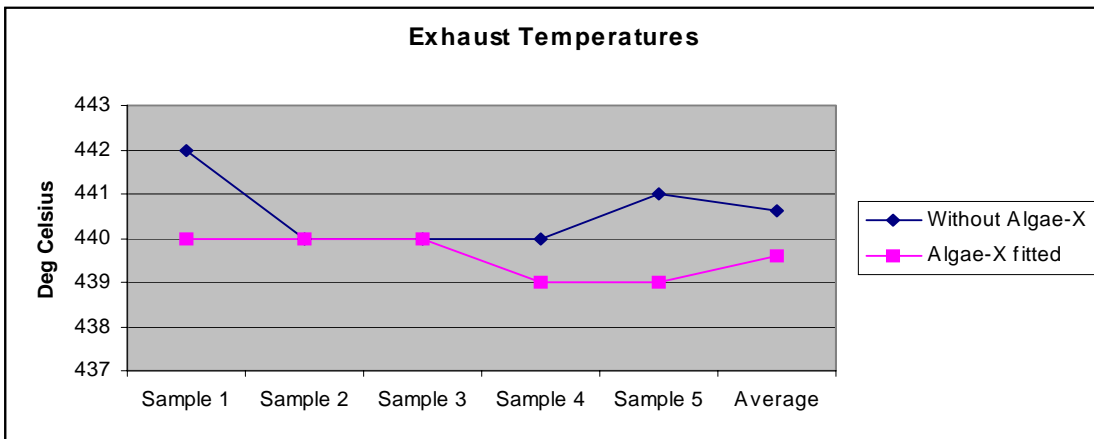
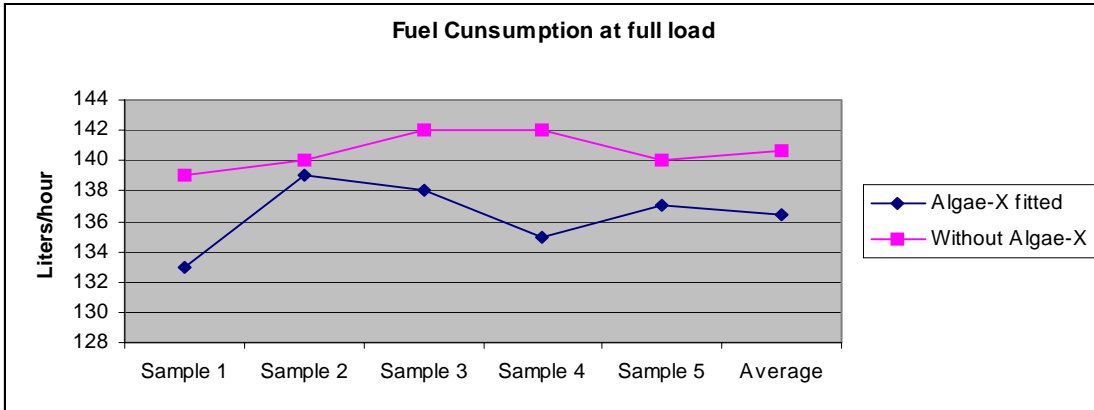
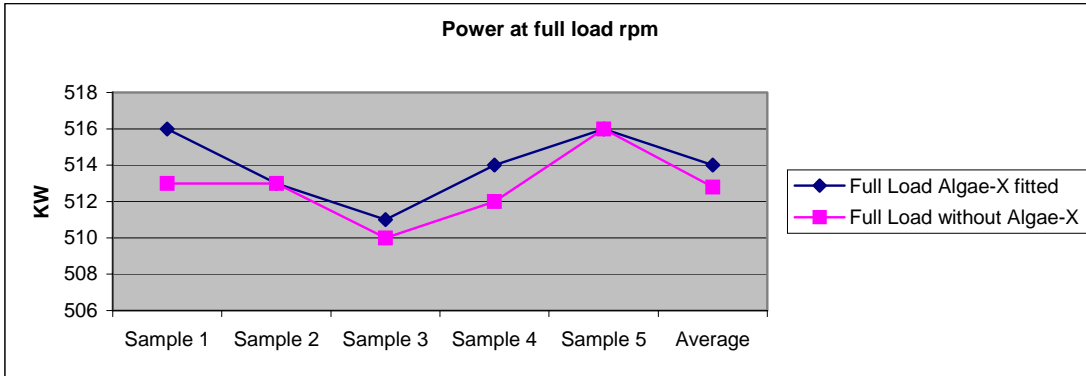
Fuel consumption at Full load (L/h)	
Sample 1	139
Sample 2	140
Sample 3	142
Sample 4	142
Sample 5	140
Average	140.6

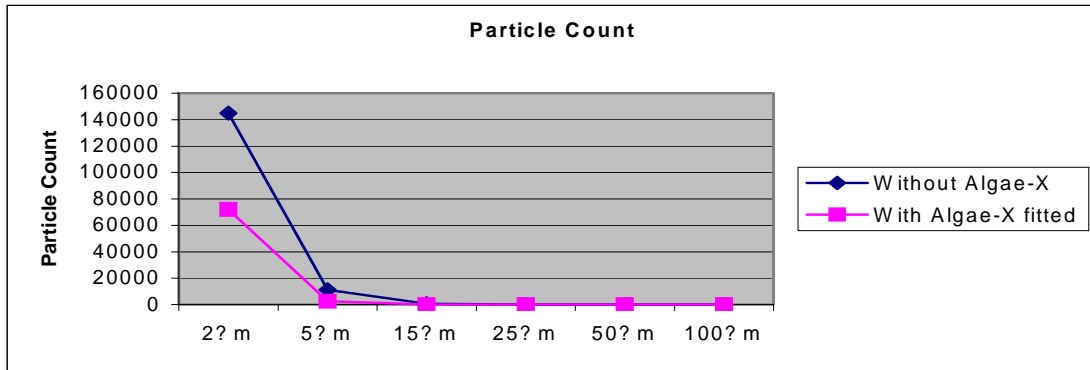
Exhaust Gas Temperature at Full Load	
Sample 1	440
Sample 2	440
Sample 3	440
Sample 4	439
Sample 5	439
Average	439.6

## **2) Fuel cleanliness**

With Algae-X fitted	2 µm	5 µm	15µm	25µm	50µm	100µm
Sample 1	72045	2463	56	22	0	0
Sample 2	55991	2058	22	0	0	0
Sample 3	19406	4342	450	101	11	1

### 3) Summary





ISO: 18/14/10	ISO: 17/13/9	ISO: 17/12/7
Count/100ml	Count/100ml	Count/100ml
>2µ 144990	>2µ 87277	>2µ 83261
>5µ 11193	>5µ 5996	>5µ 2913
>15µ 596	>15µ 258	>15µ 78
>25µ 56	>25µ 0	>25µ 33
>50µ 0	>50µ 0	>50µ 11
>100µ 0	>100µ 0	>100µ 1

ISO: 17/12/00	ISO: 16/12/00	ISO: 15/13/9
Count/100ml	Count/100ml	Count/100ml
>2µ 72045	>2µ 55991	>2µ 19406
>5µ 2463	>5µ 2058	>5µ 4342
>15µ 56	>15µ 22	>15µ 450
>25µ 22	>25µ 0	>25µ 101
>50µ 0	>50µ 0	>50µ 11
>100µ 0	>100µ 0	>100µ 1

## 5) Conclusion

- No significant increase in engine power (kW) was recorded during the full load test
- The fuel consumption decreased with an average of 4 Litres / hour when the condenser was installed
- No significant changes in exhaust temperatures were recorded
- Significant positive changes were recorded on the particle counts with the fuel conditioner fitted “refer script above”
- Tests performed with a new unit. Would not know the effect time and use will have on the unit’s performance.

Report prepared by  
Nico Coetzer  
Product Analyst