



## Generator Testing

The following is a list of generators of varying size that have been tested to determine the effect of OptiFuel™ on them in terms of reducing the amount of fuel required to produce electricity as compared to untreated fuel.

### Test Method

Determine the starting amount of untreated fuel by creating a secondary fuel tank and attaching the tank to the fuel system of the generator, bypassing the internal fuel tank; run the generator into a load bank set at 75% of the generating capacity and determine the kilowatts of power generated over a set period of time; then determine the amount of untreated fuel left.

Load Bank



External Fuel Tank



Power Generation Monitoring



Then, dose a known amount of fuel with OptiFuel™; run the generator as before, only using the OptiFuel™ dosed fuel and determine the kilowatts of power generated over a set period of time; determine the amount of treated fuel left.

Convert fuel consumption for both baseline and test cycles to liters/hour. Also convert the kilowatts of power generated to Kilowatts/hour.

Divide the kilowatts/hour figure by liters/hour, determining the kilowatts/liter figure for both data sets.

Compare the two figures and determine the percent change caused by using fuel dosed with OptiFuel™.

## Results

Power generation capabilities are typically improved when generators are run with fuel dosed with OptiFuel™. The tables below show results of testing on varying sizes of generators.

<b>Cummins 750 kVA Generator</b>		
	<b>Baseline</b>	<b>Test</b>
Fuel Consumed, Liters	150.0	150.0
Total Output, kW	24.0	26.0
Run Time, minutes	78.0	83.0
Fuel Consumption, L/Hr	115.4	108.4
Power Output, kW/Hr	18.5	18.8
Power Generation, kW/L	0.2	0.2
<b>Improvement, %</b>		<b>8.3</b>

<b>CAT 250 kVA Generator</b>		
	<b>Baseline</b>	<b>Test</b>
Fuel Consumed, Liters	42.9	59.6
Output, kW	14.3	27.5
Run Time, minutes	43.0	83.0
Fuel Consumption, L/Hr	59.9	43.1
Power Output, kW/Hr	20.0	19.9
Power Generation, kW/L	0.3	0.5
<b>Improvement, %</b>		<b>38.4</b>

<b>Cummins 380 kVA Generator</b>		
	<b>Baseline</b>	<b>Test</b>
Fuel Consumed, Liters	62.1	49.7
Output, kW	229.5	239.7
Run Time, minutes	60.0	52.0
Fuel Consumption, L/Hr	62.1	57.3
Power Output, kW/Hr	229.5	276.6
Power Generation, kW/L	3.7	4.8
<b>Improvement, %</b>		<b>30.5</b>

<b>Perkins 40 kVA Generator</b>		
	<b>Baseline</b>	<b>Test</b>
Fuel Consumed, Liters	9.0	7.0
Output, kW	12.8	12.8
Run Time, minutes	60.0	60.0
Fuel Consumption, L/Hr	9.0	7.0
Power Output, kW/Hr	12.8	12.8
Power Generation, kW/L	1.42	1.83
<b>Improvement, %</b>		<b>28.6</b>

<b>Cummins DBFC 200 kVA Generator</b>		
	<b>Baseline</b>	<b>Test</b>
L Fuel Consumed	42.8	39.8
Total Output, kW	19.3	19.3
Run Time, minutes	62.0	62.0
Fuel Consumption, L/Hr	41.4	38.5
Power Output, kW/Hr	18.7	18.7
Power Generation, kW/L	0.45	0.48
<b>Improvement, %</b>		<b>7.5</b>

*It should be noted that the extreme improvements shown in three of the trials were due to the generators not being supplied fuel that met the national standard for diesel for the country in which the test took place. Baseline power generation and fuel consumption was, therefore, well below what would have been expected had conforming diesel fuel been used. Once dosed, the catalytic effect of OptiFuel™ on the substandard fuel used showed dramatic improvements in kW/L figures, well beyond the expected 7%-10% improvement.*