



REPORT ON TEST CONDUCTED AT MTN NIGERIA

Prepared for



Submitted by:

Centron Energy South Africa (Centron SA)
Head Office: Building 2, Country Club Estate,
Woodlands Drive, Woodlands, Johannesburg
Contact: 082 824 3690 or osman@centron.co.za

Submitted to:

MTN
Kevin Shepherd
Implementation Specialist
Kevin.s@mtn-dubai.ae

TABLE OF CONTENTS

1 INTRODUCTION AND BACKGROUND1

2 RESULTS.....2

2.1 SUMMARY 2

2.2 BASELINE DATA 3

2.3 FUEL SAVINGS RESULTS 3

2.4 PERCENTAGE FUEL SAVINGS AND INCREASE IN PERFORMANCE 5

2.5 CLEAN UP PHASE 6

2.6 EXHAUST EMISSIONS BEFORE AND AFTER 6

2.7 PERFORMANCE AND OPERABILITY BEFORE AND AFTER 7

3 CONCLUSION OF TRIAL RESULTS8

4 RETURN ON INVESTMENT (ROI) AND REDUCTION IN CARBON FOOTPRINT8

5 RECOMMENDATIONS:9

6 SAFETY AND SUPPLY ASPECTS11

7 CONCLUSION AND WAY FORWARD12



1 INTRODUCTION AND BACKGROUND

MTN engaged Centron Energy SA to perform a pilot project on use of Centron's fuel additive to reduce harmful exhaust emissions as well as improve fuel economy. Being a listed Company MTN is directly affected by Emissions laws, regulations and reporting standards. MTN have committed to going green and is investigating the use of fuel enhancers to achieve reduced emissions and improve the performance of its Gensets. The aim of the present test was to assess the effect of Centron fuel additive added to diesel, on the emissions and fuel savings on the Generators at MTN.

Centron in turn acts as a stabilizer and oxygenator to fuel and by doing so will address MTN's fuel related challenges.

Accordingly MTN requested Centron to run a test on its operations in Nigeria as this is the most challenging environment relating to diesel quality and the fact that much of the Nigerian operation is driven by fuel. The various challenges facing MTN are briefly stated as follows:

- Rising diesel costs will affect MTN's bottom line
- Substantial usage of Gensets with poorer quality of diesel leads to a shortened lifespan and increased wear and tear
- Increased maintenance costs
- Higher emissions levels causes environmental harm and stakeholder pressure

MTN Nigeria provided a generator, Jubaili Bros P30, with a Perkins engine, 27 – 30 kva for Centron to perform its test on. The test was conducted from 14th March 2012 to 24 April 2012 for about 976 hours of run-time at Ilabere street site, Ikoyi of which the first 139 hours were used to collect baseline data, and the balance of 837 hours were treated with Centron.

2 RESULTS

2.1 Summary

The testing of Centron Fuel Additive was conducted from 14th March 2012 to 24 April 2012, according to the standardized EPA protocol for a cumulative effect fuel additive testing for diesel fuels, using an EPA approved Autologic Opacity Meter. The test was commissioned by Mr Kevin Shepherd the Implementation Specialist, MTN Dubai Limited.

In summary, the following results were obtained during the test:

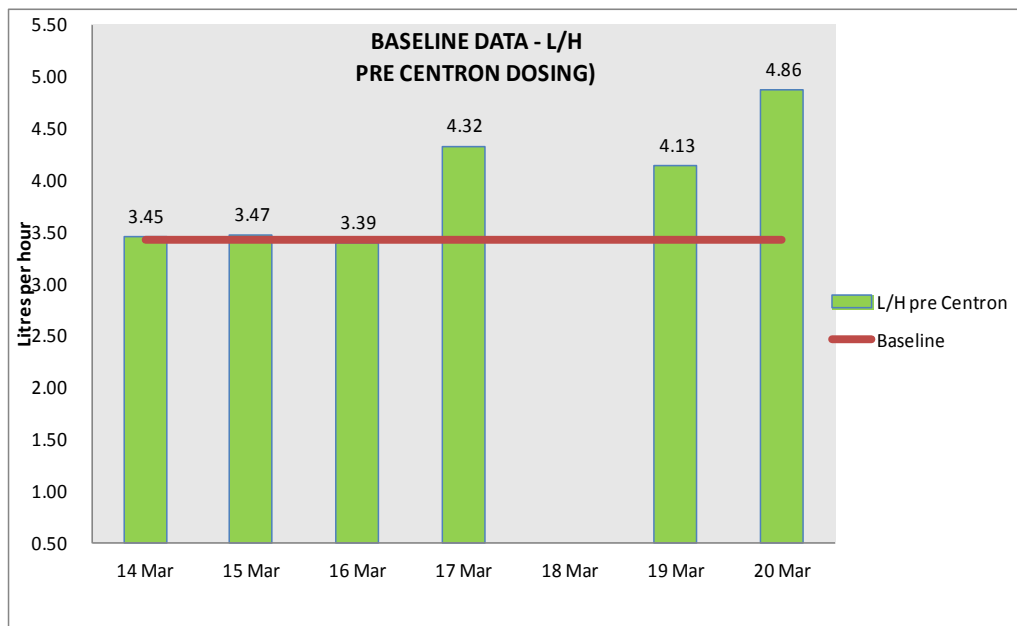
- The fuel consumption savings at the conclusion of the trial is 2.85 L/H (.35 H/L) and equates to a 20% saving based on a baseline figure of 3,42 L/H (.29 H/L)¹. On a baseline of 3,91 L/H the savings would be more than 30%. The average consumption after the clean up phase reduced to 2,87 L/H (.35 H/L) and equates to a 19.12% saving (see **Section 2.3** for calculations).
- The overall average reduction in opacity was 625%. Furthermore the elimination of exhaust black smoke & soot clearly demonstrates that the use of Centron created a cleaner, more efficient fuel combustion resulting in less overall harmful emissions and improved fuel economy performance. (See **Section 2.6** for details)
- The filters were becoming cleaner indicating an overall better performing GENSET.
- If Centron saves MTN a mere 10% on fuel consumption, this yields a Return on Investment of 226% assuming a fuel price 0.92 USD per liter after paying for the product (please refer to **section 4** of this Report for full details and calculations). At a savings of 20% the return on investment doubles and the CO2 reduces by double as well.
- Based on the evidence gleaned from the pilot, we are certain that the GENSET lifespan will increase and wear and tear resulting from fuel related problems will be minimized which will add to the ROI.
- Based on the above factors, we are of the opinion that the application of Centron across all MTN GENSETS will be a major contributor to the net bottom line of MTN as well as enhance its sustainability report.

¹ The average baseline over the period 14 to 20 March was 3,94, however MTN used the baseline data for the dates 14 March to 16 March which averages 3.42 L/H. MTN explained that the latter was more consistent with their previous experience. See **section 2.2** of the report for baseline data.

2.2 Baseline data

The baseline fuel consumption was collected over 162 hours of run time from 14 March 2012 to 21 March 2012 (“baseline period”). For the baseline period no Centron was added as the objective was to ascertain the performance of the GENSET without Centron. The fuel consumption over the baseline period was erratic as can be seen from the graph below. The total fuel consumed for the baseline period was 634.18 litres over 162 hours meaning that the baseline average consumption was 3.91 L/H (0.255 H/L) with the consumption on some days going up to 4,86 L/H (0.20 H/L). MTN Nigeria however disregarded the dates 17th to the 20th March 2012 where the consumption was at 4,32, 4,13 and 4,86 L/H respectively. This resulted in a lower average baseline of 3,42 L/H (0.29 H/L) as opposed to 3.91 L/H (0.255 H/L). In either case Centron returned significant savings to MTN as will be seen in Section 2.3.

The “pre-Centron” period is depicted in the following graph and as can be seen is quite erratic from the 17th of March to 20th March:



2.3 Fuel savings results

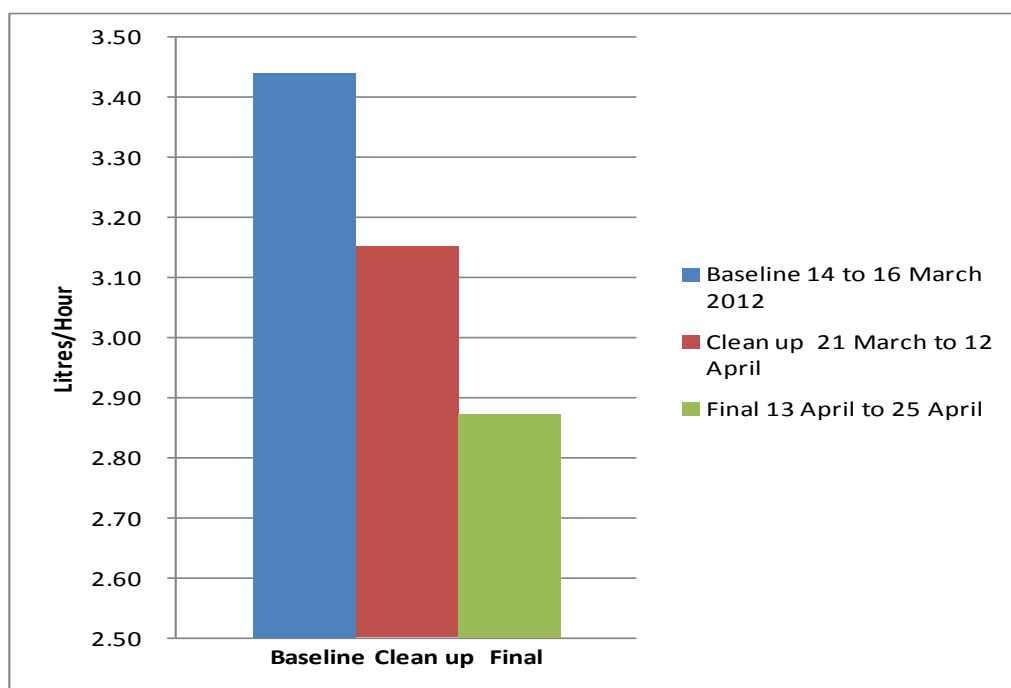
We began treatment with Centron Fuel Additive on 21st March 2012 with 9,6 millilitres per litre of Diesel and began noticing immediate action by the additive. Due to the cleaning effect of Centron we noticed an initial increase in consumption and once the Genset filters were changed on or about the 27th of March 2012 the results improved dramatically and remained so to

conclusion of the trial. The average consumption after the clean up reduced to 2,87 L/H (0,34 H/L). The improvement at the conclusion of the trial was over 31% on fuel savings when compared to the baseline of 3,94 L/H (0.25H/L) and 20% when compared to the lower baseline of 3,42 L/H (0.29H/L). When compared to the days 17th to the 20th March 2012 when the fuel was burning at average 4,43 L/H (.225 H/L), the savings is about 50%. If left untreated we are of the opinion that the Gensets may well reach the 4,5 L/H (.022 H/L) for periods closer to the next service.

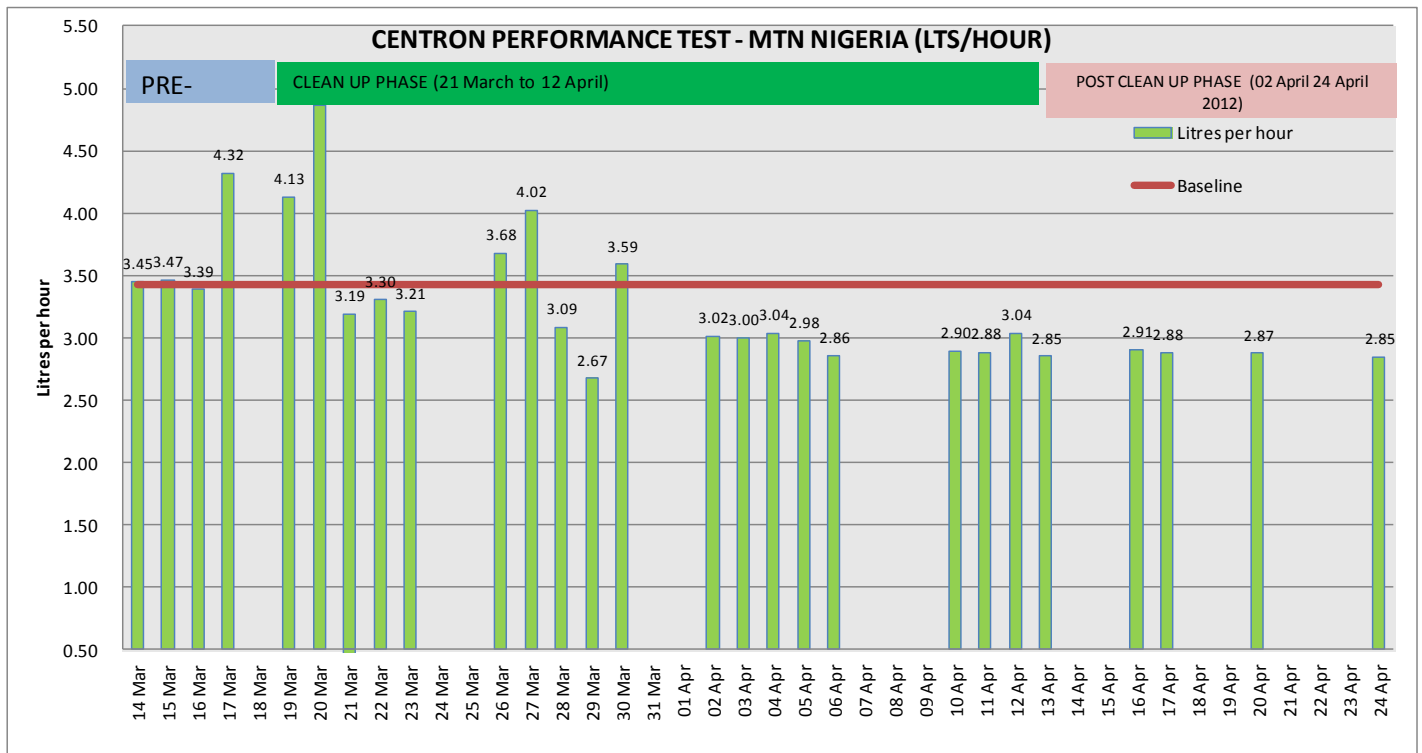
The table below reflects the savings calculation, based on a baseline of 3.42 L/H and dropping to 3.15 L/H (0,32 H/L) during the clean up and finally at 2,87 L/H (0,35 H/L) after the clean up:

Event	Dates	Litres	Hours	Average L/H	Average H/L
Baseline	14 to 16 March 2012	160.8	47	3.42	0.29
Clean up	21 March to 12 April	1 729.72	549	3.15	0.32
Final	13 April to 25 April	827.16	288	2.87	0.35
Improvement				<u>19.12%</u>	<u>19.12%</u>
Test: Baseline + (baseline * improvement) = After Clean up					0.35

The graph below shows the visual presentation of the improvement from the baseline phase gradually improving into the clean –up phase and finally the results become even better once the clean up is complete.

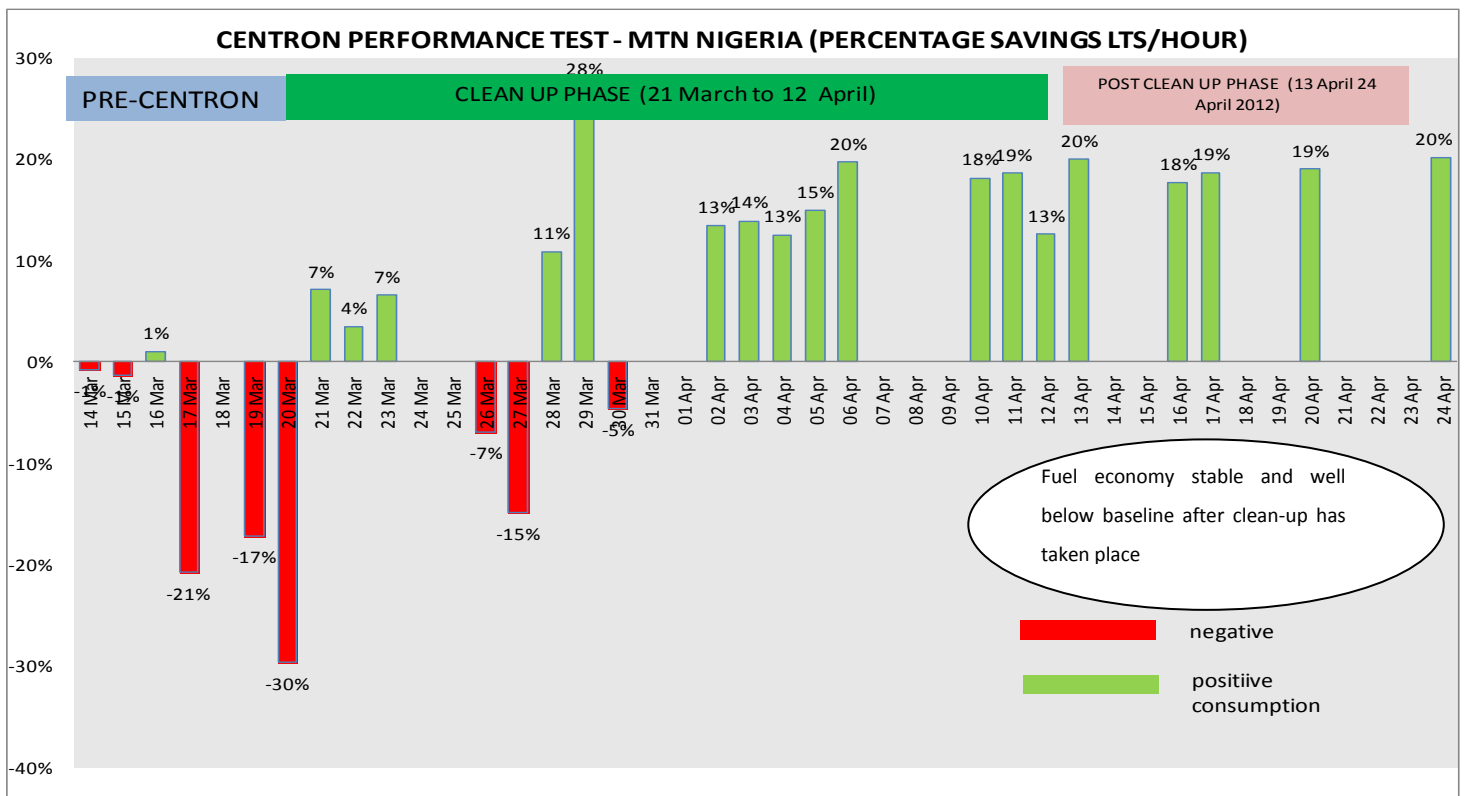


The test results were monitored on a daily basis with regard to fuel economy and is depicted in the following graph where the red line indicates the MTN required base line of 3.42 and you will observe the L/H steadily decreasing and stabilizing to well under 2.90 L/H:



2.4 Percentage Fuel Savings and increase in performance

The percentage savings achieved on a day to day basis is reflected in the chart below, please take note of the consistency in performance following the dosing of Centron from the 1st April reaching 20% fuel savings on the lower baseline of 3,42 L/H (0.29 H/L). The red graphs indicate the negative performance of the GENSET against the Low Baseline of 3,42 L/H (0.29 H/L) and occurred prior to the treatment of Centron and during the Clean up phase. Once the clean up was completed the GENSET never performed below the baseline and was consistently better than the baseline. At conclusion of the trial we observed the GENSET running at 2,85 L/H (or .35 hours per litre) in comparison with the baseline of 3,42 L/H (0.29 H/L) **The improvement is from .29 hours per litre to .34 hours per litre, an increase of 20,04%.** Using the average performance after the clean-up of 2.87 L/H (.34 H/L) the fuel savings is about 20%. Once again had the baseline period’s full average been used the improvement is more than 30%.



2.5 Clean up phase

During the clean up phase it is common that the fuel economy decreases as a result of Centron cleaning out the sludge and the filters become taxed during this short process. Once the Filters are changed the fuel burns cleaner and the GENSET runs ‘smoothly’ and as can be seen from the 1st of April in the graph above, the GENSET is extremely stable with results concluding at 2,85 litres per hour.

2.6 Exhaust emissions before and after

Exhaust emissions measurements were taken at commencement using Centron’s EPA approved equipment by inserting a small probe into the tailpipe while the Genset was running. Exhaust was pulled into the analyzer by a small fan. The values are calculated by the Equipment directly at the beginning and conclusion of the trial. The results are as follows and reflect an average savings of 625%



OPACITY							
		BASELINE -16 Mar 2012			POST DOSING - 24 Apr 2012		% change
<u>POCKET SMOKE</u>	<u>PRE-TEST</u>	<u>TEST RESULT</u>	<u>TIME</u>	<u>PRE-TEST</u>	<u>TEST RESULT</u>	<u>TIME</u>	
SNAP 1	0.10	0.1	10:43	0.02	0.01	10:42	900%
SNAP 2	0.12	0.08		0.02	0.02		300%
SNAP 3	0.08	0.08		0.01	0.01		700%
SNAP 4	0.07	0.07		0.01	0.01		600%
Average							625%

	Test Result	Standard			Test Result	Standard	
OPACITY	0.08	3.25	PASS		0.01	3.25	700%

The above reduction in opacity is a reflection of Centron’s strong detergent properties and since the Diesel is burning cleaner this will have a positive impact on the engine life and performance of the GENSET. Furthermore this will assist MTN in favourably reporting this in the Group Annual report which will enhance stakeholder value.

2.7 Performance and operability before and after

We also noted a marked improvement in the performance & ease of operability of the Genset due to cleaner burning fuel. Continuous treatment of Centron will assist with preventative maintenance and the GENSET is already performing better. This may well result in an increased lifespan, cooler running engine and reduced wear and tear. The filters below from before Centron and after Centron reflect a cleaner filter already and one can expect a further improvement with continuous use.



← BEFORE

AFTER →



3 CONCLUSION OF TRIAL RESULTS

The fact that the Trial Genset ran for most of the day during trial gave us adequate time to form solid conclusions and Centron delivered excellent results in all departments:

- Fuel savings were more than 31% when compared to the baseline of 3,94 and 20% when compared to the lower baseline of 3,42 L/H (0.29 H/L).
- Opacity reduction on average was at 625% and actual final decrease was 700%.
- The engine of the Trial Genset is burning a lot cleaner and the filters after more than 800 hours of application are visibly cleaner meaning that the engine is performing better and may well have an improved lifespan.
- The results obtained are compelling evidence for MTN to roll out the implementation of Centron into all of its operations.

4 RETURN ON INVESTMENT (ROI) AND REDUCTION IN CARBON FOOTPRINT

We understand that ROI is important to users of Centron. At a mere 10% fuel savings, our calculations below reflect that MTN will earn a 226% Return on Investment and accordingly Centron will contribute to MTN's bottom line profit in more ways than one. The calculated ROI of 226% is before taking account of the savings that MTN will benefit from as a result of reduced maintenance costs, longer engine life, fewer fuel related problems and greater shareholder confidence as a result of decreased emissions.

Assuming that MTN uses 20 million litres of diesel annually at a price of .92 USD per litre, the figures at a conservative saving of 10% are likely to be as follows:

The overall carbon reduction based on the above figures will be 5 320 Metric Tonnes of CO₂ reduced annually assuming 20 million litres of diesel and 10% fuel savings.

Estimated annual consumption	20 000 000
Fuel Savings %	10.00%
Liters of Fuel Saved	2 000 000
Cost of Fuel per Liter in USD	0.92
Fuel Cost Saving	1 840 000
Centron Required in Liters	64 000
Cost per Centron litre ex VAT (usd) *	12.73

Cost of Centron – USD	814 720
Net Fuel Savings – USD (Fuel cost savings less Centron costs)	1 025 280
Return on Investment	226%
CO2 Reduction in Metric Tonnes	5 320
* Price based on exchange rate of 7.85 and will fluctuate based on exchange rate	

If we extrapolate the savings of 20% into the above model the return on investments will be 400% plus and some 10 000 tonnes of CO2. However to be prudent and conservative we have performed our calculations on 10% savings. If Centron is rolled out to the world-wide operations, based on the above calculations and our test results, the bottom line profit and sustainability report of MTN will be greatly enhanced. Centron additive may well become one of MTN’s greatest contributors to its overall profitability and sustainability thereby increasing stakeholder value.

5 RECOMMENDATIONS:

Based on the results of the Centron evaluation it can be concluded that Centron causes fuel to combust more efficiently resulting in reduced exhaust emissions and improved fuel economy performance. Further, the cost of implementing Centron is more than offset by fuel cost savings resulting in net positive cash flow & enhanced bottom line profit for MTN together with an enhanced sustainability report. It is therefore recommended that MTN treat their diesel fuel supply with Centron additive to achieve reduced harmful emissions and improved fuel economy performance.

The results of the Centron evaluation confirm Centron’s claims of reduced emissions & improved fuel economy performance. Therefore it is reasonable to conclude that the potential for additional maintenance & financial benefits exist for MTN by treating its fuel supply with Centron. These benefits include:

Centron Cleans deposits from fuel tanks, lines, injectors, valves, and piston rings and keeps them clean with continuous use bringing engines back to "like new" performance.

- Improved sealing of valves and piston rings reduces blow-by and improves performance and fuel economy.



- Improves injector spray pattern to facilitate improved atomization
- Reduces Operating and Maintenance Costs: A cleaner engine lasts longer and runs better.
- Eliminates EGR valve fouling and reduces diesel particulate filter (DPF) regenerations saving time, money, and increasing DPF life.

Centron Improves Combustion by reducing fuel surface tension and introducing additional oxygen to the combustion process.

- Reduced surface tension allows better atomization so more of the fuel molecule to exposed to oxygen during the combustion process
- Oxygenates enable a more complete fuel burn providing better fuel economy, more power, reduced black smoke & soot.
- The improved combustion reduces hazardous emissions and particulate matter (PM) through a more efficient yet lower temperature combustion process.

Centron Lubricates pumps, valves, injectors, and piston rings.

- Replaces lost lubrication of ULSD and improves the performance and extends the life of pumps and injectors, reducing maintenance costs.
- Provides lubricity equal to that of 3000 ppm sulphur content fuel
- Increased Lubrication to the upper cylinder area, valves and top rings reduces blow-by thus improving efficiency and reducing oil contamination and dilution

Centron Conditions fuel by removing water from by carrying it through the combustion process.

- Resolves algae and sludge issues, making Centron one of the best algae and sludge solutions on the market today
- Emulsifies water and suspends it allowing it to exit the fuel system through combustion instead of accumulating
- Keeps fuel tanks and lines from rusting out
- Eliminates fuel line freeze during cold weather

- Protects and conditions bulk tank storage as well as stabilizes fuel stored in bulk tanks

Centron Stabilizes fuel allowing it to stay fresh over an off season, protecting against corrosion, water issues, and wax and varnish deposits:

- Promotes molecular balance in the fuel and makes it shelf and tank stable, thus enhancing the oxidation stability of straight diesel, biodiesel blends, gasoline and gasoline ethanol blend
- Controls water accumulation during storage
- Easier starting after storage

6 SAFETY AND SUPPLY ASPECTS

Petrochemical based product

Centron is a “Petro chemical” based product manufactured under a world-wide patent and who’s ingredients has been thoroughly scrutinised by Patent Examiners world-wide. All ingredients are fully disclosed in a transparent manner as well as their workings and actions and none of the chemicals in Centron are capable of causing any harm to an engine. With over 10 years in operation there has not been a single failure or claim against Centron. We will be glad to supply MTN the MSDS of these chemicals and or surfactants which work as synergistic blend to optimise combustion.

Zero metals, ethanol or acetone

Centron contains no metals, ethanol or acetone. It is tested by SABS which includes a test by NATREF on oxidation. This test proves that Centron is not leaving behind any residue in the fuel tank and that it clean burns through the combustion chamber.

Zero claims history

Centron has been in use for more than 8 years and 600 million kilometres of road use with zero claims. This as a result of Centron introducing nothing harmful such as metal, alcohol, acetone or particulates into the fuel or fuel system.

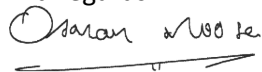
MANUFACTURING OF CENTRON

Our blending company, IMPROCHEM, a specialist lubricant/additive manufacturer, is part of the AECI Group and one of the largest blending companies in South Africa. They are able to handle substantial volumes and manage the quality of production in line with the latest ISO and other applicable standards.

7 CONCLUSION AND WAY FORWARD

We thank MTN for the opportunity provided to us and the staff at MTN Nigeria involved in the project for their assistance and kind co-operation during this trial. With these substantial savings and compelling results we hope to secure MTN's business and look forward to an exciting business relationship.

Kind regards



Transmitted electronically

Osman Moosa

Director

For: Centron Energy SA

Duly authorised

DATE: 25 April 2012