

Vodacom slides

Pump rate in SA is 31.67 Rands per KG.

Price per litre, Easigas says to use 0.55kg per litre

Price per litre – 17.42 Rands Before VAT

Diesel is R22.60 Before VAT

Diesel and CO2 Savings with Polar Power DC Telecom Power Solutions for SA Telecom Off-Grids

In the absence of actual site details, we have used the site at 12kW Load, 8 x 150AH LFP Batteries at 80% DOD, 30KVA Generators at an average 6L/Hr Diesel Consumption, for each of the 35 Sites

Site Name	Site Equipment	Average Power Consumption (kW)	Genset	LI-Ion Battery module (48V 150AH) quantity	Battery bank 48*150/1000 = 7.20 (kW)	ACTUAL AUTONOMY (hr.)	GENSET Starts (Annual)	GENSET Hours per Cycle	GENSET RUNNING (hrs/yr)	AVERAGE FUEL CONSUMPTION (lts/year)	Fuel Consumption Litres per day	Estimated Average Site Fuel consumption, 30KVA 24/7 @6L/hr	Fuel Savings per annum	CO2 Savings in Kg per annum
VOD-12KW	Polar 15kW DC Genset and 57.60kwh li-ion battery bank	12.00	15	8	57.60	4.12	1,101	3.87	4,262	16,450	45.1	52,560	36,110	96,775

The Polar Power DC Generator Solution will provide the following, based on the assumptions above:

Current Diesel Fuel consumption - 52,560 Litres per year per site x 35 = 1,839,600 Litres

CO2 Emission from Current Diesel Fuel Consumption = 4,930,128 kg

- ✓ Equivalent LPG Fuel required = 4,262 Hrs x 3.78 Kg/Hr /0.55 kg/Litre = 29,292 Litres per Year per site.
- ✓ 35 sites = 29,292 x 35 = 1,025,220 Litres per Year
- ✓ CO2 Emission for 35 sites= 44,231 x 35 = 1,548,085 kg

Overall CO2 Emission Reduction from Diesel to LPG = 4,930,128- 1,548,085 = 3,382,043 CO2 kg

Vodacom South Africa Case Study

Number of sites nationally 15,000

Off-Grid Sites with Diesel 35

- Diesel Usage 52,560 Litres per site per year,
- Total for 35 sites, 1,839,600 Litres per year
- Cost of Diesel per litre, 22.60 Rands. Yearly cost = 1,188,760 Rands per Year
- Total for 35 sites per year, 41,606,600 Rands
- Carbon Emissions 140,860.80 Kg CO₂ per site per year,
- Total for 35 sites 4,930,128 Kg CO₂

Savings with Polar Power LPG DC Generators

Equivalent LPG Fuel for 35 sites = 4,262 Hours x 3.78Kg/Hr / 0.55Kg/Litre = 29.292 Litres

Total for 35 sites = 1,025,220 Litres

Wholesale LPG cost, R17.42 = 17.42 x 1,025,220 = 17,859,332

CO₂ Emission for 35 sites = 1,548,085.

Fuel Opex Savings Diesel to LPG = 41,606,600 - 17,859,332 = 23,747,268 Rands

CO₂ Emissions Savings from 4,930,128 - 1,548,085 = 3,382,043 CO₂ KG

Vodacom South Africa Case Study

Number of sites nationally 15,000

Sites on One Bad-Grid Cluster 814

Diesel Generators 30KVA

Diesel Fuel Usage with one 6 hour Eskom outage per day 507.50 Litres per site x 814 = 421,245 Litres/year

Cost per Year = 22.60 x 421,245 = 9,520,137 Rands

CO2 Emissions per Year = 1,128,936.60

Polar Power LPG System Consumption = 167.21Kg per site.

Total for 814 sites in Litres= 136,109 Kg/0,55Kg per Litre = 247,470 Litres

Wholesale Cost per Litre = 17.42 Rands. Total Cost = 4,310,927 Rands

CO2 Emissions for 814 sites = 373,679.70

Fuel Opex Savings = 9,520,137 - 4,310,927 = 5,209,210

Diesel to LPG CO2 Savings = 1,128,936.60 - 373,679.70 = 755,256.90 CO2 KG Reduction