

Inverters

Standard,
Premium & Solar
Systems



NCEAP
Efficient energy solutions

An initiative of the Concession Development Company (CDC)

A BRIEF INTRODUCTION TO N-CEAP

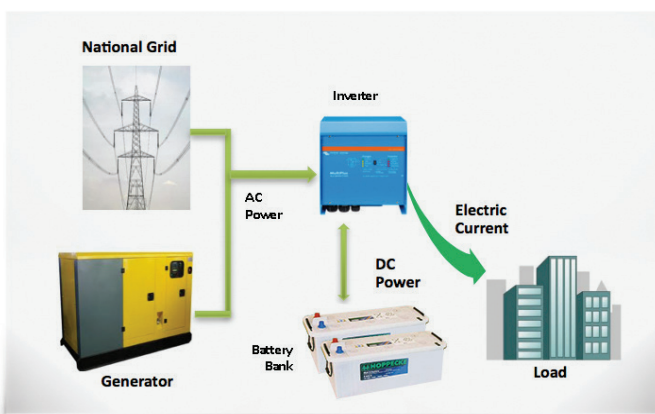
The Nigeria Clean Energy Access Program (N-CEAP) offers clean, affordable energy with solar inverter systems, inverters, energy storage and efficient lighting systems.

The N-CEAP initiative has been designed to reduce greenhouse gas emissions in Nigeria, as well as the high cost of power self-generation and consumption by households and businesses.

N-CEAP was established in 2010 by the Concession Development Company (CDC), a project development organisation.

N-CEAP POWER SOLUTIONS

N-CEAP inverter systems use energy stored in a battery bank to deliver power as a backup to the regular power source. These systems are carefully designed to allow for the desired number of operating hours using the batteries.



N-CEAP inverter systems are designed with painstaking attention to detail. Each system is built from a selection of premium components, shopped globally to ensure that our power solutions meet the highest international standards.

We have configured each system to meet the various needs of average Nigerian households and businesses, recognizing the need to save money as well as the safe, peaceful and healthy enjoyment of their premises.

Every naira spent on petrol or diesel for power generation is money that goes up in smoke and never comes back, but an N-CEAP investment is long-lasting.

A Glance At N-CEAP Inverter Systems

- Our products are of the highest grade, culled from the world's top manufacturers.
- We carry top quality inverter products from the likes of Victron Energy, Must Power, Outback and SMA
- Our products and installations are reliable and efficient, guaranteed.
- N-CEAP inverter systems can be installed either as full solar systems or as back up systems to alternative power sources.
- Our inverters can be configured to send you an SMS on the status of your system's batteries, and you can access your system for status information remotely via computer.
- We provide inverter systems with different capacities, ranging from 1kVA to 30kVA. Larger systems can be customized.

BENEFITS OF AN N-CEAP INVERTER SYSTEM

Cost effective
Convenient and affordable
Zero noise and fumes
Zero maintenance
100% reliable power

N-CEAP Inverter System Components

Inverters

- Convert DC power to AC power
- Backup Inverter – 12 V, 24V, 48V

Power Enclosure

- Designed to house the inverters, batteries, and other accessories.
- Temperature and other environmental conditions are considered in the design.

Energy Storage (Batteries)









- Stores excess energy as DC for later use.
- 2V, 4V, 6V, 12V deep cycle batteries.

Cables and Accessories

- Comprises cables and other interconnecting equipment and materials
- Includes remote monitoring systems, temperature sensors, etc

Load Recommendation for N-CEAP Inverters Systems

INVERTER LOAD GUIDELINES

| | BULB | FAN | HOME THEATRE | TV SET | BIG REFRIGERATOR | AIR CON-DITIONER | LAPTOPS/ COMPUTER | WATER DISPENSER |
|----------------|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| 0.8 KVA | CFL 11 W = 8pcs | 3 pcs | 2 pcs | 1 pcs | Fridge/Freezer - 0 | 0 pcs | PC - 1pc | 0 pcs |
| 1.6 KVA | CFL 11 W = 12pcs | 3 pcs | 2 pcs | 2 pcs | Fridge/Freezer - 1 | 0 pcs | PC - 1pc | 0 pcs |
| 2.0 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 2 pcs | Fridge/Freezer - 1 | 0 pcs | PC - 1pc | 0 pcs |
| 3.0 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 2 pcs | Fridge/Freezer - 1 | 0 pcs | PC - 2pc | 1 pcs |
| 5.0 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 4 pcs | Fridge/Freezer - 2 | 0 pcs | PC - 2pc | 1 pcs |
| 8.0 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 6 pcs | Fridge/Freezer - 2 | 1 pcs | PC - 2pc | 2 pcs |
| 10 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 6 pcs | Fridge/Freezer - 2 | 2 pcs | PC - 2pc | 2 pcs |
| 20 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 6 pcs | Fridge/Freezer - 2 | 3 pcs | PC - 2pc | 2 pcs |
| 30 KVA | CFL 11 W = 12pcs | 10 pcs | 2 pcs | 6 pcs | Fridge/Freezer - 2 | 4 pcs | PC - 2pc | |

N-CEAP Standard Inverter Systems

| | | | | | | |
|--|---------------------------------------|----|--------------|---------------------------------------|----|------------|
|  | Inverter System | | NGN | Inverter System | | NGN |
| | 1 KW (1.2 KVA) Inverter System | | 189,000.00 | 2 KW (2.5 KVA) Inverter System | | 318,000.00 |
| | Components: | | | Components: | | |
| | 1KW (1.2 KVA) Inverter | 1 | | 2KW (2.5 KVA) Inverter | 1 | |
| | Batteries (12V 200AH) | 1 | | Batteries (12V 200AH) | 2 | |
| | Battery Rack | 1 | | Battery Rack | 1 | |
| | MCB Box | 1 | | MCB Box | 1 | |
| | MCB | 2 | | MCB | 2 | |
| | 35mm Industrial Flex (m) | 4 | | 35mm Industrial Flex (m) | 5 | |
| 2.5mm 3-core | 20 | | 2.5mm 3-core | 20 | | |
| Installation | | | Installation | | | |
| | 3 KW (1.2 KVA) Inverter System | | 384,000.00 | 4 KW (5 KVA) Inverter System | | 544,000.00 |
| | Components: | | | Components: | | |
| | 3KW (3.75 KVA) Inverter | 1 | | 5KW (5 KVA) Inverter | 1 | |
| | Batteries (12V 200AH) | 2 | | Batteries (12V 200AH) | 4 | |
| | 32A Change Over Switch | 1 | | 32A Change Over Switch | 1 | |
| | Battery Rack | 1 | | Battery Rack | 1 | |
| | MCB Box | 1 | | MCB Box | 1 | |
| | MCB | 2 | | MCB | 2 | |
| | 35mm Industrial Flex (m) | 20 | | 35mm Industrial Flex (m) | 20 | |
| | 4mm single core | 20 | | 4mm single core | 20 | |
| | Installation | | | Installation | | |
| | Inverter System | | NGN | Inverter System | | NGN |
| | 5 KW (6 KVA) Inverter System | | 600,000.00 | 6 KW (8 KVA) Inverter System | | 640,000.00 |
| | Components: | | | Components: | | |
| | 5 KW (6 KVA) Inverter | 1 | | 6KW (8 KVA) Inverter | 1 | |
| | Batteries (12V 200AH) | 4 | | Batteries (12V 200AH) | 4 | |
| | 32A Change Over Switch | 1 | | 32A Change Over Switch | 1 | |
| | Battery Rack | 1 | | Battery Rack | 1 | |
| | MCB Box | 1 | | MCB Box | 1 | |
| | MCB | 2 | | MCB | 2 | |
| | 35mm Industrial Flex (m) | 20 | | 35mm Industrial Flex (m) | 20 | |
| | 2.5mm 3-core | 30 | | 2.5mm 3-core | 30 | |
| | Installation | | | Installation | | |

N-CEAP Premium Inverter Systems



| Inverter System | | NGN | Inverter System | | NGN |
|--|----|--------------|---|----|--------------|
| 1.6 KW (2 KVA) Inverter System | | 358,000.00 | 2 KW (2.5 KVA) Inverter System | | 474,000.00 |
| Components: | | | Components: | | |
| 1 KW (1.2 KVA) Inverter | 1 | | 2KW (2.5 KVA) Inverter | 1 | |
| Batteries (12V 200AH) | 1 | | Batteries (12V 200AH) | 2 | |
| 32A Change Over Switch | 1 | | 32A Change Over Switch | 1 | |
| Battery Rack | 1 | | Battery Rack | 1 | |
| MCB Box | 1 | | MCB Box | 1 | |
| MCB | 2 | | MCB | 2 | |
| 35mm Industrial Flex (m) | 4 | | 35mm Industrial Flex (m) | 5 | |
| 2.5mm 3-core | 20 | | 2.5mm 3-core | 20 | |
| Installation | | | Installation | | |
| Multiplus 3KW(3.75KVA) Inverter | | 518,000.00 | Multiplus 5KW (6.25KVA) Inverter | | 832,000.00 |
| Components: | | | Components: | | |
| 3 KW (3.75 KVA) Inverter | 1 | | 5KW (6.25 KVA) Inverter | 1 | |
| Batteries (12V 200AH) | 2 | | Batteries (12V 200AH) | 4 | |
| 32A Change Over Switch | 1 | | 32A Change Over Switch | 1 | |
| Battery Rack | 1 | | Battery Rack | 1 | |
| MCB Box | 1 | | MCB Box | 1 | |
| MCB | 2 | | MCB | 2 | |
| 35mm Industrial Flex (m) | 20 | | 35mm Industrial Flex (m) | 20 | |
| 4 mm single core | 20 | | 6 mm single core | 30 | |
| Installation | | | Installation | | |
| Inverter System | | NGN | Inverter System | | NGN |
| Quattro 8KW (10KVA) Inverter | | 1,332,000.00 | Quattro 10KW (12.5KVA) Inverter | | 1,586,000.00 |
| Components: | | | Components: | | |
| 1 KW (1.2 KVA) Inverter | 1 | | 2KW (2.5 KVA) Inverter | 1 | |
| Batteries (12V 200AH) | 6 | | Batteries (12V 200AH) | 8 | |
| 32A Change Over Switch | 1 | | 32A Change Over Switch | 1 | |
| Battery Rack | 2 | | Battery Rack | 2 | |
| MCB Box | 1 | | MCB Box | 1 | |
| MCB | 2 | | MCB | 2 | |
| 35mm Industrial Flex (m) | 20 | | 35mm Industrial Flex (m) | 25 | |
| 10mm single core | 30 | | 10mm single core | 30 | |
| Installation | | | Installation | | |

Comparison between N-CEAP Inverter Systems and Generators

Comparative Analysis between 3.75KVA Generator and NCEAP 3kW Inverter Systems

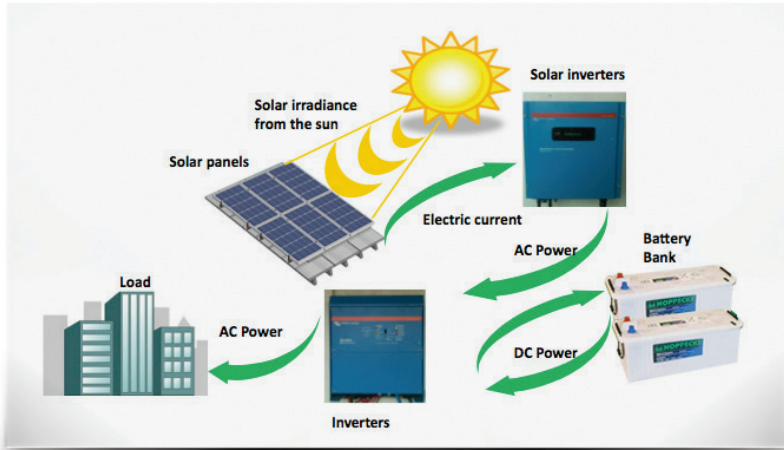
| Description | Generator | Standard system | Premium system | Note |
|---------------------------|---------------------|-------------------|-------------------|---|
| Petrol Generator Cost | 69,300.00 | - | - | - |
| Inverter System | - | 384,000.00 | 518,000.00 | Inverters will last in excess of 3 years |
| Cost of Petrol (NGN) | 97.00 | - | - | - |
| Hourly Petrol | - | - | - | - |
| Consumption (liters) | 1.88 | - | - | - |
| Daily Petrol Cost (NGN) | 1,455.00 | - | - | - |
| Yearly Petrol Costs (NGN) | 424,860.00 | - | - | - |
| Engine Oil | 18,000.00 | - | - | - |
| Maintenance | 27,000.00 | - | - | - |
| Cost of Self Generation | 539,160.00 | - | - | This is exclusive of spares for generator |
| 1st Year | 539,160.00 | - | - | We have assumed that the generator is not replaced in the first 3 years. However it is known that the lifespan of this petrol generator rarely exceeds 2 years when used in this way. |
| 2nd Year | 469,860.00 | - | - | |
| 3rd Year | 469,860.00 | - | - | |
| | 1,548,180.00 | 384,000.00 | 518,000.00 | |

Comparative Analysis between 6.25KVA Generator and NCEAP 5kW Inverter Systems

| Description | Generator | Standard system | Premium system | Note |
|---------------------------|---------------------|-------------------|-------------------|---|
| Petrol Generator Cost | 110,000.00 | - | - | - |
| Inverter System | - | 600,000.00 | 832,000.00 | Inverters will last in excess of 3 years |
| Cost of Petrol (NGN) | 97.00 | - | - | - |
| Hourly Petrol | - | - | - | - |
| Consumption (liters) | 1.88 | - | - | - |
| Daily Petrol Cost (NGN) | 1,940.00 | - | - | - |
| Yearly Petrol Costs (NGN) | 566,480.00 | - | - | - |
| Engine Oil | 15,000.00 | - | - | - |
| Maintenance | 19,800.00 | - | - | - |
| Cost of Self Generation | 711,280.00 | - | - | This is exclusive of spares for generator |
| 1st Year | 711,280.00 | - | - | We have assumed that the generator is not replaced in the first 3 years. However it is known that the lifespan of this petrol generator rarely exceeds 2 years when used in this way. |
| 2nd Year | 601,280.00 | - | - | |
| 3rd Year | 601,280.00 | - | - | |
| | 1,548,180.00 | 600,000.00 | 832,000.00 | |

SOLAR INVERTER SYSTEMS

N-CEAP solar inverter systems use photovoltaic technology, where the sun is the sole source of energy for power. Careful considerations are made during the design process so that the solar system can continue to work for a number of days, even when there is minimal sunlight.



N-CEAP solar inverter systems are designed for residential and commercial use, and can provide both partial and complete coverage of any facility. As with all N-CEAP products, our solar systems are comprised of premium quality hardware sourced from leading brands, and come with maintenance support and warranties.

Our solar inverters allow users to enjoy complete autonomy from the national grid, and minimal to no use of generators.

Benefits of an N-CEAP solar system

- 40% to 54% cheaper than diesel/petrol self-power generation
- Efficient, eco-friendly and affordable
- Zero noise and fumes
- Zero maintenance
- 100% reliable power
- Autonomy from national grid, freeing user from price fluctuations linked to transmission and distribution
- Modular power inverter system, where the power inverter can be made up of multiple smaller inverters interconnected to work together.

N-CEAP Solar System Components

N-CEAP solar inverter systems boast a product lifespan that far exceeds the usability of the average petrol or diesel generator set. Our products will literally last you a lifetime!

Our solar systems comprise of six basic components:

Solar Panels

- Grade A
- Monocrystalline panels
- High output panels
- Take DC current from the sun

Inverters

- Convert DC power to AC power
- Inverter – 600V – 10,000W
- Backup Inverter – 12V, 24V, 48V

Energy Storage (Batteries)

- Stores excess energy as DC for later use.
- 2V, 4V, 6V, 12V deep cycle batteries specifically built for solar installations.



Power Enclosure

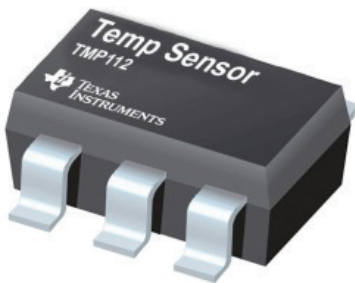
- Designed to house the inverters, batteries, and other accessories.
- Temperature and other environmental conditions are considered in the design.

Mounting System

- Consists of racks, rails, columns, stancions and accessories.
- Designed to complement the environment where installation is done.

Cables and Accessories

- Comprises cables and other interconnecting equipment and materials
- Includes monitoring systems, such remote cameras, temperature sensors, etc.



N-CEAP INSTALLATIONS



15kW Inverter Backup System in Lekki



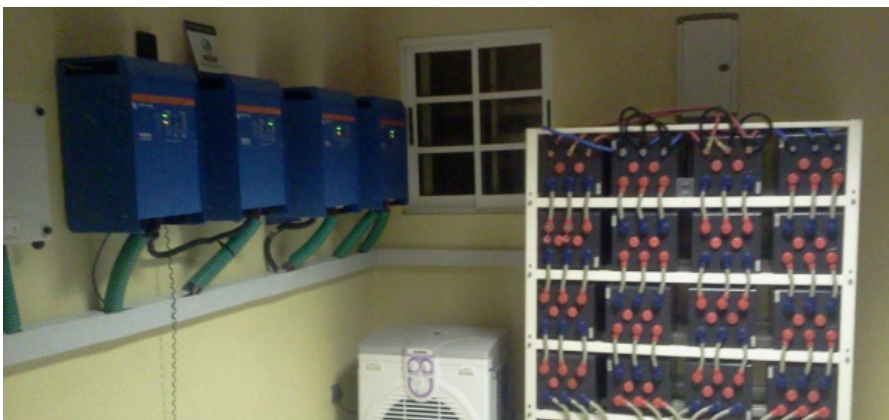
10kW Solar Power Backup System in Wuse 2, Abuja



30kW Solar Power System in Minna



40kW Solar Power System in Lekki, Lagos



25kW Inverter Power System in Maitama, Abuja



40kW Solar Power System in Lekki, Lagos

PRICING AND PAYMENT TERMS

Quoted prices for N-CEAP inverter systems cover both the equipment and materials for the complete installation. Should there be any change in the technical specifications, our offer undergoes revision accordingly. The prices stated herein are limited to the Lagos area only. Additional charges apply for installations outside Lagos.

Validity: Offer is valid for 30 days from the date of submission of pro forma invoice. Extensions may be provided upon request in special circumstances.

Delivery and Installation: Within 10 days subject to receipt of payments and logistics availability.

Terms of Payment: 100% advance payment. Payments can be made via bank transfer or certified cheque.

ABOUT THE PROGRAMME

About The Nigeria Clean Energy Access Programme (N-CEAP)

N-CEAP seeks to offer clean and affordable energy through the provision of solar power generation, inverter, energy storage and efficient lighting systems.

The initiative is designed to reduce greenhouse gas emissions. Our 3-year target is to distribute 400 million energy efficient bulbs and fluorescent tubes and 100,000 inverter systems (including solar systems) in Nigeria. With this, we aim to lower the high cost of power self-generation and consumption by households and businesses.

The N-CEAP vision is to catalyse widespread access to clean and efficient energy, and reach every Nigerian residential and corporate premises.

The programme's objectives include:

- To provide widespread access to clean and affordable energy for target households in Nigeria.
- To sensitise and cause a general change in attitude and behaviour on efficient energy use in Nigeria.
- To contribute to a broad based reduction of greenhouse gas emissions in Nigeria.



About N-CEAP Products

All N-CEAP products are of premium quality and some are designed specifically to suit Nigeria's power fluctuation.

For example, the CFLs and LEDs have an operating voltage range of 150 to 250V with a lifespan of 10 years and above; the inverters have a power factor of 1 compared to that of typical brands currently available in the market, which range between 0.6 – 0.8; and the Victron 2000Ah 2V deep cycle batteries have a lifespan of 12 years. Some other batteries currently available in this market typically have a lifespan of 6 months to 18 months.



About Concession Development Company (CDC)

CDC is a project development company with a primary focus on providing clean and renewable energy sources for power generation and conservation. CDC also advises on energy efficient solutions for demand side management.

CDC's objective is to facilitate meeting Nigeria's energy needs through renewable energy sources and energy efficient solutions.

CDC is the project development company for N-CEAP.

STRATEGIC N-CEAP PARTNERS

- Federal Ministry of Environment
- Renewable Energy Programme (REP)
- Special Climate Change Unit
- Philips Lighting BV
- GE Lighting
- Victron Energy BV
- SMA Germany
- Suntech
- EPV Germany
- Juwi Germany
- Volta Tech South Korea
- Gaston China
- Lilleker Brothers Nigeria Limited
- Lilleker Brothers UK
- General Lighting Company (GLC Group)





NICEAP

Efficient energy solutions

An initiative of the Concession Development Company (CDC)

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