



MEDAAN

ENGINEERING SERVICES LIMITED

·Experience ·Precision ·Excellence

MEDAAN ENGINEERING SERVICES LIMITED

EQUIPMENT & TOOLS CERTIFICATION FOR VENDOR REGISTRATION

(Renewable Energy & Solar Solutions Provider)



1. COMPANY CAPABILITY OVERVIEW

Medaan Engineering Services Limited is a qualified engineering firm specializing in the design, supply, installation, testing, and maintenance of renewable energy and solar power systems.

Our technical capability is supported by a comprehensive inventory of certified equipment, advanced engineering tools, and industry-standard testing instruments required for delivering high-quality solar energy solutions across residential, commercial, and industrial applications.

2. CORE SOLAR POWER EQUIPMENT

2.1 Power Generation & Storage Systems

- Solar PV Modules (Monocrystalline & Polycrystalline)
- Hybrid, Grid-Tied, and Off-Grid Inverters
- Lithium-Ion Battery Storage Systems (LiFePO₄ Technology)
- MPPT & PWM Charge Controllers

Plot 6, Karu Jikwoyi Road, Karu Site, FCT-Abuja

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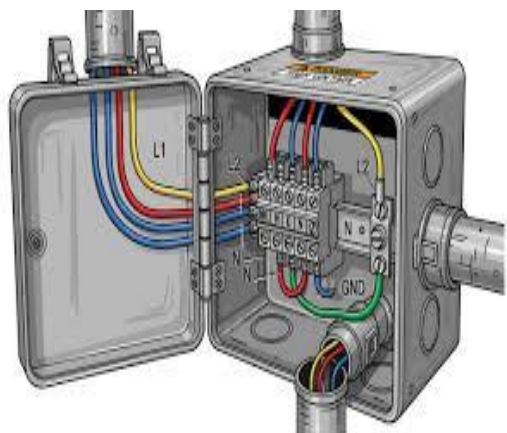
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2.2 Electrical Components

- DC & AC Solar Cables (PV-rated)
- MC4 Connectors
- Combiner Boxes
- Junction Boxes
- AC/DC Circuit Breakers
- Surge Protection Devices (SPD)
- Earthing & Grounding Systems



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3. INSTALLATION TOOLS & EQUIPMENT

3.1 Basic Installation Tools

- Impact Drills & Rotary Hammers
- Manual & Electric Screwdrivers
- Spanners & Socket Sets
- Cable Cutters & Wire Strippers
- MC4 Crimping Tools



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3.2 Advanced Installation Equipment

- Angle Grinders
- Welding Machines (for mounting structures)
- Ladders & Scaffolding Systems
- Measuring Tapes & Spirit Levels
- Torque Wrenches (precision tightening)

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4. TESTING & COMMISSIONING EQUIPMENT

- Digital Multimeters (True RMS)
- Clamp Meters

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- Insulation Resistance Testers (Megger)
- Solar Irradiance Meters
- I-V Curve Tracers
- Thermal Imaging Cameras
- Battery Testers
- Earth Resistance Testers





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5. MOUNTING & STRUCTURAL SYSTEMS

- Aluminum / Galvanized Mounting Rails
- Roof Hooks & Clamps
- Ground-Mount Structures
- Fasteners (Bolts, Nuts, Washers)
- Waterproof Sealing Materials



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6. LOGISTICS & FIELD OPERATIONS

- Service Vans & Transport Trucks
- Lifting Equipment (Manual Hoists & Lifts)
- Warehouse Facility (Dry & Ventilated Storage)
- Protective Packaging Materials

7. DESIGN & ENGINEERING CAPABILITIES

Software Tools

- AutoCAD – System Layout Design
- PVsyst – Energy Yield Simulation
- HelioScope – Advanced Solar Design
- HOMER Pro – Hybrid System Modeling

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Hardware Tools

- Engineering Workstations & Laptops
- GPS & Site Survey Equipment
- Drone Technology (for site inspection and mapping)

8. SAFETY EQUIPMENT (HSE COMPLIANCE)

- Safety Helmets (Hard Hats)
- Full Body Harnesses (for elevated work)
- Electrically Insulated Gloves
- Safety Boots
- Reflective Vests
- Fire Extinguishers

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- First Aid Kits



OFFICE & BUSINESS INFRASTRUCTURE

- Administrative & Engineering Office Facilities
- Customer Relationship Management (CRM) Systems
- Accounting & Financial Software

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- Project Management Tools
- Reliable Communication & Internet Systems

10. ADVANCED TECHNICAL CAPABILITIES

- EV Charging Infrastructure Deployment
- Smart Energy Monitoring Systems
- Grid Synchronization & Net Metering Solutions
- Mini-Grid Systems for Rural Electrification

11. TECHNICAL DATA SHEETS

11.1 AURORA HYBRID INVERTERS

(A) 5kVA / 48V Hybrid Inverter

- Rated Power: 5kVA / 5000W
- Battery Voltage: 48V DC
- Output Voltage: 220–230V AC
- Frequency: 50/60Hz
- Waveform: Pure Sine Wave
- Efficiency: 90–97%
- MPPT Controller: 80A – 100A
- PV Input Voltage: 145V – 450V DC
- AC Charger: Up to 60A
- Transfer Time: 0ms (UPS Mode)
- Phase: Single Phase
- Protection: Overload, Short Circuit, Overcharge

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- Display: LCD Monitoring

Application: Residential & Small Commercial Systems

(B) 12.5kVA Hybrid Inverter

- Rated Power: 12.5kVA
- Battery Voltage: 48V
- Output Voltage: 230V AC
- MPPT Current: Up to 150A
- PV Input: Up to 500V DC
- Efficiency: 93–96%
- Parallel Capability: Yes

Application: Large Homes, Offices, SMEs

(C) 20kVA Hybrid Inverter

- Rated Power: 20kVA
- Battery Voltage: 48V / 96V
- Output: 230V / 400V AC (Single/Three Phase)
- MPPT: 150A – 200A
- PV Input: 500V – 800V DC
- Efficiency: 95–98%
- Communication: RS232 / CAN / WiFi

Application: Industrial & Mini-Grid Systems

11.2 AURORA LITHIUM BATTERIES

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(A) 48V 100Ah (5kWh)

- Voltage: 51.2V
 - Capacity: 100Ah
 - Energy: 5kWh
 - Cycle Life: ≥ 8000 cycles
 - DOD: 95%
 - Communication: RS485 / CAN
-

(B) 48V 200Ah (10.5kWh)

- Energy: 10.5kWh
 - Cycle Life: ≥ 8000 cycles
 - Installation: Wall Mounted
 - Expandable: Yes
-

(C) 48V 300Ah (15kWh)

- Energy: 15kWh
 - Cycle Life: 6000–8000 cycles
 - Scalability: Up to 8 Units
-

11.3 JINKO SOLAR PANELS

400W Panel

- Efficiency: ~ 20 – 21%
- Voltage (Vmp): $\sim 31V$



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- Warranty: 25–30 Years

450W Panel

- Efficiency: ~21%
- Improved performance for limited roof space

550W Panel

- Efficiency: ~21.5%
- Ideal for commercial installations

600W Panel

- Efficiency: ~22%
- Suitable for utility-scale projects

11.4 FELICITY INVERTERS

- 5kVA – Residential
- 7.5kVA – Duplex / Offices
- 10kVA – SMEs / Estates

(All units support hybrid operation: Solar + Grid + Battery)

11.5 ELECTRICAL MATERIALS (SUMMARY)

- PV Solar Cables (Up to 1500V DC, UV Resistant)
- MC4 Connectors (IP67 Rated)
- Combiner Boxes (2–24 Inputs)
- Junction Boxes (IP65–IP68)
- Circuit Breakers (AC/DC up to 1500V)
- Surge Protection Devices (Up to 80kA discharge)

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- Earthing Systems (<5 Ohms Resistance)
-

11.6 INSTALLATION & TESTING TOOLS (SUMMARY)

- Solar Installation Tool Kits
 - MC4 Crimping Tools
 - Digital Multimeters & Clamp Meters
 - Insulation Testers (Megger)
 - Cable Preparation Tools
 - Electric Drills / Impact Drivers
 - Torque Wrenches
 - Solar PV Testers (I-V Curve Analysis)
 - Measuring & Layout Tools
 - Full PPE Safety Kits
-

12. CONCLUSION

Medaan Engineering Services Limited possesses the technical expertise, certified equipment, and operational capacity required to deliver reliable, efficient, and scalable renewable energy solutions.

Our inventory, combined with our engineering competence, ensures compliance with international standards and guarantees high-quality project execution for clients such as Sterling Bank Plc.

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