



Empowering Your Business with Remote Sustainable Power Solutions

GPT Renewable Hybrid Solution
– Bridge Consult, DRC

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Prepared by: GPT Renewables



Bridge Consult

Our Solution

GPT Single Inverter-Battery Cabinet



Introduction

Project Background

DRC – Bridge Consult ATM Site Location & Geographic Layout

The Government of the Democratic Republic of Congo (DRC) is actively encouraging the expansion of digital banking services and ATM infrastructure to improve financial accessibility and support broader economic modernization.

However, **unreliable utility power** remains one of the biggest challenges affecting ATM availability across cities such as Kinshasa. **Frequent outages, unstable voltage conditions, and poor grid reliability** often result in ATM downtime, interrupted transactions, reduced customer confidence, and operational disruptions for banks.

Bridge Consult has engaged GPT to develop a resilient power continuity solution focused on ensuring ATMs remain operational during utility outages and unstable grid conditions.

Green Power Technologies (GPT Renewables) proposes a compact Single **Inverter/Battery Energy Storage System (BESS)** Cabinet specifically engineered to provide uninterrupted backup power for ATM applications. The system integrates lithium battery storage, inverter technology, intelligent charging, protection systems, and remote monitoring within a secure standalone cabinet.



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Technical Approach & Design Considerations

DRC-specific Design Considerations

- **Resource & climate:** Designed for Kinshasa operating conditions including high temperatures, unstable grid supply and outdoor urban/village environments.
- **Power Continuity:** System designed to ensure uninterrupted ATM operation during utility outages and unstable grid events.
- **Battery Modularity:** 30 kWh expandable LFP BESS system, suitable for ATM infrastructure expansion, backup, transaction continuity, voltage stabilization, load support and reduced generator dependency during intermittent grid failures.
- **Modularity & future proofing:** The inverter and battery architecture is modular and expandable, allowing future increases in battery storage capacity, additional ATM loads, solar PV integration or enhanced site resilience requirements without major infrastructure redesign.
- **Generator Integration:** Generator-ready system for extended outages and automatic battery recharge support.
- **Remote monitoring:** Centralized monitoring of inverter performance, battery (SOC), alarms, outage events, runtime analytics and overall system health.

Our Renewable Power Solutions Technical Approach & Design Considerations

DRC-specific Design Considerations

- **Power quality & protection:** Integrated inverter system with ATS functionality, surge protection, lightning protection, coordinated AC/DC protection and energy metering.
- **Reliability:** Designed to mitigate unstable grid conditions, reduce generator runtime and improve ATM operational continuity through intelligent inverter and battery management. Site runtime is expected to range between **~16 hours autonomy** depending on site load profile, auxiliary cooling requirements, operating schedules and environmental conditions.
- **Logistics & compliance:** Account for import and clearing lead times, local standards, site permitting, and earthing/lightning protection in line with IEC practice.
- **Security:** We have high security, anti-tamper enclosures available - listed in the quotation as optional upgrades / add-ons. EMS support for intrusion alarms, intrusion detection as well as battery immobilizing, rendering the battery module useless once removed without following the correct authorization protocols.
- **Land & layout:** Compact cabinet-based architecture designed to fit within existing ATM site footprints and constrained urban deployment areas.

Our Renewable Power Solutions Proposed Solution Overview

Key Product Features

Empower your operations with the GPT Integrated Power Cabinet - a compact, scalable and intelligent backup power solution designed to deliver reliable, stable and resilient energy wherever you need it.

Eco-Friendly & Hybrid Ready

Supports integration with solar PV, battery storage and generator systems to reduce fuel consumption and improve overall energy efficiency.

Advanced Battery Life

Equipped with high-efficiency LiFePO₄ battery technology designed for long lifecycle performance, high reliability and stable backup operation.

Instant Deployment

Compact plug-and-play architecture enables simplified installation, rapid commissioning and minimal site disruption.

Scalable & Flexible Architecture

Modular inverter and battery design that allows future expansion to accommodate changing operational and energy requirements.

Rugged & Secure Design

Built for tough conditions with an IP65 rating and hardened enclosure making it ideal for remote or challenging environments.

Remote Monitoring

Real-time monitoring and alarm visibility through integrated EMS functionality with remote access capability for operational oversight and performance tracking.



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Proposed Solution Overview

GPT Single Inverter-Battery Cabinet Solution

- **System Rating:** Standard site load range: 1-5 kW depending on ATM configuration and auxiliary equipment.
- **Power Cabinet:** Single Cabinet Inverter/Battery System integrating inverter/charger, LFP batteries, EMS/BMS, AC/DC protection, surge protection, monitoring and power conditioning within a secure standalone enclosure.
- **Hybrid inverter (AC):** Victron 5kVA MultiPlus-II inverter/charger configured to provide seamless backup power and stable AC supply to ATM infrastructure
- **Battery:** 30 kWh LFP battery bank designed for outage backup, power stabilization, transaction continuity and reduced ATM downtime during utility interruptions.
- **PV:** Optional solar PV integration capability for reduced grid dependency, improved operational efficiency and extended backup autonomy.
- **DG Integration:** Generator-ready architecture with automatic recharge support and optional start/stop integration for extended outage scenarios.
- **Output:** Clean, regulated AC supply to ATM systems, networking equipment, lighting, security systems and auxiliary cooling loads.
- **EMS & Monitoring:** Remote monitoring capability including battery SOC monitoring, alarms, power event logging, runtime analytics and system performance reporting.
- **MPPTs:** 2 x MPPT RS 250/100 charge controllers housed within the cabinet system.

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Proposed Solution Overview

Inverter-Battery Cabinet Operating Conditions

Option 1: Battery Backup Only - No Solar

Application: Urban Setting (Limited Solar Space)

Normal Operating Conditions:

- The ATM operates from utility supply.
- The integrated inverter conditions and stabilizes incoming power.
- Batteries remain fully charged and ready for backup operation.

During utility outages:

- The inverter automatically transfers the ATM load onto battery backup.
- Power continuity is maintained without interruption.
- ATM services continue operating seamlessly.

Once utility supply returns:

- The system automatically reverts to utility power.
- Batteries recharge automatically.
- Monitoring systems continue logging events and performance.

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Proposed Solution Overview

Inverter-Battery Cabinet Operating Conditions

Option 2: Battery Backup with Solar PV

Application: Urban / Peri-Urban or Remote Sites (Available Solar Space)

Normal Operating Conditions:

- The integrated inverter manages the power flow between the utility supply, solar PV array, battery bank, and ATM load. The ATM is supplied from the utility grid, while the inverter stabilises the incoming power and protects the ATM equipment from poor power quality. During daylight hours, the solar PV system supports the ATM load and assists with battery charging..

During utility outages:

- The inverter automatically transfers the ATM load onto battery backup without interruption. If solar energy is available during the outage, the PV system continues to support the load and extend the battery runtime.

Once utility supply returns:

- The system automatically reconnects to the grid and recharges the batteries using available utility and solar power. Remote monitoring remains active throughout all operating conditions, recording battery status, solar production, outage events, alarms, and system performance.

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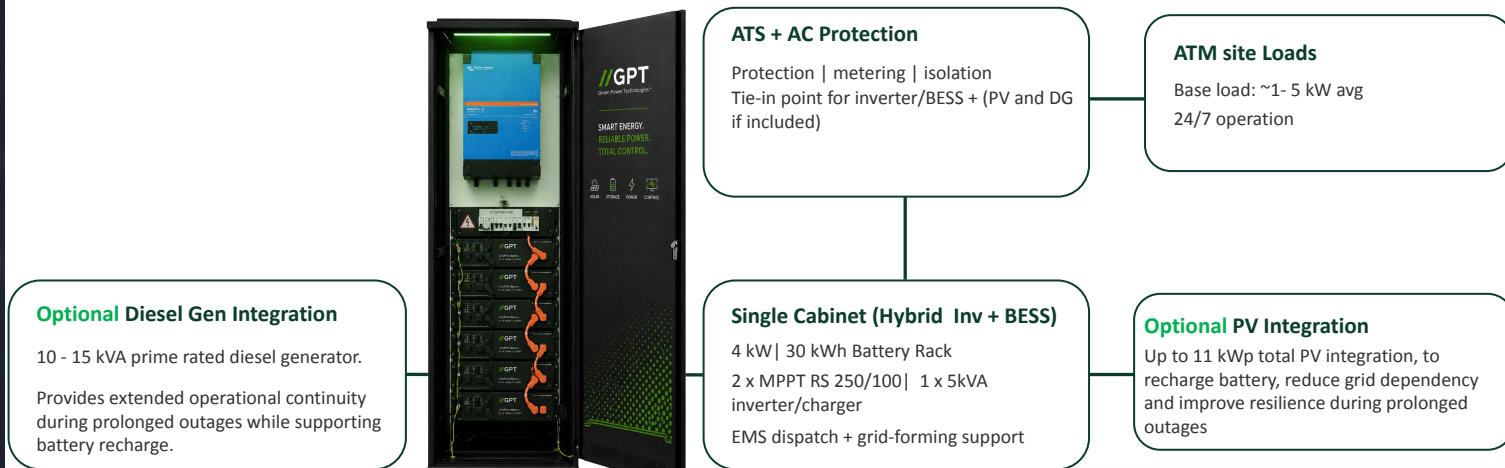
How it Works & Systems' Architecture

How it Works

The proposed ATM resilience architecture is based on an integrated **utility – inverter – battery backup system** designed to ensure uninterrupted ATM operation during utility outages and unstable grid conditions. All core power components are integrated through a centralized AC distribution architecture managed by an intelligent inverter and Energy Management System (EMS).

The figure below shows a high-level power flow (system architecture) for the proposed solution. The architecture prioritizes automatic backup transfer, battery-based outage support and continuous operation.

High-level Power Flow



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Proposed Solution Overview

Possible Site Layout

The image below is for conceptual and illustrative purposes only, intended to provide a visual indication of a possible ATM site layout and integrated power solution configuration within the DRC operating environment. Actual site layouts, equipment positioning, cabinet sizing and infrastructure configuration may vary depending on final site conditions, utility availability, security requirements and client-specific operational needs.



Ideal for both Urban & Rural Settings

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Technical Approach & Design Considerations

Scope of Supply

Single Inverter-Battery Cabinet Scope

Power Box Component / Feature	Included Scope
Single Cabinet Enclosure	Secure integrated cabinet designed for reliance applications and outdoor deployment environments.
Integrated Hybrid Power System	Integrated inverter/charger, LFP battery storage, EMS/BMS, AC/DC protection and monitoring systems.
LFP battery bank	30 kWh battery storage system.
Victron-based inverter system	1 x MultiPlus-II inverter/charger
Solar charge control	2 x MPPT RS 250/100 charge controllers for DC-coupled PV input.
EMS/RMS	Energy management and remote monitoring system for alarms, battery SOC, runtime events and system performance visibility.
Fire detection / suppression	Included as preliminary design allowance, subject to final fire system specification.
Generator Integration	Generator-ready architecture for extended outage support and battery recharge functionality.

Commercials

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Our Offer: Commercial Offering

GPT Single Inverter-Battery Cabinet Solution

The proposed budgetary commercial offering is provided as a high-level equipment supply estimate and remains subject to final ATM load requirements, battery autonomy confirmation, site conditions, cabinet configuration, transport, import duties, taxes, installation scope and commissioning requirements.

Budgetary Commercial Options

Item	Description
Option 1: Battery Only Solution	IP65-rated rack cabinet enclosure including hybrid inverter, 30 kWh battery bank (16 hours backup), MPPT charge controllers (solar ready), EMS/RMS integration, protection & breakers, and cooling/ventilation.
Option 2: Battery + Solar Solution	- IP-rated rack cabinet enclosure including hybrid inverter, 30 kWh battery bank (20 hours non-grid / day), MPPT charge controllers, EMS/RMS integration, protection & breakers, and cooling/ventilation. - Includes 6 x solar PV panels, 3P2 solar table mounting arrangement, PV mounting structures, PV DC cabling allowance, clamps, brackets, nuts, bolts, washers, PV connectors, cable glands, labels, and standard installation accessories.

Our Offer: Commercial Offering

Price Exclusions

Excluded From Quote

- **International shipping:** Freight costs from manufacturing/supply location to destination country are excluded.
- **Customs duties and import taxes:** Customs clearance charges, import duties, VAT, withholding taxes, levies or government charges are excluded.
- **Local taxes:** Local sales tax, VAT, municipal charges or country-specific tax obligations are excluded.
- **Road freight delivery to site:** Inland transport, road freight and final delivery to Mutanda Mine, DRC are excluded.
- **Offloading and cramage:** Crane hire, forklift hire, rigging, lifting equipment and final positioning are excluded.
- **Civil works:** Foundations, plinths, trenching, drainage, fencing, site preparation and access road preparation are excluded.
- **Electrical installation works:** Final cabling, cable trenches, cable ladders, glands, terminations, DB modifications, protection upgrades and UPS connection works are excluded.

Our Offer: Commercial Offering

Price Exclusions

Excluded From Quote

- **Earthing and lightning protection:** Site-specific earthing, bonding, lightning protection, earth mats and compliance testing are excluded.
- **Permits and approvals:** Regulatory approvals, local authority permits, import permits, environmental approvals and utility approvals are excluded.
- **Fuel supply:** Diesel fuel, first-fill fuel, fuel storage tanks and fuel logistics are excluded unless specifically included in the final offer.
- **Site security works:** External fencing, guards, CCTV poles, perimeter alarms, lighting and third-party security infrastructure are excluded.
- **Active IT equipment:** Servers, switches, routers, storage devices, fibre equipment and client software systems are excluded unless specifically requested.
- **Travel and accommodation:** Travel, accommodation, meals, local transport, visas and subsistence for installation or commissioning teams are excluded unless separately agreed.
- **Detailed engineering studies:** Final engineering design, PV simulation, protection studies, short-circuit studies, earthing studies, HVAC thermal model and detailed site survey are excluded unless separately contracted.

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Proposed Hybrid Solution

Client Benefits

- **Compact ATM Resilience Platform:** Integrated cabinet-based solution provides a secure and scalable backup power platform for ATM deployment environments.
- **Clean & Stable Power Supply:** Inverter and battery system provide regulated AC power to ATM equipment, networking devices and auxiliary loads.
- **Reduced Generator Runtime:** Battery backup system reduces dependency on generators during short-duration outages and unstable grid conditions.
- **Improved Generator Efficiency:** Generator operation can be limited to controlled recharge periods during extended outages.
- **Protected Operating Environment:** Integrated cabinet thermal management and electrical protection improve equipment reliability in harsh operating conditions.
- **Remote Visibility:** EMS and monitoring platform provide alarms, battery monitoring, runtime analytics and operational visibility.
- **Improved Resilience:** Hybrid-ready architecture supports utility, battery, optional PV and generator integration for enhanced ATM uptime and continuity.

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Proposed Hybrid Solution

Required Next Steps

- Confirm final ATM site load profile, auxiliary equipment loads and required backup autonomy per site.
- Confirm whether generator integration and optional solar PV integration will form part of the final solution scope.
- Confirm final deployment locations, available installation footprint and utility connection conditions.
- Confirm environmental conditions including ambient temperatures, ventilation requirements and outdoor installation constraints.
- Develop final cabinet configuration, electrical SLD, protection philosophy and monitoring architecture.
- Confirm earthing, surge protection and lightning protection requirements in line with site standards and IEC practices.
- Confirm installation scope, commissioning scope, logistics requirements and commercial exclusions.
- Issue final technical-commercial proposal for client review and approval.

Renewable Energy for Your Business

Our Process

At Green Power Technologies, we handle every step of your renewable energy project, from initial consultation to long-term maintenance. We provide tailored solutions designed to maximise energy efficiency, reduce costs, and help your business go green with confidence.



Step 1

Consultation

Our experts assess your energy needs and design a customised plan for sustainable energy solutions. Start your journey and contact us today!



Step 2

Design

We deliver bespoke designs that align with your commercial needs—scalable, efficient, and built for long-term savings.



Step 3

Build

Our skilled team ensures seamless construction with minimal disruption, adhering to the highest safety and quality standards.



Step 4

Install

Our certified technicians guarantee a flawless installation that delivers immediate energy savings.



Step 5

Maintain

We offer comprehensive maintenance services to keep your system running efficiently, ensuring long-term reliability and peace of mind.

Next Steps

Step-by-Step Approach to Sustainable Power Solutions



STEP 1

Load Profile Analysis

Assess the client's energy consumption to establish a tailored baseline.



STEP 2

Deploy Energy Meter Logger

Install a logger on-site to gather precise real-time energy data.



STEP 3

Custom System Design

Develop a bespoke energy solution based on specific usage patterns.



STEP 4

Commercial Proposal

Present a detailed proposal outlining costs, savings, and environmental impact.



STEP 5

Client Approval

Finalise and secure approval to transition into the implementation phase.

Who we're working with Our Partnerships



Locations

Powering Communities, Expanding Impact





Thank You for Your Time

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THAT **REDUCE OPERATING
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