

POWER YOUR TELECOM SITE WITH A HYBRID RENEWABLE ENERGY SOLUTION



SOLAR PHOTOVOLTAIC. WIND . DIESEL. BATTERY.



All across Africa, telecom networks are expanding. Most of all, they're expanding in remote areas with limited access to a reliable electricity grid network. At the same time, choosing diesel as the main power source for a base station has become increasingly hard to justify – both financially and environmentally.

Entrust offers an impartial service that will choose your hybrid system, technical expertise, customer service agreements and maintenance contracts from one or a combination of a number of the world's leading renewable energy manufacturers and hybrid system providers, to best suit your business and site requirements, to reduce your opex and to significantly reduce your diesel fuel consumption.

THE NETWORK POWER DILEMMA

Energy Costs for off-grid locations - fuel costs are escalating while diesel and propane generators require frequent maintenance, spare parts, continuous fuel supply, and high personnel and supply chain costs.

Diesel costs for off-grid base stations can be substantial and impacts on the overall operational cost.

Our hybrid solution, integrating wind and solar power will dramatically reduce your fuel consumption and lower your operating costs by up to 98%



Reliability. Power failures caused by unreliable or incomplete power distribution can cause cellular, pager and emergency notification disruptions. Remotely located sites with limited grid connectivity require more network reliability and less maintenance.

Our solution is a complete system designed one specifically for providing power to telecoms base stations. Our technology utilizes the highest quality and most reliable renewable energy solution to power your base station whilst reducing your operating costs.

Coverage and Community Power. An ever increasing coverage area and data capacity is needed. Excess energy from our hybrid solution can be used to provide energy to a local community.

Inadequate Grid. In many locations, grid power is sporadic or completely unavailable, generator fuel supply capability is not always reliable, and generators and fuel storage tanks are targets for theft or vandalism.

Regulatory Restrictions on Generators. Government environmental agencies are increasingly restricting the use of fossil fuel generators as a primary source because of noise and air pollution and this is set to increase in future.

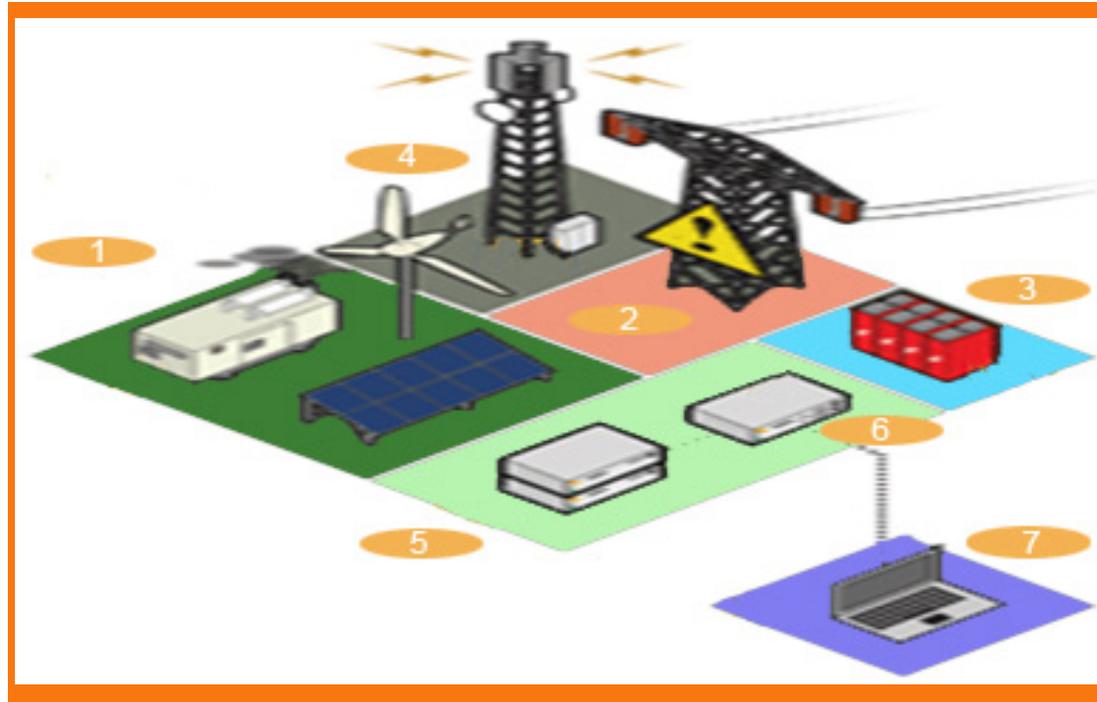
DRAMATICALLY REDUCE YOUR OPERATING COSTS NOW

Entrust has the potential to significantly increase operating efficiencies, as well as meet or exceed stringent environmental requirements in the future. Hybrids are particularly well-suited for applications in remote areas, where electric grid service does not exist or is unreliable.

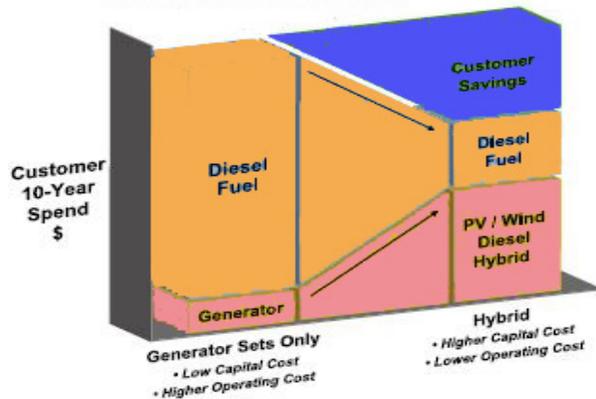
In comparison with the costs of grid extension or the high costs of fuel delivery to remote locations, hybrids can offer a number of immediate benefits to telecommunications operators: Hybrid renewable power systems deliver efficiency that firms seek in order to optimise their productivity and the hybrid technology system provides a significant breakthrough in operating costs and fuel efficiency by significantly reducing diesel fuel consumption and maximising system reliability whilst being environmentally friendly.

- Decreased diesel fuel consumption by 30–98%
- Payback periods - 3 years or less in many instances
- Significant & immediate reduction in opex costs
- Reliable & uninterrupted Base Station service
- Extended maintenance and replacement intervals

HOW A HYBRID SYSTEM WORKS



Off-Grid Telecom Hybrid Economic Justification



- 1: Use any combination of diesel, wind and solar power sources (depending on site details)
- 2: Utilise an existing unreliable grid power source (if available)
- 3: Optimise battery power storage, charging and lifetime
- 4: Maximise base station availability

- 5: Supplement diesel generators with wind/solar renewable energy
- 6: Introduce a smart generator-battery hybrid power
- 7: Sophisticated Hybrid Management System for total power management, remote monitoring, control and ongoing optimisation

CUSTOMIZED TO YOUR SPECIFICATIONS

Entrust know that properly sizing the hybrid power system is critical for the success of your operation. So we will work closely with you to customize your system to your exact specifications.

We consider each of your sites individually, evaluating the electrical loads, the strength of the sun and wind resources, and the price of fuel and delivery charges.

We give you the flexibility to choose the optimal solution that meets your needs: quickest payback, minimum diesel consumption, longest maintenance intervals, or any criteria of your own choosing.



We only partner with tier 1 suppliers of hybrid system components that have a worldwide reputation for quality, service and reliability to provide you with:

- Detailed product specifications
- Expert system sizing services and dealer consultation
- Flexible configurations
- Clear communication throughout the entire process
- Excess power can also be used to charge mobile handsets as base stations are often physically close to villages which can be helpful for security reasons.

OUR HYBRID SYSTEM SOLUTION TYPICALLY

CONSISTS OF:

• Power Control Center

- Supervisory control – PV control
- Wind turbine control – Inverter
- Generator set rectifiers - Communications
- Sealed compartment – Active air-cooling

• Solar Photovoltaic (PV) Array and Mounting Structure

- 1-25 kW solar PV
- Typical 8m PV array length fits within 10m telecom site
- Mounted 3-4m above ground to avoid shading from cell site walls, and to provide shading for equipment mounted beneath
- Seismic-rated structure
- Simple floating-concrete footings
- Optional vandal-resistant frame

• Wind Turbines and Towers

- Up to 10 kW turbines
- Robust design/high reliability
- 25 years of proven field history
- Auto-furling for high-speed wind protection
- Low maintenance, brushless rotor
- 18-50m tower heights available

- Self-supporting lattice towers, guyed lattice towers, and tilt-up tubular guyed towers available

• 13 kVA Generator Set

- Additional ratings available
- Fuel-efficient 4 -stroke diesel
- Water-cooled engine
- Quiet operation
- Meets emission regulations
- Standard, robust AC generator



• Battery Banks

- Cost-effective lead-acid batteries
- Robust deep-cycle rating
- Forced cooling and H2 ventilation
- Vandal-resistant enclosure

• Hardened Enclosure for Extreme Environments

- All electrical equipment completely enclosed for isolation from weather
- Indoor space for telecommunications equipment mounting
- Full HVAC system (heating/air conditioning)
- Robust insulation to minimize HVAC operational costs
- Heavy-gage steel walls for vandal and weather resistance
- Completely self-contained for simple, quick installation at site

• Operating System

- Fail safe real time securing power supply in case of software error
- Battery management for long life usage
- Generator power control for maximum efficiency
- Solar power control for low power losses
- Wind power control during high & low wind speeds for maximum capture
- Site load control to protect battery bank from deep discharge
- Cabinet cooling control for energy efficient cooling
- Alarm & Event Management to NMC immediately
- Site data storage
- Web based current & past performance of hybrid components
- Alarm & Event Management to NMC immediately

- Excess power management – measures & calculates potential excess power that can be used for community power applications such as handsets
- Factory & Site Commissioning for maximum quality assurance



EVERYTHING YOU NEED

Consultancy

We can provide a consultancy service to include the design of the system and all hybrid system components or we can provide a full design, installation and commissioning service.

Turnkey Solutions

With a full range of hybrid power system products and equipment, including mounting structures, power control centers, battery banks, wind turbines, solar photovoltaics, and more, Entrust has everything you need to get your operation up and running in no time.

Customer Support Agreements (CSAs)

CSAs are the most effective way of operating your hybrid power systems at peak performance. They greatly reduce the risk, disruption and loss of revenue caused by unscheduled downtime. They also ensure that your service, maintenance and repairs are performed by highly skilled professionals, giving you more time to concentrate on driving your business forward.

Maintenance Contracts

From analysis and assessment to the service agreements that take maintenance worries off your mind, we can supply the total support you need for maximum efficiency and peak performance.

CONTACT DETAILS:

Call or email us and we will provide you with a hybrid solution proposal tailored to your individual site needs.

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