Hybrid Energy Solutions

HYbrid
ENERGY

Powering telecommunications base stations
with innovative and ground breaking solutions

Welcome to Hybrid Energy Solutions

Hybrid Energy provides renewable energy based hybrid power generation technologies for the Telecommunications industry providing reliable and cost effective off-grid power solutions.

Energy solutions are offered on a sale, lease or rentals basis.

Why Telecoms?

- Global demand for reliable off-grid power solutions
- Energy accounts for up to 60% of network operating expense
- High growth in data traffic in developed world, smart phones
- High growth in voice traffic in developing world
- Need for further investment in networks
- Falling ARPU driving efficiency and OPEX squeeze
- New technology driving down energy demand
- Making existing diesel generators less efficient
- Corporate policies to reduce carbon footprint

Why use DC Generators for Telecommunications

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- Most BTS operate at 48 volts DC
- By powering the BTS at 48 volts DC you can remove the site rectifiers
- This eliminates a large source of heat within the site cabin
- Thus reducing cooling demand and energy usage
- Generator will not overload when charging batteries
- Therefore the engine size can be matched to load size
- Improves efficiency by 40%
- Electric radiator offers even higher efficiency

Hybrid Energy Station / UPS

Patent Pending

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Key Features

- Designed for Telecommunications Industry
- Reduces Network Operating Expense
- Reduces Fuel Consumption (50 - 80% Typically)
- Increases Maintenance Interval (Up to 3 months between services)
- Reduces Maintenance Cost

  Above figures relate to typical BTS installation

Sensitive to Environment

- CO2 Reduction (60 tonnes/year per BTS)
- 100% Containment for all liquids
- Reduced Fuel Storage & Spillage Risk
- Less Frequent Fuel Delivery
- No External Hoses / Tanks
- Bund Alarms Alerts of Leak to Basin

How does it operate?

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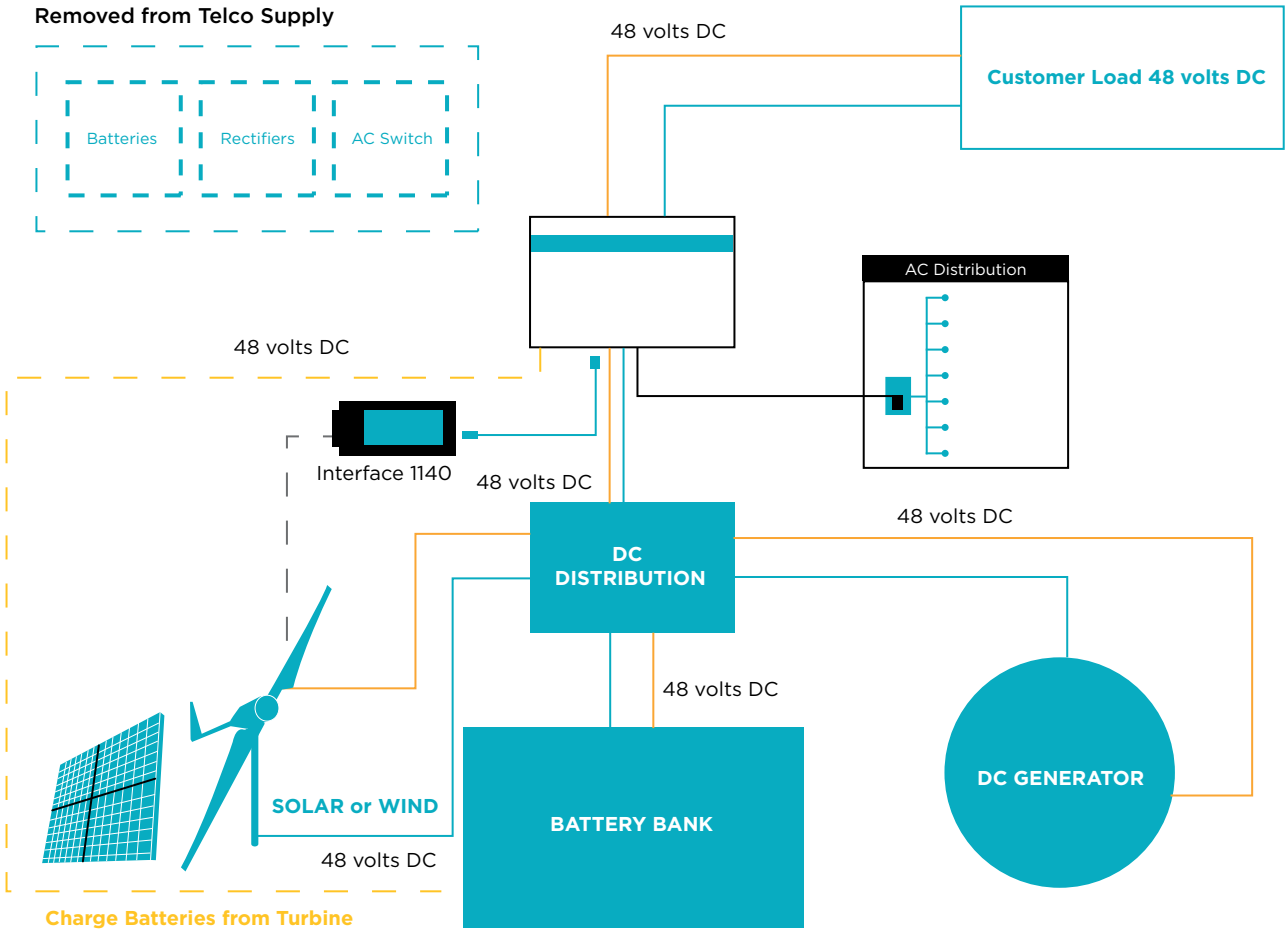
- Similar To A Hybrid Car
- Engine - Battery Combination
- Engine Powers Load + Charges Battery
- When Battery Charged Engine Shuts Down
- When Battery Discharges Engine Restarts
- Variable Speed Operation Improves Efficiency
- When Load Higher Engine Speeds Up
- Can Plug In Wind / Solar To Supplement



Total System Management

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To guarantee our customers the highest possible system reliability Hybrid Energy remotely monitors and controls all critical parameters within the system. Using the latest system software we can identify potential problems remotely and carry out preventative measures without having to attend site.

The system software continuously monitors and controls all engine, alternator and battery parameters and sends an alert in the event of a problem.

Supra Digital Controller

- Engine Management
- Voltage & Current Control
- Battery Charging
- Temperature Compensation
- Operator Interface
- Remote Monitoring & Communications
- History Logging

Other Products

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Wind Turbines

Solar Panels

Inverters & Chargers

Batteries

Markets / Applications

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Telecommunications	Off-grid Prime Power Grid Support Standby Power Hybrid Energy Station UPS
Automotive	Electric Vehicle Power Pack Electric Vehicle Rapid Recharge Unit Recovery Vehicle Recharge Unit Materials Handling
Military	APC Power Pack Critical Systems Support Remote Power
Oil & Gas	Remote Pipeline Monitoring Critical Systems Support
Residential	Co-generation Off Grid Prime Power Renewable Energy
Marine	Propulsion Systems On Board Power Shore Power

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