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DC Cost Saving Power Solution

DC Power System benefits:

1. Increased servicing intervals of 1,500 hours.
2. Decreased fuel consumption of 1.8 – 2.4 litres per hour.
3. Smaller ruggedized lightweight unit on wheels, 4 person lift and 5 minutes to change out generator.
4. Variable engine RPM to make engine more efficient and longer lasting.
5. Extended oil sump with contaminant and water filtration system integrated.
6. Electric fans to reduction of 1.5 – 2hp.
7. Security licensed data logging for security or GPS tracking.
8. Supply up to 180 amps of continuous output for faster battery charging and lower engine run-time.
9. Precision voltage and current regulation for optimized battery charging.
10. No need for starting battery with the 48v starting capacitor system.
11. Remote operation and visibility of system performance and servicing requirements.
12. GSM/GPRS remote monitoring & engine control.
13. Electric fans to reduce power consumption.
14. Anti-theft Licensed Data tagging.

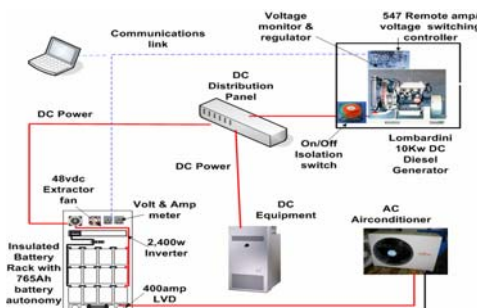
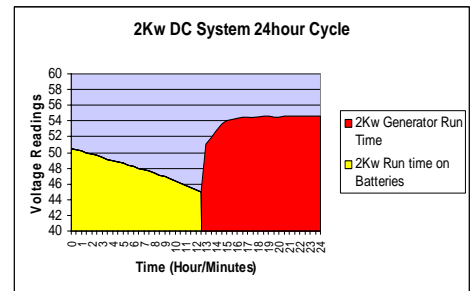
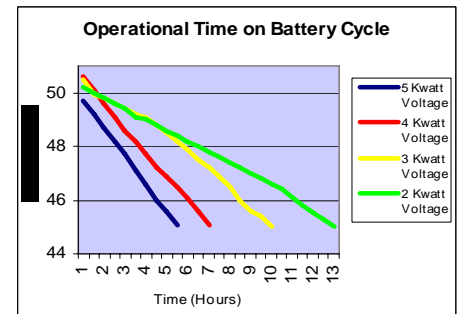
giving the customer an automated system that enables them to have full real-time remote visibility at any given time.

This system is ideal for running Cell sites, Hub sites, Microwave sites, Satellite sites, IT systems or general power solutions in built up areas or remote/isolated locations where low maintenance and cost savings are required.

How it works

The DC system comprises of a DC generator, system controllers and battery system designed to replace the conventional AC prime power system (AC generator, rectifiers etc). The battery bank provides the prime power to the equipment and is recharged by the DC generator which cycles in and out to recharge the batteries to an optimum state when required. The generator run-time varies depending on the amount of power (voltage/amps) consumed by the equipment. This whole process is automatically controlled by the voltage, current, power monitors and regulators.

- Renewable energy system to lower overall company CO2 emissions.
- Full on site system servicing, no need to return system to manufacturer for major services.
- Simple system upgradeable and renewable energy system expansion.
- Security of having full control and visibility of system remotely, minimising trips to site.



Objectives

The objective of our system is to provide peace of mind to the end customer by providing a power system that provides the following benefits.

- Huge reduction of generator running hours.
- Huge savings of up to 85% on current fuel consumptions.
- Decreased servicing schedules/maintenance of the generator systems by 80%.
- Minimising or deleting system down time due to poor, lack of maintenance or refuelling issues, avoids downtime and loss of revenue.
- System reliability
- Provide standard systems that serve as prime or backup power solutions seamlessly.

The CobraComms Ltd cost saving power system has specifically been designed with the understanding of cost, power and logistical problems in mind, reducing the overall “operational running costs”. This is achieved by decreasing servicing, dramatically decreasing fuel used and

The complete solution

CobraComms offer the complete solution for the DC cost saving system (i.e. DC Generator and System Battery Pack). Additionally CobraComms can supply the Solar cube (innovative solar panel, 33% more efficient) or a small wind turbine to add to the DC system to provide a complete hybrid renewable energy solution to further reduce running and maintenance costs. Additionally for customers that require air conditioning the co-generation air conditioning system or separate DC air conditioners can be supplied to again reduce costs further.

DC Generator system;

- 180amp 10kW output DC Generator
- PolCo v1.0 System Controller
- System remote monitoring software
- Voltage/Amp regulators
- On/Off 350Amp system isolator
- Power distribution point
- Generator super silenced sound attenuation unit
- Automatic Oil Adder remote oil system
- Extended oil sump with contaminant filtration system removal
- Cyclone Air cleaner (extends servicing intervals)
- First Service kit (Includes, oil filter, fuel filter, cyclone air filter, alternator belt)
- Ammeter (Cable clamp)
- Starting capacitor no need for starting battery
- Integrated GSM/GPRS wireless dual band modem

All services are available anywhere, anytime.

DC Battery Power Pack System;

System batteries sized to suit application.

- Deep Cycle Gel 765Ah or 1020Ah @ 48vdc battery strings as standard designed for cycling
- Insulated secure battery cabinet
- Make and Break 350A DC isolation switch
- Circuit breakers
- Voltage and Amp gauges (to monitor equipment amp/voltage levels)
- Power distribution points
- Low Voltage Disconnect 400/600amp (LVD)
- 3,000Watt DC-AC Inverter with battery charging for AC Shore power backup(optional)
- Inverter "mate" remote controller
- Generator/Battery Pack cables

DC System Features

CobraComms DC Generator sets are designed for use as the DC prime, standby or with the DC Power saving system. The generators ensure constant operation to the equipment. The generators provide automatic starting to charge the DC Power pack system or customers station backup batteries at a far high charge rate than offered by any standard AC generator.

Further fuel and servicing savings can be achieved by the addition of solar panels and wind turbines. These options will help to further increase the products promotion

towards becoming an environmental power alternative.

Benefits

- Small in area, easy to transport and carry manually.
- No need for surge arrestor
- DC output reduces costs and space requirements and increases efficiency and reliability over AC systems
- No need for problematic rectifiers
- Built in data log chip for anti theft
- Electric cooling fans
- High quality acoustic housing
- Hybrid scaleable and load sharing easily implemented
- 48vdc starting system no problematic 12v starting battery
- Remote operation and monitoring facilities
- Available in 12, 24, 48, 96 or 120vdc power options
- Depending on the motor type selected, it is possible to have a maximum Amp output of 180Amps for running and charging batteries
- Available in Diesel, Petrol, Natural Gas/LPG or Bio-Diesel
- Very low ripple output for longer battery life
- No alternator parts to wear out or requiring servicing
- High efficiency alternator for low fuel consumption
- Worldwide parts and service distribution
- 86cm High x 97cm Long x 86cm Wide

Features

- Electric capacitor electric starter
- 4 stroke diesel, liquid cooled with electronic fans to reduce fuel consumption
- Stainless steel and high quality aluminium motor and anti rust components
- In line fuel filter system
- Indirect fuel injection by unit injectors
- Anti-theft Data chip
- Enhanced fuel filtration and contaminant filtration system
- Full flow lube filter
- Cast iron crankcase with re-borable cylinders
- Auto Start/Stop
- RS232 or RS485 communications ports for remote monitoring and control diagnostic interface
- LCD engine run hour meter
- On/Off 350A circuit protection switch
- 3 Cylinder motor
- Dry weight 198kg (including enclosure)

Future Developments

Future developments are on going to incorporate a lighter, higher performance and cheaper battery. The next step is to incorporate the DC cost saving power solution with Fuel Cell Technology. This will make the CobraComms DC cost saving solution a world leader in providing the smallest most powerful and reliable environmentally friendly solution on the market.

Reduced Costs

The DC generator only runs when needed, ensuring the customer saves running and servicing costs. For the customer to fully benefit from this system the DC Generator and System Battery Pack should be deployed together.

The following statistics are provided based upon actual hard data obtained through system trials, testing, deployments and customer feedback.

Usages

- Telecoms applications
- WiMax applications
- Hub site prime or backup system
- Remote transmission sites
- Electronic installations to act as large UPS
- On housing installations where mains power fails or is non existent
- Small to medium businesses
- Hospitals for long term pure sine wave power back up system
- Remote microwave transmission sites
- Satellite hub sites or remote sites
- Emergency back up system for long term power requirement
- Power for disaster relief applications
- Hybrid renewable energy housing projects

Typical AC generation stats versus CobraComms DC system

| Solution | Initial AC system Dual Generator CapEX | Annual Gen run hours | Yearly 250hr Services | Yearly 1,000hr Services | Yearly 3,000hr Services | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total Site Cost @ 5 Years |
|---|--|----------------------|-----------------------|-------------------------|-------------------------|----------|----------|----------|----------|----------|---------------------------|
| CURRENT AC SYSTEM | | | | | | | | | | | |
| Current AC Generation System OpEX Costs (Fuel consumption an conservative 4 litres per hour) | | 8,760 | 20 | 6 | 2 | \$47,566 | \$49,230 | \$50,953 | \$52,737 | \$54,583 | \$255,069 |
| Current AC Generation CapEX Costs (Replacement generator @ 30months est. \$14,000USD not included in OpEX costs) | | | | | | | | | | | \$0 |
| Grand Total OpEX & CapEX over 60 months | | | | | | | | | | | \$255,069 |
| COBRACOMMS AC/DC SYSTEM SINGLE GENERATION | | | | | | | | | | | |
| CobraComms DC System using 6,000w DC - AC inverter System * Single Generator option includes AC air conditioners and controller panel | | 4,960 | 0 | 3 | 1 | \$14,871 | \$15,391 | \$15,930 | \$16,487 | \$17,064 | \$79,743 |
| DC System CapEX Costs (Replacement batteries @ 24 -48 months) | | | | | | | | | | | \$0 |
| Grand Total OpEX & CapEX over 60 months | | | | | | | | | | | \$79,743 |
| COBRACOMMS DC SYSTEM SINGLE GENERATION | | | | | | | | | | | |
| CobraComms DC System using DC air conditioners & control panel* Single Generator option + AC battery charger system | | 4,480 | 0 | 3 | 1 | \$13,815 | \$14,298 | \$14,798 | \$15,316 | \$15,853 | \$74,080 |
| DC System CapEX Costs (Replacement batteries @ 24-36 months, replacement Generator @ 48 months, | | \$9,856.00 | | \$1,143.00 | \$530.00 | | | | | | \$0 |
| Grand Total OpEX & CapEX over 60 months | | | | | | | | | | | \$74,080 |
| COBRACOMMS DC SYSTEM GENERATION HYBRID SYSTEM | | | | | | | | | | | |
| CobraComms DC System using Three Generator system cycling option includes DC air conditioners and controller panel + 3kW Hybrid mix | | 3,840 | 0 | 3 | 1 | \$11,639 | \$12,046 | \$12,467 | \$12,904 | \$13,356 | \$62,412 |
| DC System CapEX Costs | | | | | | | | | | | \$0 |
| Grand Total OpEX & CapEX over 60 months | | | | | | | | | | | \$62,412 |

(Based on 3kW constant load, OpEX costs only)

All statements quoted within this document are based upon actual results obtained from system and design testing carried out at the CobraComms facility. Slight differences in performance and operation may be experienced depending on the environment and the deployed equipment configuration. The trials were conducted at 1,000ft above sea level with an ambient temperature between 20 – 25degrees.

Patent Pending WDA-11050306/01