



Enlighten

Solar & Wind Hybrid Street Lights

A division of **CLEAR BLUE TECHNOLOGIES**

Generate Electricity
from the **Sun and Wind**
Day and Night

Wind & Solar
Off-Grid Power



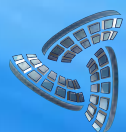
Remote Monitoring
& Control



LED Luminaires
& Photometrics



Aesthetics
& Design



CLEARBLUE
TECHNOLOGIES

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EnlightenHybrid.com



Solar & Wind Hybrid Street Lights

Tapping into the sun and wind for clean, renewable power not only saves the environment, it also saves money.

Combining a wind turbine and solar PV, power is generated both day and night. Electricity is stored and ready to use when the sun goes down.

Wind & Solar Off-Grid Power



Electricity Produced Day and Night from the Sun and Wind

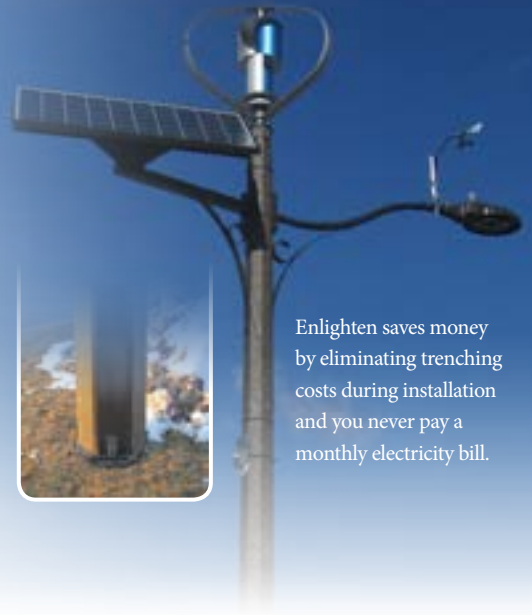
Batteries in the base of the pole store enough power to illuminate the LED luminaire for more than 4 days even if there has been no wind or sun. It works in all weather conditions including snow, ice and rain.

Whisper Quiet Daisy 300 Watt Vertical Axis Wind Turbine (VAWT)

- *Efficient* – Operates in low or high winds, day and night producing more energy than solar only solutions
- *Rugged* – All aluminum construction is vibration free and built to last
- *Smart* – Demonstration of renewable energy. Show you are doing your part for the environment
- *Environmentally friendly* – People, bat and bird friendly

Solar PV Panel converts sun energy into electricity

The 250 watt crystalline-silicon photovoltaic module allows for easy installation with flexible orientation allowing the installer to face the panel south ensuring minimized shading all year round.



Enlighten saves money by eliminating trenching costs during installation and you never pay a monthly electricity bill.



Remote Monitoring & Control



Intelligent Control and Management Solution

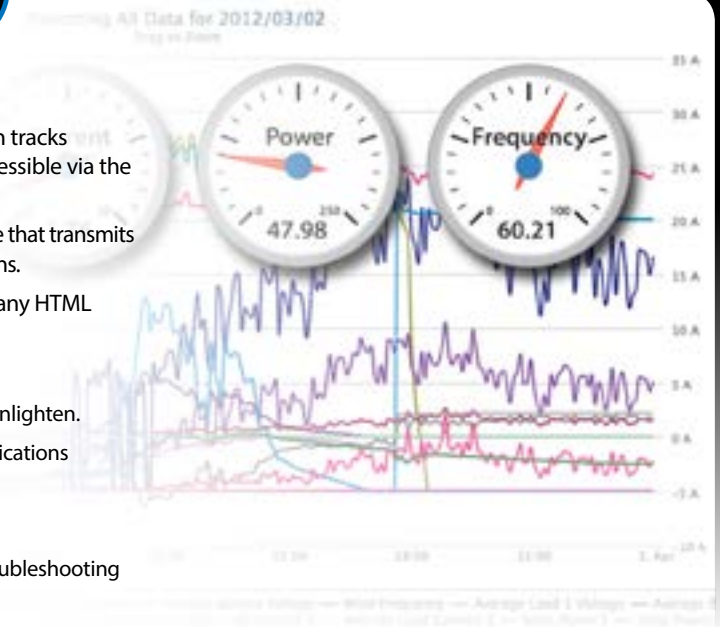
Unique in the market, real-time remote monitoring and data collection tracks performance to ensure maximum reliability and performance – all accessible via the Internet.

Blackbird is the in-pole hybrid charge controller and monitoring hardware that transmits status data to the cloud service, Horizon, over Zigbee or cellular connections.

Horizon is the real-time cloud service platform that is accessible from any HTML browser or smartphone.

Benefits of Real-Time Remote Monitoring and Control

- Real-time remote management and performance data is unique to the Enlighten.
- All poles connect to the Internet via low-cost cellular or Zigbee communications
- Controls the power and load to ensure performance is optimized
- Controls how long the LED is on at night and can also be dimmed
- Automatically identifies and diagnoses issues for fast and convenient troubleshooting
- Easy to install and configure
- Accessible anytime, anywhere using an internet browser or smartphone

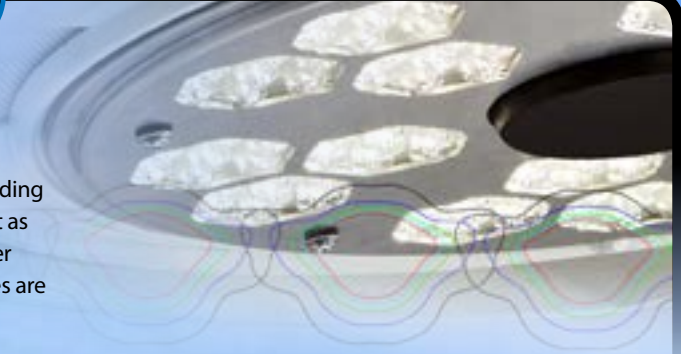


LED Luminaires & Photometrics



High-Efficiency LED Luminaires and Custom Photometrics

A number of GE and King Luminaire LED light options are available including Cobra heads, decorative lantern or pendant lights. These LED lights emit as much light on the street as traditional HID luminaires at 1/10th the power and last up to 4 times longer. Customer dimming, light on / off schedules are controlled remotely via the Internet ensuring full customer control.



Aesthetics & Design



Attractive, Aesthetics and Efficient Design

Take the 'ugly' out of off-grid lighting! As organizations embrace Green Energy, they struggle to find aesthetic solutions. Enlighten is an attractive solution that integrates well with its environment. We consider it the most beautiful off-grid streetlight in the market today! The classic design of the Alexander concrete spun pole and decorative arm as well as the wind turbine are available in a wide selection of colours – to match corporate logos.



PRODUCTS

Enlighten Off-Grid LED Streetlight Configurations

Depending on the light and power requirements of the project, one VAWT, one or two solar PV panels and/or LED luminaires are combined.

| Enlighten Hybrid | | Enlighten Solar | |
|---|--|--|--|
| Enlighten Hybrid combines a vertical axis wind turbine (VAWT) with solar photovoltaics to take advantage of weather conditions. | | Enlighten Solar uses only the sun to generate electricity in low wind areas. | |
| Enlighten Hybrid | Enlighten Hybrid Duo | Enlighten Solar | Enlighten Solar Duo |
| 1 Turbine + 1 Solar PV Panel ■ powers 1 LED luminaire | 1 Turbine + 2 Solar PV Panels ■ powers 2 LED luminaires | 1 Solar PV Panel ■ powers 1 LED luminaire | 2 Solar PV Panels ■ powers 2 LED luminaires |
| | | | |

Enlighten offers custom solutions for Hybrid or Solar only off-grid auxiliary and/or backup power in remote locations – with or without an LED light. We will work with customers to develop the best Enlighten system for their specific needs.



SYSTEM COMPONENTS

POWER GENERATION

• **Photovoltaic Solar Panel Converts Sun Energy Into Electricity**

This crystalline-silicon module has an aluminum frame and an advanced textured glass surface on the front that increases light absorption and efficiency.

• **Daisy Vertical Axis Wind Turbine: The VAWT Converts Wind Energy Into Electricity**

The Daisy wind turbine is an efficient and reliable way to produce pollution-free, renewable power. The self powered system costs nothing to operate, saving money in electricity costs every year.

LOAD

• **High Efficiency LED Luminaire**

Only 55 watts, yet throws the same amount of light on the street as HID lights at 1/10th the power consumption. The long lasting LED effectively eliminates normal maintenance required for other bulb types.

CONSTRUCTION

• **Luminaire Arm**

Aesthetically designed and engineered for strength, the luminaire arm is made of galvanized steel and painted your choice of colour with a protective coating guaranteed to never rust or fade.

• **PV Frame & Articulating Mount**

The PV solar panel is securely mounted in a galvanized steel frame with a pivoting joint that allows the panel to be angled for maximum solar exposure.

• **Spun Concrete Pole**

The Alexander pole is a centrifugally cast reinforced concrete pole, commonly referred to as a "spun pole". It combines elegance with durability and surpasses most other materials in the economy at the same time forming a hollow raceway inside the pole, thereby providing a smooth conduit for electrical and communication cables.

CONTROL & MONITORING

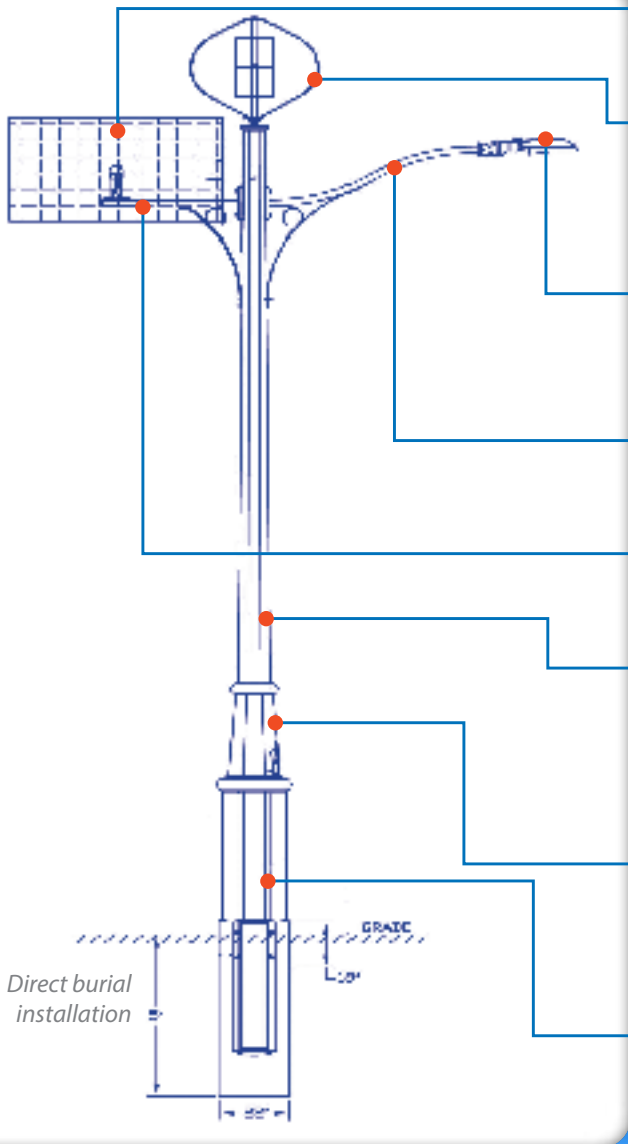
• **Blackbird Controller & Horizon Communications**

Unique to our system is our Blackbird hybrid charge controller combined with wireless communications to transmit data to Horizon's real-time monitoring software via the Cloud, which ensures peak performance and convenient troubleshooting.

POWER STORAGE

• **Sealed Absorbed Glass Matt Batteries**

These batteries are specifically designed for renewable energy applications due to their higher freeze resistance, excellent high-rate power discharge and their quick recharge rate, making them ideal for hybrid power generating applications.



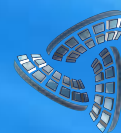
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What makes the Enlighten extraordinary is its beauty and brains on board — with monitoring.

We have integrated the spun concrete pole and high-efficiency LED from StressCrete/King Luminaire with our real-time remote monitoring intelligence topped off with the whisper silent Daisy VAWT to offer the smartest and most aesthetically designed off-grid street light on the market today! www.enlightenhybrid.com

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