



#### **GREEN CONSTITUTES SDN BHD (916287-M)**

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By converting the THREE PILLARS in the Waste Hierarchy into the Energy Sector:

REDUCE ENERGY

RE-USE ENERGY

RECYCLE ENERGY





#### **HOW TO REDUCE ENERGY CONSUMPTION?**

The electricity bills you receive only tells you the accumulated energy usage of your resident/office.

In order to reduce your energy consumption, first you have to measure it.



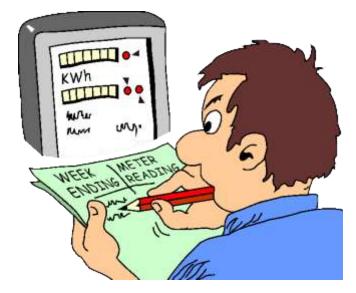
- 1. How to measure your energy consumption?
- 2. Do we need to perform energy auditing?

#### THE CONVENTIONAL ENERGY AUDITING

An energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s).

In normal practices, a certified energy manager will be appointed to conduct this job.





## DO WE NEED TO PERFORM ENERGY AUDITING?

**YES.** Energy auditing is essential. By measuring your energy usage, you are able to reduce significant amount in your electricity bills without realizing.



NO. You do not have to appoint an energy manager to perform this task. Because you are the energy manager.







## "SMART" ENERGY MANAGEMENT SYSTEM

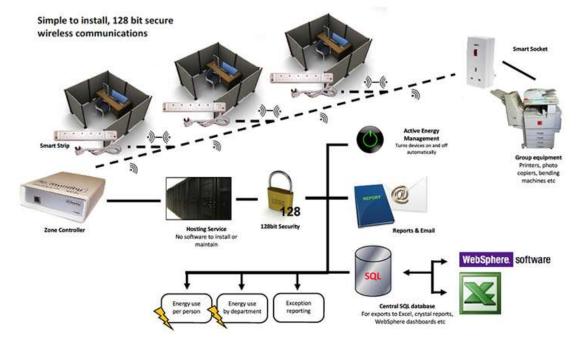
## **Smart Energy Management System**

Green Constitutes offers various advanced, wireless smart metering system that allows you to measure and manage the energy use within your buildings, allowing you to get a precise breakdown of where your energy is being used on a circuit by circuit or device by device level. This is often referred to as a Building Energy Managements System or "BEMS". With extensive, real-time, online software reporting aimed at helping factories, offices, hotels, schools and colleges it can report energy use by function; by physical location; by department; and by person.

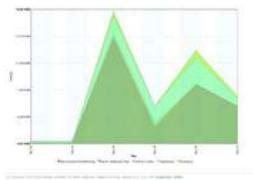


## enistic









## IN MOST CASES...

A typical PC consumes around 506 kWh of electricity annually





Many PCs and other devices are left on after office hours

There are 38 hours in a working week, and 168 hours in a standard week.

Wouldn't it be great if unused device

can be switched of AUTOMATICALLY?



## **PERFORMING ENERGY MANAGEMENT**

Plug your appliances into the Smart Strip...





### **PERFORMING ENERGY MANAGEMENT**

## And get detailed summaries of your office!

A snapshot of your statistics	Value	Unit
Power being consumed now	67	W
Number of devices you are controlling now	2	
Energy consumed	926.1	kWh
Carbon produced	398.2	kg CO2
Money spent	101.87	£



BBS Professional Server statistics	Value	Unit	
Power being consumed now	10,446	W	
Total number of devices being controlled	284		
Energy consumed	20,568.9	kWh	
Carbon produced	8,844.6	kg C02	
Money spent	2,262.58	£	

## **Global Application References**

#### **IBM**

- One office, consisting of 45 desks and a workgroup printer, was selected for the project, which was based around Enistic 5-way Smart Sockets and the Energy Manager system
- Energy usage was lowered by 20%

#### **BF Technology Ltd**

- BF Technology performed a baseline audit of energy wastage and investigate an automated energy management solution
- A saving of 2.4 tonnes of CO2 per quarter is being achieved and the system has a financial return on investment (ROI) of approximately 23 months







#### **LOW COST ENERGY EFFICIENCY SOLUTIONS**

Now that we are able to manage our own energy usage and reduce some electricity cost. The next step is to find a low cost energy reduction solution.

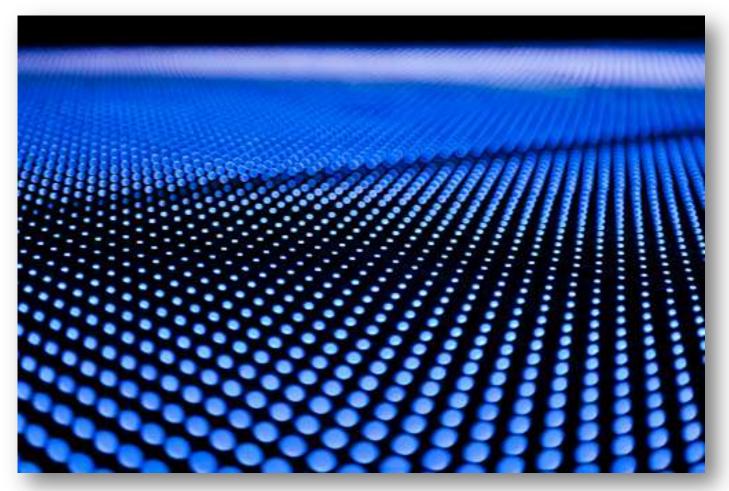
#### **LIGHTING ENERGY CONSUMPTION:**

- 20 45% in commercial buildings
- 3 10% in industrial plants

Significant energy savings can be realized with a minimal investment of capital.









LIGHT EMITTING DIODS (L.E.D)

## **PRODUCT RANGE**

- Conventional T5, T8 indoor lighting tube
- > Indoor LED Bulb
- ➤ LED Panel Light
- > LED Down Light
- > LED Spot Light
- ➤ LED Street Lamp
- ➤ LED Tunnel Lamp
- ➤ LED Mine Lamp

#### **EPISTAR**







#### **L.E.D LIGHTING SOLUTIONS**

A 20W CFL can be changed with a 7 - 10W LED without sacrificing light output but reducing energy consumption up to 66%.

A 250W Sodium Vapor Lamp gives 15,000 L, which can be achieved by a 80 – 100W LED saving 60% of energy.



LED's highly efficient with extremely long life, no ultra-violet or infrared radiation, no heat, lights up instantly, operates silently, and lastly it's a low energy product.



#### **CASE STUDY**

A house with 50 18W CFLs can be substituted with 7W LED bulbs. Assuming 8 hours of operation a day with an average utility tariff of RM 0.40/kWh; Total monthly savings = RM 52.80 That is RM 644.60 of savings per annum.



Not to mention, the Return on Investment for incorporating LEDs is less than 2 years.



#### **RE-USING ENERGY**

Natural gas and crude oil prices are volatile and subject to fluctuations outside our nation's control. That volatility leads to greater uncertainty in forecasting energy costs.

Using energy produced from renewable sources softens your impact on the planet. Clean, renewable energy reduces the carbon emissions that contribute to global warming and significantly lowers emissions of other regulated pollutants.







**PV Modules** 

**Grid Connected & Stand Alone** 

## **PV MODULES by ET Solar Group**

With local sales and marketing subsidiaries and offices throughout Asia, Europe, and North America, we provide high quality photovoltaic modules, world leading solar tracking systems and smart turnkey solutions to our customers in more than 50 countries and areas.









## **ET Modules**

ET Modules generate very reliable solar power for on-grid and off-grid applications. Our modules are designed and manufactured to comply with very strict international quality standards. Backed by our 25-year warranty on power output, our modules bring lasting values.





Mono-Crystalline
Poly-Crystalline
Zero-Rack Module
Transparent Module
Hybrid Crystalline

## **Methods of Installation**

## 1. Retrofitted





## **Methods of Installation**

## 2. Integrated





#### **GRID CONNECTED PV SYSTEM**

We understand that solar modules has limited conversion efficiency and huge space is required in order to sustain a building's energy consumption. So how do we solve this matter?

### "SELL then BUY" concept.

- 1. Energy is generated via PV.
- Generated electricity is sold 100% to TNB according to Feed in Tariff rates for PV.
- Energy is then purchased from TNB for electrical loads in building.



## **FEED IN TARIFF (FIT)**

- The national electricity utilities (TNB) are obliged to buy renewable electricity at market rates set by government.
- FiT will be implemented in December 2011 for 21 years.



- First-come-first-serve basis until quota is finished.
- Guaranteed by the law (Renewable Energy Act)

## FEED IN TARIFF (FIT) RATES FOR PV

Capacity of renewable energy installation	FiT rate (RM per kWh)	Effective period	Annual degression rate
Installed capacity up to and including 4 kWp	1.23	21 years	8%
Installed capacity above 4 kWp, and up to and including 24 kWp	1.20	21 years	8%
Installed capacity above 24 kWp, and up to and including 72 kWp	1.18	21 years	8%
Installed capacity above 72 kWp, and up to and including 1 MWp	1.14	21 years	8%
Installed capacity above 1 MWp, and up to and including 10 MWp	0.95	21 years	8%
Installed capacity above 10 MWp, and up to and including 30 MWp	0.85	21 years	8%
Additional for installation in buildings or building structures	+0.26	21 years	8%
Additional for use as building materials	+0.25	21 years	8%
Additional for use of locally manufactured or assembled solar photovoltaic modules	+0.03	21 years	8%
Additional for use of locally manufactured or assembled solar inverters	+0.01	21 years	8%



#### **OUR INSTALLATION TEAM**

Laurenz Leistung Sdn Bhd, the most reputable PV installer in Malaysia has been the appointed to conduct Green Constitutes' PV project installation.





#### Our integrated system is:

- Neat & aesthetically appealing
- Leak-proof
- Hassle-free during service & maintenance
- Easy & fast in installation.

# LOOKING FOR OTHER ALTERNATIVE SOURCES?



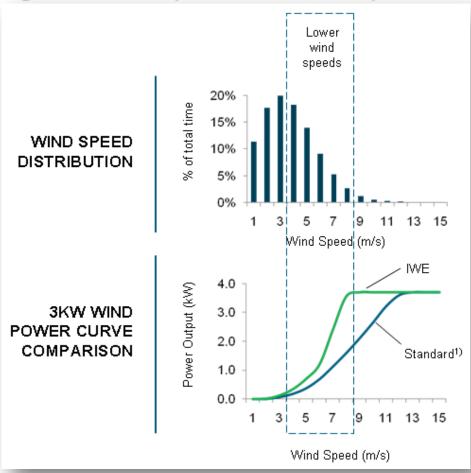




WIND TURBINE Suitable For Low Wind Condition

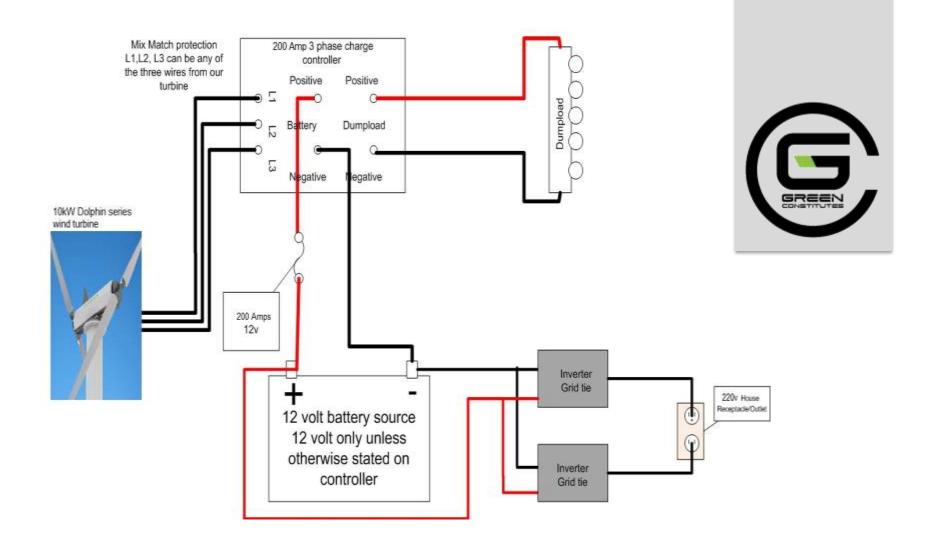
## **POWER OUTPUT**

The superiority of our Dolphin Series turbines lies in our ability to generate more power at lower wind speeds Most turbines are rated at 12 m/s or more, those sustained high winds rarely even occur, as represented in the graph





## **ON & OFF-GRID CONNECTION**



## THIS WIND TURBINE LOOKS TOO COMPLICATED?



## ARE YOU SEARCHING FOR A NEW LOOK?





VERTICAL AXIS
WIND TURBINE (VAWT)

## **HI-VAWT's Solution**

HI-VAWT is developed in various range of power output mainly 300 W; 1.5 kW and 3 kW. IEC certified.

- Excellent wind direction adaptability
- Suitable to be applied at urban areas
- Noise-free
- Self starting ability









## **HI-VAWT's FLEXIBILITY**

#### CONTRIBUTES UP TO 5 GBI POINTS

HIENERGY KOREA WIND POWER GENERATION GALLARY









#### **OFF GRID SOLUTIONS FOR RURAL AREAS**

HIENERGY KOREA WIND POWER GENERATION GALLARY

Case study (Product Installation)







Zero energy and applied technology for the implementation of various wind power generation technology has been recognized for outstanding performance. Is ideal wind environment for Downtown, we have adopted and installed HIENERGY vertical-axis wind power generator

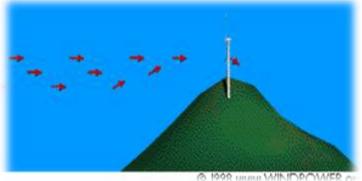
#### WIND TURBINE APPLICATIONS

Finding the best location to install a wind turbine is the most crucial step. Green Constitutes will provide wind resource assessment to identify and provide a comprehensive report to show its feasibilty.



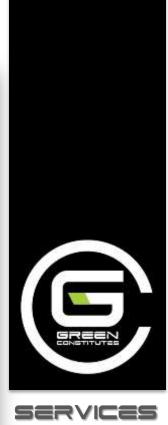








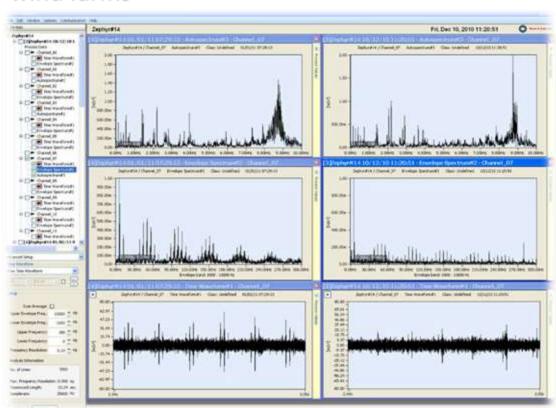




# WIND MONITORING SERVICES kW class assessment MW class assessment

#### IMPORTANCE OF WIND RESOURCE ASSESSMENT

- Same like an oil exploration, WIND being an ENERGY RESOURCE also can be measured and classified.
- ➤ It enables developers to locate the best wind speed area and estimate the future energy production.
- Therefore it is crucial to the successful development of wind farms





Now, we are able to reduce our energy consumption and incorporate some renewable energy products.

How do we recycle energy besides using the waste management technology?



**✓ REDUCE ENERGY** 

**✓ RE-USE ENERGY** 

RECYCLE ENERGY?



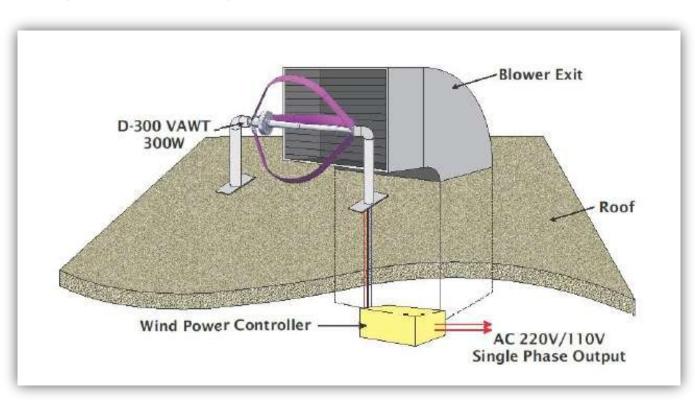


## VENTILATION RECOVERY SYSTEM

(V.R.S)

#### **CONNECTION DIAGRAM**

This Wind Turbine being equipped on the outlet of the ventilation fan system achieves both merits of not only generating the recovery wind power but also reducing the fan power consumption.



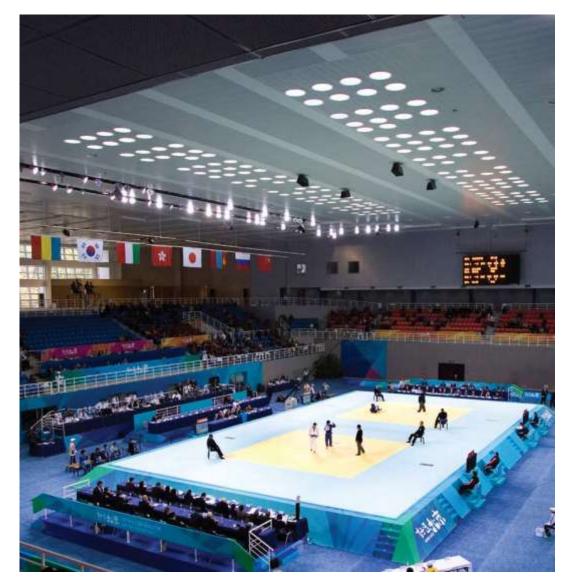




There are many ways of utilizing energy that would normally be wasted and recover it into electricity or thermal energy.

Common practices are Waste Heat Recovery from Air Conditioning and Combined Heat & Power System (CHP). When electricity is produced on-site with a CHP plant, excess heat is recycled to produce both processed heat and additional power.







SOLATUBE – Innovation in Daylighting



# Breakthrough Technology For Higher Performance

Solatube Daylighting Systems are designed to provide superior performance for virtually every daylighting application. Imagine being able to take daylight where you never thought possible. How do we achieve this? It's all in the details. At the heart and soul of every Solatube product, you'll discover an array of innovative technologies that deliver amazing results.

Over the next few pages, we'll introduce you to the unsurpassed capture, transfer and delivery technologies that make Solatube Daylighting Systems the ultimate daylighting experience.

#### Capture Zone

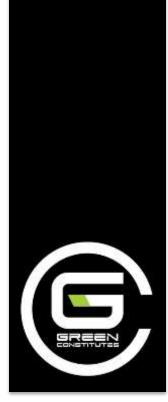
The story all begins with capturing sunlight. We challenged our engineers to develop a dome that automatically adjusts daylight harvesting throughout the day while achieving demanding thermal performance requirements. The solution? The industry's most advanced dome technology with the ability to virtually bend daylight.

#### Transfer Zone

How much does a bounce matter? You'd be surprised. Every time a ray of light is reflected, a small amount of that light is lost. And even a few percentage points in reflectivity make a huge difference in overall performance. It's that attention to detail that led us to develop the biotiest performing tubing available.

#### Delivery Zone

What makes Solatube Daylighting Systems unique? The ability to offer amazing control over daylighting a space. From light control to diffusion we've thought of virtually everything you need to bathe any space in pure, natural light.



# GREEN CONSTITUTES ENERGY EFFICIENCY AND RENEWABLE ENERGY

#### **HOW DOES IT BENEFITS YOU?**

Long Term Cost Effectiveness: Promising ROI

Promote Healthier Lifestyle: Reducing carbon footprint

**Create Awareness: Green profiling** 

**Investment Tax Allowance**Contribute up to 10 points under GBI





### THANK YOU

VISIT US AT www.gcenergy.yolasite.com

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