CASE STUDY

Project: Our Offices, Unit 3 Broom Road Business Park, Broom Road, Poole, Dorset, BH12 4PA

Project Summary

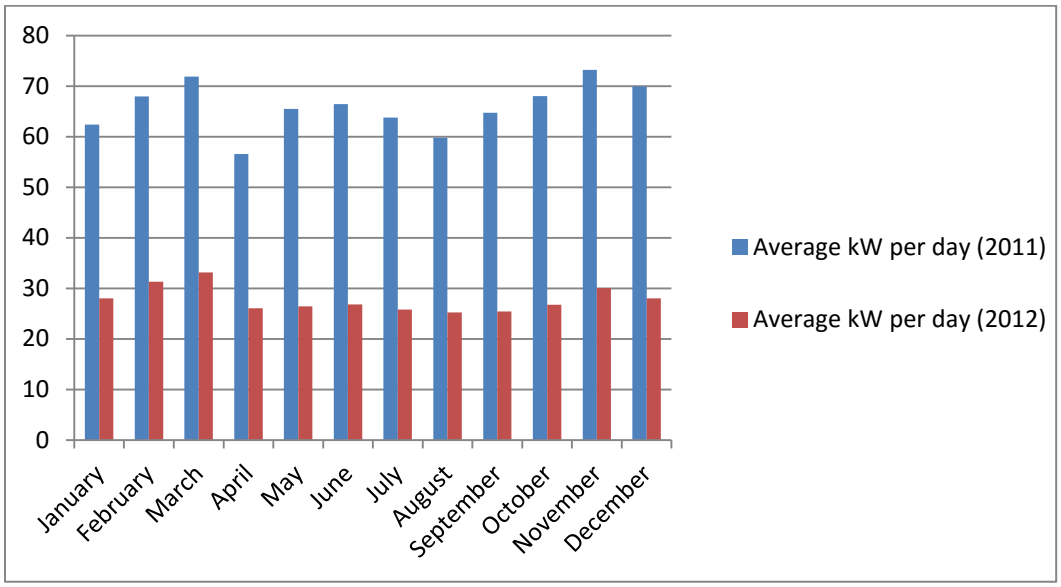
Rentec Limited is a Mechanical and Electrical Contracting company, specializing in Renewable Technologies. The building is a 806m² industrial unit situated in Poole, Dorset. We believe that solar PV will help greatly in our endeavours to substantially reduce our carbon emissions and enable us to become more self sufficient in terms of electricity production.

The installation is a 115 No panel, 29.28kW Solar Photovoltaic system using 250W and 260W Znshine monocrystalline panels mounted on a Renusol MetaSol mounting system fixed to a metal trapezoidal roof, and SMA Sunnyboy Inverters. An SMA GA-500 Large Display is displayed in Reception which shows a summary of the energy being produced and the CO^2 being saved.

Estimated Output Summary

Estimated annual output kWh/annum	22,956
Estimated annual income (FIT & Savings from reduced energy bills)	£ 9,243
Estimated income (FIT & savings from reduced energy bills) over 25 years	£ 308,971
Estimated annual CO^2 savings	7,493 kg p.a.
Estimated CO^2 savings over 25 years	169,624 kg

Actual Energy Savings in our first year



Our electricity usage for 2011 is shown in blue and we installed our Solar PV System in December 2011 and as you can see our usage for 2012 is down by over 50%.

Figures provided by our energy supplier, E-on.

Photovoltaic Installation

Description

Supply, installation, testing and commissioning of a 29.28kW Solar PV installation including:

1. PV system electrical design
2. Shade analysis
3. Structural analysis
4. Wind load analysis
5. Liaising with the DNO
6. Weather proofing
7. 115 No Panel PV Installation using 1 SMA Sunny Tripower 12000TL and 1 SMA Sunny Tripower 15000TL Inverter connected to a 3 phase supply
8. SMA GA-500 Large Glass Display

Panel Specification

The ZnShine 250W and 260W modules utilise 96 highly efficient monocrystalline solar cells with an attractive and robust anodized aluminium frame.

- 25 year limited power output warranty
- Anodized aluminium frame ensuring a stable mechanical life
- High-transparency low-iron tempered glass bearing 25mm ice-ball with velocity of 23m/s
- Anti-aging EVA
- IP65 rated junction box enhancing thermal isolation
- Up to 15.5% module conversion efficiency
- Up to 2400 pa – withstanding high wind loads
  Up to 5400 pa – snow loads

SMA Inverter Specification

- maximum efficiency of 98.2%
- Excellent tracking efficiency with OptiTrac MPP tracking by SMA
- Bluetooth communication
- Triple protection with Optiprotect
- Electronic string fuse
- Self-learning string failure detection
- DC surge arrester (Type II) can be integrated
- DC input voltage up to 1000V
- Integrated grid management functions

Display Specification

GA-500 Large Display – frameless glass front

- 3 values
  1 x 6 digits acutal power output in Watts
  1 x 6 digits energy total in kWh
  1 x 6 digits CO2-saving in kg
- LCD digits height 25 mm, (readable at up to 8m)
- approx. W x H x D 50 x 40 x 3,5 cm
- wall fixing stainless steel
- external power supply 9 VDC

- impulse standard (data rate and initial value adjustable) RS-232 and RS-485 optional
- suitable for outdoor use
- easy to connect and adjust

Economic, Social and Environmental benefits

The solar array uses the sun's energy – this is an abundant natural resource. It is non-polluting, clean and sustainable. Solar energy is an important element in achieving the Government's commitment to reduce carbon dioxide emissions to 2.5% below 1990 levels by 2010. More specifically, it is Government policy to achieve 30% of the nation's electrical requirements from renewable sources by 2020; this proposal will help to move towards these targets.

There are many different benefits of installing solar PV systems, the main benefits are summarised below:

- Using a solar PV system can reduce or even completely remove the need to purchase electricity from your energy provider, thus reducing our reliance on pollutant fossil fuels.

- Installing a PV system is a big step towards reducing the carbon footprint of a building and aids the fight against climate change. The environmental benefits of PV solar energy are overwhelming as photovoltaics generate zero global warming gases.

- The feed-in tariff (FiT) is a substantial incentive which pays a generation tariff for every KW of energy produced by photovoltaics, with an additional export tariff for every unit for every unit sold back to the national grid.

- Solar PV systems are made from silicon, a derivative of sand, which is widely available.

- A solar PV system requires very little maintenance. There are no moving parts to the system so the potential for a problem to occur is very small, and should require nothing more than an annual clean and inspection.

Photographs