

## SOLAR PHOTOVOLTAICS PRICE GUIDE

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### INTRODUCTION FROM CHRIS KAWECKI, DIRECTOR

#### Solar PV

Welcome to the Greenleaf Innovations Ltd price guide for 2014. These prices are based on a 4kW system, fully installed. 4kW is a popular size for domestic installations.

At the time of writing, these prices are reasonably accurate, but to account for installation variations, please get in touch if you'd like an accurate quotation for your home.

I've broken down the panel/inverter options into Standard, Premium and Superior categories. You can make savings by choosing a Standard system if you are more focused on function than form. For example, a standard system will use silver

frame polycrystalline panels whereas a premium system may utilise a black frame, a black backing sheet (if you wish) and monocrystalline cells.

Superior is a world of it's own, utilising panels that can achieve very high efficiencies (approximately 30% greater than standard or premium panels) by utilising hybrid cells or rear contacts technology. Remember, high efficiency doesn't necessarily mean it is better for your needs. If you can reach your desired generation potential with standard or premium panels then this may be more cost effective.

High efficiency really shines



when you are trying to generate as much power as possible from a given area (e.g. small roof space). It's much simpler to discuss these things in person, so please contact me for a free survey of your property.

All the best.

Chris

### PROJECTED ANNUAL RETURNS OF A 4KW SYSTEM

Panels (250W)	Location	Orientation	Tilt Angle	Total Annual Generation
16	Bristol	South	30°	3769kWh

Assuming 50% own usage (at 13p/kWh for energy savings), 50% export and receiving the full generation tariff for the export tariff, this system would currently be expected to achieve the following returns, tax free and index linked for 20 years.

Generation Tariff	Export Tariff	Energy Savings	Total Annual Benefit
£541.98	£89.88	£244.98	<b>£876.84</b>

### INTENDED OUTCOMES

- Introducing Price Guides
- Determine projected returns of a 4kW system
- Look at Standard, Premium and Superior Options
- Contact Us

## STANDARD SYSTEMS

Under the MCS estimating procedure, a 4kW system would produce the same annual yield be it using Standard, Premium or Superior components. With that said, let's look at the options and examine the differences between them.

### Example 4kW Standard System

Panels	Inverter	Cost of Installation (including VAT at 5%)
Axitec AXIpower AC-240-250P/156-60S	Samil Solar River 3680TL	£4995.00—£5250.00

## STANDARD PANELS

The Axitec 250W panels are a fantastic example of high quality at a budget price. Axitec are a German brand offering some of the best warranties on the market.

These panels are polycrystalline with blue cells, white backing and a silver frame.

For our Standard systems I am careful to avoid 'Budget' panels. There are cheaper panels available on the market, but I believe that you

reach a certain point where the quality is sacrificed to squeeze prices.

These panels will perform admirably, though if aesthetics are important to you, then you may wish to look at the more uniform options afforded by panels in the premium system.

These panels are an example of a Standard system panel. I am happy to quote for alternatives if you prefer.



## STANDARD INVERTERS

Samil inverters are manufactured in China and have rapidly gained a strong UK presence.

These inverters have a lot going for them. Their IP65 rating ensures that they can be mounted in most locations (indoor or outdoor).

The Samil 3680TL offers a high maximum efficiency of 97.6%.

In addition, Samil offer an industry leading 10 year

warranty on all of their Solar River range as standard.

So why is it part of the standard system?

The inverter offers excellent performance at a good price, but certain features are not included as standard. For example, although monitoring software is available free of charge, you will require additional components to monitor the inverter from your computer.



## PREMIUM SYSTEMS

Premium Systems offer everything that the Standard systems offer, but with a greater focus on aesthetics and use of demonstrably superior inverter technology.

### Example 4kW Premium System

Panels	Inverter	Cost of installation (including VAT at 5%)
Axitec AXIblackpremium AC-245-260M/156-60S	SMA SB3600TL	£5500.00– £5800.00

## PREMIUM PANELS

Offering all the benefits of the polycrystalline 250W, the Black Premium monocrystalline panels combine excellent performance, components and aesthetics.

These panels are monocrystalline with black cells, black backing sheets and black frames. As the cells are monocrystalline, they have a uniform appearance that can't be matched by polycrystalline cells.

Although not offering a sig-

nificantly higher performance than the Standard panels option, these premium panels will provide an array that is uniform and neat on your roof top. A solar photovoltaic system is a significant investment and it is worth choosing something that you would be pleased to see every day. Other options are available with white backing sheets and black frames. Take a look at some panel images and let me know your preference.



## PREMIUM INVERTERS

Premium system inverters need to be able to back up the manufacturers' claims with a high performance in the independent Photon test

SMA inverters have some clear advantages in technology that their competitors are yet to match.

Active cooling is achieved with Opticool technology. Not only does this prevent the derating of the inverter due to high temperatures, it does so without the need for

additional cooling fans etc, thereby reducing the number of parts that can go wrong.

OptiTrac Global Peak offers advanced shade management, without the requirement of micro inverters or panel level optimisers.

Greenleaf Innovations are SMA Advance Installers and our teams have undertaken additional training with SMA in order to get the most out of their inverters.



## SUPERIOR SYSTEMS

Improved panel technology is what makes a system 'superior'. At this stage standard panel technology is left behind and superior technologies surge ahead, offering efficiencies of around 30% more than their more conventional competitors. Currently the two main manufacturers in this regard are BENQ and Panasonic.

Superior systems combine Superior panels with Premium inverters.

All of the systems that we have installed that utilise the Panasonic and SMA combination have outperformed their MCS generation estimates, many of them by 15% or more.

As a rule, a HIT panel would be expected to outperform estimates by between 7% and 10%. Solar panels reduce in efficiency in high temperatures. HIT cells have been proven to maintain a high efficiency even in high temperatures—this is an especially useful trait in the Summer months.

### Panasonic

The construction technology of Panasonic HIT® solar modules is innovative and

## Example 4kW Superior System

Panels	Inverter	Cost of installation (including VAT at 5%)
Panasonic HIT	SMA SB3600TL	£7200.00– £7500.00

different from conventional designs. They achieve a higher cell efficiency, which means more energy per square metre. With a Module efficiency of 19% and a cell conversion efficiency of 21.6 %, the HIT®-N240W series is a market leader in panel efficiency. With its very low temperature coefficient of only -0.29%/°C, the HIT® solar cell offers better performance than conventional cells in normal operating conditions.

We are Panasonic Solar Premium Installers, having utilised these modules on many of our projects. I can highly recommend them.

This month (September 2014) Panasonic announced a new European record low claim rate of



0.00381% on it's Solar panels. 3.5 million HIT panels have been sold across Europe since 2003 with only 137 having claim made against them.

These panels are reliable, robust and have a track

record of excellent performance in all weather conditions. As such it's easy to understand why these panels are offered as our Superior range.

**GreenleafInnovations** 

### CONTACT INFORMATION

If you'd like more information please arrange a free survey via the contact details below

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