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Towngate Technologies Ltd • Towngate Farm • 11 Towngate • Thurlstone •

Penistone Scout Group
Wentworth Rd
Penistone

Project name:	**Penistone Scout Hut**	**Location: United Kingdom / Leeds**
Project number:	Scout Hut 1	
Project file:	Penistone Scout Hut.sdp2	Grid voltage: 1~230 V

System overview Part project 1

16 x Day4Energy 60MC-I (230Wp) (PV-array 1)
Azimuth angle: -75 °, Angle of inclination: 35 °, Mounting type: Roof, PV Peak power: 3.68 kW

Inverters:
1 x SB 4000TL-20 (Inverter efficiency: 93.8 %)

Technical data

Total number of PV modules:	16	Energy usability factor:	99.9 %
PV Peak power:	3.68 kWp	Performance ratio (approx.)*:	82.3 %
Number of inverters:	1	Spec. energy yield (approx.)*:	724 kWh/kWp
Nominal AC power:	4.00 kW		
Annual energy yield (approx.)*:	2665.50 kWh	Line losses (in % of PV energy):	---
		Unbalanced load:	4.00 kVA

Notes:

Version: 2.00.4.R

Signature

Important: The yield values displayed are estimates. They are determined mathematically. SMA Solar Technology AG accepts no responsibility for the real yield value which can deviate from the yield values displayed here. Reasons for deviations are various outside conditions, such as soiling of the PV Modules or fluctuations in the efficiency of the PV modules.

Evaluation of design

Project name: Penistone Scout Hut
Project number: Scout Hut 1
Project file: Penistone Scout Hut.sdp2

Location: United Kingdom / Leeds

Cell temperature:
Record Low Temperature: -10.00 °C
Average High Temperature: 50.00 °C
Record High Temperature: 70.00 °C

Part project 1

System overview

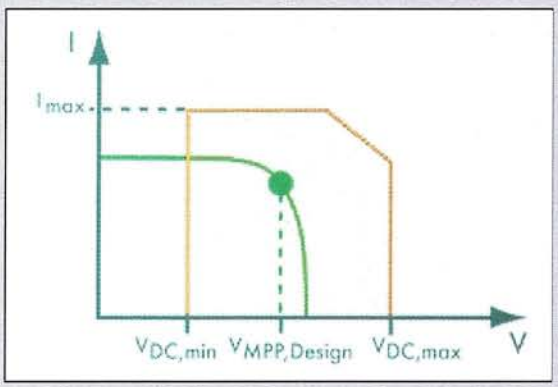
Inverter: 1 x SB 4000TL-20

PV-module:

A: (PV-array 1)	**B: (PV-array 1)**
Day4Energy	Day4Energy
60MC-I (230Wp)	60MC-I (230Wp)
Azimuth angle: -75 °, Angle of inclination: 35 °	Azimuth angle: -75 °, Angle of inclination: 35 °
Mounting type: Roof	Mounting type: Roof

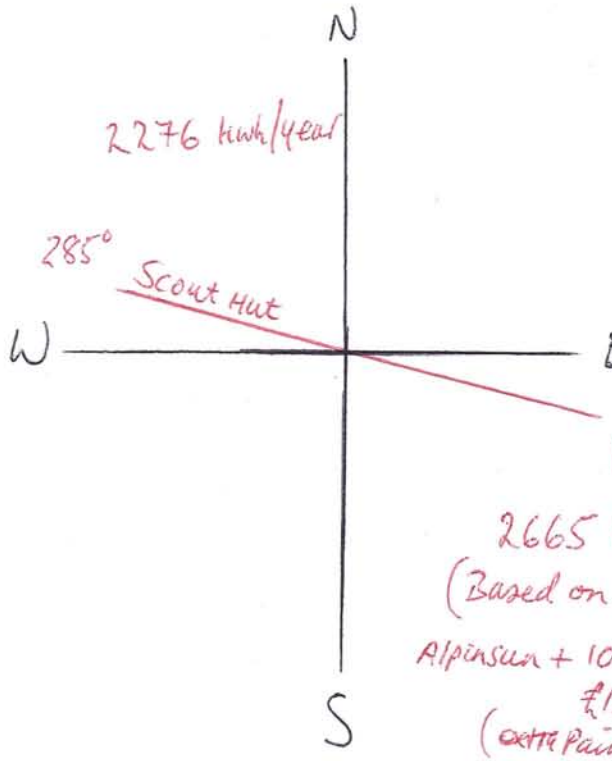
Technical data

PV Peak power:	3.68 kWp	
Total number of PV modules:	16	
Number of inverters:	1	
Max. DC power:	4.20 kW	
Max. AC power:	4.00 kW	
Grid voltage:	230 V	
Nominal power ratio:	114.0 % ✓	
	Input A:	**Input B:**
PV-array:	PV-array 1	PV-array 1
Number of strings:	1	1
Number of PV modules (input):	11	5
Peak power (input):	2.53 kWp	1.15 kWp
Min. PV voltage:	275 V ✓	125 V ✓
Typical PV voltage:	297 V ✓	135 V ✓
Min. DC voltage (Grid voltage 230 V):	125 V	125 V
Max. PV voltage:	443 V ✓	202 V ✓
Max. DC voltage (Inverter):	550 V	550 V
Max. current of PV array:	7.8 A ✓	7.8 A ✓
Max. DC current:	15.0 A	15.0 A



PV/Inverter compatible
PV array and type of inverter are compatible. The nominal power ratio (max. DC power of the inverter divided by the peak power) is within the recommended range (80% - 120%).





2665 kwh/year
(Based on Daily Energy 230)
Alpinsun + 10% = 2931
£120 in year 1 extra.
(extra paid for in 2 years)

TOTAL DIFFERENCE WOULD BE £7,246.29 AFTER 25 YEARS AT 4% INFLATION.

2665
-2276
389 kwh/year difference

∴ 389 × 0.448 = £174 in year 1 (+ inflation)

174 × 25 years = £4,356.

Call us on **01226 767909** or email **info@towngatetechnologies.co.uk**

About Us
Accreditations
Global Warming & Climate Change
Reducing Your Carbon Footprint
Why Choose Solar?
How Solar P.V. Works
Types of Photovoltaics
The Feed In Tariff Scheme (FiTS)
Domestic Solar
Commercial Solar
Make money from solar panels
Is Your House Suitable
Planning Permission
Frequently Asked Questions

Download our Brochure

Click here to Download

Relax, we're MCS accredited installers

MCS

REA
RENEWABLE ENERGY ASSOCIATION

CHAS

The Feed In Tariff Scheme (FiTS)

From April 1st 2010, the UK Feed-In Tariff comes into effect, making solar panel installation a very attractive investment indeed.

The FiT will apply across England, Scotland and Wales and is designed to incentivise solar panel installation, by offering what is referred to as "clean energy cashback". Put simply, it means that homes and businesses implementing small scale low carbon energy generation through solar PV panels (or other eligible means) will be paid for the energy they generate. This even applies if the households or businesses use all of the electricity they generate themselves! The rates have also been set so that those generating electricity through solar PV will be paid well above the rate at which utility companies sell electricity, to account for the fact that solar generated power is more expensive to produce than fossil fuel generated power.

Feed-In Tariff Rates

How much you get paid will depend largely upon the type and size of the solar PV technology you use in your home. This table acts as a guide as to the pence per unit a new solar panel installation could earn.

Essentially, the price you will be paid per unit for energy you generate and then use yourself goes up to 41.3p. For energy you generate and then export back to the grid (as opposed to using yourself) it goes up to 44.3 pence per unit. More information about the Feed-In Tariff rates can be found detailed in the table below.

Size of Solar PV system	Generation Tariff (pence per kWh) Self Used Energy	Export Tariff (pence per kWh) Exported Energy
< 4kW (new build)	37.8	40.8
< 4kW (retrofit)	43.3	46.3
4 - 10kW	37.8	40.8
10 - 100kW	32.9	35.9
100kW - 5MW	30.7	33.7
Off Grid Systems	30.7	33.7

These rates apply to systems installed between 1st April 2011 and 31st March 2012 and will be paid for a period of 25 years. The payment levels drop for systems installed later than this.

Definition of Terms

Retrofit: Panels installed on a building that is already occupied.

New Build: Installed on a new building before it is occupied for the first time.

Feed-In Tariff Eligibility

Eligibility for the UK FiT depends upon the date of installation, size of the installation and the technology used.

Systems Installed Before April 2010

Even if your system was installed before April 2010, you may still be eligible for the Feed-In Tariff. Any systems installed between 15th July 2009 and 1st April 2010 will be eligible, provided they are registered with

Articles & Studies

Sunday Times Excerpt - 25th May 2010

The Guardian Excerpt - 6th February 2010

Towngate News

Ofgem reports on PV installations

The Guardian reports on the Feed-in Tariff

Solar farm plans to produce 5MW of power

Energy price increases add half a billion to bills

Government To Protect Solar Subsidy

300 New jobs created at Sharps Wrexham solar panel factory

Latest Update from Chris Huhne

5YEAR GUARANTEE ON ALL WORK



Read more about our accreditations

Renewable Obligation. Any systems that are registered will receive payments for this period (July 09 - April 2010) under the Renewable Obligation Certificate (ROCs) and will be automatically transferred over to the FiT as of April 2010 and the tariffs outline above will apply.

Systems Installed Before 15th July 2009

Any system installed before 15th July 2009 and registered for ROCs will still be eligible for FiTs. However, irrespective of the technology used, a lower rate of 9p/kWh will apply.

Systems Installed After April 2010

Systems installed between April 2010 and 31st March 2012 will be eligible for the rates as outlined above, providing they are registered by an accredited body. Once installation is complete, consumers should contact their supplier to begin receiving payments at the rates detailed above.

Systems installed after 31st March 2012

The FiTs will apply to all new eligible systems installed. However, the FiT rates will decrease for systems installed after 31st March 2012. There will be a decrease in the FiTs for systems installed from April 2012, a further decrease for those installed after April 2013 with continued cuts each following year.

Why Will the Feed-In Tariff Decrease Each Year?

The idea behind cutting the tariffs from April 2012 is to encourage people to act now. By acting now you will get the best financial return on your solar PV installation. This is an incentive to get more people to make the solar choice before sooner rather than later, assisting in ensuring that the UK meets its carbon emissions reduction targets.

Want to know more about the UK Feed-In Tariff and how you could benefit? Contact Towngate Technologies today.

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Insurance?

Towngate Technologies Ltd
RENEWABLE ENERGY SOLUTIONS

Mr Steve Christopher
Penistone Scout Group
Wentworth Rd
Penistone
Sheffield

10th October 2011

Ref: Scout Hut

Dear Mr Steve Christopher

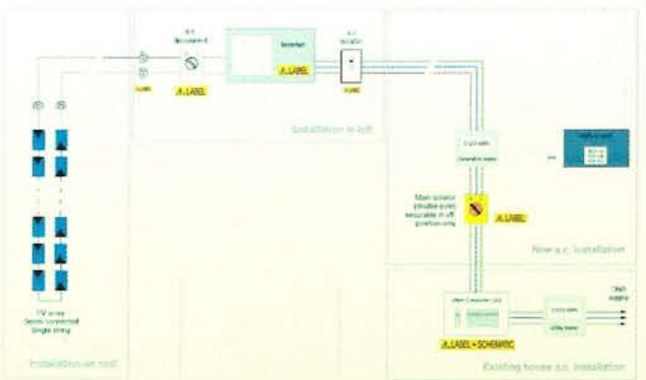
Thank you for the time that you afforded to me during our recent conversations, I trust that you found our discussions interesting and informative. We have the pleasure of submitting the following quotation for a solar photovoltaic system. The overall system size is 3.6 KWp.

System Components

Your system will comprise of the following components;

Photovoltaic Panel	15 x Alpinsun 240Wp Modules (diffused for east/west orientations)
Panel Mounting	Hilti or schletter mounting kit
Inverter	SMA Sunny Boy 4000TL OR Aurora Power One 3.6
Monitoring	SMA Sunny Beam Bluetooth device OR Power One display

System Schematic



System Performance

Roof Orientation	East (110 degrees)
Roof Inclination	35 degrees
Installed Panel Area	28.6 M2
Estimated annual yield	2856 kWh per year (per system)

The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. This estimate is based upon the Government's standard assessment procedure for energy rating of buildings (SAP) and is given as guidance only. It should not be considered as a guarantee of performance.

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SOLAR PV & ELECTRICAL CONTRACTORS

www.towngatetechnologies.co.uk
Vat No: 996113592 Company No: 07304663

Estimated Feed In Tariff and Energy Saving

See attached performance calculation spread sheet

System Installation

Your system will be installed by one of our experienced teams of installers and will be installed in accordance with Planning Regulations, Building Regulations. The system will be installed under the conditions of The Microgeneration Installer Scheme Standard 3002 and the REAL code of practice. When completed, your system will be legible for the 'Feed In Tariff' scheme. Our installation team will dispose of all waste and unused items for you and leave your property in a clean and tidy condition.

System Price

Our price includes supply of all components, installation, and commissioning

Price	£9,519.05
Vat 5%	£475.95
Total	£9,995.00

Our standard payment terms are 25% deposit, with the balance payable on commissioning of the system.

We trust that the foregoing meets with your approval and we look forward to receiving your further instructions in due course, however should you require any additional information then please do not hesitate to contact us.

Regards

Matthew Crossfield
Managing Director

Towngate Farm, 11 Towngate, Thurlstone, Sheffield S36 9RH
Tel: 01226 767909 Mobile: 07766 148278 Email: towngatetechnologies@mail.com

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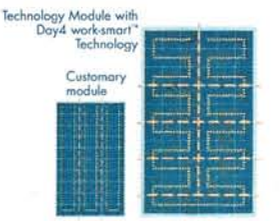


Solar module Alpinsun Prisma 60MC-I with polycrystalline cells

The Alpinsun Prisma 60MC-I solar module combines the advantages of a prismatic glass module with the outstanding features of the Day4 technologies.

Customary solar modules are formed of three segments (zones) of interconnected solar cells. If only a small portion of a segment is shaded, the entire zone is no longer able to transport energy. Accordingly, the efficiency of the module is significantly reduced - up to complete failure. The flexible cell arrangement of the **work-smart technology** allows for the construction of a module with nine independently operating zones. If one of these is shaded, the other eight zones remain functional. This ensures that you always benefit from optimal output and maximised energy yield.

work•smart™ TECHNOLOGY



Solar modules with the **live-long technology** have a waterproof reverse side composite film with aluminium lamination. This protects them from the damaging effects of humidity and saline fog, makes them immune to harmful gases such as ammoniac near greenhouses or farmlands and particularly suitable for hot climates.

The patented **stay-powerful technology** ensures an optimal interconnection of the solar cells so that the generated energy can be completely dissipated. More than 2100 independent contact points result in a range of extensive benefits: a higher degree of efficiency of the PV cells, mechanical stability, outstanding power density of the PV modules and a higher long-term energy yield under real-world use - where it truly counts.

stay•powerful™ TECHNOLOGY



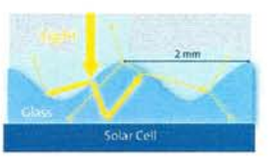
The **multi-benefit technology** makes the module suitable for non-south-oriented roofs. The prismatic glass absorbs sunrays that hit the module at an angle especially well, and does not reflect them as smooth glass tends to do. This guarantees a manifold suitability of the module and an increase in output of up to 20% in the case of east/west-oriented roofs.

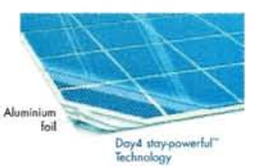
multi•benefit TECHNOLOGY

live•long™ TECHNOLOGY



Alpinsun – the solution for east/west-oriented roofs





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jms UK solar trade ltd.

Solar module Alpinsun Prisma 60MC-I with polycrystalline cells

Alpinsun Prisma 60MC-I

Typical electrical performance at STC: 1000 W/m², 25°C, AM 1.5

Peak power (Wp)	235 W	240 W	245 W	250 W
Max. power voltage (U_{mpp})	30.18 V	30.22 V	30.40 V	30.58 V
Max. power current (I_{mpp})	7.80 A	7.96 A	8.06 A	8.18 A
Open circuit voltage (U_{oc})	37.21 V	37.30 V	37.42 V	37.55 V
Short circuit current (I_{sc})	8.30 A	8.35 A	8.40 A	8.45 A

Module power tolerance	positive power tolerance only
Temp. coefficient (U_{oc}%)	-0.10 V/K
Temp. coefficient (I_{sc}%)	+2.67 mA/K
Temp. coefficient (P_{mpp}%)	-0.44 %/K
Max. system voltage (U_{max})	1000 V

Cells per module	60 (156 x 156 mm polycrystalline)
Module length x width x depth	1650 mm x 1013 mm x 40.4 mm
Weight	19.2 kg
Frame	St. Gobain, Albarino P, 4.0 mm
Maximum snow load	5400 N/m²
Certification	IEC 61215, IEC 61730, SK II
Performance warranty	1 year 97%, then 1 year 0.71% degression per year**
Product warranty	10 years
Terms and conditions of the manufacturer´s warranty apply.	

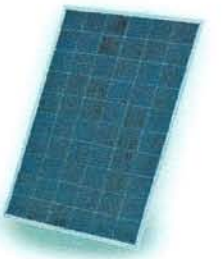
* Please refer to our warranty conditions for further information.
** In terms of the date of initial operation.

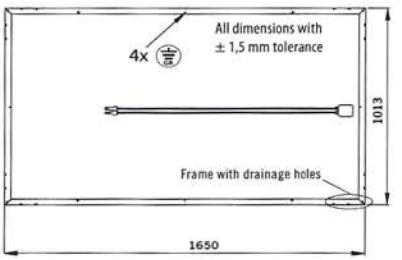
Subject to technical alternations. No liability is assumed for particulars.

16111

Advantages at a glance:

- Increase of energy yield through prismatic glass
- Up to 25% higher energy yield for the same surface area
- 10 years product warranty
- 25 year linear output guarantee*, 1 year 97%, then 0.71% degression of the rated output per year perfomance
- Positive power tolerance only
- High quality components
- 3 times less sensitivity to shading and debris







Alpin sun

DAY4 DNA



CE PV CYCLE IEC TÜV

Please mind the mounting and safety guide lines in the manufacturer´s installation manual.

jms UK solar trade ltd

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