

New Domestic Scale 1.8kW Wind Turbine

Segen are very pleased to announce the availability in the UK of the brand new **Skystream 3.7** small wind turbine from Southwest Windpower.

The Skystream 3.7 is specifically designed for grid-connected homes and small business use.

The cost of a Skystream 3.7 is approximately £5,000 after LCBP grant (excluding foundations).

The Skystream 3.7 offers a simple, all-in-one solution to harnessing wind energy on a residential scale. Different from all other technologies, Skystream 3.7 is the first all-inclusive wind generator with the controls and inverter built into the turbine.

The Skystream 3.7 has been developed by Southwest Windpower in collaboration with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), and is the newest generation in residential wind technology.

The Skystream 3.7 is a down-wind (wind hits the blades on the downwind side of the tower) direct drive (gearless or no transmission) permanent magnet wind generator. Skystream 3.7 uses an innovative 3.7 meters rotor and produces approximately 300 kWh per month at a typical 5m/s AMWS site.



Skystream 3.7 Technical Specification

Generator rating	1.8 kW at 10 m/s
Rotor speed	325 rpm nominal (variable)
Cut-in wind speed	3.5 m/s
Survival wind speed	63 m/s (140 mph)
Rotor diameter	3.7 m
Rotor orientation	Downwind
Number of blades	3
Blade material	Carbon reinforced fibreglass.
Control system	Electronic stall control.
Gearbox	None
Brakes	Electro-dynamic
Generator	Permanent magnet alternator
Yaw control	Passive downwind yawing
Tower height	10 m
Tower	Free standing.

The initial prototype has been operating at the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) in Colorado for almost two years and has undergone extensive performance, reliability and duration testing in accordance with internationally accepted testing standards.

In addition to the innovative technology, Southwest Windpower have invested heavily in tooling to reduce component cost. Doing so makes it possible to sell Skystream 3.7 at a very low price. Its full 1.8kW is achieved at around 9m/s with a maximum rotor speed of 325 RPM. Because of the exceptionally low RPM for such a size of turbine, the machine operates nearly silently.

The Skystream 3.7 is supplied in the UK with an 10m free-standing tower which looks much like a standard light pole.

A visually aesthetic shape played a key role in the design to show that a wind generator is not only a clean source of energy but pleasing to the eye.

Please contact Segen now if you wish to discuss how to get hold of this exciting new product, or view further information on our web site:

<http://www.segen.co.uk/skystream>

info@segen.co.uk
0845 094 2445

Technology—Grid Connections

Following last month's article on the electronics involved in a grid connected small wind system, this month we're looking at the rules and regulations involved, and some of the pitfalls.

For all single phase grid connected turbines, which have a rated power of more than 3.6kW, Segen needs to apply to the local electricity supply company for permission to connect your turbine to the grid. This also applies to multi-phase installations where the maximum power per phase exceeds 3.6kW.

This requirement therefore applies to:

- A single phase Iskra AT5-1.
- Two or more Iskra AT5-1s connected to single or multi-phase.
- Two or more Whisper 500s connected to single phase.
- A three phase Westwind 20.

There is no need to apply for grid connection approval for a single Whisper 500 or Skystream 1.7, as those are less than 3.6kW.

In order for Segen to make the grid connection application, we will need your MPAN as described below. Segen will make the application on your behalf and will deal with any initial enquiries that are raised by the electricity supply company.

There are a number of different companies covering the whole country, but Segen is able to identify which company provides the network service in your area by using your postcode. It is important to realise that this may be different from the company you actually pay for your electricity.

Customers in the area covered by Norweb (United Utilities), who wish to make a single phase connection, unfortunately have to pay a £200 + V.A.T. (£235) "administration fee" to United Utilities for this service, and subject to what their investigations find, they may insist upon a higher cost grid connection.

Other companies do not make a charge to process the application, but if any changes are required to your grid connection, they will make a charge for that.

Segen will contact them on your behalf and make the required arrangements but we will need your **Meter Point Administration Number (MPAN)** which you will find on your electricity bill to do this.

The MPAN is your unique reference within the electricity system. It is not the account number or the meter serial number.

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The electricity supply company will then respond to our request and let us know if the quality of your supply is good enough to support the connection of a small wind turbine with no changes, which happens most of the time.

They may however respond and say that your grid connection needs strengthening, which normally involves thicker wires, or that you need to upgrade from a single to a three phase supply. Or they may insist on an extra piece of equipment called a "dual loss of mains relay" being installed, which unfortunately costs approximately £1,000.

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A Personal View



Peter Lister, at Tebbutts Farm, was one of the first customers in the UK to get an **Iskra AT5-1** small wind turbine, which was installed back in May 2004 and has been reliably operating ever since.

Peter lives on a farm at Normanton on Soar near Loughborough and uses the power from his turbine for his house and farm equipment, as well as selling surplus power back to the electricity power supplier

Being one of the first installations, it was undertaken by members of Iskra's development team, then based out of Nottingham, who used the installation to test their procedures and documentation.

Peter received a grant of £5,000 from the Clear-Skies program, which has now been replaced by a similar scheme called the Low Carbon Buildings Program (LCBP).

Peter has also very kindly allowed his site to be used by the nearby Iskra product development team to test new equipment and there is now an anemometer and data logging equipment installed at Peter's site, measuring and recording various aspects of the turbine's performance.

Peter's turbine was originally installed with 5m diameter blades, but these have subsequently been upgraded by Iskra and Segen to the new specification 5.4m blades for better performance, especially at lower wind speeds.

The tower is a 12m guyed tower, using guy anchors (screw in bolts), rather than the more common concrete foundations.

Segen recently ran an Open Day at Peter's farm at which over 60 people from the local area attended to view Peter's installation and discuss with Peter and Segen his wind turbine. The event was attended by a range of people from private individuals to companies looking to install clean energy systems.

Segen's area account manager, Tony Fowell, hosted the event supported by Segen's CEO, Andy Pegg, and two members of Iskra's design team, John Balson and Mike Wastling.

The picture to the right shows Peter Lister (far left) in the barn with various visitors and staff viewing the electrical installation. Segen thanks Peter, and everyone who attended for making it such a successful day.

The Open Day provided an excellent opportunity to see a fully installed turbine and talk to an existing owner.

Segen is running a series of such events across the country, so to check if there is one coming up near you, visit the news page of Segen's web site:

<http://www.segen.co.uk/eng/news/index.htm>



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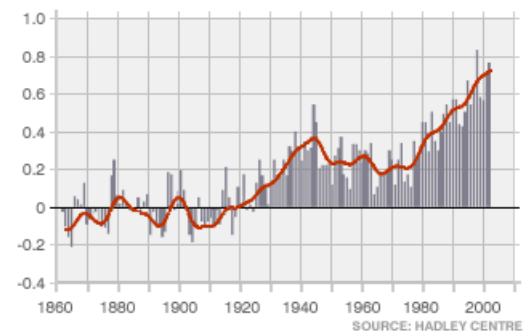
Climate Change—What's it all About?

They say that 2006 was the year that Climate Change reached the top of the agenda worldwide, and even the US seemed to start taking some notice, partly due to the release of a film by Al Gore. If so, then 2007 should be the year that we all take action.

Climate Change however is a complex subject, not fully understood by scientists, but at least two strong patterns have been identified.

- **Global Warming:** The greenhouse effect is the natural process by which the atmosphere traps some of the Sun's energy, warming the Earth enough to support life. Most mainstream scientists believe a human-driven increase in "greenhouse gases" is increasing the effect artificially. These gases include carbon dioxide, emitted by fossil fuel burning and deforestation.
- **Global Dimming:** Scientists looking at five decades of sunlight measurements have reached the disturbing conclusion that the amount of solar energy reaching the Earth's surface has been gradually falling. Dimming appears to be caused by air pollution generated by burning coal, oil and wood, in cars, power stations and at home.

Variations in global near-surface land temperature
Temperature variation in degrees C



What these two apparently contradictory trends have in common is that they are both caused by the massive increase in the use of fossil fuels over the past 100 years, so maybe it's time we started to reduce our emissions, before it's too late!

As this topic is far too large for a short newsletter, why not visit one of the best on-line resources for reading more about this which is the [Climate Change](http://www.bbc.co.uk/sn/hottopics/climatechange/) web site developed by the BBC: <http://www.bbc.co.uk/sn/hottopics/climatechange/>.

SAVE YOUR 20%

The UK's target is to reduce CO2 emissions 20% by 2010, which is now only three years away. Much has been done already with energy saving and renewable energy generation, but time is running out if this target is going to be met.

The Energy Saving Trust (EST) is therefore running a campaign to encourage people to save 20% on their own energy use through a series of simple measures that will all help to contribute towards the UK's target.

The EST has created a [web site](#) on which you can select from a range of energy saving ideas which you can easily implement and allow you to make a commitment to saving your own 20%.

On here you can see how much contribution things like cavity wall or loft insulation, turning appliances off standby, installing a condensing boiler or energy saving light bulbs, using your car less and just turning down your room thermostat can make to your own energy consumption.

Over **30,000** people have made this commitment in just the past two months, so why not join them now to reduce your own carbon emissions and save on your fuel bills: <http://www.est.org.uk/commit/>

Upcoming Events

Segen is an active supporter of local renewable energy events across the country and will be supporting and exhibiting at the following locations:

10th February 2007 Customer Open Day in Todmorden, Lancs. One of our recent customers has offered to open their gates to allow visitors to see their Iskra AT5-1 Turbine fully operational.

17th March 2007 Customer Open Day near Witham, Essex.

27th March 2007 Segen will be exhibiting at the **Envirenergy North West** exhibition. Join us at Stand 49.

Please contact us if you wish to attend any of these events.