

ENERGENO

## A DESIGNER-LED SMART METER TO IMPROVE THE PAYBACK ON A RENEWABLE ENERGY INVESTMENT

ENERGENO LTD  
KEY DATA: FACT FILE

Technology  
Portable energy saving smart meter

Established  
2008

Type  
Start-up

Location  
London

Employees  
5

Director / Co-Founder  
Mark Elliott

He has worked in a variety of senior marketing roles, mainly for ICT and software companies. Whilst working as a business support manager for an NPO, Nesta, he became involved in DIY Kyoto, the predecessor of Energeno; he then joined the company as Business Development Director, becoming a co-founder when it was refinanced and renamed, Energeno. He has a BsC in Computing from Sussex University; and MBA from Imperial College.

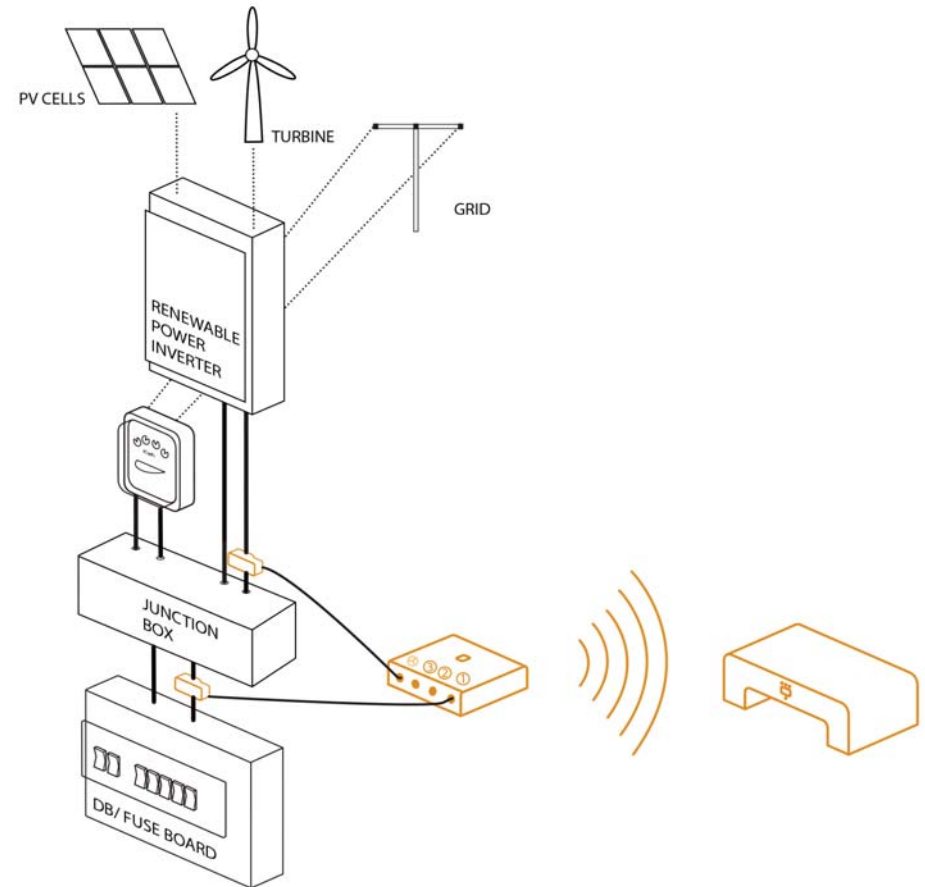


Energeno Ltd is developing smart energy-saving devices which work with renewable power installations. The aim of the company is to provide in-home and web-based tools for owners of renewable energy systems, funders of solar installations, and maintenance companies to enable them to obtain the highest payback on their renewables investment.

### POWER TO THE PEOPLE

What is distinctive about Energeno is that its energy-saving products are designed from first principles to maximise the return on a homeowner's investment in a renewable energy installation. Its products were previously sold under the name, 'DIY Kyoto'. The name explains the company's philosophy, 'you don't have to wait for governments to honour the Kyoto Protocol, you can do it yourself'.

The company's main product up to now has been an energy display monitor, called Wattson, which is designed to make people 'excited' to save energy, and in the process become natural Kyoto DIYers. To support this the company has established an online forum on its web site where people actively share their experiences of saving energy and demonstrate their 'DIY' spirit.



## ENERGENO

# A DESIGNER-LED SMART METER TO IMPROVE THE PAYBACK ON A RENEWABLE ENERGY INVESTMENT (CONTINUED)

### PORTABLE ENERGY DISPLAY

Energy monitors measure power into and out of the building at the point where the power comes in from the grid or is exported. Wattson's radio frequency sensor clips attached to the grid meter and renewable power meter inputs measure the power imported and exported by the solar array. This data is sent wirelessly to the Wattson display, which can be located anywhere in the home (up to 100 meters away through air, or 30 meters through walls).



### BEHAVIOURAL CHANGE

According to Energeno, Wattson owners typically reduce their energy bills by over 20% in the course of a year. "There is a 'behavioural change' at work", says Mark Elliott, the company's operations director, "the monitor becomes a 'silent nagger'". He illustrates it with the story of a teenager who used to leave on all the electrics in his room. Wattson showed him at a glance his energy behaviour, and gradually he changed his habits, without the 'nagging' from his parents.



The display is designed so that it can stand either on its feet, or face forward. What is displayed can be changed simply by tilting the display and pressing the button on the top.

### THE PRODUCT

Wattson is a portable display, unlike most displays which are hardwired to the junction box or energy inverter. It sends data from the junction box using the company's proprietary communications protocol: the RF frequency is standard, but Energeno has developed its own protocols to optimise system performance.

The monitor displays how the solar array is performing using colours to make it easy to see at a glance. When there is surplus energy the display glows green (see illustration over the page); when there is less than average usage it turns blue; with average usage it glows purple; and for higher than average usage it changes red. The company says people settle quickly on one or other of the options according to their particular interest – for example, 'green' if they want to monitor the energy exported to the grid.



## ENERGENO

# A DESIGNER-LED SMART METER TO IMPROVE THE PAYBACK ON A RENEWABLE ENERGY INVESTMENT (CONTINUED)



Below your average



Your average



Above your average



Generating more than you're using

### INFORMATION DISPLAYED

From a single button, or by tilting the monitor, the user can switch through a range of options:

- **Grid:** Shows how much power is being imported from (+ve) or exported to (-ve) the grid, in kWh, actual cost and CO2 emissions.
- **Usage:** Shows how much power is being used in real time, in kWh, actual cost and CO2 emissions.
- **Solar:** Shows how much power is being generated, in kWh, return from FITs and CO2 emissions.
- **Total Energy Generated:** Shows how much energy has been generated. It can also be reset to zero by giving the display a gentle shake.
- **Clock:** Shows the time together with power in watts displayed.

Wattson's on-board memory logs data every five minutes and can collect up to 28 days of data. This data can be downloaded to a computer via USB for examination or export to CSV files using the software provided. Alternatively, the data stream can be integrated into existing data management systems, or viewed with many open source Wattson data viewers.

### REFINANCING

Despite its many strong points, by 2011, DIY Kyoto was suffering the difficulties faced by an inexperienced start-up company which has to manage production (offshore in China), sales, cashflow, and logistics. A serial entrepreneur and turnaround specialist, Chris Poulton, who owned a Wattson, learnt that the

company was in difficulty, and agreed to re-finance it under the new Energeno name.

Mark Elliott, who is also an investor in Energeno, had previously been an investment manager at an NPO, NESTA, which had invested in DIY Kyoto. Elliott now manages the day-to-day operations of Energeno. Two of the three original founders and designers of the product have stayed on with equity in the company. They developed the original Wattson idea when they were studying at the Royal College of Art in London.

The new funding injected into Energeno has allowed the company to complete the development of the next generation 'Wattson Solar Plus'. This version is powerful enough to identify how much saving is possible by switching the washing machine from a 60° wash to a 30° wash, or how much energy is saved by defrosting the fridge.

### OPTIPLUG

A further, even more intelligent product, called 'Optiplug' began shipping to customers in February 2013. This is a plug socket which uses the same intelligent RF sensor to 'listen' to the flow of power into the home. What is different is that it has a learning algorithm which can build up a profile of how each energy appliance operates (i.e. its standard and peak power usage). With this 'higher understanding' it is able to direct surplus power automatically to the most suitable appliance (and if there is not enough surplus power to send to all the appliances, the algorithm calculates how to prioritise them). Because this is done automatically, Wattson owners can continue to save energy when they are away from their home and their Wattson display.

## ENERGENO

# A DESIGNER-LED SMART METER TO IMPROVE THE PAYBACK ON A RENEWABLE ENERGY INVESTMENT (CONTINUED)

### OPTIMMERSION

Optimmersion measures both the direction and amount of power flowing through the electricity meter. Only when the home is exporting more than 50 Watts does it activate the immersion heater. It then adjusts the exact level to maintain the amount of exported power below about 200 Watts which means it is possible to turn electric appliances on and off in the house without worrying about how much energy they are using.

### OPTIMMERSION

The other new product is an intelligent controller, called 'Optimmersion' which was launched in January 2013. The device automatically diverts free (i.e. surplus) electricity generated by the solar array to an immersion heater to provide free hot water. A company in Cambridge developed the product, while Energeno has added its wireless software so that the system can be located anywhere in the home. The wireless version reduces the cost of installation, which also makes it attractive for solar panel installers to promote.

### PATENT STATUS

There is a granted patent covering high-level operating features of a new appliance discrimination product which will be incorporated into the Wattson and Opti-range products in the future. Energeno will also file more patents as appropriate.

### BUSINESS OPERATIONS

The company's monitors continue to be manufactured in China by a contract manufacturer. The product is shipped to a logistics company for delivery to wholesale distributors. There are over 3,000 accredited installation companies in the UK who mostly buy equipment through these distributors. During 2012, around 200,000 new PV systems were installed on homes in the UK. The company has sold 35,000 Wattsons since 2008, and aims to double unit sales to 13,000 this year. It is also expecting strong sales for its two new products - Optimmersion and Optiplug.

### PLANS

There are plans to develop other products, either under the Wattson or Opti-range labels. As an example, the company would like to offer a range of energy storage subsystems so that homeowners can store self-generated, or off-peak electricity, which can be used in place of peak-rate electricity imported from the grid. The eventual aim is a trade sale once Energeno has reached critical mass in its main target markets. ■

[energeno.com](http://energeno.com)

