

## **Greenrock turns up heat in fight against carbon emissions**

A group of entrepreneurs has established an energy services company (ESCO) to fund the installation and maintenance of environmentally friendly systems to heat and cool new buildings throughout the UK and Europe and is currently in the market to raise £10 million in equity from investors.

Greenrock Energy Limited (Greenrock) will manage the ESCO, which will finance the installation and operation of ground source heat pump systems (GSHP). GSHP systems use solar energy stored just below the earth's surface to heat buildings, and can also cool buildings by transferring heat from buildings to the ground.

Used worldwide to reduce carbon emissions from buildings, GSHP's proven technology is highly efficient, with one unit of input energy typically producing 3.5 to 6.5 units of output energy. The systems can provide carbon savings of 50% or more compared to conventional energy sources such as gas, oil and electricity.

Greenrock believes a number of drivers will prompt speedy take-up of GSHP systems:

- Uncertainty over gas supplies due to diminishing reserves and geopolitical forces
- Expected increases in fossil fuel prices in the medium to long term
- Tougher carbon emission controls
- Growing demand for cooling as well as heating in new buildings, and
- Lower GSHP installation costs through Greenrock's efforts.

The Greenrock Chairman Cameron McColl previously set up two high-technology call centre operations, McColl McGregor and Telecom Service Centres, and co-founded Memory Corporation plc, which floated on AIM in 1995. He is involved in several other established businesses in the UK and abroad.

Mr McColl and his co-directors acted in response to the growing carbon agenda and to the rising demand for resource efficiency and the efforts to address the issues presented by climate change. The construction industry is braced for new economic and environmental sustainability rules imposed by government and building occupiers in both public and private sectors are demanding buildings which incorporate alternative energy solutions. Greenrock's proposition is timely, relevant and backed by individuals with a proven track record.

The board also includes Chief Executive, Calum Innes, a Partner in the property consultancy firm CKD Galbraith, the Chief Operating Officer John Flavell Smith, co-founder of Vibtech, an oil exploration services company, Finance Director, Ken Brown, formerly of Eclipse Blinds and Kenmore Property Group and the Rt Hon Brian Wilson, who was UK Energy Minister from 2001 to 2003.

Greenrock will turn the capital cost of a GSHP installation into a revenue cost that relates to energy supplied, producing overall savings for users, cutting carbon emissions and helping to comply with increasingly demanding CO<sub>2</sub> targets. In the current economic climate early customers will most probably originate from the public sector.

Despite its green benefits, GSHP has been taken up in only a handful of key UK building projects due to its perceived high up-front costs and the UK's extensive gas supply grid. Greenrock will address this with an innovative business model, paying for installation and handling the often complex design and infrastructure issues and charging building owners or occupiers for energy used.

The Rt Hon Brian Wilson commented: "As a long-time advocate of both renewable energy and greatly improved energy efficiency in our building stock, I believe that Greenrock is offering both an excellent option to consumers and a correspondingly attractive offer to investors. It represents the kind of lateral thinking required to make green jobs and a greener economy a reality."

GSHP's emission-reducing technology is catching on, aided by tighter rules on planning, building standards and energy performance. Today more than 1.4 million GSHP systems are installed globally, with a capacity of more than 15GW compared to just 2GW in 1995. The potential market for this technology is enormous and Ernst & Young has estimated the market potential for GSHP in the UK at between 5 and 17 TWh.

With fluctuating energy prices, dwindling North Sea gas reserves and a need to make meaningful reductions in carbon emissions, GSHP is likely to become established in the UK as it already is in Europe and the US, especially if, following recent consultation, the UK Government decides to extend its support of renewable energy to include heating and cooling.

EU governments are committed to increased use of sustainable fuels following a March 2007 summit at which heads of state negotiated a binding target, to be achieved by 2020, that 20% of overall final energy consumption would be from renewable sources.

The UK Government is increasing pressure on local councils to ensure that planning systems encourage sustainable energy use and to provide examples of best practice in public sector buildings.

Many local authorities in England and Wales now place targets for low carbon generation in new buildings. In England, several boroughs encourage energy saving measures with the aim of lowering energy demand by 10% in accordance with the so-called Merton Rules. Some parts of Scotland now have a 15% target for energy reduction, in addition to new building regulations based on a maximum level of carbon emissions.

“GSHP systems are a significant weapon in the battle to reduce energy consumption and CO<sub>2</sub> emissions,” said Cameron McColl. “They are scalable, predictable, reliable and unobtrusive.”

Installation and maintenance will be led by Greenrock’s partner firm Geothermal International Limited, the market leading commercial GSHP installer. Greenrock will identify and manage opportunities and report to investors on the ESCO’s performance.

The target market includes hospitals and healthcare, offices, leisure centres, data centres, supermarkets and other customers with suitable energy requirements. GSHP systems are most economical in buildings where both cooling and heating are required, in different parts, in different seasons, or both, as this allows higher utilisation of the plant.

### **How GSHP works**

The geothermal energy used by GSHP does not originate from the earth’s core but from incident solar energy that over millennia has become trapped in the earth’s near surface. Consequently, even in relatively shallow ground, the temperature ranges between 8° - 12°C throughout the year. GSHP systems tap this energy to provide both heating and cooling. This energy is captured and delivered at the point of use unlike electricity generation from renewable sources such as wind or wave power which needs to be exported to far flung centres of population, requiring significant electricity grid infrastructure, with its transmission losses and high costs.

In heating mode, a typical system pumps a liquid through a collector loop, which is fixed in the ground. The liquid enters the collector loop at a low temperature and returns at a higher temperature, where the energy is extracted in a heat exchanger and used to heat the building.

For cooling, the heat pump works in reverse, extracting heat from the building and dissipating it in the ground. Combined heating and cooling systems increase both utilisation

of plant and improve efficiency: the ground is used as a heat sink whilst cooling and the energy deposited can later be drawn upon during the heating cycle.

Greenrock's advisers include the merchant bank Quayle Munro, solicitors Shepherd+Wedderburn, the accountants Johnston Carmichael and the technical consultancy IPA Energy + Water Economics.

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**Notes to editors**

Based in Edinburgh, UK, Greenrock Energy Limited has set up the first renewable-energy services company (ESCO) established to fund the installation and operation of ground source heating and cooling systems (GSHPs).

The ESCO funds the capital cost of installing and maintaining GSHP systems in return for customers paying for energy consumed in the customer's premises, enabling them to control building temperatures at the equivalent price of conventional systems without incurring the high up-front costs of GSHP systems, whilst delivering substantial savings in CO<sub>2</sub> emissions.

Amid growing concerns over climate change and depleting fossil-fuel reserves, demand is growing for GSHP installations, which harness the sun's energy, absorbed by the ground, to heat and cool the built environment.