

As the world staggers from one energy crisis to another, it is finally having to face up to the reality that fossil fuels are a depleting resource and that rapidly escalating energy prices are now a permanent feature.

As the search for new alternative energy sources and the development of known ones continues, for users of energy – large and small – the most important thing is to reduce the consumption of existing energy sources. This, of course, reduces carbon emissions and, importantly from a commercial point of view, reduces, or at least contains, costs.

FirstLight Energy is a new breed of company that specialises in just that. Its founder-directors had a thorough grounding in solar thermal, and searched the world for the most efficient and cost-effective solar collectors on the market. They found them being manufactured in a state-of-the-art factory in China.

The company now successfully sells and installs its advanced Sun Stream range of 360% vacuum tube collectors that can achieve significant savings. However, the company has always been aware of the shortcomings of solar thermal collectors on their own. They have, for example, the tendency to produce hot water when it is least needed. And however efficient the collectors, it is often difficult on pure cost grounds to justify the capital expense of the installation. A typical domestic installation, for example, would – on the basis of current energy prices – take over 20 years to pay for itself. For this reason, the environmental issue of lower carbon emissions is an important factor in the buying decision.

FirstLight Energy is continuously researching products that can work alongside its solar collectors to create greater savings. It works closely with Excalibur and markets its range of intelligent boiler controllers.

However, its major breakthrough was achieved when it found a small company in East Germany that had invented and developed the Power Tank.

The Power Tank is a very simple idea, yet its impact on energy consumption, whether gas or oil, is nothing less than staggering. The combination of solar collectors and Power Tanks, even with

the most efficient boilers, will produce savings of around 50%.

When installed with older, less efficient boilers, savings can be as high as 70%.

Figures like these can seem pure fantasy until one understands what a Power Tank does. Basically, it acts as a buffer between the boiler and the hot water system, including central heating. In a normal system the boiler fires up in response to a thermostat reacting to a fall in temperature. It will do this between 30,000 and 40,000 times a year. In practice, this means that most boilers never reach their maximum operating efficiency, which can take up to six minutes of firing.

With Power Tanks installed, this firing cycle is reduced by up to 95%. This is because the energy generated by the boiler is directed to the tanks where it is stored. The system is modular and each module will store up to 10kW/h.

It is the Power Tank that releases energy into the central heating and hot water system as and when required, with the boiler and the solar heating panels only topping up the Power Tanks. The boiler now fires less frequently but for longer periods and therefore far more efficiently.

The positive impact on the solar system can now be seen, as not only does all the heat generated get productively used as it is stored in the Power Tanks, but systems can now be oversized to generate more energy than could previously be utilised.

Power Tanks are modular and can be adapted in size to suit any installation, from domestic to large-scale commercial and industrial applications. Their compact size – they are two metres high, and a four-tank system covers less than one square metre – means that they can be installed anywhere from a garage to a basement. There is even a horizontal model that can be fitted in a loft.

FirstLight Energy's Sun Stream solar heating and Power Tank systems can now be rented on a long-term basis, with rentals in most cases being lower than the actual savings.

Power Tanks have an expected life of 100 years and the solar heating system of at least 20 years so that users will have the benefit of cheap energy far into the future.