on demand hot water & space heating renewable energy storage
“Sunamp has developed heat batteries, an idea which arose from an understanding that energy storage is at the heart of making renewables and energy efficiency work. There is over twice as much heat consumed in the world economy as electricity, so why isn’t heat storage a major topic? We decided that it was and that’s where we focus.”

Andrew Bissell  |  CEO
Sunamp Ltd

Innovative technology to store energy
Based on the understanding that the world uses over twice as much heat as electricity, Sunamp heat batteries help solve numerous problems by storing energy as heat, when that energy is available and releasing it when needed.

This is achieved at lower cost and higher efficiency than competing technologies (e.g. electrical batteries, hydrogen electrolysis or fuel cells). This is a totally new way of storing energy, developed in collaboration with the University of Edinburgh School of Chemistry and then perfected at Sunamp laboratories. Others have tried, but no-one before has succeeded in perfecting our combination of low-cost materials, exceptional long-life, recyclability, safety and high energy density. This guarantees high energy and almost unlimited lifespan as the composition of the material remains unchanged.

The innovation comes from using our own special formulation of energy storage material housed in a unique, proprietary, high-power heat battery. Sunamp heat batteries contain inorganic, non-toxic, salt-based Phase Change Materials (PCM), which absorb and release thermal energy during the process of melting and freezing. When a PCM freezes, it releases a huge amount of energy in the form of latent heat at a selected constant temperature.

Heat has always needed storage. Hot bricks and hot water would be recognisable to ancient Romans and Victorian engineers. Isn’t it time for something new? Sunamp heat batteries are the new.

Household Energy Consumption
Contains two red cells (5kWh, 100 litres). Larger three and four cell models (ISO and 200 litre equivalent) will be available soon. Can be used in multiples for larger capacity.

If you have solar PV panels on your roof, instead of exporting excess energy back to the grid with no financial return, Sunamp PV stores that surplus energy for you to use when you need it. It delivers fast-flowing hot water on demand. No need for a hot water tank or immersion heater.

It works perfectly with combi boilers or instant water heaters (gas, oil, LPG or electric). Because it’s small – it fits anywhere: under the kitchen sink, in a cupboard, in the garage, pretty much anywhere.

Sunamp PV, connected to a typical 4kW PV system, can save up to £550 per year from your home energy bills.

Sunamp PV is available as a cost-saving package with leading gas combi boilers. It can be used without PV as a standalone electric hot water heater. It’s also available in variants such as a district heating interface unit with integrated storage.

SunampPV

Electrical storage:

- High Cost
- Low efficiency
- Issues with end-of-life

Heat storage:

- Ripe for improvement
- More heat storage needed
- Low cost, sustainable materials

SunampStack

Contains any number of red cells from four up to 40 (100 kWh, 2000 litres). Can be used in multiples for larger capacity.

SunampStack, used in both home and commercial environments, is an advanced heat store designed to save you money by optimising the operation of renewable heat sources. It typically doubles the financial return on Heat Pumps and micro CHP (Combined Heat and Power) systems. It assists biomass projects fit in tight spaces.

It squeezes the full storage capacity of a giant hot water tank into an appliance around the size of a domestic fridge freezer. The size and number of red cells can be tailored to individual requirements. Installation is a breeze, even in locations where a large monolithic cylinder is impossible to deliver or fit e.g. narrow doorways, busy plant rooms.

SunampStack is available as a fully validated package with pre-selected, top-quality Air Source Heat Pumps from the world’s leading manufacturer. Please consult Sunamp, your specifier or installer for other packages.

SunampCube

SunampCube is an exciting new Sunamp product that provides large scale static or transportable energy storage (200 kWh to multiple MWh).

SunampCube is all about turning excess energy at the wrong place and the wrong time into heat at the right place and the right time. These products respond to the need for large community and commercial scale heat storage. You will be able to store energy from waste heat sources and electricity from grid constrained assets, e.g. wind farms and Solar parks, and use it when your internal demand requires, or deliver it to offices, housing, leisure facilities, district heating networks, or any other site with a hot water or heating requirement.

The pallet size cube can easily be moved by standard pallet truck or permanently mounted on a standard HGV trailer. Sunamp can offer bespoke design services and assistance with moving heat within rural or urban environments.

Sunamp

Heat batteries
This red cell ™ is where the heat energy is stored, making it the heart of each Sunamp product. It stores up to 2.5 kWh of heat, equivalent to around 50 litres of hot water.

Depending on how much energy is needed in a house, office or farm, the number of red cells used will increase, starting with two in SunampPV (5kWh, 100 litres) up to 40 in the largest – but still fridge-freezer sized – SunampStack (100 kWh, 2000 litres). One of the unique characteristics of Sunamp’s red cell is the speed of storing and releasing energy. A red cell can be charged or discharged in just five minutes (30kW rate), meaning Sunamp heat batteries can easily keep up with the peaks of renewable energy production and deliver high flow rate hot water when you want.

SunampPV

SunampStack

SunampCube

*Source: United Kingdom housing energy fact file 2012

www.sunamp.co.uk
Hot water and space heating when you need it

- Brand new method of storing energy
- Easy installation, modular and compact
- Beats hot water tanks and electric batteries for size, power and price
- Bespoke designs tailored to your needs
- For your home, office, car, farm or even yacht
- Monitor energy usage in real-time
- Benefits you without harming the environment
- Up to 75% of your hot water for FREE
- SAVE up to £500 per year
- Dramatic efficiency gains and cost savings
- Tested to last 40 years
- Designed for the circular economy

Who can use it

Because of its compact size and ability to scale up, Sunamp heat batteries can be used in various applications. The red cells are designed in a modular fashion with the smallest battery containing two red cells and the largest so far containing 40 red cells.

The smallest SunampPV is sufficient for a typical family home in the UK providing up to 75% of hot water use for free, while the larger heat batteries, SunampStack and SunampCube, can support more demanding environments such as large homes, guest houses, hotels, office complexes as well as farms and district heating networks.

Easy Installation

A SunampPV weighs 85kg, which is nearly 50% less than a full hot water cylinder. On average Sunamp products weigh half as much and take up just a third of the space of hot water cylinders.

For installations accessed by stairs, Sunamp products divide up into parts that can be hand carried. It only takes half a day to install SunampPV and it fits comfortably within a standard kitchen cabinet or locally by the combi boiler. The heat battery connects via a diversion controller and is wired via a 13A fused spur.

SunampPV is typically installed by your local electrician or boiler installer. Simple, step-by-step installation guidance is provided along with training and telephone support.

www.sunamp.co.uk

Department of Energy & Climate Change (DECC) Trial Results

RESULTS & BENEFITS: Typical running cost saving range from 45% to 57% | Carbon emission reductions range from 17% to 36%

Case Study A
2 Bedroom House

- This is a 2 bedroomed house with 2 working occupants. They are heavy hot water users having 2 deep baths in the morning and 2 deep baths in the evenings.
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 59%
  - Bill Saving: 56%
  - CO₂ Saving: 29.9%
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 40%
  - Bill Saving: 45%
  - CO₂ Saving: 36%

Case Study B
3 Bedroom House

- This is a 3 bedroomed house lived in by a young working couple, their heat and hot water usage is normal. The household had a night storage heater. Comfort has improved.
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 49%
  - Bill Saving: 57%
  - CO₂ Saving: not available
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 38%
  - Bill Saving: 54%
  - CO₂ Saving: 46%

Case Study C
1 Bedroom House

- This is a 1 bedroomed house, semi-detached bungalow. The occupier is an retired man who looks after his grandchildren in the early evening so the house must be warm.
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 40%
  - Bill Saving: 45%
  - CO₂ Saving: 36%
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 32%
  - Bill Saving: 45%
  - CO₂ Saving: 26%

Case Study D
5 Bedroom House

- This is a 5 bedroomed house with 2 working occupants, 1 teenage child and 1 visiting adult.
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 59%
  - Bill Saving: 57%
  - CO₂ Saving: not available
- Annual Savings on Heat and Hot Water:
  - Energy Saving: 49%
  - Bill Saving: 50%
  - CO₂ Saving: 36%
Sunamp heat batteries come equipped with an electronic system that sends energy data back in real time to our online platform where users can monitor as it happens. Firmware updates can also be delivered over the air to improve and customise products in the field, for example to programme off-peak times.

Sunamp products can be connected to a wide range of controls including Google Nest, Honeywell, Sangamo, Solar iBoost, Solar Cache and Power Diverter.

Technical information for SunampPV

Monitor your energy in real time

www.sunamp.co.uk

For more technical information about our products visit www.sunamp.co.uk
Head Office:
1 Satellite Park, Macmerry, East Lothian EH33 1RY United Kingdom
+44 (0) 1875 610 001 info@sunamp.co.uk

Europe:
GLATEC at EMPA Überlandstrasse 129 CH-8600 Dübendorf Switzerland
Tel +44 (0) 1875632291 Tel: +41 (0)799619761 info@sunamp.co.uk

www.sunamp.co.uk

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