

Integrated Hybrid Home Energy Storage

The national power grid lacks energy storage and the best place for that storage is in individual homes or for a group of homes. This invention will bring savings to consumers and help balance the energy grid.

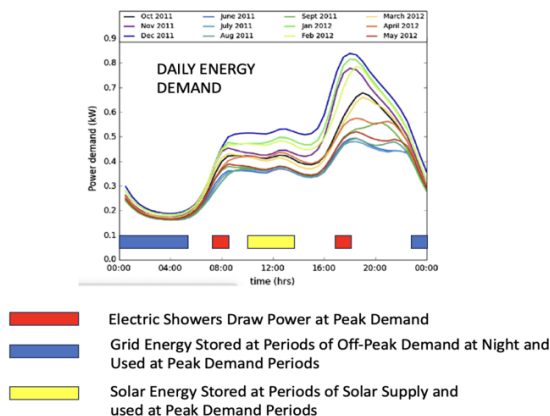
There is normally plenty of spare electricity at night as industry and demand in homes is low, and at night if the wind blows there is nowhere to store that energy. Our current practice is to either stop producing energy or waste that energy. Water companies pump water at night inefficiently to burn off electricity and wind turbines are turned off with the generators paid compensation. Gas power stations are only built to supply energy at peak times, so these are turned off and are therefore inefficient and expensive to run. The cost of electricity generated by gas is the cost used to fix high charges to consumers.

In my own home I have two heat stores:-

A standard 213 litre and a 12.5 KWHr – Demonstration only

A 500 litre 25 KW/Hr heat store for hot water only (recharged as needed or every night between 11.30 and 05.30)

1 in 5 homes in the UK have hot water cylinders in their homes which could be retrofitted to store surplus electricity in the form of hot water (patent granted – GB2623198). 20% of the energy used in homes throughout the year is for heating hot water in homes. A standard tank will only heat the top 1/3rd, which is used rapidly for showers, and then the immersion heater kicks in to take premium priced electricity. Standard tanks retrofitted with my device will store a day's worth of hot water in a single charging session. Larger tanks will store up to 3 days of energy.



Tank Size Litres	Ht Metres	WrightChoice Energy Stored 65-40 Deg C (KW Hr)	Standard Hot Water Cylinder (KW Hr)	Energy stored for (x) number of showers
130	1.2	7.5 KW/Hr	1.9 KW/Hr	1.3 showers increased to 5 showers
180	1.3	10.5 KW/Hr	2.4 KW/Hr	1.6 showers increased to 7 showers
300	1.9	17.5 KW/Hr	2.8 KW/Hr	1.8 showers increased to 11.6 showers
*500	2.1	29.0 KW/Hr	4.1 KW/Hr	2.7 showers increased to 19.3 showers

My 500 litre 25KW/Hr heat store for hot water only installed in my home.

This is close to being the biggest heat store that fits into a normal airing cupboard. In my home it activates at 11.30 pm every night and runs until 05.30 am. Most nights the immersion heater turns off after a couple of hours. It can store up to 3 days of hot water in a single charging session.

My proposed 1,000 litre 50 KW/Hr heat store for central heating.

50 KW/Hr heat stores are a very practical size when provided by plastic tanks designed to hold 1000 litres and when those tanks can be located outside a home in a garage, a shed, or even buried. The tanks, costing £80 each, designed for water at 75 deg C, will be placed in my garage with an interconnecting 15 metre heat loop delivery system to and from my central heating hot water return pipe. I have already proven the link works efficiently with 30 metres of interconnecting pipework. Using features patented in my patent "Pressure Enhancing Device – GB2477599" the tanks(s) installed in my garage will integrate with my central heating system. It can be demonstrated November/December 2024.

Air Source Heat Pumps (and Oil and Gas Boilers)

Hot water can be transferred in micro-bore pipes to and from any number of storage tanks. Air source heat pumps can heat and store hot water during warm spells and store it in advance of cold spells. They allow stored energy to accumulate at any time there is surplus electricity or warm weather. At any time the temperature of the heat store can be raised using an immersion heater.

Hot water is reintroduced into the return feed of either an air source heat pump system or a gas/oil based central heating system using my patented technology. Since this is patented we can disclose how we do this.

Alternative Heat Stores (Mixergy & Tesla Power Walls)

Existing hot water cylinders can be retrofitted with a patented energy storage device. My patented energy storage devices will **cost £40** to manufacture and can be fitted in minutes.

There are well known alternatives to using my patented devices;

The market leaders in bespoke energy stores are mixergy and Tesla
A 210 litre standard hot water cylinder in a 4 bedroom home will store 12.5 KW/Hr
Equivalent costs for the same storage from the market leaders are:-

Mixergy - £1,800 plus £1,000 fitting Total **£2,800**

Tesla Power Wall (As fitted in my own home) Total **£10,000**

Future Automation and Integration with Power Networks

We are looking for manufacturing and distribution and others who can integrate with and add value to our simple devices, such that our immersion heaters and pumps respond to fluctuating power surpluses in the grid. Any device needs to drive up to 3 KW of power.

Research & Development

Validation and determination of the efficacy of the hydraulic process is to be carried out at the UEA in 2025 by Dr Stefano Landini and Dr Jack Panter. Both are acknowledged pre-eminent academic experts in hydraulic processes.

<https://research-portal.uea.ac.uk/en/persons/jack-panter>

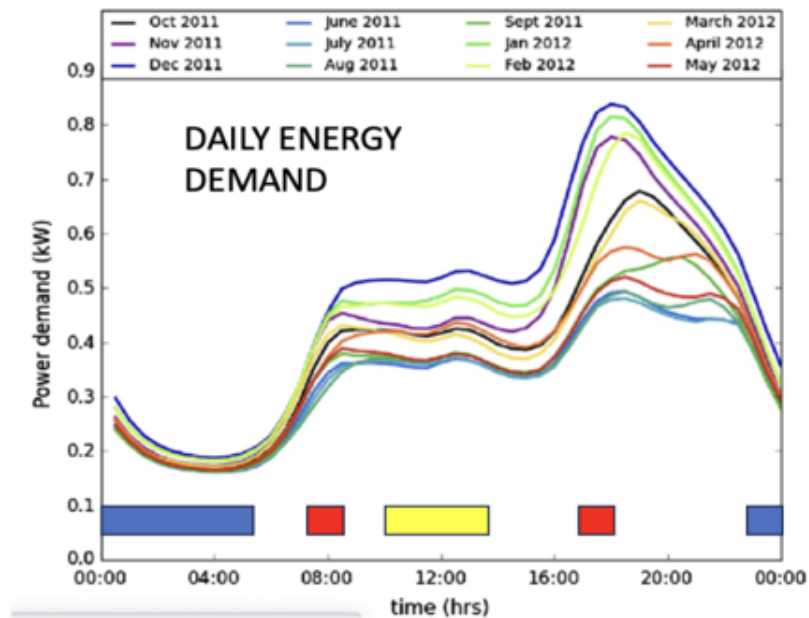
<https://research-portal.uea.ac.uk/en/persons/stefano-landini>

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4th November 2024

<https://wrightchoicuk.com/>



Electric Showers Draw Power at Peak Demand



Grid Energy Stored at Periods of Off-Peak Demand at Night and Used at Peak Demand Periods



Solar Energy Stored at Periods of Solar Supply and used at Peak Demand Periods

<u>Tank Size</u> <u>Litres</u>	<u>Ht</u> <u>Metres</u>	<u>WrightChoice</u> <u>Energy Stored</u> <u>65-40 Deg C</u> <u>(KW Hr)</u>	<u>Standard Hot</u> <u>Water</u> <u>Cylinder</u> <u>(KW Hr)</u>	<u>Energy stored</u> <u>for (x)</u> <u>number of</u> <u>showers</u>
130	1.2	7.5 KW/Hr	1.9 KW/Hr	1.3 showers increased to 5 showers
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