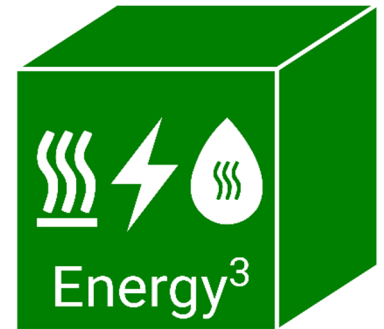


Energy³ : A thermal energy storage system providing heating, hot water and electricity



Application

The Energy³ is designed to meet all the energy needs of householders, small commercial businesses, and energy intensive users. It stores 100 kWh of energy when it is inexpensive, taking advantage of time-of-use tariffs, and then outputs this energy in the form of heating, hot water, and electricity, when required.

Benefits

- Owners who currently pay peak rates of 25p/kWh can purchase and store energy at 5p/kWh taking advantage of time-of-use tariffs. Additionally, excess energy can be exported back to the grid, taking advantage of the new 'Smart Export Guarantee'. Under previous regulations, this would have generated £450 per year for an average family home in addition to reduced energy costs.
- Positive environmental impact as capable of being fully reliant on renewable energy sources like solar and wind and is constructed from abundant and recyclable materials.
- An energy supply is guaranteed as the Energy³ can burn gas or alternative fuels if the thermal store depleted. Additionally, the Energy³ can operate without a grid connection.
- Resilient to rate of usage and can be charged and discharged at any rate without degradation or a reduction in the system lifetime of 25 - 100 years.
- High-grade heat (up to 900°C) can be directly extracted for energy intensive processes.

Technology

Inexpensive electricity is used to heat up the inside of the Energy³ to 900°C. A unique insulation structure ensures that so little heat escapes that the surface of the Energy³ is safe to touch. A gas-to-liquid heat exchanger can heat incoming water to 80°C to provide space heating and hot water. When needed, the heat from the Energy³ drives a turbine and generator to produce electricity.

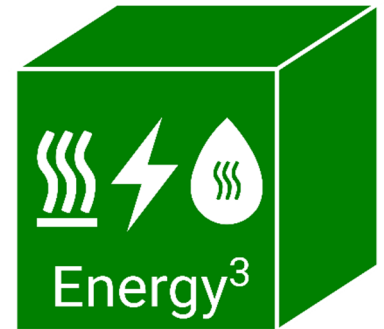
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Technical Details

- Total capacity of 100 kWh in sensible heat. This can be extracted as heat, electricity, or a combination of both.
- Electricity output of 3.8 kW with 22% plus micro turbine efficiency.
- Each unit is 1m³ and is installed externally, or in a basement with appropriate ventilation.
- Stackable, multiple units can be combined for increased capacity. Larger 30 MWh shipping container unit in development.
- Fully charges in approximately 4hrs with a 100A connection or 2 hrs with a 200A connection. 100% efficient charging as each unit of electrical energy is directly converted into a unit of thermal energy.
- Excellent thermal insulation with a maximum energy loss less than 2 kWh per day.
- Connected to existing heating and hot water infrastructure through existing heating pipes and 100A or 200A electrical connection.
- Compatible with both AC and DC charging.
- Can be integrated with existing renewable technologies, i.e. trickle charge with solar.

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