

# Helianth Systems Ltd Project Heathog

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## The Problem

The proliferation of air conditioning systems, refrigeration and cooling-hungry electronic equipment diverts ever increasing amounts of electrical energy towards providing cooling. This inflates operating costs, and rolling energy blackouts in the summer months are now a reality. Attention is therefore turning to alternative sources of cooling, such as the use of temporary heat stores which can absorb and store finite quantities of heat during the day and regenerate (i.e. release heat to ambient air) at night when temperatures are lower. This concept use less energy for active cooling, but requires additional electrical energy and control equipment for the regeneration process.

## The Solution –Heathog

We have an innovative design which allows temporary heat stores to regenerate without any additional input of energy. Thus, Heathog reduces by half the amount of electrical energy required to charge and regenerate state of the art temporary heat stores for cooling. Our concept also enables other alternative cooling methods to work more effectively and can even form the basis for completely passive cooling systems. Our design concept makes use of simple heat-responsive mechanisms and does not require additional external control equipment.

## Market opportunities

### Integration with existing systems

#### 1. Commercial air conditioning systems

Air conditioning sales in the US are driven by energy-efficient replacement systems and represent a growth market in Asia. Heathog can reduce the cooling load and hence running costs of these systems.

#### 2. Precision cooling for data centres

This rapidly growing market is estimated to be worth £534 Million by 2014 with annual growth rates of 9%. Up to 63% of the energy consumption in data centres can be attributed to cooling. Heathog can reduce the cooling load and hence running costs of these systems.

#### 3. Heat sinks for office equipment

There will be 2 Billion PCs in the world by 2014 each adding 60-150W of heat power to occupied spaces thus increasing cooling loads. Heathog can passively absorb the waste heat from PCs, printers, copiers etc. during the day and dissipate it at night, thereby reducing the cooling loads in offices.

### New cooling products

#### 4. Passive cooling systems for domestic use

#### 5. Conversion of domestic and commercial solar water heating installations to provide solar heating and cooling

## Development strategy

- A detailed programme of works has been compiled and costed for a proof-of-concept study in conjunction with fluid mechanics experts Intelligent Fluid Solutions
- This will form the basis for an application for a Technology Strategy Board Grant for R&D to fund this proof-of-concept work
- Data gathering on Heathog operating conditions has commenced
- Initial literature and prior art searches are completed

## Business model

Complete proof-of-concept work

File patent applications

Evaluation of technology by potential licensees

Licensing agreements by application or territory

Royalty revenues

## Funding required for proof-of-concept:

TSB R&D grant (60%):	£51K
Match-funding from private investors (40%):	<u>£34K</u>
Total:	<u>£85K</u>