

BEIS Low Carbon Heating Technology Innovation Fund – Summary Project Details

- 8 projects;
- Total value of grants offered: £8.49m

Lead Company	Partners	Project Title	Brief Project Description	Grant Award
OVO Energy Ltd	Sunamp Ltd	The Zero Carbon Home - Cost Effectively Decarbonising Fossil-Fuel Based Heating Using Smart Electric Heat	OVO and Sunamp, will come together to develop a mass-market smart electric heat product, that can be deployed at scale by 2022. The proposed system uses a high energy density, high power density heat battery to store heat generated from cheap, renewable electricity either via a heat pump or direct electric heater. A drop-in replacement for central heating, the system will be controlled by energy management software that ensures power is only drawn when it is being generated renewably, as well as enabling revenue to be earned from various grid support services, such as frequency response and energy arbitrage.	£1,611,377
Minus7 Ltd	London South Bank University; ICAX	Endothermic Heating Technology Development	Minus7 have developed a hybrid solar thermal/PV/heat pump energy storage system to provide heat and power to properties. The system has a heat and electricity energy generation cost of 1.5p per kWh. The focus from this project is to double the energy output per unit cost through raising the efficiency of the system (SPF) and reducing the production costs and thus widen the market for the technology.	£760,189
BMSHome Limited	GSPK Design Limited	Thermionix - Retrofit Smart IoT Control for Low Carbon Heating	Wind and solar energies are valuable sources of renewable, zero carbon, electricity, but they often supply energy out of step with when the consumer wants to use it. The Thermionix system restores that balance by matching the Time of Use of energy consumption with the Time of Generation. The Thermionix Internet Of Things (IOT) Smart Controllers can be retro-fitted to existing electric storage heaters to turn them into smart devices. These Smart Heaters are then remotely instructed to use electricity to store heat when low carbon green energy is available for use, thereby maximising the benefits of renewable energy sources. The Thermionix Smart Controllers also improve the efficiency of the heaters, so they use less energy, keeping customers warmer for less.	£420,850
Cambridge Architectural Research	21C Eco-Energy Ltd	Oxypod - A Scalable Heating System Carbon	Oxypod is a European Patented, compact egg-shaped, de-aeration device with no moving parts, which is quick & easy to install (to existing and new heating systems). It reduces pipework and boiler corrosion to almost zero,	£300,000

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		Reducing Technology – Tested and Verified	and also prevents bacteria build up in water filled pipework (including the ground loop of ground source heat pumps). This project will comprise a series of objectives to prove the effectiveness of the technology, including on-site testing to confirm proof of the increased energy efficacy of heating systems fitted with Oxypod.	
PassivSystems Limited	Imperial College; Ceres Power	FlexiCell Project	The FlexiCell project, will explore an innovative approach to providing low-carbon, energy-efficient heating solutions to UK homes. The fuel cell micro-CHP, ASHP, thermal store and smart controls deployed will not only minimise carbon emissions from domestically generated electricity but will also use renewable and cost-effective grid-supplied electricity, when available. To bridge the time gap between optimal energy sourcing and consumption, a heat storage solution will be introduced, ensuring that heat will be available even when insufficient low-carbon power is available from the grid or local micro-CHP to power the ASHP. This heat store will be charged continuously by the fuel cell micro-CHP and occasionally by the ASHP when renewable energy is at its cheapest and home heating loads are low.	£949,738
Energy Transitions Limited	London South Bank University	Steel Zero and its Low Carbon Heating Applications	Energy Transitions Limited is developing a high efficiency, unglazed solar energy facade technology, christened 'Steel Zero'. Steel Zero is a low emissivity Transpired Solar Collector that uses solar energy absorbed by the facade material to heat air which is drawn through perforations within the facade. Steel Zero thereby generates solar heated air flows which can be used to contribute to the heat demands of buildings. The project aims to advance the development of Steel Zero and to develop innovative systems that apply the solar thermal energy harnessed by Steel Zero in combination with heat pumps, including within heat networks.	£472,077
University of Warwick	n/a	Adsorption Gas Heat Pump	This project has the aim of developing 'the next generation' of the common domestic gas boiler – a gas heat pump that will use at least one third less gas than a normal boiler, but from the consumer's point of view, will behave just like their conventional boiler and pay for itself within three or four years. The system is an 'air-source' heat pump, that is to say it extracts heat from the outside air, 'upgrades' it to a higher temperature and delivers it as hot water to radiators.	£1,994,736

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University of Hull	NPS Humber Ltd; Environmental Process Systems Ltd	A Low Carbon Heating System for Existing Public Buildings Employing a Highly Innovative Multiple-Throughout-Flowing Micro-Channel Solar-Panels-Array and a Novel Mixed Indoor/Outdoor Air Source Heat Pump	Development and demonstration of a novel, high efficiency, low cost, and low carbon heating system applicable to existing public buildings in the UK. The proposed system will have a 55% higher seasonal performance factor(SPFH4), a 10% lower capital cost, and a 20% lower operational cost compared to existing solar assisted heat pump systems of the same capacity. Additionally, associated fossil fuel saving and carbon emission reduction rates for the proposed system will be 7.5% higher than existing alternatives. Since existing public buildings have sufficient roof area to accommodate the solar panels, and discharge a huge amount of ventilation air which, when being used as part of the heat source of the heat pump, can effectively increase its evaporation temperature and COP, the proposed system is particularly appropriate to retrofitting of existing public buildings.	£1,982,251