



2010 WINNERS & COMMENDED ENTRIES

AFC Energy plc (www.afcenergy.com) for their advanced alkaline fuel cell which, through their innovative fuel cell and stack design, together with a novel laser-based process for mass manufacture, makes it suitable for the technology to be linked with underground coal gasification so that it can be deployed on an industrial scale for the first time. (Winner)

Anyvan.com (www.anyvan.com) is a delivery auction website that matches demand for deliveries, from single items to large consignments, with spare capacity that is available. Transport providers bid on the consignment to be moved and the customer chooses the one they want. Organisations bidding for listings are using spare capacity on return journeys or part loads, thereby reducing the number of delivery trips on the roads. (Winner)

Arvia Technology and Magnox North (www.arviatechnology.com) The nuclear energy industry produces quantities of highly radioactive oils and oily wastes that are so heavily contaminated that they are defined as orphan wastes with no suitable disposal route. The oils are emulsified with an organic surfactant and poured into a plastic tank over a non-porous, highly conducting, adsorbent, carbon-based material. The oils are separated by adsorption and then destroyed, together with the organic surfactant, by anodic oxidation and the radioactivity remains in the aqueous phase. (Winner)

B9 Coal (www.b9coal.com) who are developing projects that combine coal gasification with alkaline fuel cells to produce utility scale low carbon electricity from the world's abundant coal reserves. The coal gasification process produces a syngas which is then cleaned up so that the CO₂ is captured and the hydrogen fuels the integrated gasification fuel cell power station. (Commended)

Baxi (www.baxi.co.uk) Ecogen is a micro-CHP unit that can generate 1KW of electricity and provide all the heating and hot water needs of a typical household. It is a wall-hung boiler that uses a Free Piston Stirling Engine and through intelligent controls it manages the flow temperature to match the property heat requirements. (Winner)

Biomatrix Water Technology. (www.biomatrixwater.com) Their Dynamic Media Active Island Reactor is an engineered floating island and underwater ecosystem that supports complex biological treatment processes within an attractive feature in the aquatic landscape. It combines ecological engineering with biofilm and traditional treatment processes in an energy efficient and low cost manner. (Winner)

Diverse Energy (www.diverse-energy.com) The PowerCube is a low-cost power solution for mobile phone communication towers in remote third world locations, replacing diesel generators. An innovative ammonia cracker produces the hydrogen for the fuel cell with market leading efficiency and in a compact design, which only produces what is needed to produce the required power at any given time. (Winner)

EarthEnergy (www.earthenergy.co.uk) for their HeatPlant ground source heat pump system capable of delivering high temperature hot water and heating in an easily replicable closed loop pump package suitable for large scale adoption in social housing. (Commended)

Ecocamel. (www.ecocamel.com) have developed their InJet multi-venturi system which combines many venturis in a shower head for the first time. This reduces the required water pressure to aerate the water and to deliver today's expected shower experience. This can be developed further for pressure washer and window cleaning applications. (Winner)

EnerNOC (www.enernoc.com) for DemandSMART which is a comprehensive demand response system that give businesses the opportunity to earn money if they are willing to reduce non-essential energy usage during times of grid instability or peak demand. (Commended)

Geothermal International (www.geothermalint.co.uk) for their innovative combined ground and air source closed loop energy piles, open loop wells and dry air coolers system at One New Change, next to St Paul's Cathedral. (Commended)

Glosume (www.glosume.com) have developed a ceramic filter which can remove 96% of all PM₁₀ and PM_{2.5} from biomass wood-fired boilers. A number of micro porous tubes are vertically mounted within the filter housing. The exhaust gas is drawn through the wall of the tubes and the sub-micron particles collect on the outer wall and are collected at a preset time through a compressed air driven cleansing. (Winner)

IMC (www.imco.co.uk) have developed the Compod standalone mobile building designed to be a flexible solution to the treatment and processing of caterer's food waste at Imperial College into quality compost in a cost effective way. The food waste is macerated and dewatered before being blended with wood pellets and loaded into an In Vessel Composter. The payback is just 19 months for this facility which can be used in a variety of locations such as shopping centres, hospitals and stadia. (Winner)

Intelligent Energy (www.intelligent-energy.com) have integrated their proprietary Proton Exchange membrane fuel cell system into the London black cab in conjunction with an electric battery to produce a zero emission vehicle with a driving range of 250 miles, a top speed of 95 mph, rapid refuelling and no loss of passenger or luggage space.

It could remove one third of the capital's particulate pollution and 2million tonnes of CO2 emissions. (Winner)

InterfaceFLOR (www.interfaceflor.eu) for their Zelfo Technology. Cellulose Optimization Resource Efficient technology has been developed to up-cycle cellulosic and ligno-cellulosic waste, without any chemical additives, to create Zelfo, a micro and nano-fibrillated fibre. Waste such as old paper, wood chips, waste cotton, flax and jute can be processed to produce Zelfo using techniques used for synthetic material production, dramatically reducing the amount of water and energy typically used in such processes. (Winner)

Keld Energy(www.keldenergy.co.uk) in association with the University of Manchester, have developed an advanced biomass CHP technology that addresses the problems of tar fouling, low process thermo-electric efficiencies and poor fuel flexibility in a scalable form from as small as 100KW up to many MW. It can be fed with a range of biomass fuels and process wastes. (Winner)

Larfarge Readymix (www.lafarge-cement-uk.co.uk) for Extensia which is a new concrete floor product that does not require steel to manage shrinkage, can be laid in thinner and larger slabs due to the extra flexural strength and reduced shrinkage and has low oxygen permeability and water porosity. (Commended)

Luethi Enterprises (www.silentwindturbine.com) Silent Wind Turbine, is a vertical axis Savonius type design with a clever mechanical speed regulator that enables it to operate in very high wind speeds, have a low start-up speed, is easy to install and maintain and is therefore ideal for remote locations. It is manufactured using large plastic barrels that are used globally for transporting a wide range of fluid materials, yet they are rarely reused and are resource intensive to recycle. (Winner)

Minesto.(www.minesto.com) Deep Green is unique in its ability to extract cost-effectively electrical energy from slow water movements in tidal sites. This is achieved through the movement of a kite through the water which increases the flow velocity into the turbine tenfold. The kite moves on a spherical surface and has a wing span of 12m. The kite is tethered to the seabed and the generated electricity runs down the tether along the seabed. (Winner)

ModCell (www.modcell.com) for their prefabricated straw bale and hemp panel construction system. The innovative, offsite manufactured system ensures speedy installation for large scale, low carbon buildings. The performance of ModCell and BaleHaus, the domestic building equivalent, meet PassivHaus standards. (Commended)

MWH ByProduct Ltd (www.biproductrecovery.co.uk) (formerly **Biproduct Recovery**) have developed a system that takes cement kiln dust, which are fine-grained,

highly alkaline materials from exhaust gases, and by-pass dust and recognises their significant levels of calcium oxide, sulphur and soluble potash. They are diverted from hazardous landfill and instead used as a direct substitute for virgin limestone by farmers to neutralise soil acidity. (Winner)

Oxford Catalysts (www.oxfordcatalysts.com) use microchannel Fischer-Tropsch and steam methane reforming reactors with a highly active catalyst to produce a high quality synthetic crude or gas-to-liquid product that can be handled through the existing industry infrastructure. Its cost effectiveness on a small scale opens up new markets, especially offshore, as a real alternative to flaring. (Winner)

Pavegen (www.pavegensystems.com) for their flexible paving slab that generates electricity from the kinetic energy from footfall. Each step can generate 2W of energy for the duration of the step and involves just 5mm of movement. It can be linked to lighting or a battery for power storage. (Commended)

Recolight (www.recolight.co.uk) have developed two collection containers for low-energy light bulbs. Due to the small amount of mercury used in such lights, they are deemed hazardous waste. The Bulbstore Maxi is for outside use and the Bulbstore Mini, designed in partnership with the Open University, is for in-store application. Both are designed to minimise the risk of breakage. (Winner)

Re Hydrogen (www.rehydrogen.com) for their revolutionary electrolyser which produces hydrogen 93% cheaper and 13% more efficiently than current systems. Innovations include the elimination of standard elements which are not part of the electrolysis reaction to reduce cost, materials and electrode configuration to avoid catalyst oxidation, and catalyst regeneration. (Commended)

Roger Bullivant Ltd (www.roger-bullivant.co.uk) and **University of Nottingham** (www.nottingham.ac.uk). The integration of System First, a pre-fabricated foundation and ground floor system that reduces installation time by 75% and concrete usage by 90%, with Thermafoundation, which extracts ground heat through piles and also stores heat interseasonally with the use of solar technologies, provides significant resource and energy usage reduction through this successful collaboration. (Winner)

Severn Trent plc. (www.severntrent.co.uk) Severn Trent is using 750 hectares of land which have been used to recycle sewage sludge for over 120 years, and due to elevated levels of heavy metals are unsuitable for food crops, to grow and harvest maize silage. This is stored and then fed into an anaerobic crop digester to produce biomethane, which is used to fuel a combined heat and power plant which supports the process and the adjoining sewage treatment works, serving the city of Nottingham. (Winner)

Surface Power (www.surfacepower.com) have developed a solar thermal product which decimates the time to install, halves the cost, outperforms on heat generated and lasts for twice as long when compared with the current legacy systems. (Commended)

University of Nottingham (www.nottingham.ac.uk) has developed a solar desalination system consisting of a concentrating solar collector which heats the seawater and a desalination core which incorporates the humidification and dehumidification chambers . The key innovation is the psychometric energy core cycle that consists of a multi-channel polymer membrane device which ensures high quality treated water. (Winner)

VerdErg Renewable Energy (www.verderg.com) use Bernoulli's venturi principles to convert large low head flows to higher head smaller flows to drive a conventional axial flow turbine which is the only underwater moving part in this marine energy technology. It is suitable for a range of different locations and conditions and is easily scalable. (Winner)

Zeropex (www.zeropex.com) for Difgen, a micro-hydro generator that fits into the water distribution network and converts excess pressure into electricity. It acts as a pressure-reducing valve that provides either renewable energy under natural flow or recovered energy under pumped flow via a rotary lobe turbine linked to a generator. (Commended)