

# ACAL Energy Media Coverage

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## Fuel cell with liquid cathode

The Carbon Trust's recent announcement of a £1million investment - through the Polymer Fuel Cell Challenge - in ACAL Energy's FlowCath technology drew increased attention to the innovations happening in this field. CT was quoted as saying: "ACAL's breakthrough technology could make hydrogen fuel cell cars a mass-market reality".

Fuel cells are well known to be an emerging and highly efficient energy production technology. As an alternative to diesel and gasoline engines, or rechargeable battery power packs, the wide variety of potential applications includes remote and distributed power applications, as well as home cogeneration, automotive and consumer electronics applications. Fuel cell systems have been technically demonstrated around the world, with clear evidence of the feasibility for these systems to reduce carbon and provide 21<sup>st</sup> Century power generation.

Commercial adoption of fuel cells is starting to happen in markets such as materials handling, telecoms back-up power and data centre UPS, where the benefits of the immediate charging capability, compact size and longer lifetimes are outweighing the initial capital costs. However in mass market applications such as transport and diesel gen set replacement, the take up is currently still limited due to high costs and lack of robustness of the technology.

The company's FlowCath system is designed to replace the standard and expensive platinum

cathode found in conventional fuel cells with a liquid non-precious metal catalyst system. This not only reduces the cost of the cell, but also humidifies the membrane naturally, eliminating

the need for additional hydration balance of the plant, and better manages the waste heat which is generated; factors that will in turn help improve the robustness and durability of the fuel cell.

Once through its technical development phases the technology should enable faster commercial application of fuel cell systems by reducing the overall capital costs and enabling greater reliability in operation, particularly for the automotive application. This has been confirmed by recent Carbon Trust analysis, based on a US Department of Energy model, which showed that the company's energy technology has the potential to cut system costs by up to 40 per cent once it reaches mass production, while potentially increasing durability.

Progress with the technology has been strong: in 2009, a peak power level of 1.5kW was achieved from a hydrogen-fuelled laboratory-scale fuel cell system. Last year, the company began leading a £1.9 million collaborative project, part-funded by the Technology Strategy Board, to build its first installed system in a practical application. This year, came the announcement that a system will be installed in mid 2011 to provide critical back-up power for an environmental remediation plant at the Warrington plant of Solvay. This

installation will show exactly how a back-up power system powered by the fuel cells operates in a real application.

Ultimately, fuel cell systems utilising FlowCath will be a clean and economically sensible alternative to diesel and gasoline generators in stationary and transportation applications requiring 1kW to 200kW of electrical power.

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