

PRESS RELEASE

For Immediate Release

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London Schools take on the Hydrogen Challenge



On Friday 1 March 2013 over a hundred young people, technologists of the future, will take part in a hydrogen fuel cell car race at London's City Hall. It is the finale of the London Schools Hydrogen Challenge, an interactive competition for secondary schools.

*"It was fantastic! The whole lesson was engaging and fun.
The workshop taught us about efficiency and construction."*

Student, City Academy

Over the last few months, pupils from around the capital have been designing, building and testing hydrogen powered model cars. As part of the National Curriculum pupils have been developing skills such as scientific enquiry and knowledge about the role hydrogen will play within a future low-carbon society.

The London Schools Hydrogen Challenge was established in 2007 to put London's young people at the forefront of new technologies. The challenge is commissioned by London Hydrogen Partnership, set up in 2002 to develop a network of hydrogen fuel cell (HFC) stakeholders in the capital and help develop HFC technologies in London. The partnership is based at City Hall and chaired by Deputy Mayor, Kit Malthouse.

Kit Malthouse, Deputy Mayor for Business and Enterprise: "It is vital that London school pupils gain hands on experience of the latest technologies and the science involved, if they are to become the innovators of tomorrow creating future growth and jobs in London through their entrepreneurial minds."

This year's challenge has is being supported by ITM Power, internationally renowned UK based hydrogen fuel systems manufacturer.

Graham Cooley CEO, ITM Power, said "the excitement of innovation starts with the young, and the demonstration that a clean fuel for cars and buses can be made by electrolysis,

from just water and renewable energy, leading to clean air in the city of London is just the perfect way to inspire the engineers of the future. ITM are delighted to support this important initiative”

Transport for London is also supporting this year’s school challenge. Operating hydrogen buses on route RV1, Covent Garden to Tower Gateway, they are demonstrating the technology works reliably and efficiently in commercial use.

Mike Weston, London Buses Operations Director, said “TfL is proud to be supporting this school initiative, demonstrating how hydrogen is being used as a low-carbon energy solution for transport in the capital. We are also pleased to offer the winning teams a chance to visit our depot, to see behind the scenes where the buses are maintained and refuelled as well as demonstrating the use of hydrogen commercially.”

The 2012 challenge has been developed through the Arcola Energy for Schools programme, which has delivered science and technology workshops to over 4,000 children and young people since its launch in autumn 2010.

Dr Ben Todd, Managing Director of Arcola Energy “Arcola Energy is working to bring low-carbon energy solutions based on hydrogen fuel cells to mainstream markets. Our work, which spans industrial, transport, and domestic applications, has at its heart educating consumers about the incredible array of clean energy solutions now available. Empowering young people is the best possible way to start.”

Notes for editors

London Schools Hydrogen Challenge has been developed by the London Hydrogen Partnership. It is designed to support the Key Stage 3 National Curriculum for Science, ICT, Geography, Citizenship and PSHE. The Challenge guides students through the issues surrounding the need for cleaner, renewable energy and the role hydrogen plays in providing a vital source of clean energy for the future. Arcola Energy developed an interactive competition for secondary schools in London. Pupils from Key Stage 3 and 4 (years 7-11) design, build and test a hydrogen powered model car while learning about the environment. The winning design from each school have been invited to the final event at which the top three teams will win prizes for their schools. Learning Outcomes:

- Hydrogen fuel cells: exploring the role that hydrogen could play within a low carbon society
- Electrolysis as a method for generating hydrogen
- Iteration based scientific enquiry
- Mechanics
- Renewable energies vs. carbon-based fuels

London Hydrogen Partnership was set up in 2002 to develop a network of hydrogen fuel cell (HFC) stakeholders in the capital and help develop HFC technologies in London. It consists of an Executive Committee, two Project Groups (the Infrastructure Vehicle Group and the Stationary Group) and a Secretariat based at City Hall, which coordinates the partnership's day to day activities. Deputy Mayor Kit Malthouse is chair. The London Hydrogen Partnership (LHP) was set up to:

- provide dialogue among key industry stakeholders;

- offer platforms for funding bids and initiating projects;
- set up forums to prepare and share hydrogen and fuel cell technology research and materials;
- deliver the [London Hydrogen Action Plan](#) as a pathway towards clean, secure energy.

The success of the LHP means it now includes a wide range of industry members with expertise in all areas of the sector from fuel cell development to hydrogen supply and component manufacture. [Find out more about our members](#). We want to continue to build momentum in 2013 and take full advantage of what could be a key movement in the sector's development.

ITM Power designs and manufactures hydrogen energy systems for energy storage, clean fuel production and renewable heat. ITM Power is an AIM-listed company incorporated, registered and operating in England with a staff of 55. We have a first class team of engineers and scientists, based at two facilities in Sheffield, UK

Arcola Energy is a multi-disciplinary developer, manufacturer and retailer of fuel cell-based low carbon energy solutions. We operate across a wide range of markets with applications in home, industry, construction, entertainment, education and transport sectors. Our business is applying understanding of end-user needs to deliver cost-effective customised solutions to individual end-users and OEM clients. Our success is built on open and collaborative relationships with clients, suppliers and partners. Arcola Energy is the UK agent and distributor for Horizon Fuel Cell Technologies. Development of Arcola's mass customisation manufacturing approach is supported by the UK Technology Strategy Board.

Electrolysis is the method a direct electrical current to drive a chemical reaction to separate elements. In the case of hydrogen fuel cells, electrolysis is used to separate hydrogen and oxygen in water

Fuel cells are based around a central design using two electrodes (anode / cathode) separated by a solid or liquid electrolyte that carries electrically charged particles between them. Oxidation of the hydrogen takes place electrochemically and hydrogen atoms react with oxygen atoms to form water; in the process electrons are released and flow through an external circuit as an electric current.

A fuel cell can be thought of as a cross between a battery and an engine – like a battery it operates electrochemically with no noise or moving parts, directly converting the chemical energy of the fuel to electricity; whilst like an engine it can operate continually from an external fuel supply. A fuel cell system comprises a fuel cell stack (the fuel cell) and ancillary components including fuel and air supply pumps and power electronics.

Fuel Cells were invented in 1839 have been under development ever since. They were used during the 1960's Apollo space missions and are currently under development for applications ranging from mobile phones to cars to homes to locomotives.

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