About Fuel Cells

When was the fuel cell invented?

Fuel cells were initially demonstrated in 1839, by Sir William Grove. However, a truly workable fuel cell was not demonstrated until 1959. After use in NASA's space programme, interest in fuel cells died down somewhat until the 1990s when research and development started to lead towards greater prospects of commercialisation.

Which fuels can be used in a fuel cell?

Most fuel cells use hydrogen at the point where the electrochemical reaction takes place. This hydrogen can be chemically generated or reformed from a variety of normal fuels, including gasoline, natural gas or methanol. There is no consensus as to the single best fuel.

What types of fuel cells are there?

There are a number of types of fuel cell which are normally distinguished by the electrolyte they contain. The best-known types are alkaline, molten carbonate, phosphoric acid, proton exchange membrane and solid oxide. Direct methanol and regenerative fuel cells are also being extensively researched.

What is a fuel cell?

A fuel cell is an electrochemical device that produces electricity and heat from a fuel (often hydrogen) and oxygen. Unlike a conventional engine, it does this without burning the fuel and can therefore be more efficient and cleaner.

Can I buy a fuel cell?

In general, fuel cells are in the development phase and are not yet commercially available. Many companies are currently running field trials of alpha and beta development units and hope to be commercialising this technology from as early as this year in some cases. However, some products, such as educational fuel cells, are commercially available now.

Why use a fuel cell?

Fuel cells have a number of advantages over other technologies for power generation. They have the potential to use less fuel than competing technologies and to emit no pollution when used. There are also many reasons why a fuel cell might be useful in specific environments, such as the high quality of electricity generated or their quiet operation.

What devices could a fuel cell power?

In principle, a fuel cell could power any device that requires electrical energy to function. This could range from a mobile phone up to a factory. Presently, the majority of attention is focused on powering automobiles, houses and medium-sized portable electrical equipment. However, announcements have suggested that portable computers may be an early application.

How much does a fuel cell cost?

Since fuel cells are not yet fully commercialised, they are produced in small numbers. Consequently, they tend to be more expensive than they will be when selling in significant quantities.

What is the difference between a fuel cell and a battery?

Whilst a battery chemically stores and releases electricity, a fuel cell produces energy by reacting a fuel with air. A battery will therefore run out of power and have to be recharged or disposed of. A fuel cell, however, will continue to function and produce power as long as the fuel and oxygen are supplied to it.

Is hydrogen safe?

Like any other fuel, hydrogen is potentially dangerous and is flammable. However, so are gasoline, diesel and natural gas and this has not prevented their use to power cars, alongside the correct safety features. Hydrogen even has some advantages as it is non-toxic, a definite benefit over most fuels. Use of hydrogen would therefore present new but not insurmountable safety challenges.

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