



## MARKET DRIVERS

### Fuel Cell Today – Education Kit 7

#### General

Fuel cells suffer the same problems as numerous other technological advances: that of being a technology push rather than a market pull. It has certainly been the case throughout much of the history of the fuel cell that development has been carried out by people and companies with significant scientific curiosity but less commercial skill.

However, over recent years, there has been a switch in this situation with the increasing involvement of many more traditionally consumer-focused industries. Whilst the technological advances continue to be made at a rapid pace, corporations have targeted specific market segments and real products will be seen over the coming years. What though, will drive significant sales of fuel cell applications? There is, unfortunately, no one single answer but market drivers can be identified in all of the relevant sectors.

#### Automotive Sector

In the automotive arena, a number of different factors should help to push sales of fuel cells. Legislation is widely mentioned in the press, particularly in the form of the Californian zero emission vehicle (ZEV) mandate, which quantifies minimum numbers of zero emission vehicles which must be sold annually in California. Fuel cells also have the potential to be more fuel-efficient than their competitors and, in the long-term, this may prove to be the biggest driver for real sales of this technology.

## **Small and Large Stationary Sector**

As stationary fuel cells produce heat and electricity, home and business owners can reduce their requirements for both from other sources, which may result in a significant financial saving. Therefore, a FC unit of the correct power for an individual residence or business unit may be able to provide all of its heat and power requirements, perhaps even selling electricity back into the grid system.

FC has, however, specific benefits in rural areas where an electrical grid connection is not available. Where no grid exists, a fuel cell should be able to provide power to a house or business with more reliability than a comparable generator. Even in countries with a grid system, it may be extremely expensive for a remote household to connect to it. In this case, there could simply be a much lower capital (and operating) cost than paying for the connection and electricity afterwards.

Finally, fuel cells have the potential to produce high quality, highly reliable back-up power. Many specific industries (particularly high-tech and telecoms) lose huge amounts of money per minute if equipment fails due to power supply problems and consequently should be interested in the use of fuel cells to address this issue once the required performance has been demonstrated.

## **Portable Sector**

Many portable products, such as mobile phones, use batteries to supply their power and, although battery technology is constantly improving, it seems unlikely to be able to meet all of the future requirements. A miniaturised fuel cell may show clear benefits in these uses due to its potential longer life and easier recharging (for example, simply by changing a fuel canister rather than by plugging into the electrical mains for a number of hours).

## **Military Sector**

The military has a strong interest in various types of fuel cells, especially in portable fuel cells, which could replace generators and batteries. Since reliability is more important than cost, the higher purchasing price is not as important for the military. Furthermore, fuel cells operate silently and have a low heat signature, providing advantages in this sector.

Fuel cells may also benefit from other legislation. In all developed and many developing countries, regulation of emissions from conventional vehicles is continually becoming stricter. A fuel cell car would meet even the tightest of these rules and should therefore become increasingly attractive. Additionally, fuel cells may also be boosted by very specific rule-making: in London, such vehicles would escape paying the congestion charge, saving a driver significant amounts of money each year. Low noise and lower environmental impact than conventional technology may also aid sales.