

Fuel Cell Installations by Proto Systems Ltd

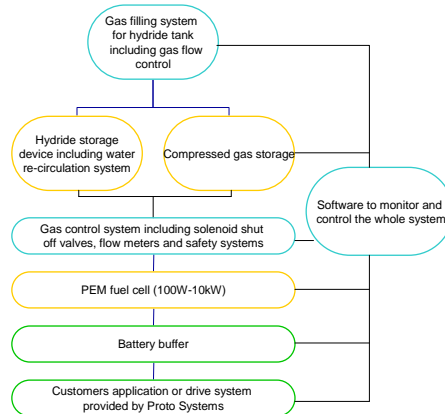
Proto Systems Ltd has installed a 5kW fuel cell on board a hydrogen powered canal boat at the University of Birmingham. Hydrogen is fed to the fuel cell from a bank of solid state metal hydride stores. The power from the fuel cell is used to charge a battery buffer and run an electric propulsion motor. The motor is based on permanent magnet technology operating at an efficiency of 90%.

Proto Systems Ltd installed the fuel cell and designed and built the required subsidiary systems around the fuel cell stack, including; gas handling equipment, humidifiers, power electronics, water heaters, cooling system and control / monitoring software.

This fuel cell requires 4500 litres of hydrogen per hour while running at full capacity.

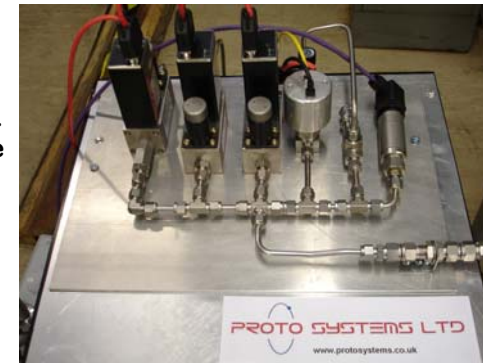


5kW fuel cell



To run a fuel cell, a number of subsidiary systems have to be put in place (see flow chart). All of the surrounding systems need to work together to provide an efficient system. To increase the overall efficiency of the fuel cell system excess heat generated could be used in a CHP unit (combined heat and power).

Proto Systems Ltd has built a range of fuel cell systems for UPS (uninterruptible power supply) to motive power, ranging from 100W – 5000W.



Gas control system built by Proto Systems Ltd



Today fuel cells have wide ranging applications from cars and boats to buildings. Over the coming years it is expected that fuel cells will become more widespread. The advantages in moving towards hydrogen based fuel cells include; independent power from the grid, reduction in intermittency of renewable energy supplies, near silent operation, and zero green house gas emissions. Fuel cell power can replace many fossil fuel based applications without a reduction in performance. Hydrogen can be produced from a wide variety of sources thereby reducing our dependence on imported energy and increasing energy security.

Proto Systems Ltd will design, consult and build fuel cell installations to meet a customers requirements. If you require further information contact sales@protosystems.co.uk