



# ENERGY STORAGE FOR A NETT ZERO EMISSION UK

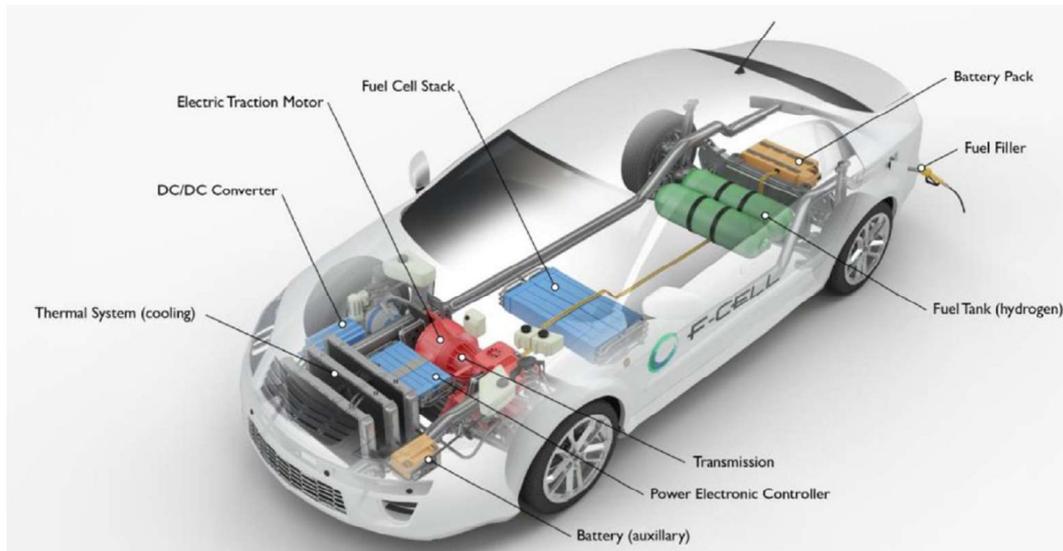


Image courtesy Hydrogen Fuel Cell Vehicles, Current Status and Future Prospects, by Manoharan Y, Hosseini S E, Butler B & Alzehrani H, Applied Sciences, 9(11), May 2019

**Prestige Seminar: Wednesday 17 November 2021 – 18:45 to 21:30**  
Weston Auditorium, De Havilland Campus, University of Hertfordshire, Hatfield, AL10 9EU

**Free entry - advance registration required – book online**

To help combat climate change, the UK has committed to net zero carbon emissions by 2050. Good progress is being made to decarbonise generation of electricity using renewable energy from wind and photovoltaics. However renewable energy is intermittent so storage is needed for when the wind doesn't blow and the sun doesn't shine. Also emissions from transport and heating buildings have yet to reduce, so a zero carbon energy solution is needed to decarbonise them.

There are pumped storage hydro-electric schemes in Scotland and North Wales, but they do not have the capacity to store all the electrical energy that is generated when demand is low.

Battery electric vehicles (BEVs) are one answer. They can be charged up overnight and are starting to compete with fossil-fueled cars and light goods vehicles, but the weight of batteries makes long range and heavy loads difficult. Also, it takes longer to refuel a BEV than a fossil-fueled car so millions of charging points are needed at homes, kerbsides, workplaces, public car parks and motorway service areas.

Hydrogen fueled vehicles are another answer. Refueling points for them are starting to appear but so far only a few in the UK. They can be refueled in the same time as fossil-fueled vehicles. Early charging stations generate hydrogen from water by electrolysis at refueling stations, which is expensive. The cost of hydrogen is expected to fall when it can be generated on a large scale from natural gas by Steam Methane Reformers with Carbon Capture and Storage to store the unwanted carbon dioxide in disused gas wells. Hydrogen can be stored in salt caverns and distributed by pipelines and road tankers.

Trials have started on the use of Hydrogen to replace some or all of the natural gas in the gas mains and used to heat homes and for cooking. Also, individual heat pumps are starting to be used to heat buildings. All buildings need to be well insulated to reduce the energy needed to heat them.

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This prestige seminar will provide an overview of these technologies and their prospects to help reduce carbon emissions. This evening seminar will be the twenty second annual prestige seminar organised by EMSTA CIC as a joint event with various professional engineering and science Institutions.

This free event is hosted by the University of Hertfordshire and will commence with light refreshments and networking in an informal environment.

An important element of the prestige seminar is the final chaired discussion when the audience can put forward their questions to the speakers and debate some of the issues discussed.

**How do I attend? **Entry is free, but advance registration is required.****

**Book online** at <https://bookwhen.com/emsta>.

**Helpline:** 0845 474 3341\*

*\* Calls cost 5p [plus 5p per minute after the first 60 seconds] plus your phone company's access charge.*

For more information visit [www.emsta.org.uk/seminars.php](http://www.emsta.org.uk/seminars.php)

We would be particularly pleased if you brought a young person to this event: they may be involved in the widespread use of hydrogen technologies to achieve net zero emission.

To discuss EMSTA's events and STEM project support, contact Roger Boddy, Chairman EMSTA. 07956 109337 or by e-mail [chairman@emsta.org.uk](mailto:chairman@emsta.org.uk).