

Café Scientifique Headingley

Monday 29 March 2021 at 7:30pm

Energy storage: future prospects by Rick Jefferys



Outline: We store energy to fill gaps in supply due to breakdowns or variable production, to provide additional supply when demand peaks, and to absorb spare energy when demand is lower than production. Unlike coal, oil and gas, which can be stored relatively easily, electricity must be used as soon as it is produced. It cannot be stored at scale as electricity, so must be converted to mechanical, chemical or thermal energy, before reconversion on demand. We will look at the technology options for short-, medium- and long-term electricity storage.

“Renewables and storage are getting cheaper” so a 100% renewables future is assumed by some to be assured – but how cheap do they need to be? Analysis of UK wind and solar data shows that while high penetration of renewables is possible, a reliable grid with 100% renewable supply will be very expensive, using current technologies.

Electricity conversion, storage and regeneration have significant capital and operational costs, and the losses remove energy from the system, increasing the amount of renewable generation required. But there are alternatives to storage such as controllable demand and flexible (zero carbon) generation. These may be cost effective alternatives, particularly if we want to solve all our energy problems, including heating, rather than focusing on electricity alone.

Dr Richard Jefferys is an engineer with a long career in energy, including offshore structures, renewables, carbon capture and storage and energy storage. He has undergraduate and PhD degrees from Cambridge, is a fellow of the Royal Academy of Engineering and is actively involved in energy storage and carbon capture as an independent consultant.

Venue: By ZOOM

