Smarter energy storage for solar and wind power

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Image credit – CSIRO

Development of the first hybrid battery suitable for storing electricity from renewable energy sources such as solar and wind is now a step closer.

CSIRO and Cleantech Ventures have invested in technology start-up Smart Storage Pty Ltd to develop and commercialise battery-based storage solutions.

Director of the CSIRO Energy Transformed National Research Flagship Dr John Wright said the Smart Storage battery technology aims to deliver a low cost, high performance, high power stationary energy storage solution suitable for grid-connected and remote applications.

“Cost effective, high performance energy storage has been the missing link for renewable energy,” he said.

Current battery storage solutions undergo frequent deep discharging and are unable to meet high power demands. They are also considered expensive due to high initial cost and short battery life.

“The Smart Storage technology is based on CSIRO’s ‘Ultrabattery’ which has been successfully trialled in hybrid vehicles,” Dr Wright said.

Extensive technology development is now underway to produce a low cost and easily manufactured deep-cycle stationary battery that meets demanding variable operating conditions.

The Smart Storage technology is a hybrid battery which combines an asymmetric ‘supercapacitor’ electrode and a lead-acid battery in a single unit cell. Advanced materials used for the electrodes and current management absorb and release charge rapidly and at efficiencies well above conventional battery types.

It is expected that the discharge and charge power of the Smart Storage battery will be 50 per cent higher and its cycle-life at least three times longer than that of the conventional lead-acid counterpart.

“Most importantly, our technology development path is directed towards manufacturing in existing lead-acid battery plants,” said Andrew Pickering, a Principal at Cleantech Ventures.

“Too often new technologies simply aren’t affordable and that significantly retards market uptake.

“Investments in energy storage technologies have excellent potential for strong returns given the growing market demand and the lack of viable

solutions. We now have investments in two energy storage technology companies, V-Fuel which targets grid-scale renewable energy storage applications and now Smart Storage for smaller renewable energy systems."

Source: CSIRO