Baseload solar prospect gets funding boost

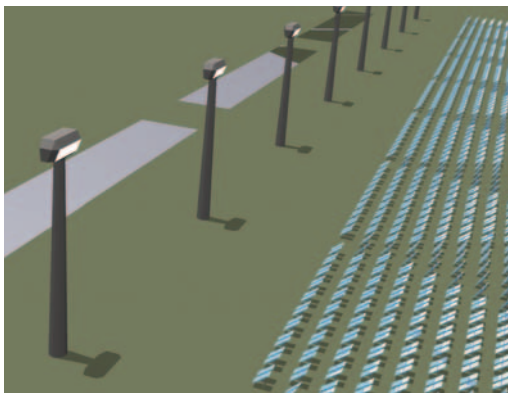
Just before last year's Federal Election, the Australian Government announced its support for commercialisation of a patented hydrogen-based storage technology developed by Melbourne-based Solar Systems, which says the technology will enable solar power facilities to deliver on-demand baseload power supply.

The government announced a contribution of $5 million towards first-stage development of the new technology, which will allow large-scale solar energy facilities to deliver power at night and during cloudy periods.

The company says the technology – which represents a $62 million investment over a seven-year timeframe – has been successfully demonstrated on a small scale.

Solar Systems has been developing a range of solar energy technologies since 1990, with a focus on reducing costs to make solar viable for large-scale implementation.

These technologies are based around solar concentrator photovoltaic technology to concentrate solar energy via mirror arrays before redirecting the concentrated energy to compact photovoltaic cells.



Concept for the large-scale solar power concentrator photovoltaic array planned for north-west Victoria. Solar Systems

The company has four solar power stations operating commercially in central Australia and is developing a $420 million, 154 megawatt solar power station – enough to meet the equivalent needs of 45 000 homes – for north-west Victoria, a project funded by the Federal and Victorian governments.

Solvent solution could delay 'peak lithium'

The global boom in portable electronic products such as mobile phones and laptop computers has put a premium on rechargeable lithium batteries.

A typical lithium battery lasts for 300–500 full recharges – around one to three years – before failing, after which it is likely to end up in landfill. In addition to lithium contamination, metals such as iron, aluminium, copper and cobalt can leach from spent batteries into the local environment.

Landfill contamination is not the only drawback. The world's reserves of lithium are rapidly dwindling. This scarcity, combined with rising demand for the batteries – which also power hybrid electric vehicles – has created the prospect of a 'peak lithium' crisis occurring in parallel with peak oil.

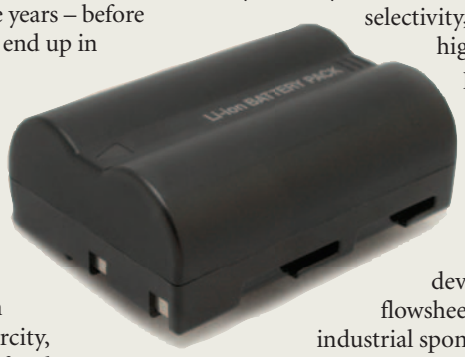
The main challenge in recycling lithium is separating it from the other substances in the spent batteries.

Australian researchers at the Parker Centre (CSIRO Minerals) in Perth have come up with a novel concept for an improved solvent extraction process to recover and purify cobalt and lithium from batteries.

The process starts with the leach solution from spent batteries and includes a new solvent extraction process, together with conventional solvent extraction, ion exchange, electrowinning and precipitation.

CSIRO researcher, Dr Chu Yong Cheng, says the key to the new extraction process is its selectivity, enabling recovery of high-purity metal end-products. Alternative processes based on precipitation result in contamination of metal end-products by other impurities.

'Now that we've developed the process flowsheet, we are looking for industrial sponsors to develop the technology further,' adds Dr Cheng.



Digital cameras, laptops and mobile phones have fuelled demand for lithium batteries but global lithium reserves are limited. Tom Brown

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'Go national' says recycling body

The recent announcement of new Waste Avoidance and Resource Recovery (WARR) regulation in Western Australia has reignited debate about the need for national extended producer responsibility (EPR) regulation.

The WA Government will establish a statutory state Waste Authority and increase landfill levies, which will fund the authority's activities.

WA Environment Minister, David Templeman, said the higher landfill levies will reduce the financial burden on councils and provide some incentive for manufacturers to take more responsibility for the lifecycle and disposal of their goods.

John Lawson from the Australian Council of Recyclers (ACOR) said that while ACOR applauds state-based EPR initiatives, opposition from manufacturers and retailers to state schemes has stalled progress.

'Australia has a successful national stewardship scheme for recycling lubricant oils. We could do the same for other products like lead acid batteries that contaminate landfill.

'Manufacturers and retailers obviously don't want seven or eight different systems. However, if most states follow NSW and WA, resistance to national EPR schemes is likely to fall away.'

Currently, around 1 million lead acid batteries a year end up in landfill in Australia.

Oil recycling shows the potential for national stewardship schemes.