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Batteries

Aqua Metals sees future for lead-acid batteries in green energy

Ability to recycle gives technology head start over lithium to store energy from sun and wind



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by: **Henry Sanderson**

The world's dominant battery technology needs to become cleaner to compete with the booming [lithium-ion battery sector](http://next.ft.com/content/081860a2-9dc1-11e5-8ce1-f6219b685d74) (<http://next.ft.com/content/081860a2-9dc1-11e5-8ce1-f6219b685d74>) in the race to store energy from the sun and the wind, according to start-up Aqua Metals.

Lead is easier to recycle than lithium and can be done without producing toxic waste, said Stephen Clarke, chief executive of Aqua Metals, which opened a battery recycling facility in Nevada last week.

Lead-acid batteries are widely used in cars with almost 98 per cent of the lead recycled. But

the smelting and processing involved emits sulphur dioxide and greenhouse gases.

Pollution from lead smelting has affected countries such as China, the world's largest consumer, where children have been poisoned after inhaling lead-contaminated air.

While lithium-ion batteries have grown rapidly through their usage in smartphones and electric vehicles, little lithium is recycled and reused.

California-based Aqua Metals, which listed in July last year, says its electrochemical process to recycle lead produces no toxic waste.

Combined with improvements in lead-acid battery technology, that could give it an advantage over lithium-ion, said Mr Clarke, who has worked on advanced batteries since 1993.

“The fundamental problem with lithium cells themselves is the moment you put them into a breaker they explode,” he said, referring to the beginning of the recycling process that breaks batteries into their component parts.

“If we're going to have multiple gigawatt-hours of lithium-ion batteries in the system and there's no recycling, what are we going to do?”

That could help lead-acid compete for the next big battery market, which is expected to be grid storage, he said. Batteries are key to enable utilities to better integrate power from intermittent sources such as [solar and wind \(http://www.ft.com/topics/themes/Renewable Energy\)](http://www.ft.com/topics/themes/Renewable_Energy).

If improvements in the energy density of lead-acid batteries can be made “lead will become the default for grid storage”, he said.

Despite growth in lithium-ion, lead-acid batteries are expected to continue to dominate, according to consultancy CRU. They expect lead-acid batteries' total share of the market to only fall to 75 per cent by 2025.

“You take the world's bad actor and turn it into the absolute paragon of the circular economy,” Mr Clarke said.

“One view of toxics is let's get rid of them, but that means we're going to go back to wearing cotton wool with wooden shoes. The world needs toxic material to get the lifestyle we want — but you keep them out of the environment by using them.”

Dallas-based Interstate Batteries has committed to supply more than 1m most automotive lead-acid batteries to Aqua Metals and has invested \$10m in the company.

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