

Innovative battery firm leads charge with lithium alternative

Invinity Energy Systems joined AIM in April this year following redT Energy's merger with US-based Avalon Battery.



Invinity manufactures and supplies a rechargeable battery that is crucially differentiated from the plentiful lithium-ion (Li-ion) cell. Invinity's product is a *vanadium redox flow battery* (VRFB) with superior longevity and safety characteristics to Li-ion.

Best known as a hardening agent popular in hand tool manufacture, vanadium is a transition metal capable of existing in four oxidation states. Using the metal in a rechargeable battery was first

reducing fire risk

hypothesised in the 1930s but not successfully demonstrated until 50 years later.

What distinguishes Invinity's offer is the fact that the battery operates by circulating a liquid electrolyte, significantly reducing fire risk. A VRFB delivers superior performance to Li-ion, typically operating without degradation over five times as many charge/discharge cycles.

The vast increase in private ownership of solar panels e.g. on factory rooves, has created a

market of economy driven energy consumers/producers. Invinity is successfully selling to this market and the *frequency response* services market.

The requirement for a

solution is battery cells

battery solution to *frequency response* was made clear to the UK in August 2019, when a gas fired power station in Oxford and an offshore wind farm both suffered power outages in short order. This took out the power across the UK. A typical power station is unable to immediately respond to such a requirement and similarly renewables may not be generating at a particular time. The only solution is battery cells.

Invinity is already installing its VRFB solution with infrastructure providers for *frequency response* requirements. One such application is with a customer in California, that calls on VRFB discharge typically three times a day. Invinity will deploy at the *Energy Superhub Oxford* project here in the UK later in 2020.

Invinity Energy Systems' solution can be applied where there is a drop in supply (discharge) or demand (charge) of electrical power. The

increased prevalence of weather dependent power generation creates an immense

an immense opportunity

opportunity.

Currently, a VRFB is more expensive than a Li-ion solution. However, a study by the US *Department of Defense* concluded that this gap would likely be closed by volume increases delivering economies of scale in production.

Invinity's solution is able to operate for 25 years, while a typical Li-ion offering can fail in as few as three.

Invinity Energy Systems shares represent an innovative solution in a nascent market that is supported by a powerful global trend. The company typifies AIM's *raison d'être*.

Invinity Energy Systems (LON:IES)	
FOR	
zeitgeist market	
market enjoys structural growth	
AGAINST	
few protections from competition	
unproven business	
Market cap	£70m
Bid:offer	90p:92p
P/E (forecast)	n/a
Yield (forecast)	0
52week low:high	37p:92p