

Squeaky clean energy



Matt Maroon

PES talks to Matt Maroon, VP of Product Management, Aquion Energy about salt water batteries and the importance of clean, green energy. Interest in storage is on the up....

PES: Welcome to PES Solar/PV magazine. Thanks for talking with us. Would you like to begin by explaining a little about the background of your organisation and how you currently serve the solar and wind industry?

Matt Maroon: Aquion Energy manufactures saltwater batteries that are high-performance, sustainable and cost-effective and provide daily deep cycling for multi-hour applications. Our founder, Jay Whitacre, began researching low-cost electrochemical approaches to bulk energy storage in 2007 and produced the first functioning Aqueous Hybrid Ion (AHI) battery the following year. By 2009, the technology was developed enough to begin production. As Aquion batteries are suitable for an array of users, we have

deployments across the world including small-scale systems, such as homes and small businesses and large-scale commercial, industrial and OEM applications. Most of our installed systems to date are coupled with solar arrays.

PES: You are active in a number of industry sectors. How important is the residential market to you?

MM: The residential sector is one of our primary markets. We have over 50 partners worldwide who install residential energy storage systems for end customers. We see our batteries going into both off-grid and grid-tied systems. Coupling solar with storage enables customers to increase their self-consumption of solar and reduce reliance on diesel generators.



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PES: We see you have developed The Aqueous Hybrid Ion (AHI) batteries. Can you tell us about the chemistry used?

MM: Our saltwater batteries have a new and unique chemistry. They are composed of a saltwater electrolyte, manganese oxide cathode, carbon composite anode, and synthetic cotton separator. This results in a nontoxic, non-combustible system that is high-performing and abuse tolerant.

PES: How does this differ from conventional batteries and what does it mean for your customers?

MM: Currently, lithium ion and lead acid are the most well-known chemistries for energy storage. Lead acid batteries usually require regular maintenance and are sensitive to many factors such as temperature, depth of discharge and being left at a partial state of charge, all of which result in shortened lifespan of the battery. They are also prone to corrosion and can leak toxic chemicals. Lithium ion batteries are expensive and can exhibit energetic thermal runaway if abused or exposed to fire, which poses safety risks. Aquion's batteries, however, offer an

affordable solution that is maintenance-free, safe, clean and sustainable and has excellent daily, deep cycling performance, which makes them ideal for solar applications. Aquion batteries can be cycled at 100% depth of discharge daily without impact on cycle life.

PES: How important is the 'green' factor to Aquion in the development of this new battery and your company's philosophy?

MM: We think it only makes sense that clean energy should be stored in clean batteries. Our batteries are made from abundant, nontoxic materials, contain no heavy metals or toxic chemicals and are non-flammable and non-explosive. They are the cleanest and safest batteries you can buy. In fact, our batteries are the only ones in the world to be Cradle to Cradle Certified™. This independent certification judges a product on five categories: material health, material reutilisation, renewable energy and carbon management, water stewardship and social fairness. Our battery series achieved bronze level certification in 2015, officially





becoming the first and only battery in the world to receive this distinction.

PES: Geographically speaking, where are the key markets for Aquion and do you have any plans for expansion into other areas?

MM: We have installations all over the world. There has been significant activity in Hawaii, California, and Australia and interest from island nations in general. Islands typically have very high electricity costs because they import and burn fossil fuels for electricity. We are also seeing interest in our batteries worldwide – energy storage makes sense in many different scenarios, driven by factors such as the cost of electricity, grid availability and/or reliability, net metering, and government incentives.

PES: Aquion has been serving the solar industry for several years. What major changes have you witnessed during this time?

MM: We have seen a continuous uptick in the level of interest in energy storage. Energy storage is gaining mindshare as a critical element in enabling people to use all

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the solar power they generate on their own roof. As end customers and solar installers gain a better understanding of the role of storage and how to design systems, I think we’ll continue to see broader adoption of the technology. We’re also seeing different kinds of applications that are a great fit for our batteries. For example, we recently completed a project in Thailand, where Aquion’s batteries are being used to sustainably power 800 off-grid solar-powered LED lights along a 14.6 mile bicycle track at Bangkok’s international airport.

PES: Which aspect of the industry provides the most satisfaction for you right now?

MM: Seeing the excitement in the market for our batteries is invigorating. When we talk to customers, people really respond to the fact that we have an environmentally-

friendly battery that is safe, long-lasting and optimised for solar applications.

PES: And conversely, what presents you with the biggest challenges?

MM: One challenge we encounter is that energy storage is new, and many solar installers are facing a learning curve. Our batteries are much simpler to configure than lead acid, which is what many installers are used to working with. We’re working hard to provide training to our dealers, distributors and installers to help educate the marketplace about our batteries. We regularly run NABCEP certified trainings as well to help reach the solar community.

PES: What are your thoughts about prospects for 2016 with regard to your organisation, and the solar industry in general?

MM: This is an exciting year for us. We’re seeing a strong demand for our batteries and growth in markets worldwide. As the use of renewables continues to increase, storage is expected to play a significant role in the successful integration of renewable resources into the electric grid and well as enabling off-grid systems. We are well positioned to take advantage of this growth by providing a clean, reliable and cost effective solution for long-duration energy storage. ■

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