Speaker Abstract for Beyond Li-ion IX

From Molecules to MWs – Experience and Progress in Commercializing New Generation VRFB

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Early applications of energy storage have focused primarily on grid reliability and short duration services, with mainly high power Li-ion batteries already manufactured at scale and widely used in mobile electronics and the auto industry. Now market change is accelerating in North America and other regions, and increasingly demanding longer duration benefits to increase value for customers. Redox flow batteries (RFBs), particularly the new generation vanadium RFB's or (VRFB's) that feature long duration benefits, while covering the short duration or power functions, have emerged as a leading alternative for utility, commercial & industrial, and microgrid applications. The new generation VRFB was developed at Pacific Northwest National Lab under the support of US DOE OE Storage Program, and have been commercialized at UniEnergy Technologies. MW scale systems has been developed, installed and operational in the field. This paper will share the experience of advancing the new generation VRFB from lab research to the scale of MW systems. Current progress and challenges along the journey, through the death of valley will be discussed.

Short bio:

Dr. Yang has been a leading scientist and now an entrepreneur in energy conversion and storage. He co-founded UniEnergy Technologies (UET) in 2012 and has since served as CEO of the company, now a leading EES solution provider for the evolving electrical industries. UET has delivered industrial vanadium redox flow battery (VFRB) systems that use a new generation electrolytes, first of its kind container base system design and optimized power electronics and control. Being competitive in costs, intrinsically safe, long life, unlimited cycles and flexible in performance and operation, the plug-play Uni.Systems have found applications in the US and internationally at MW scales, for utility, microgrid, commercial and industrial customers. Previously Dr. Yang was a Lab Fellow at PNNL of the US DOE, where he led the Grid Energy Storage Program in RD&D of varied batteries, including VRFB, planar Na-halide, novel Li-ion, etc. Under his leadership, the multidisciplinary team made several breakthroughs including development of a new generation VFRB. He is an author/co-author of over 200 research articles and 50 patents. His efforts have won him multi-awards including twice (on SOFC and VRFB) the FLC Award, one of the most prestigious US government awards on technology development and commercialization.