

Ultra Power Battery

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In a previous thread, Kent Hoult <khoult@xxxxxxxxxx> pointed me to the patent and other information on EESStor's Ultra Power Battery they are developing for automotive use. The patent is quite technical and goes into detail about the chemistry, materials preparation, fabrication, specifications and other aspects of their invention. I must say that if this is not smoke and mirrors it should prove to be a major innovation in vehicle technology.

Basically the invention is a giant ceramic capacitor using special techniques, chemistry, coatings and fabrication methods to produce an unheard of capacitance and voltage rating in a relatively small box. They call the capacitor an EESU, Electrical Energy Storage Unit and sometimes term it a "battery." They are secretive and careful to not call it a cap, I guess to throw off inquisitive copy cats. However, the patent does disclose what they are doing but probably has some misleading information in it to cover their bets.

Each EESU is a box a little over one cubic foot in volume and weighs about 336lb. The dimensions given were 13.5in X 13.5in X 11in. Each unit can store up to 52.2kWH of electrical energy. That is a huge amount for any previous capacitor technology and many times any known chemical battery technology in that volume. It actually rivals gasoline in storage capability which is the equivalent of about 1.6 gallons of gas. Considering that an ICE is only about 25% efficient, the equivalent electrical storage is greater than that of six gallons of gasoline. And, that ain't bad!

The EESU has a capacitance of 31Farads and can charge to 3500Volts. The unit is made of some 2230 smaller capacitor components each less than one cubic inch in volume. A solder bump assembly scheme is used to connect the components. The dielectric is Barium Titanate, a common material used in capacitors, but it is uniquely prepared and fabricated to create the individual component caps. The particles of Titanate in powder form are coated with Aluminum Oxide and a Magnesium Alumino Silicate glass that gives the dielectric its extreme voltage capability and other unique properties of the invention. The component capacitors are fabricated from multi-layer, nickel electrode, parallel plate units using silk screen techniques. They are appropriately hot pressed and fired into the ceramic capacitor sub-units.

Apparently the EESU's can stand a million charge discharge cycles, like most

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capacitors without degradation. They lose energy at a rate of about 0.1% in 30 days which is unheard of in chemical batteries. They can be charged slowly, over night from domestic power or quick charged in several minutes from industrial power or from a bank of other EESU's in a charging station. They can be added together for higher energy storage for larger vehicles, buses, SUV's, etc. The costs are unknown but they claim to be in the \$2000 range.

Clearly these things are too good to be true. If they are real they could obsolete ALL other electric vehicle schemes, fuel cells, hydrogen, chemical batteries, hybrid electrics, etc. I'm not sure that this small company, EESor has the clout, marketing savvy, funding or capitalization necessary to pull this off if the device is as promised. I suspect that they will have to partner with one or more of the big boys to make it happen in the way it deserves. As it stands now we are waiting to see what the results are as they try to enter the market. I sincerely hope that this is not a scam or over promised and hyped technology like so many things we have seen from a lot of these small companies. Furthermore I am well aware that patents mean little and are often used to bilk investors but I am hopeful about this. At least it seems reasonable. I invite comments.

Bob

Here is the patent:

<http://patft.uspto.gov/netacgi/nph-Parser?u=%2Fnethtml%2Fsrchnum.htm&Sect1=PTO1&Sect2=HITOFF&p=1&r=1&l=50&f=G&d=PALL&s1=7033406.PN.&OS=PN/7033406>