

Electronic Component Development needed for Heavy Duty Electric Vehicles Addendum to presentation of Paul B. Scott of 9 September and plea for funding.

ISE Corporation – psscott@isecorp.com

ISE has produced nearly 300 heavy duty electric drive vehicles, mostly transit buses, most of which are currently in operation on city streets. The company has approximately half of these vehicles in warranty; some are approaching or exceeding 200,000 miles of operation. ISE proposes to focus future efforts more to the truck market, where capital cost is a more critical consideration. Component costs and warranty costs are critical.

The development of cost effective reliable components for high power, high voltage electrical switching, and high voltage battery development is timely and even urgent for firms choosing to compete in this industry. Presently such components are sourced by high priced foreign firms, with no local equivalent. The cost reduction is necessary to make hybrid electric drive heavy vehicles commercially viable.

Components of critical interest are:

- DC-DC converters capable of operation to 800 volts and currents to 300 amperes. The housing and connections must be such that this high power component can operate immersed in water, and the cooling system must be such that it can operate in the desert in a 50°C ambient.
- Inverters, capable of DC-AC and AC-DC conversion, again to 800 volts and 300 amperes. Similar environmental constraints as above.
- High voltage batteries of high energy storage (6kWh to 160kWh) and with amperage capability to or in excess of 300 amperes. Again, cooled and environmentally sealed.



Figure 1 - This ISE design ultra-capacitor pack is fully sealed and internally cooled with refrigerated liquid.

ISE has worked with other vendors with mixed, generally unsatisfactory results. Even world class vendors have failed to develop and supply at the specification and quality levels required. Hence ISE has hired and supports staff of the highest competency in high power electronics and automotive level quality capability.

It is important that the components be sourced, on the whole, from domestic producers and it is important that the manufacture be in the USA... California preferred.

DOCKET

09-ALT-1

DATE

RECD. Sept 16 2009

Funding the development of these critical components is urgent and unusually difficult. The DOE and other sources will provide guarantees of loan funds to enhance production of large quantities, but monies to get to the production of hundreds such that it is a proven component are increasingly hard to come by.

ISE invested at the multi-million dollar level to develop the capacitor packs shown above. Similar funding, totaling near ten million dollars, is required for the component development (see bullets above) needed for large scale production of electric drive heavy duty vehicles. Such components are needed not only for local production, but for being competitive in a rapidly growing export market. By developing this ultra-capacitor electrical Energy Storage System ISE has elicited interest and early orders from some of the largest vehicle producers in the lower Asian continent.

ISE wishes to bring to the attention of the CEC the need for bridge funding to assure the continued development of these essential components and the production of tens and hundreds so as to get to the point of the production of thousands needed for real commercial and social effect.