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Hotstick Reveals High Voltage Detector for First Responders

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Hotstick Reveals High Voltage Detector For First Responders



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By: **MARK KANE**

The growing number of plug-in electric cars, and also hybrids, as well as expanding solar market, leads to the topic of how emergency responders will be able to detect high DC voltage.



The DC hotstick voltage probe can accurately detect the presence of DC voltages in a hybrid electric vehicle. Credit: Carlos Jones/Oak Ridge National Laboratory, U.S. Dept. of Energy.

One of the recent Tesla accidents raised questions of [how to deal with an energized battery when the mechanism for neutralizing it — the “cut loop” — is destroyed.](#)

Hotstick USA exclusively licenses a direct-current detector developed by the Department of Energy's Oak Ridge National Laboratory to offer it emergency responders.

Read Also - [Electric Car History Lost In Fire: Tzero and Tesla Roadsters Burn Away](#)

Checking the voltage will let responders know what action should be performed.



Nance Ericson, left, and Bruce Warmack of ORNL test the DC hotstick on a hybrid electric vehicle. Credit: Carlos Jones/Oak Ridge National Laboratory, U.S. Dept. of Energy

"In emergency situations, first response teams often rely on voltage detectors such as Hotstick USA's flagship product, the AC Hotstick, to sense the presence of dangerously high alternating current, or AC, electric voltages from a safe distance. The increase in electric vehicles on the road and solar panels on homes means high voltages could also originate from direct current, or DC, sources not accurately detected by existing technologies.

ORNL inventors Bruce Warmack and Nance Ericson, who specialize in experimental physics and sensing technologies, worked with Hotstick USA to develop a DC-detection prototype."

"The DC hotstick prototype is a handheld device equipped with easy-to-read indicator lights that show whether the probe has established a connection and whether the electricity source is hot. In a crash involving an electric vehicle, for instance, the car's battery could still be connected and energized at a deadly 400 to 600 volts.

The probe is designed with a novel piercing tool to cut through plastic cable insulation that may obstruct contact with the vehicle's battery and to indicate that a valid electrical connection is made. "This ensures good contact for an accurate voltage reading in a situation where decisions must be made in seconds," Warmack said.

Early results from field testing of the patent-pending technology have yielded a positive response, according to Warmack. He and his team plan to expand the functionality of the hotstick including collecting, sharing and storing voltage data.

After further development, Beckmann expects the DC hotstick to complement the company's existing AC sensing technology, which is the market leading device, and satisfy the need expressed by many customers."

"Inventors of this technology include ORNL's Warmack, Ericson, Yarom Polsky and Roger Kisner.

The direct current voltage probe was designed under the sponsorship of the U.S. Fire Administration, a division of the U.S. Department of Homeland Security.

UT-Battelle manages ORNL for DOE's Office of Science. The Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, please visit <http://science.energy.gov/>."

William Beckmann, president of Hotstick USA said:

"Emergency responders need to assess their safety before commencing rescue efforts. The DC hotstick detector will help them more accurately determine whether an electric vehicle or home is energized from a direct-current source for better, safer emergency assessments."

"This new tool protects them as they're protecting others and saving lives," he added.

Richard Raines, director of ORNL's Electrical and Electronics Systems Research Division said:

"Our partnership with Hotstick USA exemplifies how our nation's critically needed capabilities can be conceptualized, incubated and prototyped at the lab and then transitioned to industry for commercialization. This effort demonstrates the successes possible through strong, collaborative laboratory-industry partnerships."



The DC hotstick voltage probe can accurately detect the presence of DC voltages in a hybrid electric vehicle. Credit: Carlos Jones/Oak Ridge National Laboratory, U.S. Dept. of Energy.

Bonus: How the AC Hotstick USA works

source: [ORNL](#)

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