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Utah State University to Break Ground for Electric Vehicle and Roadway Test Track | College of Engineering

09/23/2014

(From Archive) Originally posted Sept. 23, 2014 – Utah State University will break ground on Sept. 23 for its state-of-the-art Electric Vehicle and Roadway (EVR) Research Facility and Test Track, the first facility of its kind in the United States.

The complex will include a 4,800-square-foot research building and electrified quarter mile oval-shaped test track designed to demonstrate in-motion wireless power charging for electric vehicles. The EVR will be located near the existing USU Power Electronics Lab to leverage the combined capabilities of the two facilities.

The EVR provides a glimpse into a visionary future of transportation: electric vehicles with unlimited range. Using wireless inductive power transfer pads embedded in the roadway, electric vehicles can seamlessly charge while in motion, drastically reducing the need for large battery packs and cumbersome charging stations.

This technology, adopted at a U.S. market penetration rate of only 20 percent by 2035, could result in \$180

billion in annual cost savings, a 20 percent reduction in air pollution and a 10 percent reduction in CO2 emissions in the U.S.

Utah State University began pioneering wireless electric vehicle technology starting with stationary wireless charging. Dr. Rob Behunin, vice president for Advancement and Commercialization at Utah State University says, “the desire to move along this trajectory from stationary charging to in-motion charging has always been part of the research strategy. It’s about working out the bugs, the challenges and the science.”

Dr. Regan Zane, USTAR endowed professor of electrical and computer engineering is the principle - investigator for the EVR project. He will be a key contributor to the scientific research and development opportunities provided at the EVR. Dr. Zane is the founder of the USU Power Electronics Lab in the College of Engineering and focuses his research on advanced controls and power electronic system design with an emphasis on techniques to achieve high energy efficiency with weight and cost reduction in electric systems.

The facility will have a 750 kW power capacity, complete with AC and DC power distribution to the roadway and throughout the facility. The EVR will also enable advanced research into many related topics on energy efficiency and reduced emissions, including integration of renewable energy sources with electrified roadways and the grid, vehicle electric drivetrain design, energy storage systems, roadway materials and construction, and vehicle automation and security. The entire facility will be fully networked, allowing data on roadway and vehicle performance to be collected in real-time.

A USU-led team is cultivating funding opportunities and industry partners in order to jump start technology development in related fields, including modular power electronics, energy storage and management and environmentally-conscious propulsion. The development of these technologies will lead to additional opportunities for Utah State University and further promote the efficacy and impact of the EVR.

In-motion wireless charging technology will help alleviate common concerns about electric vehicle ownership including safety, convenience and range anxiety. Researchers and project leaders at Utah State University anticipate that vehicles equipped with this technology will cost 30 percent less to purchase than current electric vehicles and 75 percent less to operate than conventional, gasoline-powered vehicles. The net effect will be transportation that could cost up to 60 percent less to own and operate than a traditional vehicle purchased today.

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