New technology could enable super fast electric car charging - UPI.com

Charging a car could soon be as quick as filling a tank

“Electric cars will change our habits,” said researcher Massimiliano Capezzali.

By Brooks Hays | Jan. 20, 2016 at 2:12 PM

Chinese electric cars parked at a recharge parking lot in central Beijing. Researchers in Switzerland are working on technology that allows faster charging rates without draining the power grid. Photo by Stephen Shaver/UPI | License Photo
LAUSANNE, Switzerland, Jan. 20 (UPI) -- Engineers say the power grid is holding back the development of the electric car. The storage capacity of batteries are continuously improving, as are the speed at which they can be charged and discharged.

But high capacity, fast-charging batteries require large amounts of power to charge. Current infrastructure for electric car changing isn't up to the task.

To supply that charge, a team of researchers at Ecole Polytechnique Federale de Lausanne, the Swiss Federal Institute of Technology in Lausanne, have developed an intermediary power storage device. The technology can quickly charge a car without putting a drain on the power grid.

The goal is to make charging an electric car battery as quick and easy as filling up a tank with gas.

"We came up with a system of intermediate storage," Alfred Rufer, a researcher in EPFL's Industrial Electronics Lab, said in a press release. "With this buffer storage, charging stations can be disconnected from the grid while still providing a high charge level for cars."

The intermediate storage device is essentially a giant battery, a lithium iron battery the size of a shipping container. It's constantly pulling power slowly from the power grid. When it's time, it can transfer a large amount of power to the car's battery.

Right now, the device can charge the standard electric car battery in 15 minutes.

"Our aim was to get under the psychological threshold of a half hour," said Massimiliano Capezzali, deputy director of the EPFL Energy Center and leader of the research project. "But there is room for improvement."
As part of the project, researchers built models to predict the ways gas stations will need to adapt as gas-powered cars are phased out and replaced by large fleets of electric cars.

The numbers suggest a station charging 200 cars per day would require a buffer storage capacity of 2.2 megawatt hours. That corresponds with a intermediate storage device about the size of four shipping containers.

"Electric cars will change our habits. It's clear that, in the future, several types of charging systems -- such as slow charging at home and ultra-fast charging for long-distance travel -- will co-exist," said Capezzali.