

## Smart Car Meets Smart Charger at UC San Diego



*Photos by Erik Jepsen/UC San Diego Publications*

Call it an electronic meeting of the minds: Smart cars will meet smart chargers in the nation's first demonstration of the next generation of "Smart Cars." Known as the Intelligent Charging Project, the California Energy Commission-funded endeavor brings together smart fortwo electric drives from Daimler, electric vehicle charging stations supplied by RWE – Germany's second largest utility – and the University of California, San Diego as the demonstration site.

"We are truly excited to participate in this project which represents the future of electric vehicle transportation," said Gary C. Matthews, UC San Diego vice chancellor for Resource Management and Planning. "UC San Diego is the ideal place to demonstrate this type of innovative technology as it complements our existing sustainability operations and research efforts, while supporting the university and the state's efforts to promote clean energy transportation."

The Intelligent Charging Project was announced yesterday at UC San Diego in a press conference with officials from San Diego Gas & Electric and the California Energy Commission.



*Stethews, UC San Diego vice chancellor for Resource  
Management and Planning*

As part of the project, Daimler will offer affordable leases on the smart fortwo electric drive vehicles to interested students, faculty and staff who will be part of consumer driving, charging and behavior studies. The cars are built to be fully compatible with the use cases of the global standard to be implemented in 2017 by the International Standards Organization (ISO) known as ISO 15118. This new standard addresses the “vehicle to grid” communication interface, which paves the way toward one coherent system that better integrates electric vehicles with the power grid. This formalized communication is required to identify and authenticate a vehicle, coordinate the charging process,

handle the billing, and is prepared to support any additional services such as remote diagnostics, navigation system updates and entertainment.

“This is the first time a global standard defines intelligent charging,” said Werner Preuschoff, senior manager for user Interaction and SmartCharging at Daimler. “Now, the car and the grid will be able to communicate to each other in real time to determine grid capacity and customer needs.”

The electric vehicle charging stations supplied by RWE are the only charging stations in the world currently certified for the new ISO 15118 standard. By the end of April 2014, UC San Diego is expected to have 13 RWE Level 2 eStation Smart Systems, each consisting of two charging outlets for a total of 26 outlets. Level 2 electric vehicle charging systems use 208-240 volt power and typically provide 10 to 20 miles of range for each hour of charging for a passenger vehicle.

“These are the only chargers that enable the bi-directional communication that is critical for vehicle to grid communications,” said Joerg Lohr, RWE project manager. “With our ISO 15118 components, we enable standard Level 2 chargers to be intelligent.”

He added: “Each charging outlet acts independently as well, so individual drivers will be able to carry out different communications on the same charger.”

In addition to the RWE Level 2 chargers, UC San Diego will also have three publicly accessible DC fast chargers from RWE, which typically provide 60 to 80 miles of range in just 20 minutes of charging. The RWE chargers will complement the university’s existing 23 chargers, giving the campus the largest, most diverse range of electric vehicle charging stations at any university in the world.



*Professor Veerabhadran Ramanathan in a smart fortwo e  
drive vehicle*

The RWE chargers have been funded by a \$300,000 CEC grant with cost sharing from RWE and San Diego Gas & Electric. San Diego County-based small business Alternative Energy Systems Consulting, Inc., received the CEC monies to purchase and install the RWE chargers. KnGrid, a California-based small business, is the mobility operator, handling the pricing and billing for use of the chargers. RWE and KnGrid will operate the network of charging stations with RWE's own state-of-the-art IT architecture for grid-friendly electric vehicle charging with more than 4,000 connected, publicly accessible charging outlets globally.

Recognized as a leader in clean transportation, nearly half of UC San Diego's fleet of more than 800 vehicles has been converted to near-zero emission vehicles. Diesel fuel has been replaced with ultra-low sulfur biodiesel, and many buses, street sweepers, cars and trucks have been converted to run on compressed natural gas. The fleet also includes seven EVs including two smart fortwo electric drive and more than 50 hybrid-electric vehicles. The university's "green fleet" was ranked 14<sup>th</sup> overall in the nation and received the highest ranking of any university by Government Green Fleet in 2012.

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