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ETEC's SuperCharge System Helps Clean the Air at Sacramento International Airport

Phoenix based Electric Transportation Engineering Corporation (ETEC) announced today the successful completion of an electric GSE demonstration project. The project validated that electric GSE combined with fast charging are a viable alternative to gasoline and diesel-fueled GSE. Funding for the project was provided by it's participants including California Air Resources Board (CARB), Defense Advanced Research Projects Agency (DARPA), Southwest Airlines (SWA), Sacramento Municipal Utility District (SMUD), Sacramento County Airport System, and ETEC.

The project replaced Southwest's gasoline baggage tractors with 12 DC

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drive and one AC drive electric tractors. All vehicles relied on ETEC's SuperCharge GSE-400MP, Multi-Port Fast Charge System for their recharging needs. Sealed, Valve Regulated Lead-Acid (VRLA) batteries were used on the tractors to minimize maintenance costs and eliminate HAZMAT concerns. To ensure long battery life, each vehicle was equipped with ETEC's Current Compensated Discharge Limiter to protect the battery from over-discharge.

During the course of this project, ETEC demonstrated that fast charging reduced the average annual cost of "fueling" tractors. Southwest realized an annual savings of \$1227 per tractor, between the cost of fuel and the cost of electricity. The consumption of unleaded gasoline was reduced by 26 gallons per day, eliminating 343 tons of CO, 16.2 tons of hydrocarbons, and 7.4 tons of NOx (annualized). ETEC's SuperCharge system minimized the cost of electricity by charging up to 20 tractors from a single 100 amp, 480VAC circuit.

The SuperCharge station charges sequentially at 400Amps to minimize infrastructure costs and return the GSE to ramp as quickly as possible. Charge times are typically less than one hour compared with 8 to 10 hours with conventional overnight charging. The SuperCharge system uses ETEC's

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patented charging algorithm that extends battery cycle life by eliminating unnecessary overcharge and excessive temperature rise typical of conventional and less sophisticated fast chargers.

For this project, ETEC also developed an Internet-based information system to automatically collect and report vehicle fleet performance.

Information is made available at different levels to the local fleet operators, GSE mechanics and management as well as corporate management through ETEC's website. "As the airlines expand their electric GSE fleets, such information will become critical to successfully managing their fleet," says Garrett Beauregard, Director of Engineering for ETEC.

ETEC is a privately held corporation based in Phoenix, Arizona. ETEC is a leader in electric vehicle charging infrastructure providing charging hardware, engineering & construction and consulting services for the Airline Ground Support Industry, On-road electric vehicles and electric marine applications.

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