

**JFE Engineering Launches Organization to Commercialize Super-Rapid
Charging System for Electric Vehicles
– Practical System Enabling Charging in 3 Minutes Opens the Way to the
Future for Electric Vehicles –**

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JFE Engineering Corporation

JFE Engineering Corporation has successfully developed an super-rapid charging system on the laboratory scale model for electric vehicles (EV) which enables charging in only 3 minutes, and created a new organization^{*1} for commercialization of this technology on June 1.

[Need for Rapid Charging Technology]

With the existing technology, charging an EV to 80% of battery capacity requires approximately 30 minutes. This long charging time detracts from the convenience of EVs, and had been an obstacle to popularization.

[Advent of Revolutionary Super-Rapid Charging System Accelerates Popularization of EV]

JFE Engineering believes that the acceptable EV charging time for users is approximately 3 minutes, which is about the time required for a fill-up at a gas station or simple shopping at a convenience store, and developed the new "Super-Rapid Charging System" which enables charging in this remarkably short time.

The JFE "Super-Rapid Charging System" can charge an EV to 50% of battery capacity in 3 minutes, which means that an EV with a full-charge range of 160km can travel about 80km on a 3-minute charge. A 5-minute charge supplies 70% of battery capacity, making it possible to drive the same EV about 110km. This range covers the average daily travel distance for almost all passenger cars.*2

The advent of this new "Super-Rapid Charging System" represents an epoch-making improvement in charging convenience, which had been an obstacle to popularization of EV. This new technology is expected to result in a dramatic increase in sales of EV, which had been forecast at only 750,000 vehicles*3 in 2020, assuming use of the conventional charging technology.

[Key Points of Technology]

The charging device stores power at night-time in a storage battery incorporated in the device. This power is then transferred to a separate special battery, which discharges to the EV almost instantaneously, enabling charging in a short time of only 3 minutes.

[Potential for Cost Reduction]

Installation of current electric charging equipment at a gas station is expensive, generally costing almost ¥10 million. The cost of installation can be reduced to around 60% with the new JFE system. Among other advantages, the base power fee can also be reduced, and inexpensive night-time power can be used.*4

[Future Development]

If the "Super-Rapid Charging System" reaches the practical application stage and is installed in various outlets nation-wide, not limited to traditional gas stations, but also including convenience stores and others, early achievement of an environment-friendly EV society will be possible. JFE plans to begin full-scale commercialization efforts in the near future, led by the new organization. After trials are completed, the company expects to enter this market within the current fiscal year.*5

*1 Super-Rapid Charging System Project Team.

The daily travel distance of one passenger car is less than 40km for 88% of
*2 vehicles on weekdays, and less than 60 km for 80% of vehicles on weekends and holidays.

According to a quadrupolar sales forecast for electric vehicles in Japan, the United States, Europe, and China in the news release "Forecasting the Eco-Car Sales Market to 2020" (in Japanese) by Nomura Research Institute. The
*3 same news release forecasts hybrid automobile sales of 10.99 million units, plug-in hybrid sales of 1.4 million units, and EV sales of 750,000 units in 2020. (Assuming government support measures, etc., EV sales have the potential for expansion to the level of 1.55 million units.)

Because the current mainstream quick-charging systems do not have an electricity storage function, it is necessary to invest in equipment to upgrade power receiving capacity (power receiving transformer, large capacity cable wiring) when installing these charging systems in gas stations. Including the cost of the charging device itself, the total investment approaches ¥10 million for one unit. Furthermore, relatively high-priced daytime power must be used when charging in daytime.

In contrast, the JFE system uses standard power stored over several hours during night-time, eliminating the need to upgrade power receiving capacity when
*4 installing the system at a gas station. As a result, the total equipment investment, which is generally near ¥10 million, including the quick charging device itself, can be reduced to approximately 60% of this level in the present stage.

As the JFE system can be installed without increasing receiving capacity, the base power fee can be reduced by approximately ¥900,000/year, and because this technology uses power stored during night-time, the system can be charged at the night-time power fee, which is approximately 1/3 the daytime fee. Reducing rapidly-increasing use of daytime power will contribute to "load leveling" (stabilization of power supply by balancing day- and night-time supply and demand), while also reducing CO₂ emissions.*⁶

*5 Cannot be used with electric vehicles currently being sold in the general market as of June 2010.

*6 Assuming that night-time power is generated using base-load nuclear power.

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