RESC, Ltd.

Battery Sharing Platform

Features

◆ At RESC, Ltd., we aim to realize our vision of the "next-generation smart city" that is resilient to natural disasters, is carbon-neutral and has widespread electric mobility. To realize the vision, we believe that expanding and optimizing the use of batteries is essential, by fully utilizing the ICT system, prediction algorithms and Big Data. Therefore, we have developed a unique digital platform named “e-Platform” that enables battery sharing among users of various applications and scenarios (refer to Figure 1). The e-Platform makes it possible to provide battery rental and swap services for e-Mobility users and energy services that lead to smart grid constructions. Our patented ICT system*, designed with prediction algorithms, enables the maximization of user-convenience, economy, and environmental-friendliness for these services (*one of our PCT Patents: PCT/JP2019/025487).

◆ The target markets of the e-Platform are ❶ e-Mobility (e-Bike, e-Scooter, e-Motorcycle) and ❷ energy storage. Their battery related problems, as well as solutions by battery sharing, are outlined in Figure 2.

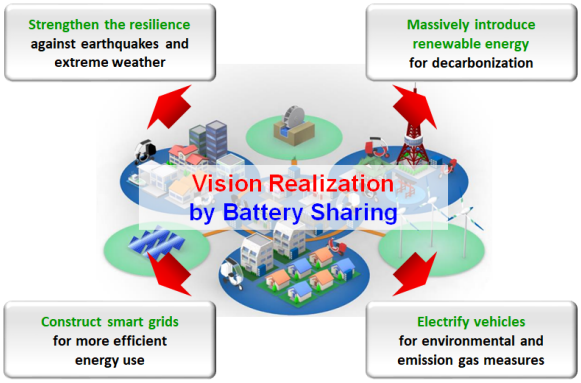


Figure 1: Vision

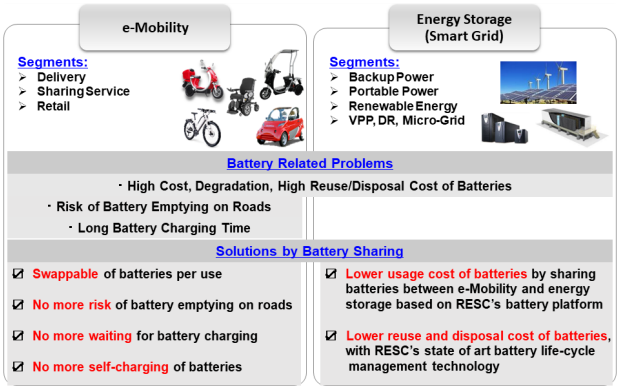


Figure 2: Target markets

Basic Concept or Summary

◆ Three primary constituent elements of the e-Platform are: ❶ ICT system (prediction algorithms, cloud servers, smart phone APP); ❷ e-Mobility; and ❸ battery related equipment (cassette batteries, battery charging lockers).

◆ Processes for providing battery sharing services to e-Scooter users, which are progressively popular in Asian countries, are outlined in Figure 3.

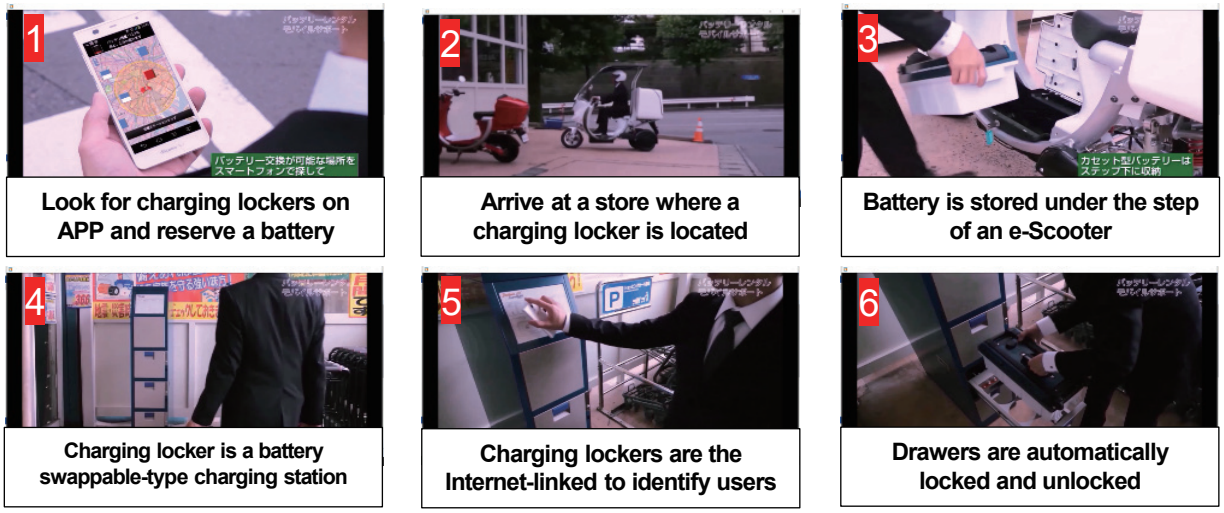


Figure 3: Processes to provide battery sharing services for e-Scooter users

Effects or Remarks

◆ Principal differentiating elements and advantages of the e-Platform are described in items 1 to 3 below:

1. Our battery charging locker is a charging station for swappable batteries and it also features an energy storage function. This means that our battery charging locker not only charges internal batteries, through remote control, initiated by our ICT system, but it is also capable of discharging (providing electric power) from internal batteries to external equipment and facilities. Our battery sharing service, therefore, is not only suitable for e-Mobility applications, but also usable for energy storage applications, such as constructing smart grids, the massive implementation of renewable energy systems, as well as emergency power supplies.
2. Our competence is in prediction algorithms (Figure 4). Prediction algorithms can generally be made sophisticated through the utilization of internal and external big data and, as such, they ordinarily have a significant impact on the performance of ICT systems. Our prediction algorithms utilize big data that encompasses users, traffic and weather conditions and are capable of making predictions on; ❶ the amount of solar power generated; ❷ the battery swapping demands of users, as well as; ❸ the battery service life. Such predictions are used as the basis to optimize the charging (discharging) speed of batteries inside battery charging lockers in real time, from ICT systems. Then, such optimizations lead to maximizing the use of renewable energy system-derived electricity from solar panels near battery charging lockers or the power grid, to potentially maximize air-pollution improvements and reduce CO_2 emissions. It is furthermore possible to maximize high levels of operational efficiencies (economy), for infrastructural equipment, by sustaining the safety and user convenience of battery sharing services to a high standard.

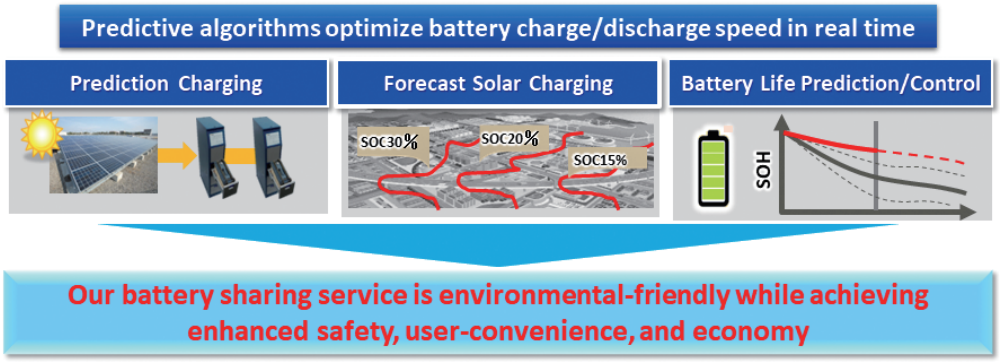
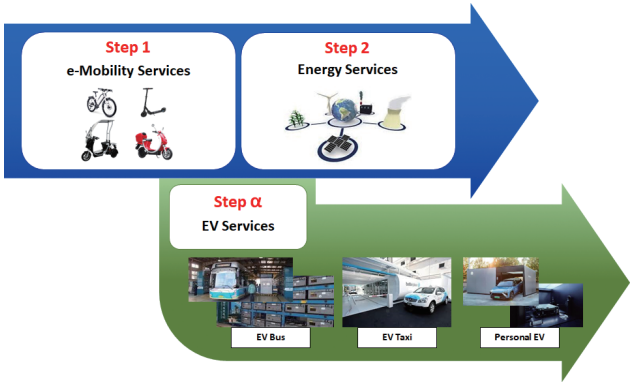


Figure 4: Core competence of RESC

3. We have already acquired multiple patents for ICT systems in several countries outside Japan, including USA, China, India, and ASEAN. The series of technologies, know-how and ICT system patents are not limited to e-Mobility, but also intended for battery sharing services and battery replacement systems for medium to large electric vehicles as well (Figure 5).



Figures 5: Roadmap of RESC

Installation in Practice or Schedule

Domestic 2016 through 2018: e-Platform demonstration conducted in Kawasaki City of Kanagawa Prefecture, in collaboration with the Municipal Government.

Overseas From 2018: Planning and trials started in the market of the People's Republic of China.
From 2024: Planning and trials started in the market of ASEAN.

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