

Naturanix Co., Ltd.

Development & demonstration of a data platform for a next-generation rapid charging system that enables electric motorcycles to be charged within a few minutes in Bangkok, Thailand.



Objective of the project

• Purpose of the Project

To develop and demonstrate a next-generation rapid charging system platform aimed at promoting the digital transformation (DX) of the electric power infrastructure in Thailand and reducing the charging time of electric motorcycles to a few minutes.

• Background

While battery stations manufactured in China have become widespread, the battery life is only about one and a half to two years, which increases running costs. This lack of profitability hinders the further spread of electric motorcycles.

Cooperation with local companies/governments



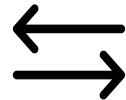
Jowit Global Co., Ltd.
Creating software for digital transformation (DX)

Embassy of Thailand in Japan

- Introduction of relevant government agencies

Thai Automotive Institute

- Cooperation with UNR136 certification



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- Battery pack assembly
- Charging station construction

Targeted economic/social issues

CO2 emissions per capita in Thailand were 3.68 tons in 2020. The Thai government has set a goal to achieve carbon neutrality by 2050, making the electrification of motorcycles an urgent priority. However, the long charging time of commercially available electric motorcycles, which can take several hours, and their poor efficiency hinders the widespread use of electric motorcycles.

Battery-swappable electric motorcycles and battery stations for motorcycles with engine displacements of 125cc or less have started to become popular in Thailand and the ASEAN region as well as in Japan. Battery-swappable electric motorcycles allow users to exchange depleted batteries for fully charged ones in a matter of minutes, thus addressing the drawback of long charging times associated with electric motorcycles. Furthermore, since the battery, a major factor affecting the lifespan of electric motorcycles, becomes a rental component, users no longer need to purchase a new battery, thereby reducing their financial burden.

In Thailand and other ASEAN countries, there are also subsidies from the government for purchasing electric motorcycles. Due to the recent surge in gasoline prices in the ASEAN region, there is a growing interest in electric motorcycles, and users are beginning to switch from gasoline-powered vehicles to electric ones.

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Demonstration Period

September 2022 – January 2024

Details of demonstration

We manufactured Naturanix battery packs that have achieved a charging time of approximately 15 minutes with an expected lifespan of 10 years. Additionally, we produced battery-swappable charging stations in Japan and Bangkok, Thailand. Furthermore, in collaboration with our partner company Jowit Global, we developed DX software to connect the manufactured hardware components.

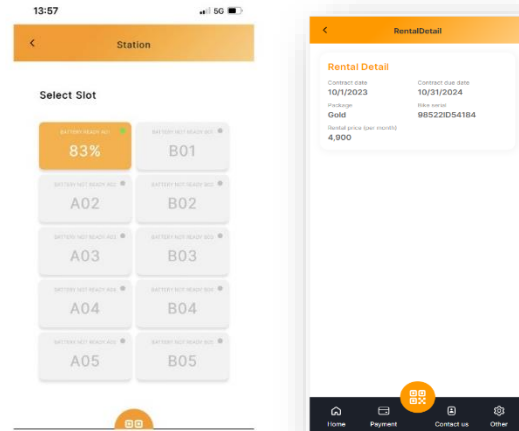


Figure: Completed charging station, battery pack, electric motorcycle, and user interface screen for software.

Project outcome / Future Plans

• Results and Discussion:

Development of the DX software platform system (alpha version) for electric motorcycle sharing services has been completed.

Manufacturing of Naturanix battery packs (alpha version) has been completed.

Manufacturing of battery-swappable charging stations (alpha version) has been completed.

Key technologies for initiating services such as battery swapping mechanisms, charging status confirmation, and personal data acquisition have been established in the alpha version. To further enhance user convenience, improving the user interface of the software and enhancing hardware convenience features such as connectors and remaining capacity indicators will be crucial for future widespread use.

Practical tests were conducted with motorcycle taxi drivers, including usage tests of battery-swappable stations using the app, battery swapping tests for electric motorcycles, and performance tests of electric motorcycles.

• Future Activities:

In the joint venture company, Windee International, established in Thailand in October 2023, we will proceed to secure contracts with 25 motorcycle taxi drivers per month, aiming for approximately 60,000,000 yen in sales by April 2025.

We also plan to launch a battery manufacturing line in Thailand and deploy this system for hot and humid regions outside of Thailand.