



TOKAI RIKA and TAKENAKA CORPORATION, and Two Other Companies

Jointly Develop Keyless System for Aerial Work Vehicles

– Adoption of digital keys to facilitate key management and to promote DX at construction worksites –

TOKAI RIKA CO., LTD. (President: Hiroyoshi Ninoyu) and TOKAI RIKA CREATE CORPORATION (TORICA, President: Shigeru Hayashi) have teamed up with TAKENAKA CORPORATION (President: Masato Sasaki) and NIKKEN CORPORATION (President and CEO: Seigo Minamioka) to develop a keyless system for aerial work vehicles used at construction worksites.

The effectiveness of this keyless system has been verified in the field tests which was conducted at the construction sites in Osaka, and a supply system is now being developed for its wider adoption.



Project Background

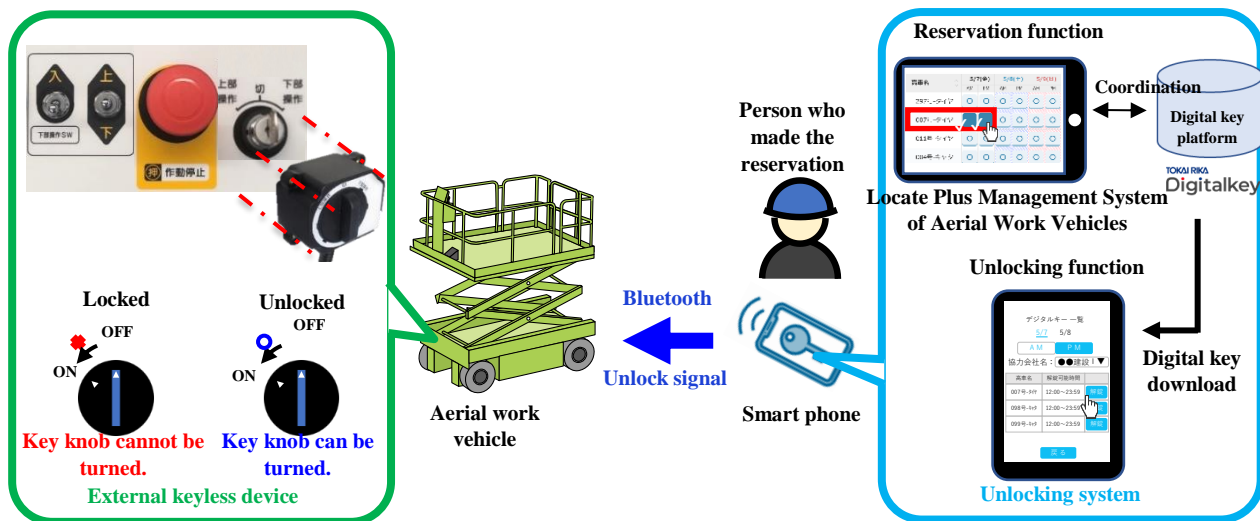
Aerial work vehicles are used in large numbers during the construction of logistics warehouses as well as production and commercial facilities, and the demand for constructing those facilities has grown in recent years. One of the regular tasks of general construction contractor is to rent aerial work vehicles from rental companies and allocate these vehicles to each collaborating construction company. The general construction contractor also performs daily lending and receiving of aerial work keys.

In 2021, TAKENAKA CORPORATION developed the application for Management System of Aerial Work Vehicles which successfully improved the efficiency of aerial work vehicle delivery by centralizing functions such as vehicle locating and reservation management. However, the process of handling aerial work vehicle keys, such as handing over, receiving, and storing keys, has remained as a time consuming process. To help resolve this issue, TOKAI RIKA in collaboration with TORICA, a member of the TOKAI RIKA group companies, which has expertise in construction and agricultural machinery, digitized aerial work vehicle keys, using TOKAI RIKA's digital key technology which is provided through TOKAI RIKA Digitalkey®.

System Outline

The system consists of an external keyless device, that is attached to the key cylinder of the aerial work vehicle before it is brought into the construction worksite, and an unlocking system that transmits signals to unlock the vehicle in the worksite in coordination with the reservation function of Management System of Aerial Work Vehicles. The unlocking system works in concert with TOKAI RIKA's digital key platform and the reservation function of Management System of Aerial Work Vehicles, and uses Bluetooth communication to unlock the aerial work vehicle via the smart phone of the user, who made the reservation. The external keyless device is attached to the existing key cylinder of the aerial work vehicle, and locks or unlocks the vehicle using signals from the unlocking system. This device is compatible with 22 types of aerial work vehicles in common use throughout Japan.

System Illustration



Outline and Results of Verification Tests

TAKENAKA CORPORATION verified the effectiveness of the system at construction worksites in Osaka city between March and April 2022. The system was found to have timesaving effects as below.

- Time saved by general contractor: **30 minutes/day** (by eliminating the need for management of aerial work vehicle keys.)
- Time saved by collaborating construction companies: **15 minutes/day** (by eliminating the need to hand over aerial work vehicle keys in case of lending/borrowing them)

Future Plans

A supply system is currently being developed based on the results of the verification tests, with NIKKEN CORPORATION, which provides the external keyless device and ASAHI CORPORATION (President: Yasuo Miyamoto), a member of the TAKENAKA CORPORATION group companies, which provides the unlocking system that collaborates with Management System of Aerial Work Vehicles. The system is scheduled to start operation at construction worksites throughout Japan from September 2022. TOKAI RIKA Digitalkey® intends to continue collaborating creatively with a wide range of companies to actively provide key-related solutions and services to help resolve various social issues.