

# Contributing to Human and Community Development in Asia

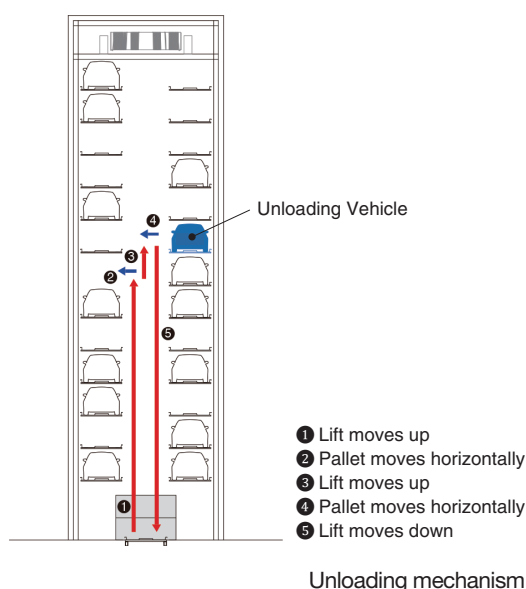
## High-capacity Tower Parking System (Pallet type) eliminate the shortage of parking space in Singapore

In Southeast Asia, there will be growing demand for parking systems contributing to the elimination of traffic congestion caused by parking on the street.

This article introduces the Tower Parking Systems (Pallet type) of IHI Transport Machinery Co., Ltd. delivered to the Housing and Development Board of Singapore.



A Tower Parking System (Pallet type) constructed for the Housing and Development Board of Singapore



### Growing Southeast Asia and its desire of Japanese quality

IHI Transport Machinery Co., Ltd. (IUK) delivered three Tower Parking Systems (total capacity: 86 lots) to the Housing and Development Board of Singapore (HDB) and the system was brought into service in January 2016. This is the first parking system that was manufactured in Japan, then exported to and installed in Singapore. Three companies of the IHI Group — IUK (Japan), IHI Asia Pacific Pte. Ltd. (Singapore), and IHI Transport Engineering Malaysia Sdn. Bhd. (Malaysia) — had cooperated to accomplish the system.

In Southeast Asia, demand for parking system has been growing to relieve traffic congestion caused by on-street parking. Although many competitive products were manufactured around the world, our products could afford to

meet HDB's requirement of Japanese quality. HDB provided housing for more than 80% of the citizens in Singapore. Hence, it is promising that the IHI parking systems delivered to the HDB will be appreciated and become a springboard for the dissemination of IHI Group products.

### IHI parking systems provide high reliability

IHI parking systems are time-honored products that have been preferred by a lot of Japanese customers. The product that IUK recently delivered to the HDB was a Tower Parking System, which was constructed on the ground and enclosed into one building of approximately 40 m in height. The system loads cars using elevators. Each elevator moves the incoming car up and horizontally to place the car in a parking space located on the left or right side of the building.

IUK has been putting the Tower Parking Systems (Pallet

type) on the market since 1992 and periodically releasing new models. We have accumulated many achievements over ten years since the current mechanism was adopted. Over the time we have been making an effort to solve most of the technical problems for better products. To this end, there is a need to simplify the mechanism as well as to reduce the number of components and consequently, reducing the risk of technical failure. Processing the world's highest level of system reliability, IUK's Tower Parking Systems (Pallet type) have been known for their low failure rate.

### Customer specifications make our technology more sophisticated

The manufacturing of the Tower Parking Systems provided to HDB was under a pilot project of measuring land-use of the government of Singapore. Therefore, high level of requirements was needed. This is the first time for us to work on and comply with the following required specifications:

- ① Steel materials to be used shall conform to the applicable U.K. standard, not the Japanese one.
- ② Auxiliary drive units shall be added.
- ③ Pallets shall be widened.
- ④ A car weight measurement function shall be added.

In order to meet the U.K. standard in requirement ①, there was a need to procure and process the steel materials, which were not available in Japan. Under pressure of time, despite of difficulties of coordinating with the local suppliers, our procurement personnel had succeeded to import the required steel materials from China and Singapore by ship. And, due to limited experience of manipulating these materials, although it had taken a certain period of time, we were, finally, able to process all materials according to the design.

The auxiliary drive units in requirement ② were required to ensure readiness for emergency situations. IHI Compressor and Machinery Co., Ltd., a company belonged to IHI Group, was requested to fabricate custom-made reduction gears, that supporting to assemble the units. We successfully achieved the requirement without major changes in design because of the advantages of technical synchronization of IHI Group.

Wider pallets of requirement ③ could not be simply made



Entrance of the Tower Parking Systems (Pallet type) for Yishun District

larger. Therefore, there was a need to develop a new device to support the wider pallets. Increased pallet width led to increase deflection. Deflection value was required not to exceed the maximum allowable limit while securing the permissible range. Even though the product satisfied the required design value, it could not be delivered to the customer without data supporting the validity of the design value. Therefore the verification tests were conducted at IUK Numazu Plant (Shizuoka Prefecture, Japan). This validation was conducted to make sure that the newly developed device was able to make pallets wider safely.

We also developed a new weight measurement function for requirement ④. This new function, which has not been provided in Japan, was designed to indicate the weight of an incoming car immediately after loading. After being conducted the functional verification test using prototype at Numazu Plant, the equipment was subjected to production.

### Overcoming the linguistic and cultural barrier

Information sharing between members is important for carrying out engineering work. To this end, we held web meetings between Japan and Singapore on a weekly basis for the engineering work for the HDB.

We carried out the work while ascertaining the local situation — for example, what shape are the receptacles, what differences are there in the lighting equipment between Singapore and Japan, and so on — eliminating all concerns along the way.

On the other hand, during carrying out these tasks, difficulties in using English had existed. We had only used Japanese before this project was carried out. However, our spirit of engineer was exposed to overcome all the difficulties. Hence, since now, we have been more confident about expand our parking system installation overseas.

Parking systems are in demand in regions harbored a large number of cars but a limited land area. Malaysia, Thailand, Singapore, and other countries in Southeast Asia with relatively developed economies are expected to have growing demand for parking systems.

Currently, we have delivered our products to those countries with a comparative quality to the ones of Japanese market. From now on, we are going to revise our specifications following country-specific needs and standards in order to deliver products with all of our desire to provide greater satisfaction to customer.

We are going to reach the next level of developing products that satisfy customer's needs.

#### Inquiries:

Overseas Sales Department,  
 Parking System Sales Department,  
 Parking System Division,  
 IHI Transport Machinery Co., Ltd.  
 Phone: +81-3-5550-5256  
<http://www.iuk.co.jp/english/>