



HONG KONG INTERNATIONAL AIRPORT

Hong Kong

Cingleot Premium
Logistics Center

The Airport Authority of Hong Kong | 2018 – Ongoing

In 2018, the Airport Authority of Hong Kong awarded a tender to a consortium including Alibaba's logistics arm to develop a new premium logistics centre on the airport island of Hong Kong International Airport. The Cingleot Premium Logistics Centre (CPLC) forms part of the economic strategy for Hong Kong in which the logistics industry is considered one of the four pillar industries for the future development of Hong Kong's economy. The new premium logistics centre also forms a key part of the strategy for ongoing development of the cargo operation at HKIA with a focus on luxury and high value goods such as electronics and aviation parts with a distribution centre serving the regional demand. The land area for the development is 5.3ha and the completed building will have GFA of 380,000 sq.m over 12 levels.

The CPLC consists of two interconnected sub-facilities. The lower levels of the building provide for a freight forwarding operation with security screening, bulk goods store, ULD build-up, ULD storage and ULD transport interfaces for delivery of the full ULDs to the HKIA airfield or other cargo terminal for further handling. The upper floors provide order fulfilment, packing and sorting to achieve the regional distribution centre (RDC) for the high-value goods. The cargo centre will receive goods from both the RDC and from other order fulfilment centres in the Hong Kong / Guangdong region. The RDC will support distribution by air to the major cities and other countries in the region and by road to Hong Kong and Guangdong area. The cargo centre provides 1.5MT per annum of cargo handling capacity, while the RDC provides order fulfilment capacity for 100,000 orders per day, and sorting capacity of 30,000 items per hour.

BNP is responsible for the logistics design for the facility, preparing full detailed design and tender documents for the cargo centre portion of the building while a layout and operational concept has been prepared for the RDC for which the future operation is yet to be finalized. The design faced several challenges because of the shape of the site and resulting building floor plates that are partly triangular. The design considered several options, to seek to optimize the material flow in the facility and the make best use of the shape of the available spaces. The cargo centre in particular presented challenges because of the large size of the MHS elements of a cargo handling operation. As far as possible, a rectangular central core was defined for the main cargo operation with the less regular parts of the floor plate assigned to more flexible functions.

A further challenge of the design was the limited and irregularly shaped spaces available to be used for the bulk goods store which is a key part of cargo operation. In place of the traditional AS/RS cranes or lift & run systems, the recently emerging AGV technology was considered. Study of the function and performance capability of the AGV versions of VNA turret trucks indicated that these would be a feasible solution while addressing the limitations of the traditional AS/RS equipment. The significant benefits of the AGV VNA turret trucks over the conventional AS/RS equipment for this application are as follows:

- Can have a single machine per aisle while still achieving good system resilience because the VNA turret trucks can be easily removed and replaced with another machine with only a small downtime.
- Can most effectively use the relatively limited headroom of the multi-level warehouse. The VNA turret truck can lift from floor level and this optimizes the use of the available vertical height.
- Very short installation time due to the machines being factory-built equipment with minimal and relatively small fixed equipment.
- Maintenance of the AGV VNA turret trucks can be carried out off-line so that routine and annual maintenance can be carried out with very minor impact on the cargo warehouse operation.
- The VNA turret trucks can be easily phased to allow for reduced early capital investment and to be expanded as the cargo volumes increase and multiple suppliers have proven products in this market.

With careful selection of the building blocks of the facility and taking care to provide the appropriate spaces for the main parts of the cargo operation, such as ULD build and ULD transport, the client's business objectives could be achieved. The technology applied in the design also achieves the landlord's (AAHK) objective to have a modern flexible and future proofed facility that can respond to and support the economic objective of Hong Kong.



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SCOPE OF SERVICES

Logistics Design
Detail Design
Tender Documents