

## Proven Positioning Solution for Airport Logistics

### The Challenge

- >> Modernization of a stacker crane of the customer's **Box Storage System (BSS)**: Typically, the BSS handles between 10,000 and 15,000 storage and retrieval tasks per day.
- >> Modernization of an **Elevating Transfer Vehicle (ETV)** at SuperTerminal 1:  
The ETV transports loads of up to 13.6 tons to a height of approximately 39.4 feet (12 m).
- >> Project requirements:
  - >> Integration of the new positioning solution into the existing hardware with minimum downtime.
  - >> A proven track-record with similar retrofitting projects.

### The Solution

- >> Installation of the ARATEC® Positioning Solution System and the FLP6000EOS Energy Optimizing Software.
- >> **BSS**: The new system increased the velocity of the horizontal axis by 6% and decreased the start delay by nearly 40%.
- >> **ETV**: ARATEC® only generates linear ramps to avoid creeping speed.
- >> Thus, oscillations were significantly reduced and the speed of the traveling axis increased by 7%.
- >> The system was installed and commissioned within two days.
- >> The customer benefits from an increased throughput and faster positioning.
- >> The system permits the continued use of existing components, such as PLCs, converters and motor drives.

ARATEC® –  
*Seamlessly integrates into existing  
logistics facilities*



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## Project Brief

### Description

Modernization and optimization of the positioning profile of the stacker cranes in the customer's **Box Storage System (BSS)** that are used for the storage and retrieval of bulk cargo

Storage height: approximately 111.5 ft (34 m)

$v_x$  max = 2643 mm/s

$v_y$  max = 1737 mm/s

Modernization and optimization of the positioning profile of an **Elevating Transfer Vehicle (ETV)** that is also used for the storage and retrieval of standard airfreight containers

Load capacity: Up to 13.6 t

Storage height: approximately 39.4 ft (12 m)

$v_x$  max = 1400 mm/s

$v_y$  max = 215 mm/s

### Customer

Hong Kong Air Cargo Terminals Ltd. (Hactl),  
Hong Kong (the biggest international cargo airport)

### Industry

Airport Logistics

### Scope

- >> Replacing the existing ICS5000L/TCS4000 units, commissioning of the new ARATEC® Positioning Solution System and the FLP6000EOS Energy Optimizing Software
- >> Replacing of laser distance meters
- >> Modbus RTU communication protocol
- >> Retrofitting of 2 axes per stacker crane

### Project Duration

**BSS:** September 2010 to August 2011

**ETV:** January 2012 to April 2012



### Toby Wong, Technical Coordinator at Hactl

*"The references of PSI Technics' positioning solution and the excellent service quality were crucial for our investment decision."*

*The decision to partner with PSI Technics has paid off, and the modernization of an additional stacker crane in SuperTerminal 1 has already been scheduled.*



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Box Storage System (BSS)



Elevating Transfer Vehicle (ETV)



**PSI Technics offers intelligent and efficient solutions that improve productivity and quality in the following fields: Factory automation, industrial positioning systems, industrial image processing, thermal protection of sensors, EMC analyses, temperature/humidity monitoring and analysis, safety engineering as well as R&D for energy efficiency and energy management.**

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