

# The merits of vertical-automated container terminals now proven in Asia

Peter Sloomweg, chief commercial officer, BNCT, Korea

## Introduction

Asia's first vertical-automated terminal shows its merit by proving all the advantages of its design within the first year of operation. Since the first vessel call on 28 January 2012, Busan New Container Terminal (BNCT) has had a quick, successful and smooth operational start in large part due to the advantages of its vertical-automated terminal design and latest technology to match. Thanks to an initial volume of 1.2 million twenty-foot equivalent units (TEU) annualised, this terminal has already demonstrated world class productivity, highest safety levels, shortest truck turnaround times, excellent yard efficiency and environmental advantages compared to traditionally structured terminals and is quickly gearing up to be a leading terminal in Asia.

## World-class productivity

The terminal is ready to make the jump in productivity that vertical-automated terminals are designed for. The entire facility and equipment are performing smoothly with no serious issues or failures to date. BNCT demonstrated very high performance for a brand new terminal delivering 22 moves per hour on the first vessel and now exceeding 30 moves per hour with the highest berth productivity achieved to date of 188 moves per hour.

BNCT's vertical-automated structure creates buffers in the container handling process which de-links equipment. Automatic rail mounted gantry (ARMG) cranes, straddle carriers and quay cranes essentially do not have to wait for the next or previous piece of equipment in the container handling process to start or finish working. With this flexibility, we can immediately respond to changing circumstances or customer requests at any point in the process without affecting other parts.



BNCT's operation in action

The most exciting part about reaching this level of productivity through practice and optimisation of our system during our first year, is that BNCT is now ready to implement one of the biggest operational advantages of vertical-automated terminals - double cycling.

Double cycling is the simultaneous loading and discharging of containers in the same cycle by both quay cranes and straddle carriers. Currently being practiced on selected vessel calls, full implementation of double cycling will deliver a big jump in productivity for large high-volume services.

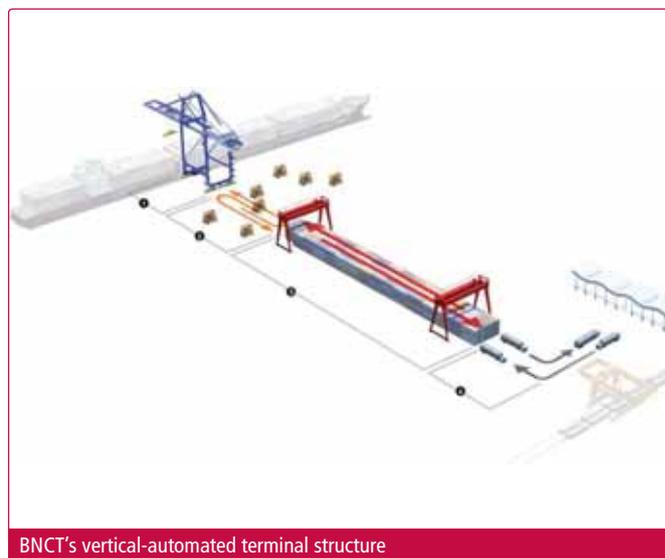
Vertical layout also maximises yard efficiency with less distance for equipment to travel and minimises yard congestion.

## Highest safety levels and more environmentally friendly

With the latest software and automation features to enhance equipment efficiency and utilisation, BNCT is raising environmental standards to a new level. With no trucks or people in the yard it is easy to see that chances for accident or injury and emission of pollutants and greenhouse gases are drastically reduced. BNCT's advanced software optimises yard and equipment planning which reduces wasted energy significantly.

## Shortest truck turnaround time

Due to the vertical layout, automated yard and proximity to our gate, the travel distance for trucks is significantly shorter than conventional terminals. External trucks spend less than 15 minutes at BNCT to deliver or pick up containers. Also, the 114 truck landside transfer points ensure a constant flow of traffic away from the operational yard area.



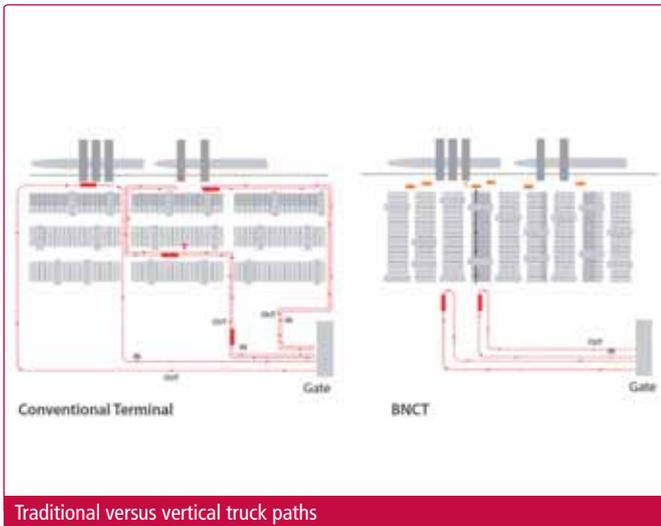
BNCT's vertical-automated terminal structure



BNCT's automated activities reduce accidents and pollution



BNCT can perform double cycling processes



Traditional versus vertical truck paths



BNCT's highly efficient system

## Highly efficient automated yard

At the heart of the terminal is a fully automated container stacking area which uses 38 ZPMC 40-tonne ARMC cranes with automation technology from ABB. Each yard block has two ARMGs spanning 10 rows, which can lift containers one over five. To avoid collisions, each machine is equipped with infrared detection devices that can be adjusted to detect the other machines working in the block from a distance of three to 30 metres. The system also allows close working of the cranes.

Laser scanning, which is installed on the trolley, verifies the given block map data (height and length) for each stack and provides the crane with the requested offset values between the nominal target position of a box and its actual measured position. When the yard equipment is not busy loading or discharging containers, our automated system carries out housekeeping, by automatically moving containers to the ideal position. This function enhances productivity and ensures more efficient operation at peak times.

The automatic yard stacking system (export decking) for inbound containers and the terminal operating system (TOS), automatically assess the vessel, gate and yard status. Each helps us to increase productivity and flexibility, allowing us to respond instantly to our customers' changing needs. The adoption of the vertical layout to make the best use of the yard stacking area also saves on manpower. We are decreasing the number of additional yard lanes needed for phase two expansion which will add another 1 million TEU capacity in 2014.

### ABOUT THE AUTHOR



**Peter Slootweg** is chief commercial officer at BNCT, Korea's newest and Asia's first vertical-automated container terminal in Busan's, New Port. He led BNCT's transition from a project to an internationally-recognised and customer-focused business realising an annualised volume of 1.2 million TEU within the first year of opening. Bringing experience from multiple industries ranging from oil and gas, automotive manufacturing to HR consulting and advertising, Mr Slootweg has been in the container logistics industry since 2006. Before joining BNCT in October 2011, Mr Slootweg performed in global roles at APM Terminals and Maersk Line and, during the recession, was CCO of Gateway Terminals India in Mumbai for three years.

### ABOUT THE ORGANISATION

**BNCT Co. Ltd.** is an independent full-service container terminal in Busan's New Port in South Korea with an initial capacity of 1.8 million TEU increasing to 2.7 million TEU by 2014. BNCT can berth four of the world's largest container vessels simultaneously at 1,400 metres of quay with 16-17 metres water draft. It has the biggest, most technologically advanced equipment supported by the most modern terminal operating system and industry leading automation technology.

### ENQUIRIES

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