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### WHAT IMPROVEMENTS HAS THE TERMINAL MADE LATELY FOR CONTAINER HANDLING?

DaChan Bay Terminals (DCB) is part of the Port of Shenzhen, the third-busiest container port in the world.

To handle ship traffic DCB deploys a full fleet of electricity-powered rubber-tyred gantry cranes (e-RTGs) and dual-hoist tandem-lift QCs, which are able to simultaneously handle two 40-foot containers.

DCB is the world's first container terminal to deploy a full fleet of e-RTGs, using electricity instead of diesel. E-RTGs emit no CO<sub>2</sub> emissions during their operations in terminals and their indirect CO<sub>2</sub> emissions are 60% lower than those of diesel-powered RTGs.

All quay cranes are also electricity-powered. These cranes are able to simultaneously handle two 40-foot containers or four 20-foot containers with lower energy consumption and higher productivity.

### HAS THE TERMINAL ALSO REDUCED AIRBORNE EMISSIONS FOR HORIZONTAL TRANSPORT?

Substituting diesel with LNG helps reduce truck emissions of particulates and nitrogen oxide by 95% and 49% respectively.

Therefore, LNG plays a positive role in improving the terminal environment as a whole.

### WHY DOES DCB WANT TO REDUCE EMISSIONS?

Ships visiting at Shenzhen Port in the Pearl River Delta ECA must use fuel with

a sulphur content not exceeding 0.50% while berthed. This regulation, which comes into effect on January 1, 2018 for all ports within ECAs, was enforced ahead of deadline at Shenzhen port on October 1, 2016.

DCB has joined the Shenzhen Green Port Initiative, a voluntary, self-regulating environmental convention organized by Shenzhen Municipal Government and led by Shenzhen Association of Shipping Agencies and Shenzhen Ports Association.

With the goal of creating greener ports and to protecting the environment, this convention welcomes any port in Shenzhen as well as companies that operate vessels in any Shenzhen Port. It encourages equipment installation so ships in port use shore power supply or other environmentally friendly fuels such as low-sulphur fuel oil or Liquefied Natural Gas (LNG).

Meeting with the Shenzhen Green Port requirements, DCB employs a shore power system with a maximum capacity of 5,000 Kilovolt-amperes (kVA) covering two berths. By rolling out the new shore power system, the port can promote technological advancement and innovation among port companies, playing a positive role in promotion and demonstration of energy-efficient technology.

### HOW DOES DCB USE ITS NEW TOS, NAVIS N4?

Before vessel berthing, the N4 Expert Decking optimization module helps arrange the best rated yard position for each container automatically. Then it prepares the berth allocation, ship plan, yard allocation, and

resource plan via N4 graphical interfaces.

The Control Centre uses the N4 Prime Route function to centrally manage chassis, Quay Cranes (QC) and Yard Cranes which will then operate accordingly. With the N4 system and wireless transmission network, loading and unloading can be done efficiently. Meanwhile, the N4 Quay Commander function allows the Control Centre monitor the work shifts, productivity, and work lists of QC in real time, and to make adjustments if necessary. Throughout the whole process, the locations of containers and the operational efficiency levels can easily be seen by operators.

### HAVE ANY CHANGES TO OPERATION BEEN MADE AFTER USING NAVIS N4?

During DCB's N4 planning phase to post-implementation from 2013-2016, Shenzhen port experienced a 57% cargo throughput increase. DCB has continued to reap the benefits of N4, improving its TEU cost by 5% compared to the same period in 2015. In addition, total haulage productivity in the first four months of 2016 increased by 18%, despite an 11% increase in volume and compound 21% increase in contractor rates. We also reduced consolidation moves by 62%.

Following the deployment of Navis N4, the operational procedures of DCB were greatly simplified, the internal truck turnaround time has decreased, operational costs decreased, while the vessel operations productivity has improved consistently. In March, 2017 DCB received an Inspire Award from Navis in recognition of its excellent performance.



## WHAT ARE THE FUTURE INDUSTRY GROWTH AREAS FOR DCB?

DCB was granted its vehicle import port license in November, 2015, and is currently the only seaway vehicle import port in Shenzhen. With the arrival of its first batch of imported vehicles, the plan to transform its port area into a multi-billion automobile industry centre has officially accelerated. DaChan Bay port area also plans to build an international automobile trading hub across 486,000 square metres, an investment of about

US\$67 billion (CNY¥10 billion).

It aims to serve as a trading platform and innovation base, integrating vehicle import and export trade, customs, inspection, display, trading, experience, culture and finance.

The project has received strong support from Bao'an District Government, which is investing at least US\$8.9 million (CNY¥60 million) to support the development of a vehicle import port in DaChan Bay, facilitating the creation of an automotive industry hub?

## ABOUT THE AUTHOR

Benjamin Lai joined Modern Terminals in 2002 and has been the Managing Director of DaChan Bay Terminals since May, 2012. Benjamin is also Vice-President of the Shenzhen Ports Association. DaChan Bay Terminals is situated in the western Shenzhen port area, which serves the Pearl River Delta (PRD) manufacturing hub. DCB's shareholders include Modern Terminals Limited (65%) and Shenzhen Yantian Port Group (35%).