

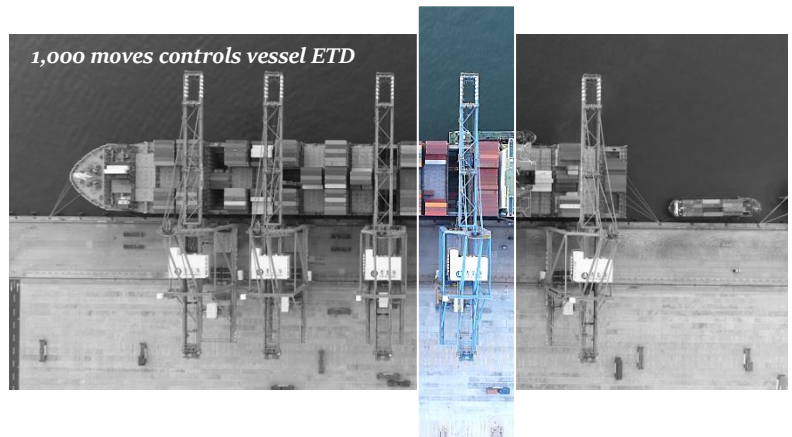
# Big Ships

## Why they are taking longer in ports

With new ships at 24 rows wide and stacked 10 high on deck exceeding twenty thousand TEU, a number of factors are leading to working slower and slower in terminals

With more than one thousand TEUs in one bay of a ship, concentrated stowage is leading to longer port stays. Traditionally ports would deploy more cranes, but no matter how many cranes are used, it doesn't put a dent in vessel stay.

With a concentration of containers in two to three bays, the result is crane splits close to 1,000 moves, ports need to find a new way to work vessels faster.



This article discusses the issues big vessels give terminals with smaller cranes and some of the solutions innovative terminals have implemented to solve this.

### TEU ratio shift from 20ft to 40ft

Despite developing countries still using 20ft containers, general container trade is shifting to 40ft containers, especially on the main trade routes. This forty-foot trend is having a marked effect on reducing crane rates in terminals, as the chance to twin lift 20ft is much lower.

In the past, terminals handled more than thirty per cent of cargo in 20ft containers. However, this is on the decline, with consignees preferring to use 40ft containers due to cost-effectiveness. Terminals are now lucky to twin lift 10% of containers on main trade routes.

With less twin lifting, gross crane rates are lower. This 40ft trend is likely to continue in future on main trade routes between China and USA, and China to EU with almost 100% empty containers on the return leg.

Many cranes are facing 50% of their lifts at 4 tonnes of their designed 65-tonne lifting capacity.

### Crane intensity doesn't solve the heavy hook

Traditionally ports would turn around bigger vessels by deploying more cranes. However, this practice is becoming obsolete, as massively concentrated stowages restrict using more than one crane to do all of the work.

The largest container ships now sailing accommodate 24 rows wide and 10 high on deck, with a further 12 deep in the hatch; this capacity equates to 500 moves in one bay alone.

It is not unfeasible that one crane could fully discharge and back-load 1,000 moves in two adjacent hatches that cannot be split to other crane. This is what controls port stay.

If the moves cannot be shared, and one single lift crane has to move 1,000 container at 25 moves per hour; then **the port stay is 40 hours.**

***"10 cranes deployed on a ship will not make it sail any quicker if there are 1,000 containers in 2 bays".***

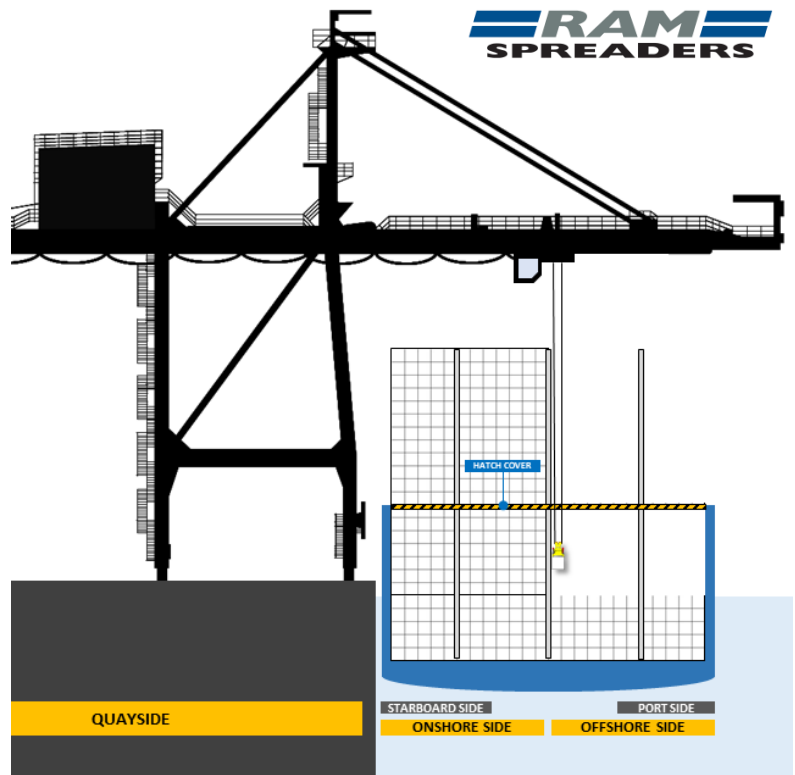
## Stowage planning to cover slow cranes

The traditional way for shipping lines to improve performance from port to port is to spread the stowage configuration to avoid "heavy hooks". However this practice leads to other problems, such as:

- Multiple ports stowed in one bay
- Slow work with cranes hoisting high over towers of containers, and then deep down into blind cells
- Turning two minute cycles into four minutes.

### **Solution**

The only solution is to work these concentrated bays faster and many innovative terminals are turning to tandem 40 to solve this. Working at 25 moves per hour, terminals can regularly achieve 50 forty foot containers per hour!



*"The savings in energy by moving 100 containers in 50 moves can be 15% less energy per box move."*

## Tandem makes financial sense

### **Dollars per box move and revenue per berth**

There are tremendous OPEX savings in terms of labour and energy if a terminal can produce vessel rates of 125 cycles per hour (CPH) using 5 cranes instead of 6 cranes.

Deploying one less crane saves a whole crane gang at the quayside, even if the yard needs the same support when using 6 cranes.

### **Same Capex**

The cost of tandem cranes with higher capacity, stronger structures and complex spreader systems can increase crane cost by 15-20%.

If a vessel rate of 125 CPH can be achieved with 5 tandem cranes compared to six single hoist cranes, the CAPEX is the same, but your daily OPEX in terms of labour allocated and maintenance services reduce.

### **More revenue**

The major benefit to ports in turning around vessels faster is the opportunity to generate more revenue.

If a port stay is reduced from 24 hours to 18 hours, the port can berth another vessel and work at generating more revenue; the utilization of the berth increases as well as profit.



*"Increasing berth utilization by 5% using tandem makes an enormous benefit to profit, as fixed CAPEX and rent remain fixed."*

## Breaking records the easy way

The achievements of ports who deploy more cranes to achieve new handling records, should be recognised and praised, but what if those records could still be achieved with less cranes and less energy per box move?

Tandem is already achieving new handling records for ports, without the expense and energy in using more cranes to achieve the same result.

### Seven-Eleven

Ports using up to eleven STS cranes to handle mega vessels, can reduce crane deployment to just seven cranes using tandem.

Using less cranes significantly reduces the amount of costs and energy and allows a greater opportunity for more ports to convert to tandem operations.



## Proof that tandem works

Since its introduction at DPW London Gateway, tandem operations have become a crucial part of their container handling operations, performing more than 72% in twin or tandem mode with more than 40% tandem rates. Working case studies, such as London Gateway's tandem operations, have paved the way for other terminals to follow suit, with tandem being used in Antwerp, Rotterdam, Le Havre, Doha, Jebel Ali, Lazaro Cardenas, Qingdao and Yangshan.



*"We are pleased that single hoist tandem has allowed DP World to work more productively and, as such, attract more business."*

Andrew Bowen, Head of Engineering  
DP World London Gateway

### The biggest leap forward since the twin lift spreader

We are entering a new era in container handling. An era which will see tandem become the new norm in container handling operations.

An era which will allow terminals to continue to thrive and remain fiercely competitive in an industry which recently has seen new challenges as a consequence of the pandemic.