

APMT installed "tandem 40" cranes with SingFlex in Lazaro, Mexico



design. The smart headblock can transfer from Single to Tandem to Quad quickly and without the need for ground staff. This transformation is achieved in a docking station with an auto-electrical connector. The automated change-over from single to tandem mode for SingFlex is world's best design in tandem. It is performed by the crane operator and is achieved in less than 2 minutes.

Features & flexibility

Due to the large range of different conditions on a ship and the quay, the system needs to be able to adjust to different heights and gaps. The crane operator has the ability to adjust the gap, skew angle, offset capability and height between the spreaders and containers.

Where is it?

After more than ten years of development with units operating in China, South East Asia and North Africa, SingFlex saw its first commercial operation on eight cranes at DPW London Gateway and was recently followed by nineteen semi-automated cranes at DP World's flagship Jebel Ali Terminal 3. After fine tuning the first batch of cranes with DPW London Gateway, RAM secured a breakthrough repeat order from London. This demonstrates customer faith in the system. Both Jebel Ali and London Gateway are using the system extensively, and are regularly achieving 60 containers per hour. APMT, with its fleet of mega-ships, understands the need to work fast, and after working with early iterations of the system in Morocco, APMT installed 'tandem 40' cranes with SingFlex in Lazaro Mexico, with more systems on the drawing board for other terminals.

China factor

RAM SingFlex is taking off in Asia as well, with orders for fifteen units destined for three automated terminals in Shanghai, Yangshan and Qingdao. Yangshan and Qingdao Port are amongst the busiest terminals in China, with over 10 dual hoist cranes each. After having used RAM's twinlift spreaders for their fully automated single hoist terminal, they embarked on a long study of RAM's SingFlex Twin40 Headblock and comparison with alternatives. The study recommended RAM SingFlex to be the solution for the two new automated terminals because of the flexibility, low capital cost and proven stable design. It also has the flexibility to couple with all spreaders, thus ensuring no obsolete equipment. Yangshan and Qingdao Port each placed an order of seven units for phase 1.

Trends in multiple lifting

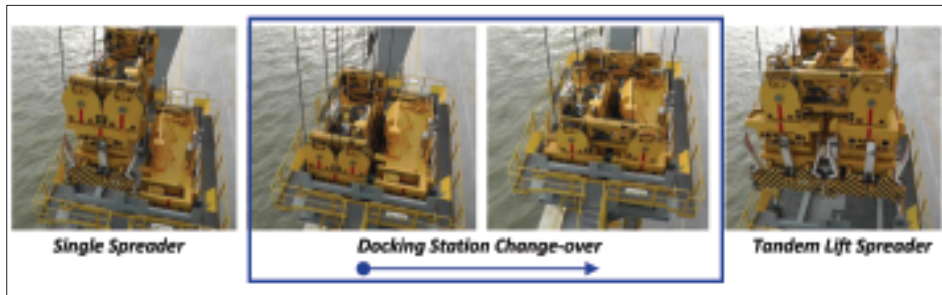
With vessels getting larger, ports are innovating to be able to transfer the containers from these massive behemoths faster. When the 18,000 TEU CMA 'Benjamin Franklin' with decks 9 rows high and 23 wide calls at a port, a faster approach is needed. The answer: many ports are turning to the RAM SingFlex tandem headblock for multiple container lifting. Cameron Hay of RAM Spreaders, part of the PEINER SMAG Group, explains...

Carrying two 40 foot containers is not a new concept, it has been happening in Dubai in the United Arab Emirates for a decade and after years of experience, terminals are fine-tuning how to do this. Experienced tandem crane operators like DP World (DPW) and APM Terminals (APMT) have learned that all cranes on a vessel do not need to work at the hectic pace of 60 containers per hour, instead focus needs to be on the larger points of work which control the vessel sailing. Flexibility is the key to turn around these vessels. You only need to work 2 or 3 cranes at 60 moves per hour. With this in mind APMT and DPW have both opted for RAM SingFlex as their solution to speed up operations. SingFlex has a fully automated rapid mode change system from single to twin headblock mode and presents huge capital savings over a dedicated dual hoist setup. Due to these reasons, we are seeing terminals turn away from the traditional dual hoist design with high maintenance cost.

What is SingFlex

SingFlex is single hoist tandem lifting (SHTL) and uses conventional crane design. It employs a 'smart' headblock that allows two spreaders to attach to a single hoist crane and provides the terminal with tandem lift capability. Each headblock system can transform from single to tandem mode automatically. Transferring from single to twin mode provides the crane driver with the flexibility of being able to handle 2x40ft containers, or 4x20ft containers in tandem mode. Flexibility is the key to the





Similarly, Shanghai Zhen Dong Terminal ordered one unit of the SingFlex Headblock last year. The latest feedback from both terminals is that they are extremely pleased with the efficiency and stability.

Big ships need fast cranes

For terminals to attract bigger ships, they must be able to provide a fast turnaround to get the vessel back to sea quickly. In the case of London Gateway, using single hoist tandem makes them the only container terminal in the UK with a capability to lift two 40ft

containers or four 20ft containers at once. This results in faster operations, attracting bigger ships and more business to the port. There is minimal benefit to running cranes that don't control the sailing of the ship at 60 containers per hour. It is the ability to flexibly deploy tandem that is more important. Single hoist tandem allows terminals to work tandem operations for less than 3% of the capital cost of a ship-to-shore crane. That, coupled with the fast change-over from single to tandem, means that terminals can get all the benefits of tandem 40 handling for a much

Gap Adjustment 0-1600mm	Longitudinal Offset ± 200mm	Skewing Angle ± 5 degrees	Vertical Float ± 1000mm



SingFlex saw its first commercial operation on eight cranes at DPW London Gateway

lower cost. The trend in tandem lifting is heading in the same direction as twin lifting 15 years ago. It's a logical progression that all larger terminals will adopt tandem and quad in the next few years.

Build it & they will come

Many ports are looking for an edge over other ports in their region. Having tandem cranes is a unique offering, showing they are tuned in to the needs of shipping lines. Being able to turn vessels around faster is a big factor in choosing which port to call and who to spend with. Take the Middle East region for example. Despite terminals in Oman, Iran, Bahrain and Saudi having large busy ports, it is Jebel Ali with its high-tech tandem cranes that continues stellar growth. Terminals, the likes of London Gateway, APMT Mexico and Evergreen have all opted for single hoist tandem systems. These bold moves are showing success in these ports, with an example being the UASC's super vessel 'Al Murayykh' re-directing to London Gateway and taking advantage of its connectivity and superfast tandem cranes.

Energy savings

With the cost of energy soaring we all need to conserve energy to help reduce emissions. We should not overlook the cost savings in energy achieved by lifting two containers at once. With the crane trolley weighing more than 100 tons and with the spreader and normal head block close to 20 tons, the ability to add one more spreader and headblock and do half the journeys is significant. A case study comparing the lifting of 100 twenty five tons loaded containers by a single lifting or tandem lifting shows an energy saving of 15 - 20% over 100 containers.

Advantages over dual hoist

For many years dual hoist cranes have been the only way to tandem lift containers. With the advent of single hoist tandem, many ports are choosing to switch to the more flexible single hoist systems. The main reasons many ports are choosing single hoist are:

- ☛ Weight - the extra trolley and motors adds more than 200 tons to the weight of the crane and some civil works cannot cope.
- ☛ Maintenance - the main factor for terminals moving away from dual hoist is the extra cost of maintaining the extra trolley and hoisting system, where there is minimal benefit to running cranes that don't control the sailing of the ship at 60cph. What terminals have discovered is the ability to flexibly deploy tandem, is more important.