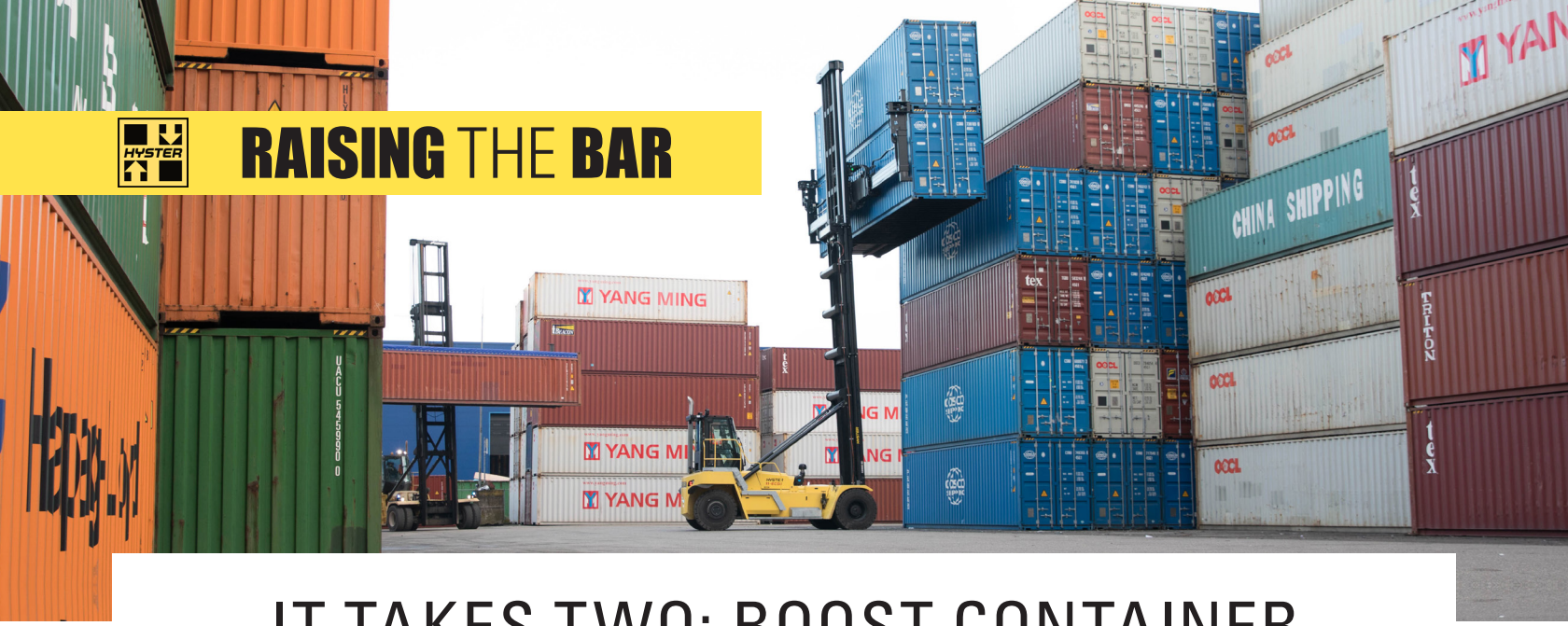

IT TAKES TWO: BOOST CONTAINER HANDLING CAPACITY AND THROUGHPUT

Severe congestion in container yards can wreak havoc on port terminal operations and subsequent stages of the supply chain.

Disarray opens the door for excess container movements, and inefficient use of container handlers can in turn lead to longer queues and waiting times for inbound ships and outbound lorries alike.

But as supply chains adapt to ongoing disruption in the wake of the pandemic and container volumes continue to reach record-breaking levels, the threat of container congestion is only intensifying. Add to that the global imbalance in the geographic distribution of shipping containers that has produced gluts of empty containers at some ports and shortages at others, and charting a course for efficient container management comes against a backdrop of uncertainty.

Under these conditions, port terminal operations face pressure to squeeze the most efficiency possible out of their container handling operations, while lowering the cost per container moved. This paper examines how double container handling can enable process and storage strategies that increase productivity and capacity, and ultimately boost throughput by up to 30%.

// DOUBLE CONTAINER HANDLING UNLOCKS PRODUCTIVITY AND CAPACITY FOR PORTS

While the pressure to move more containers remains constant, ports are also grappling with the challenge of improving ground slot usage to mitigate rising real estate costs and space limitations. In fact, the Global Port Trends 2030 report by Deloitte found that increased focus on spatial strategy will be a key focus for ports over the next decade, due to space scarcity in existing urban ports and increasing complexity of port operations.

But what does the workflow – and the equipment – for double container handling look like in practice? Just as the name suggests, double container handling allows operations to move more empty containers at the same time with less equipment. In addition to the productivity advantage, some heavy-duty double-handling equipment built for high lifting can stack containers higher, bolstering Twenty-foot Equivalent Unit (TEU) capacity, allowing port terminals to make greater use of vertical space. For example, empty container handlers that enable operators to build stacks up to nine containers high can significantly increase capacity and optimise yard space. Even if weather conditions, local policies or other constraints prevent operations from stacking nine high, increasing stacks from five to six containers can still boost capacity by up to 20%.

Double handling empty containers is well-suited to dedicated empty container yards and can also be deployed in straddle carrier ports. In a dedicated empty yard, double handling can allow operations to reduce the amount of equipment required to service lorries, helping reduce traffic congestion. Traffic flow and safety can also be supported by separating pedestrian, lorry, and container handling equipment traffic, with each having designated areas that do not overlap. While separating traffic could also be done with single empty container handling, prohibiting lorries from driving into the container stack area means longer driving distances for equipment to deliver containers to lorries. As a result, this workflow is far more economical with double handling.

The increased volume of containers handled simultaneously can actually *lower* the cost per container. Moving two containers at the same time can also:

- **Reduce driving distance** – which in turn lowers fuel usage, tyre wear, and handling time per container, and increases equipment productivity
- **Reduce time to lift and lower containers to high positions** – which also reduces fuel usage, limits handling time per container, and increases equipment productivity

// WHAT DOES IT TAKE TO DOUBLE HANDLE?

Operating efficiently amid tall, dense configurations of empty container stacks requires equipment and operator skill primed for the task. Empty container handlers designed for handling two containers simultaneously are equipped with a double-handling spreader and the necessary lifting capacity and stability. But what other core characteristics must operations consider for effective double handling?

- **Versatility**

  The standard 20- and 40-foot steel containers are not the only types that equipment must handle. New, specialised container options are becoming more popular, resulting in a wide variety of weights and handling requirements. Urbanisation is also driving growth in the "fresh chain" – shipments of foods and other goods that require cooling – resulting in more refrigerated containers, or reefers. Because different container fittings require different spreader configurations for optimal handling, operations should check that their manufacturer can provide the variety of spreader options to accommodate their changing needs.

- **Strength and stability**

  While 20-foot steel standard containers typically weigh approximately 2,300kg, gas containers or standard reefers with wet floors can often exceed 5,000kg each. In addition to capacity, handling two reefers requires orienting them in the same direction so that their cooling units can connect to power outlets in the yard, so equipment must be capable of dealing with an eccentric load.

- **Security**

  Often, containers being loaded or unloaded are not completely level with the ground, so a spreader feature designed to articulate several degrees to match the angle of the surface or load helps the attachment lock securely into the container pockets while reducing stress on the spreader, mast, and truck.

Lifting and stacking two containers simultaneously requires high performance from operators, especially when working in tight configurations. But labour turnover in the industry is high, making it tough for ports to find and retain enough skilled operators. To reap the productivity and capacity gains of double handling, ports must be thoughtful about using technology and design to set operators up for success.

- **Visibility**

  Operators need a clear vantage point with excellent visibility through the mast. Options for raised and tip-up cabins can provide operators visibility to the top of a container while positioned on a chassis and a more comfortable view when stacking containers more than four high. Radar and smart camera options can also allow operators to check that containers are seated and secured correctly.

- **Ergonomics**

  With labour in short supply, ports need operators performing at their peak. A spacious, comfortable operator environment with ergonomic controls can help fend off fatigue and support performance throughout the course of a busy shift. The cabin should provide comfort and help enhance productivity by positioning all truck controls and information in easy reach, including spreader status and first and second container detection. The joystick should be intuitive and designed for easy, precise operation of the mast and spreader.

// DOUBLING DOWN ON PRODUCTIVITY

While the industry grapples with disruption and continued evolution, the drive for efficiency and doing more with less remains constant. Innovative handling strategies, enabled by double-container handling equipment, will have an increasingly important role to play for operations in need of raw productivity gains and more efficient use of increasingly scarce space and labour. The Deloitte Global Port Trends 2030 report predicts, "Successful ports will be the ones that increase their spatial productivity. Unsuccessful ports will have lost their reason to exist and be swallowed by their respective city."

Are you ready to start optimising your space with double container handling? We're ready when you are. Contact Hyster at **info@hyster.com** to see what's possible in your operation.