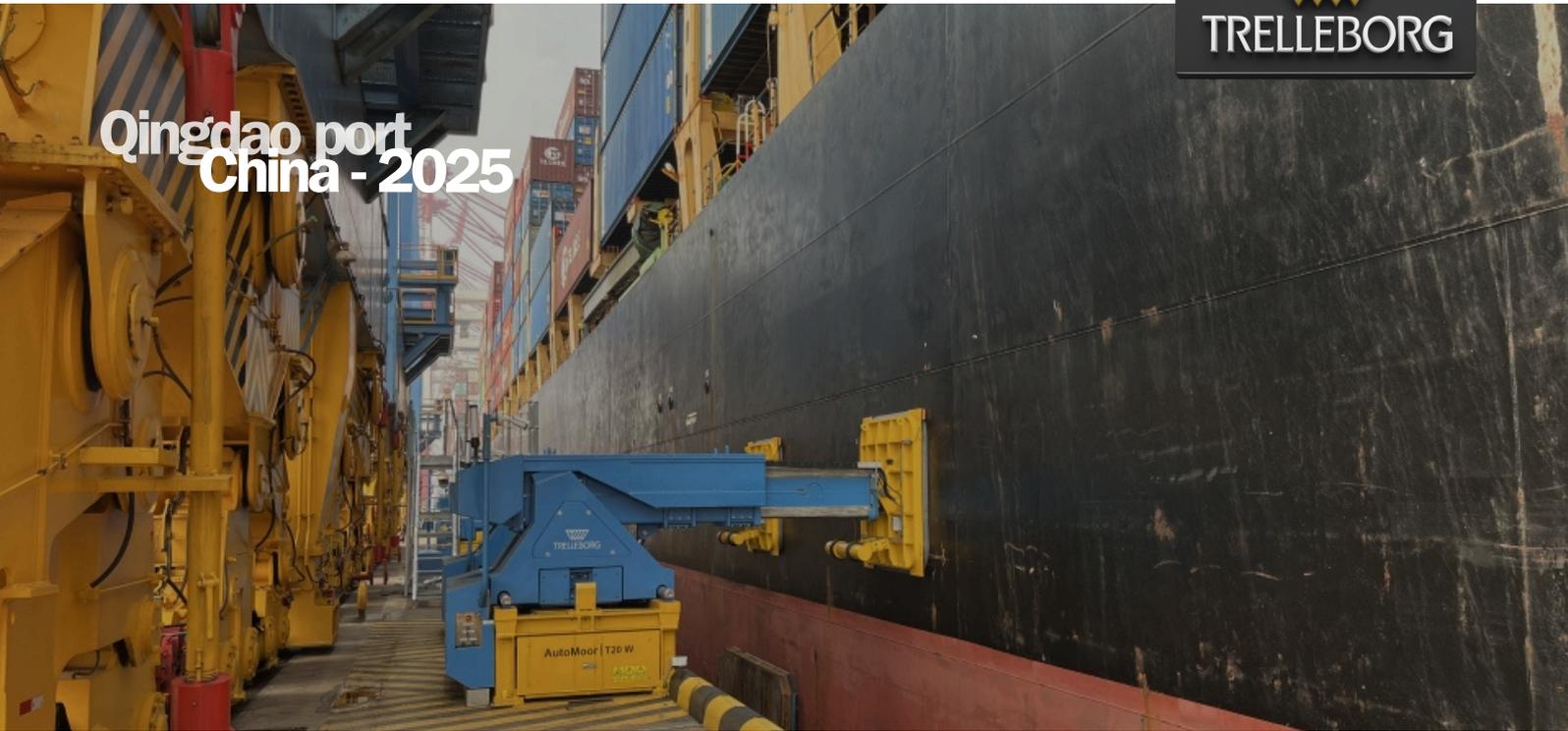


# Qingdao port China - 2025



## From 30 Minutes to Seconds - Setting a new benchmark with China's first vacuum mooring system

### CHALLENGE

As one of the world's most advanced container terminals, Qingdao New Qianwan Container Terminal (QQCTN) operates at the forefront of port automation. With cranes averaging 36.2 container moves per hour, and peaking at a world-record 62.6 TEUs per hour, even minor delays can cascade into congestion, extended vessel turnaround, and lost cargo time.

Handling ultra-large container vessels at busy, high-density berths introduced specific challenges:

- Mooring delays that could restrict crane utilization and overall terminal throughput
- Safety risks for shoreside crews operating in wind, tidal currents, and heavy vessel traffic
- The need to align mooring operations with a fully automated, 24/7 terminal environment driven by AI, robotics, and 5G connectivity
- Growing pressure to improve sustainability performance by reducing engine use and tug dependency

### SOLUTION

As part of its continuous drive to optimize efficiency and automation, QQCTN implemented Trelleborg's rope-free automated mooring system, AutoMoor, marking China's first vacuum mooring installation.

With AutoMoor, vessels are secured at the push of a button, significantly reducing mooring time per vessel from 20-30 minutes to 30 seconds and enabling cranes to begin unloading sooner. The system enhances crew safety by eliminating manual line handling, ensures vessel stability throughout cargo transfer, and delivers the reliability required for high-intensity, round-the-clock operations.

AutoMoor's warping function increases berth planning flexibility, optimizes space utilization, and allows more vessels to be handled within the same timeframe. As a result, average crane performance is expected to rise from 36 to 40 moves per hour, positioning QQCTN for its next world-record milestone.

Working closely with QQCTN and local consultant WTC, Trelleborg carried out detailed site assessments to identify optimal installation locations based on berth structure and operational demands. Beyond performance gains, AutoMoor supports the terminal's sustainability objectives by reducing vessel engine runtime, lowering tug usage, and utilizing energy-efficient damping technology, contributing to cleaner, more sustainable port operations. This installation reinforces QQCTN's role as a model for next-generation automated ports, supporting China's broader vision to replicate this approach across major port zones in the years ahead.

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13 AutoMoor units at the port generates 2,600 kN of suction force within 30 seconds. This slashes the mooring time per vessel from 20-30 mins to 30 secs, securing the ship tightly against the quay wall.

— Mr. Liu Fang Chao,  
Manager of Technical Department  
Qingdao New Qianwan Container Terminal (QQCTN)

”The image shows a large blue and yellow industrial mooring device, the AutoMoor, mounted on a red-painted quay wall. The device consists of a blue upper section and a yellow lower section. The Trelleborg logo is visible on the blue section. The device is designed to generate suction force to secure ships against the quay wall.

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