



China Port Construction (Container port)

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Part 1 The largest container ports in the world

非洲港口



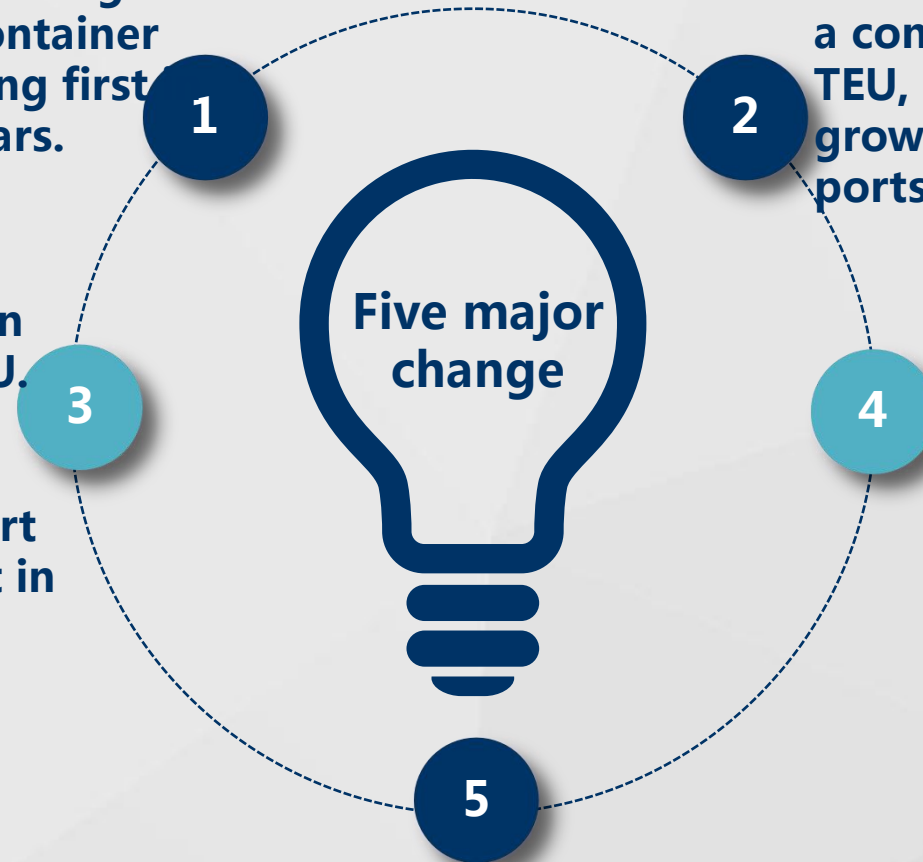
Ranking of the top ten container ports in 2018

Ranking	Country/Zone	Port name	2016 (Million TEU)	2017 (Million TEU)	2018 (Million TEU)	Increasing rate(%)
1	China	Shanghai	37.13	40.23	42.01	4.42
2	Singapore	Singapore	30.90	33.67	36.60	8.7
3	China	Ningbo Zhoushan	21.57	24.64	26.35	7.07
4	China	Shenzhen	23.98	25.21	25.74	2.1
5	China	Guangzhou	18.85	20.37	21.92	7.61
6	South Korea	Busan	19.46	20.47	21.59	5.38
7	HK, China	Hong Kong	19.81	20.76	19.59	-5.68
8	China	Qingdao	18.05	18.30	19.30	5.46
9	China	Tianjin	14.52	15.06	16.00	6.17
10	The United Arab Emirates	Dubai	14.77	15.37	14.95	-2.9

Looking back at 2018, five major change of global container port development

The container throughput of Shanghai Port has exceeded 42.01 million TEU, setting the highest record in the history of container transportation in the world, ranking first the world for nine consecutive years.

The container throughput of Pusan Port has reached 21.59 million TEU. Due to the steady increase of the container transshipment, the container throughput of Pusan Port surpassed that of Hong Kong Port in 2017 and became the fifth largest container port in the world.

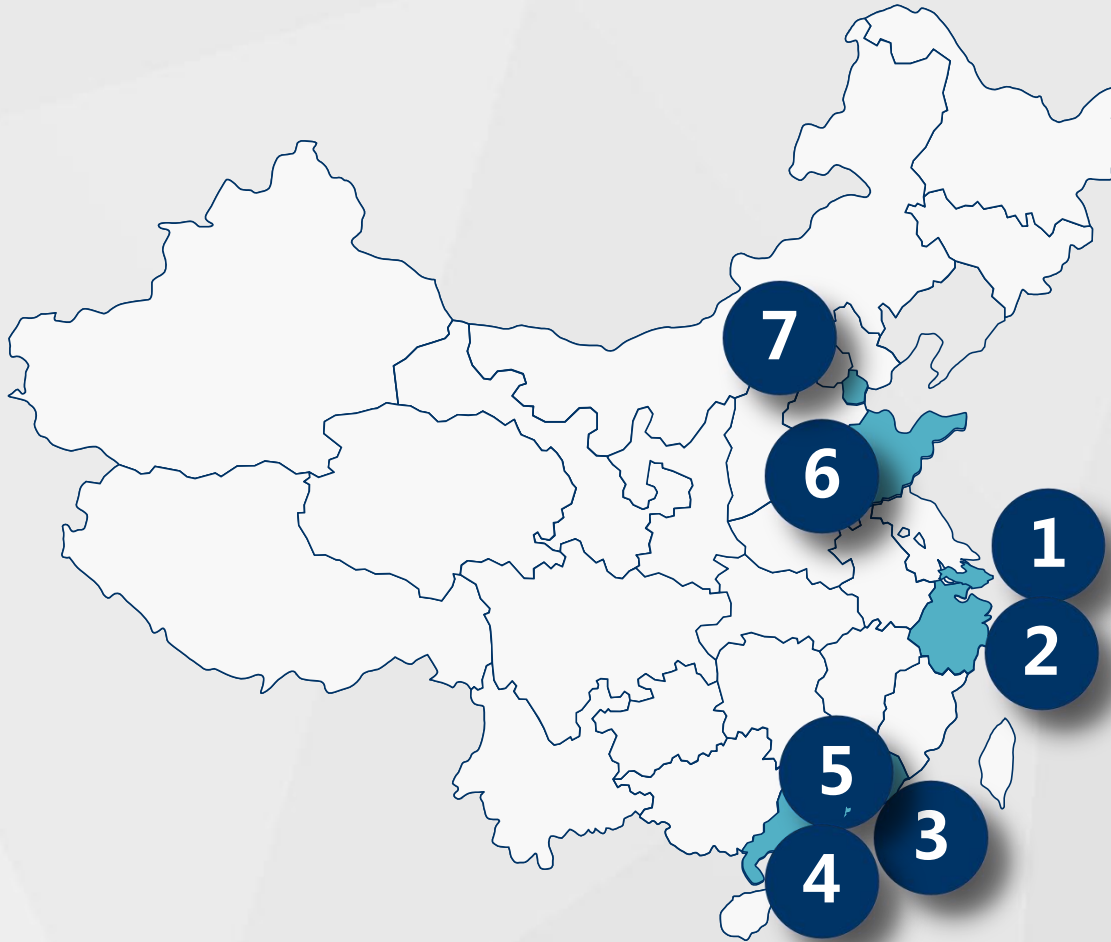


Ningbo Zhoushan Port has become a black horse in container production, completing a container throughput of 26.35 million TEU, up 14.1% year-on-year, leading the growth of the world's top 20 container ports.

In the crisis-ridden Port of Basheng, various liner companies adjusted the docking order, and the pattern of Southeast Asian regional hub port changed. Port Passenger's port business was badly hit, with container throughput falling by more than 8% in 2017, ranking one lower and being overtaken by Port Rotterdam.

The container throughput of Xiamen port is 10 million TEU per year, ranking higher than Kaohsiung.

The top seven container ports in China



- 1 Shanghai
- 2 Ningbo Zhoushan
- 3 Shenzhen
- 4 Guangzhou
- 5 Hongkong
- 6 Qingdao
- 7 Tianjin

Part 2 Fully automated container loading and discharging operation



1



2



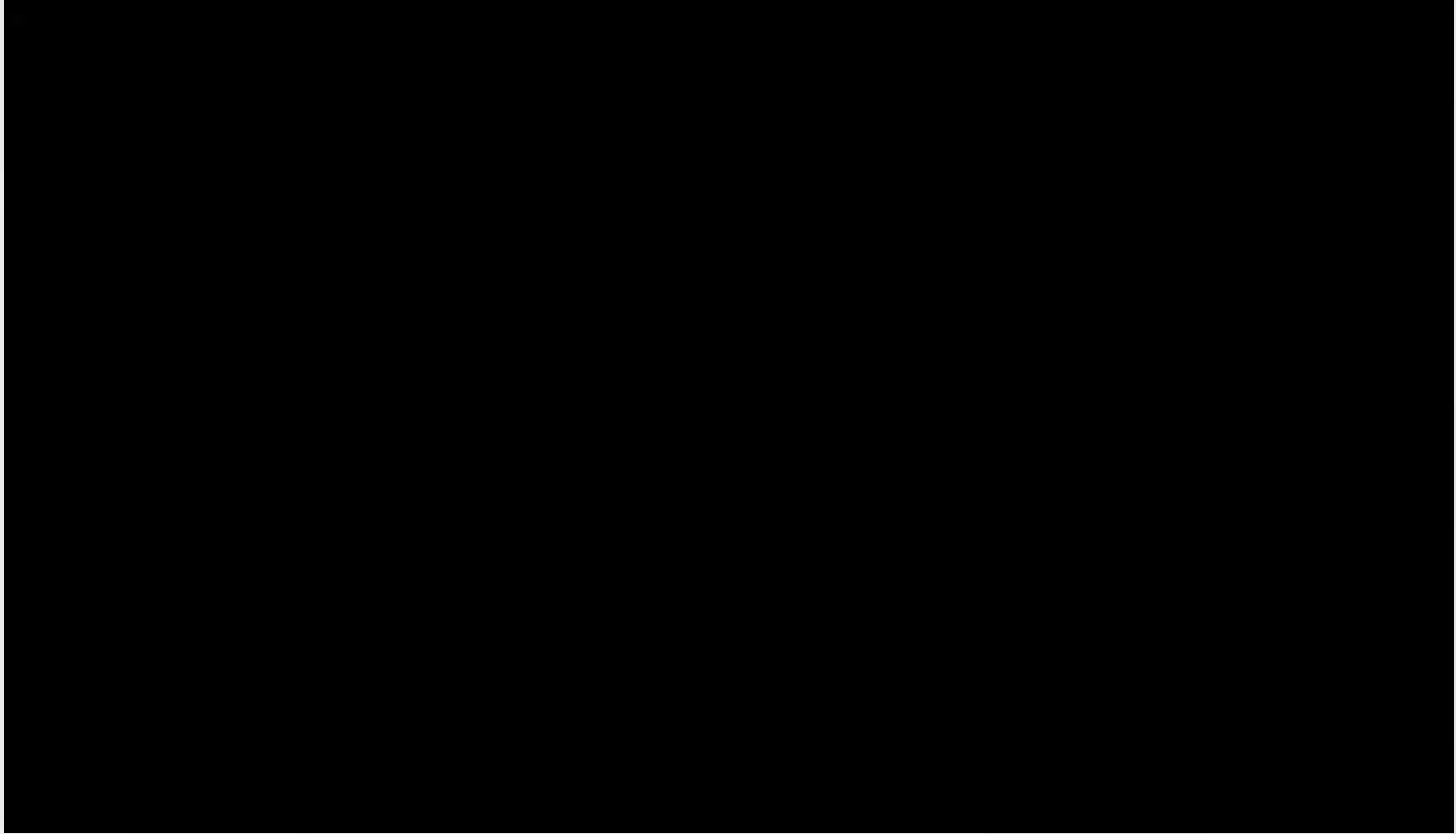
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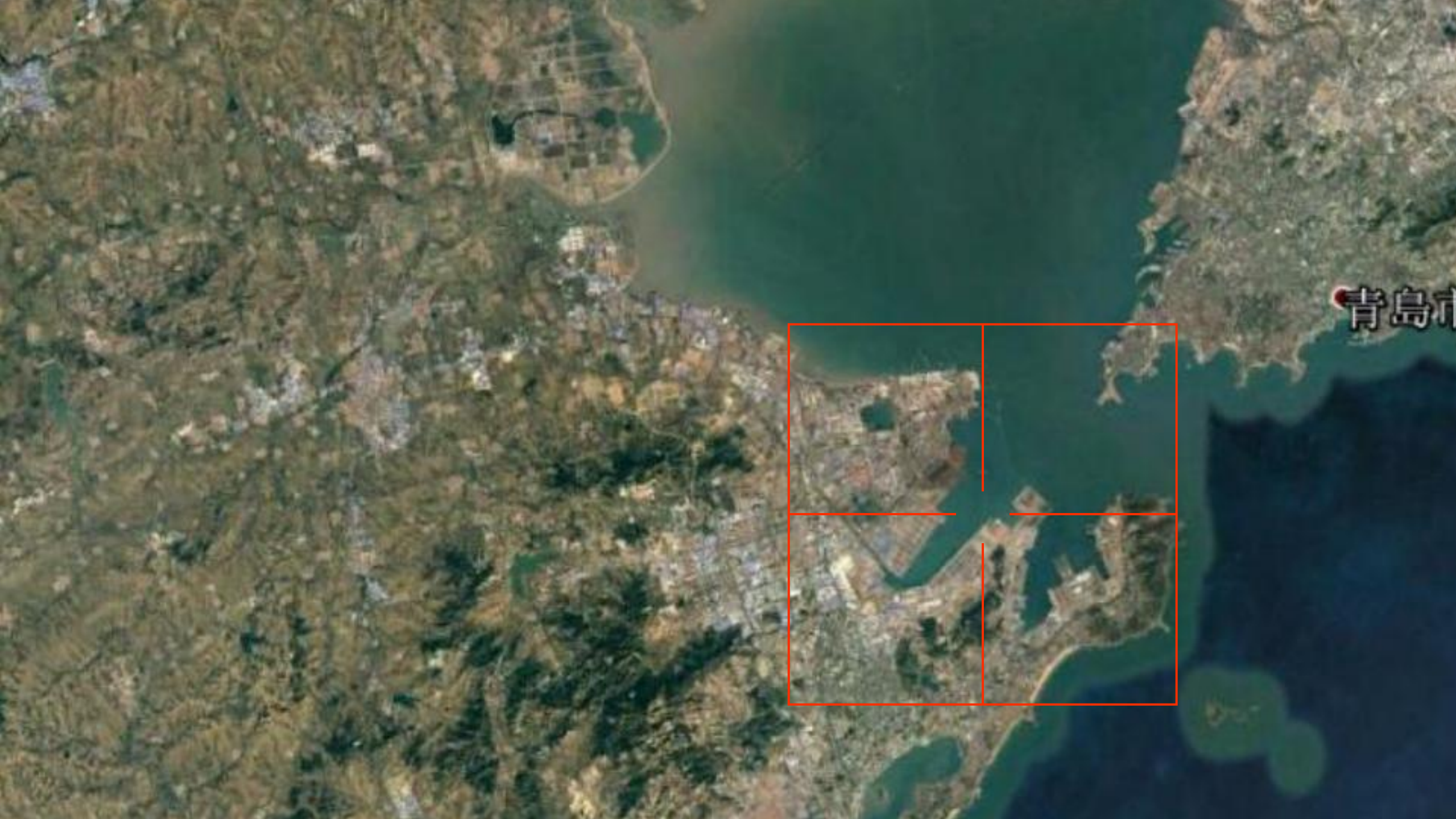
Geography





山東省

青島市



青島市





**Dubai global wharf project
of Qingdao port**

向陽村

Pier construction scene on December 2015





Qingdao Dubai global Wharf Project (2018)



Container handling technology

Adopting full automatic loading and unloading technology, it is equipped with 7 container Crane, 38 full automatic container stackers, 1 Rail Gantry crane, 1 fixed gantry crane, 38 automatic container guide trucks, 2 front container cranes and 2 battery electric forklifts.

Main innovation

The project is highly integrated with the Internet of Things, intelligent control, information management, communication and navigation, big data, cloud computing and other technologies, computer systems can automatically generate operational instructions, on-site robots automatically complete the relevant operational tasks, so that automated terminal business processes are achieved.

The degree of automation is the highest: all the loading and unloading equipment in the wharf have been unmanned, and the whole process of loading and unloading has been completed automatically.

Main innovation

(1) Independently build a set of world-leading intelligent production management system and equipment control system to achieve process flow, intelligent decision-making, automation, working place unmanned, environment friendly.

(2) The AGV automatic cycle charging technology was initiated to make the AGV complete the power supply automatically during the operation cycle, thus canceling the two power stations and saving 1.1 million RMB. At the same time, reducing the AGV weight by 12 tons, it is the lightest weight AGV and the endurance time is unlimited.

(3) It is the first time that the robot automatically disassembled twist lock system of the container to achieve full automation of the production process.











Automatic loading and unloading system for automatic dock



(4) It is the first time that the track crane installed the function of "one key anchoring" device, all yard machinery can automatically complete anchoring in 2 minutes, to solve the global problem of large machinery against sudden gale.



(5) The non-equal-length rear-extension double-trolley bridge crane is first created, which reduces the requirement of foundation bearing capacity and optimizes the layout of bridge crane.

The fastest loading and unloading efficiency: the design average efficiency of 40 TEUs / hour, it is the world's most efficient container terminal design. On April 21, 2018, during the "COSCO Greece" ship operation, set a new record of average single machine operating efficiency, to 43 TEUs / hours.



APR and DEC DENSE FOG 43TEU/H



Two berths, nine remote controllers, take on more than 60 people's work at the traditional wharf, 30% more efficient than the traditional wharf and 70% less staff.

Environment friendly: All the loading and unloading equipment of the wharf is driven by electric power, with the lowest unit energy consumption, and can operate under zero emission and no light.

safe and reliable: the operation site is completely closed and unmanned.

Low-cost and short-term: It took more than three years to complete the wharf construction, system development and adjusting, similar foreign wharf construction cycle need about 8-10 years. Construction cost is only account for 65%-75% of foreign similar terminals.

THANKS!