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SANY®

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SANY Technology, World Quality
**SHIP-TO-SHORE GANTRY
CRANE**

SANY SHIP-TO-SHORE CRANE

ACHIEVEMENT OF
PROFESSIONAL QUALITY

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ENTERPRISE OVERVIEW

Sany Marine Heavy Industry Co., Ltd is the subsidiary of Sany International. It is now located on the west shore of Zhujiang River with a manufacturing base of 6000 acres and a 3.5km offshore line with many berths. Sany Marine aims at building a modern transportation and marine equipment industrial park with estimated sales turnover of 30 billion RMB.

The first phase with an area of 800 acres had been finished and started to manufacture since May 2015 and the products include port machinery, engineering ships and ocean equipment. Currently we have reach stacker, container handler, forklift truck, port tyred crane, STS, RMG, RTG, portal slewing crane, MHC and so on, altogether 16 series and 150 types of products. In the future, a lot of national big strategic equipment will be manufactured here. Sany Marine will insist on persistent innovation, focusing more on green energy, digitalization and intelligence. Sany Marine will keep the pace, focus on energy saving and automation, and promote "automation technology in harbor and port, engineering equipment on deck and energy equipment over ocean". It is our mission to provide the best quality products and service so as to contribute greater to the mankind.

Driven by the enterprise mission of "quality changes the world", SANY Marine Heavy Industry Co., Ltd attaches great importance to process, punctuality and automation. We monitor dynamic display of all the production process, logistics, value flow and pattern; we keep improving in quality manufacturing and won many awards both from home and abroad. Now we are cooperating with a batch of top terminal operators globally.



INTELLIGENT & EFFICIENT

1 Soft intelligent container positioning technology

A laser positioning system is installed on the girder to position the truck precisely and fast. This can be applied in the automatic terminal operation and improves the handling efficiency.

2 Automatic grabbing system of spreader

- Image recognition and positioning of truck under crane
- Image recognition and positioning of truck out of crane
- Ship tilting detecting control technology
- Container lock hole image recognition and positioning
- Ship slot recognition and positioning

3 Intelligent control technology of spreader track

Optimized and safe route of spreader is calculated based on the encoder position detection and spreader track storage. Handling efficiency can be improved greatly.



SAFE & RELIABLE

1 Electrical anti-swing and anti-torque control technology

Electrical anti-swing: Angle deflection between spreader and trolley is detected to control the trolley speed and stop the spreader swing instantly.

Electrical anti-torsion: Anti-sway system detects angle to control trim/list cylinder or motor, thus controlling the spreader trim/list and realize anti-torsion.

2 Multi-function slewing and anti-snag

Advanced hydraulic control technology is applied to cut off the power of control system when there is a snag during the hoisting. The hydraulic valve will be open and the oil cylinder will unload immediately to avoid destroying to the crane or the ship's hold.

3 Anti-collision safety system

- Anti-collision between gantry and truck
- Anti-collision between two gantries
- Anti-collision between gantry and the transfer platform
- Anti-collision between gantry rail and objects beside
- Anti-collision between trolley and mast trolley
- Anti-collision between boom and the mast or buildings



ENERGY-SAVING, ENVIRONMENT-FRIENDLY

Power factor reached more than **0.9**

the amount of harmonics has greatly decreased, and energy saving effect is obvious.

1 Energy recycling technology

Active inverter technology is applied to transfer the stored dynamic power and potential power into electricity and be recycled to the grid. At the same time, it can resist the pollution to grid from higher harmonic voltage, thus increasing the power factor of the equipment.

2 Intelligent low voltage capacitor compensation

Full automatic resonance eliminating reactive power compensation device is configured to achieve the average power factor above 0.9 or more, which improves electricity efficiency and reduces wire consumption.



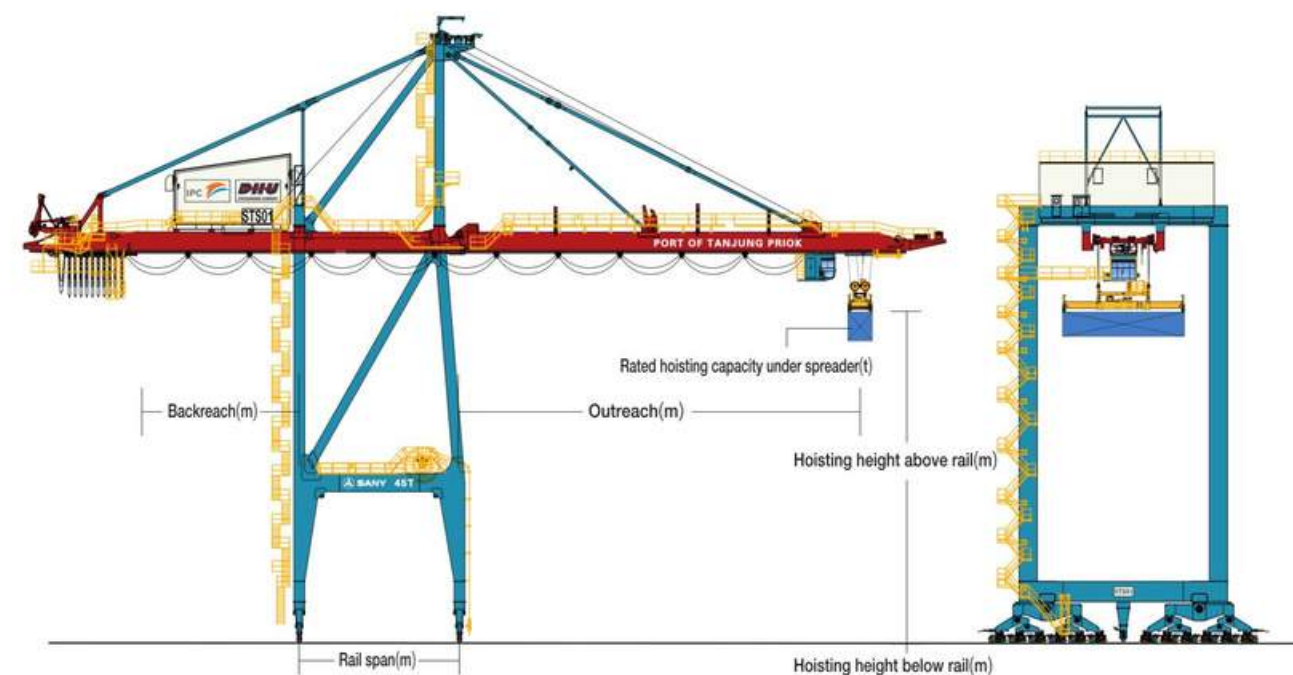
TECHNICAL PARAMETERS

Parameters for standard models

Based on our study in lots of domestic and international terminals, analyzing the characteristics of new and old terminals, combining the handling process and demands, sorting out in the STS, we developed five standard models with hoist capacity range from 41-65t. The combination of standard model and modularization design greatly the span of design and manufacturing. We will develop the customized device for you in shortest time.



STS4502



Model	STS4101S	STS4501S	STS5001S	STS5501S	STS6501S	Other bespoke parameters
Classification	A8	A8	A8	A8	A8	A7~A8
Rated hoisting capacity under spreader(t)	41	45	50	55	65	35~120
Rated hoisting capacity under hook beam(t)	50	55	60	65	75	40~150
Outreach(m)	40	45	55	60	65	18~75
Backreach(m)	12	15	15	18	18	0~28
Rail span(m)	16	18	24.384	30	30.48	10~42.67
Hoisting height above rail(m)	30	32	36	40	45	10~55
Hoisting height below rail(m)	15	15	15	18	20	10~25
Width between legs(m)	≥16	≥17	≥18.3	≥18.3	≥18.3	/
Clearance of portal beam(m)	≥13	≥13	≥13	≥13	≥13	/
Overall width of STS(m)	≤27	≤27	≤27	≤27	≤27	/
Hoisting speed (full load)(m/min)	50	60	75	80	90	30~90
Hoisting speed (full load)(m/min)	120	120	150	160	180	60~180
Trolley speed(m/min)	150	180	240	240	240	100~300
Gantry speed(m/min)	45	45	45	45	45	25~60
Single boom hoisting time(min)	6	6	6	6	6	5~10
Quantity of gantry wheels	4X10	4X10	4X12	4X8	4X8	/

◆Remark: Due to the persistent innovation of technology, partial parameters may be varied. Apart from the parameters above, we have more bespoke parameters, so welcome for your consultation.

MANUFACTURING & DELIVERY

1 The preparation process

Complete process equipment for steel pretreatment, cutting, level cutting, bending forming and other material processing are applied to provide a powerful guarantee on welding quality.

2 The welding process

As the launching of the first semi-automatic welding assembly line for heavy port machinery, the box beam welding cycle has been shortened by 15%. By applying semi-automatic car welding of H-beam, the welding cycle of stay bar system and M-house base has been shortened by over 30%. Large structures including boom and girder are welded complete in the factory, and the UT qualification rate is over 99%.

3 The coating & preassembling

As the launching of new industrial park, super-large parts blasting, component painting, and assembling can be processed in the factory. We have ended the past era of outdoor processing to guarantee the production cycle and product quality.

4 Delivery cycle

The whole delivery cycle of STS (from receiving order to delivery status) is above average in the industry. The manufacture cycle (from material preparation to delivery status) is currently shortened by 120 days than previously.



CONSTRUCTION CASES



December, 2015

Indonesia

3 units of STS4502 were delivered and put into operation in December, 2015. Outreach 40m, rated capacity under spreader 45t, hoisting height above rail 33m, and hoisting height below rail 15m. The cranes have been operating in good condition since delivered.



August, 2015

Latvia

1 unit of STS4501 was delivered and put into operation in July, 2015. Outreach 44.5m, rated capacity under spreader 45t, rated capacity under hook 60t, hoisting height above rail 34m, and hoisting height below rail 14m. The crane applies single beam with self-traverse trolley. It operates well in super cold condition.



October, 2014

Hong Kong

HIT purchased 4 units of STS4101 and 2 of them were delivered in June, 2014 and the other 2 units were delivered in January, 2016. Outreach 23m, rated capacity under spreader 35t, rated capacity under hook 45t, hoisting height above rail 18m, and hoisting height below rail 8m. These cranes apply girder beam and self-traverse trolley, which meets the requirement of low wheel pressure for old dock.



August, 2012

Dandong

2 units of STS were delivered and put into operation in July, 2012. Outreach 40m, rated hoisting capacity 41t, hoisting height above rail 30m, and hoisting height below rail 17m. This crane applies twin-girder and self-traverse trolley. It operates well in cold condition.



April, 2014

Guangzhou

3 units of STS5001 were delivered and put into operation in December, 2010. Outreach 28m, rated capacity under spreader 35t, rated capacity under hook 45t, hoisting height above rail 22m, and hoisting height below rail 10m. This crane applies twin-girder and self-traverse trolley.

SERVICE



Quality Changes the World Service Creates value



Service Concept

All for customers, creating value for customers.

Service Strategy

Build unparalleled service; realize "First Brand of Global Service" of Port Machinery.

Service Advantages

SANY has offices in over 200 countries and regions, with 30 agents in China, about 50 repair factories and 6S stores, over 3000 elite service engineers, 1000 offices and parts warehouse accommodating 100,000 kinds of parts worth more than RMB 600 million. We also have highly efficient logistics system by air, sea and land, which can transport genuine parts at any time.

Industry leading Enterprise Control Center (ECC): running for more than ten years, the ECC, as the industry initiative, is worth over RMB 30 million. It can realize real-time supervision and remote precision troubleshooting. With information promoting industrialization, it innovatively created SANY's service system of "Unity of man and heaven, synergy among 1st, 2nd and 3rd levels".

GCP, GPS and CSM system: customers can learn the working conditions & key work parameters through SANY's global portal and realize remote supervision. The system also supports parts and service search, providing convenient all-round equipment supervision.

