

SANY

RAIL-MOUNTED CRANE



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SANY Technology, World Quality

RAIL-MOUNTED CONTAINER GANTRY CRANE

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Designed and made by R&D institute of SANY Marine Heavy Industry in May 2015



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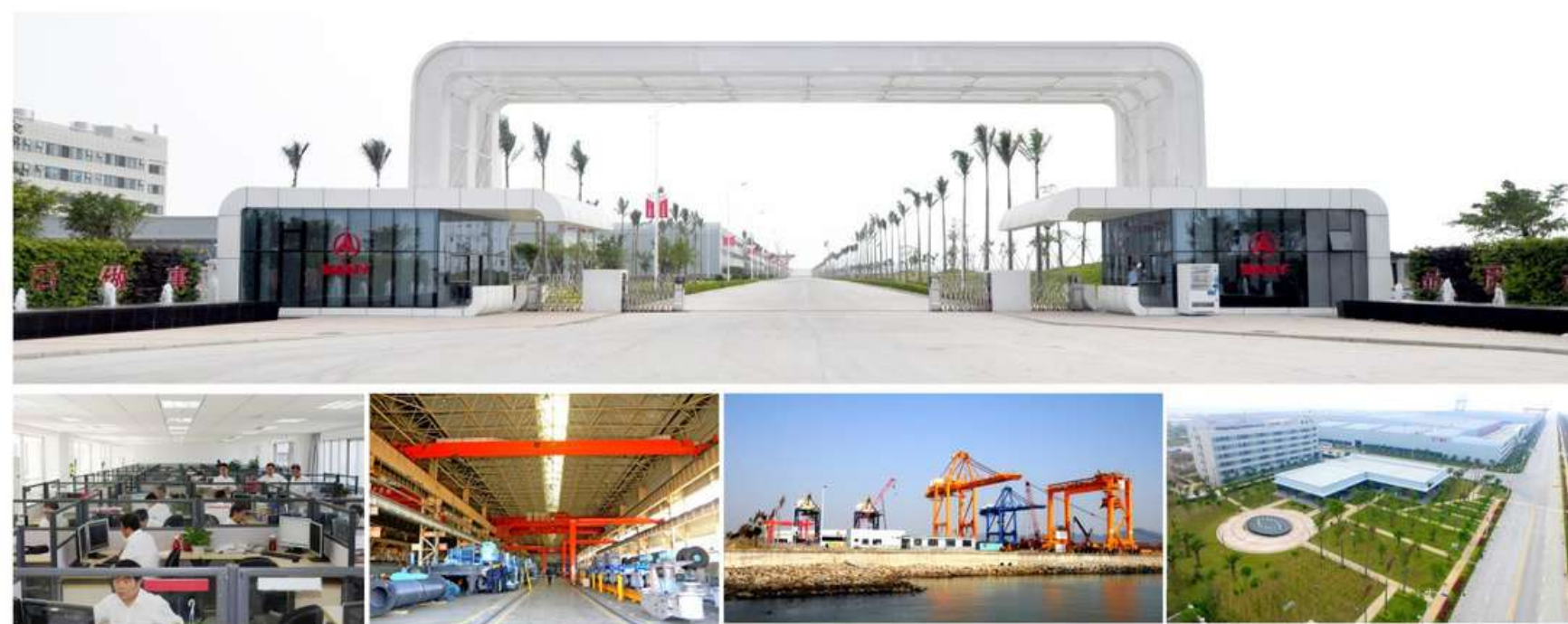


ENTERPRISE OVERVIEW

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 New torque anti-sway system(1)

Through proper arrangement of guide pulleys in the horizontal and vertical direction, the movement of the four wire ropes can effectively prevent the swing of the spreader, greatly improving container hoisting efficiency.

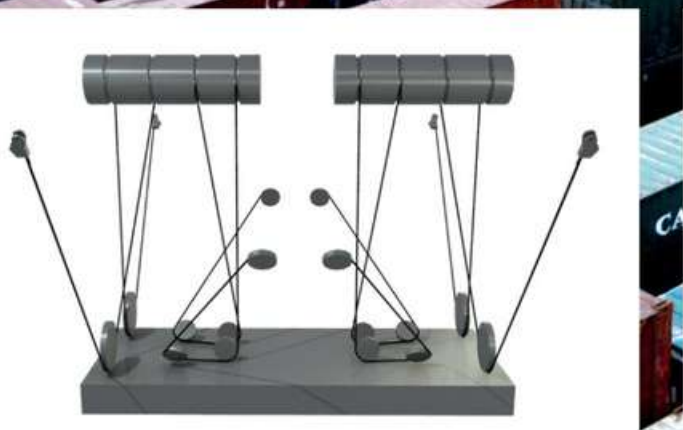
3 Container Auto-tracking and auto-hoisting system

Based on the data stored from the mechanism positions and the containers on the yard as well as database management, automatic tracking operation and the most optimized tracking control of the mechanisms can be realized, increasing the working efficiency and ensuring safety.



2 New torque anti-sway system (2)

The new-developed four rope anti-sway system (Patent number: ZL201220568248.4) effectively achieve bidirectional anti-sway of the spreader. This system allows a $\pm 250\text{mm}$ movement of spreader in the gantry or trolley direction, greatly improving container hoisting efficiency.



SAFE & RELIABLE

1 Soft landing of spreader onto the container

Software intelligent deceleration technology and hardware inspection protection device are applied to adjust the time and position of deceleration dynamically. This helps decrease crush and wheel load, thus increasing service life and stability of the crane.



2 Anti-wind anchor system

Equipped with two independent sets of anchoring device resisting horizontal force, four sets of ropes resisting overturning torque, four sets of anti-creeper or wheel clamp resisting gust, the system ensures the stability of the whole machine. Optional electric iron wedge, wheel clamp, rail clamp, rail jack and other wind proof devices are convenient and reliable.

3 Intelligent rectification technology of gantry

Deflection of bogie relative to the rail is detected in real-time as the control signal for the transducer to control motor speed. The bogie deflection can be corrected manually (or automatically) to prevent rail gnawing, thus ensuring safe operation, reducing wearing between wheel and rail, and span service life of crane.

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



SRMG5508



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 RMG, we developed two standard models with lifting height range from 15.3-18.2meter. 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.

Project	RMG5508	RMG5530S	RMG5540S	Recommended parameter	Optional range	
Hoisting capacity under spreader(t)	40	41	41	35、41、50、65	10-65	
Rail span(m)	35	30	40	30、40	15-50	
Arm length(m)	3/0	5/5	7.5/7.5	4、5、7.5	4-18	
Hoisting height(m)	21	15.3	18.2	12.4(3 over 1) 15.3(4 over 1) 18.2(5 over 1)	9.5-21.1	
Hoisting speed(m/min)	full load	25	22	20	15、20、25、30	10-40
Hoisting speed(m/min)	empty load	50	40	40	30、40、50	20-80
Trolley speed (m/min)	full load	70	70	80	60、70、80、90	
Trolley speed (m/min)	empty load	70	100	100	60、70、80、90	30-150
Gantry speed (m/min)	full load	40	50	50	40、50、60	30-120
Gantry speed (m/min)	empty load	40	50	50	40、50、60、70、80、90	30-120
Rotary speed of trolley(r/min)	/	/	/	1.0、1.1、1.2、1.3、1.4、1.5	This item applies to the gantry and trolley's mechanism	
Rotary angle of spreader(°)	±5	±5	±5	-10~+270或-5~+5	-10~+270或-5~+5	
Power supply	cable reel	cable reel	cable reel	cable reel, trolley conductor	As per client's wharf condition	
Voltage	6.6KV	380V	380V	380V、10KV	380V-10KV	

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 processing equipment for steel pretreatment, cutting, bevel 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 can be welded complete in the factory, and the UT qualification rate is over 99%.

3 The coating & pressemble

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 RMG (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 30 days than previously.

CONSTRUCTION CASES



October, 2015

ZHUHAI

Zhuhai Port purchased 6 units of RMG, whose rail span is 40m, hoisting capacity under spreader is 35t, which fully meet the requirements of 100,000 TEU per year.



March, 2014

GUANGZHOU

Guangzhou Port purchased 4 units of RMG, whose rail span is 45m, hoisting capacity under spreader is 40t, and outreach is 7.5m, which fully meet the advanced standard in the industry.



December, 2015

ZHEJIANG

Deqing Port purchased 3 units of RMG. The outreach is extraordinarily long which meet the working requirements of the river dock, hoisting capacity under spreader is 40t.



May, 2013

SHANGHAI

CRCT purchased 2 units of RMG in December, 2012. The cranes are currently working in good condition. They adopt the upper trolley and lower trolley structure and can rotate for 360 degree.



November, 2014

CHANGSHA

Changsha Port purchased 1 unit of RMG. The crane is now working in good condition and ensures the operation of Changsha Port. Changsha Port reordered cranes from SANY in 2014.

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.

