

Instruction of the side cantilever stacker

一、Summary introduction

The side cantilever stacker is mainly used for stacking limestone, sandstone, raw coal and other bulk materials. It is mainly used for storing and blending materials in stockyard. It is mainly applied for metallurgy, mining, building materials, chemical industry, cement and other industries.

The side cantilever stacker has the advantages of simple structure, reliable performance, easy operation, convenient maintenance and safe operation.

The side cantilever stacker can stacking operation to different material pile, and to stack a variety of materials, meet different stacking processes requirement. The side cantilever stacker was design as compact, electric-hydraulic driven with automatic operating function without man power.

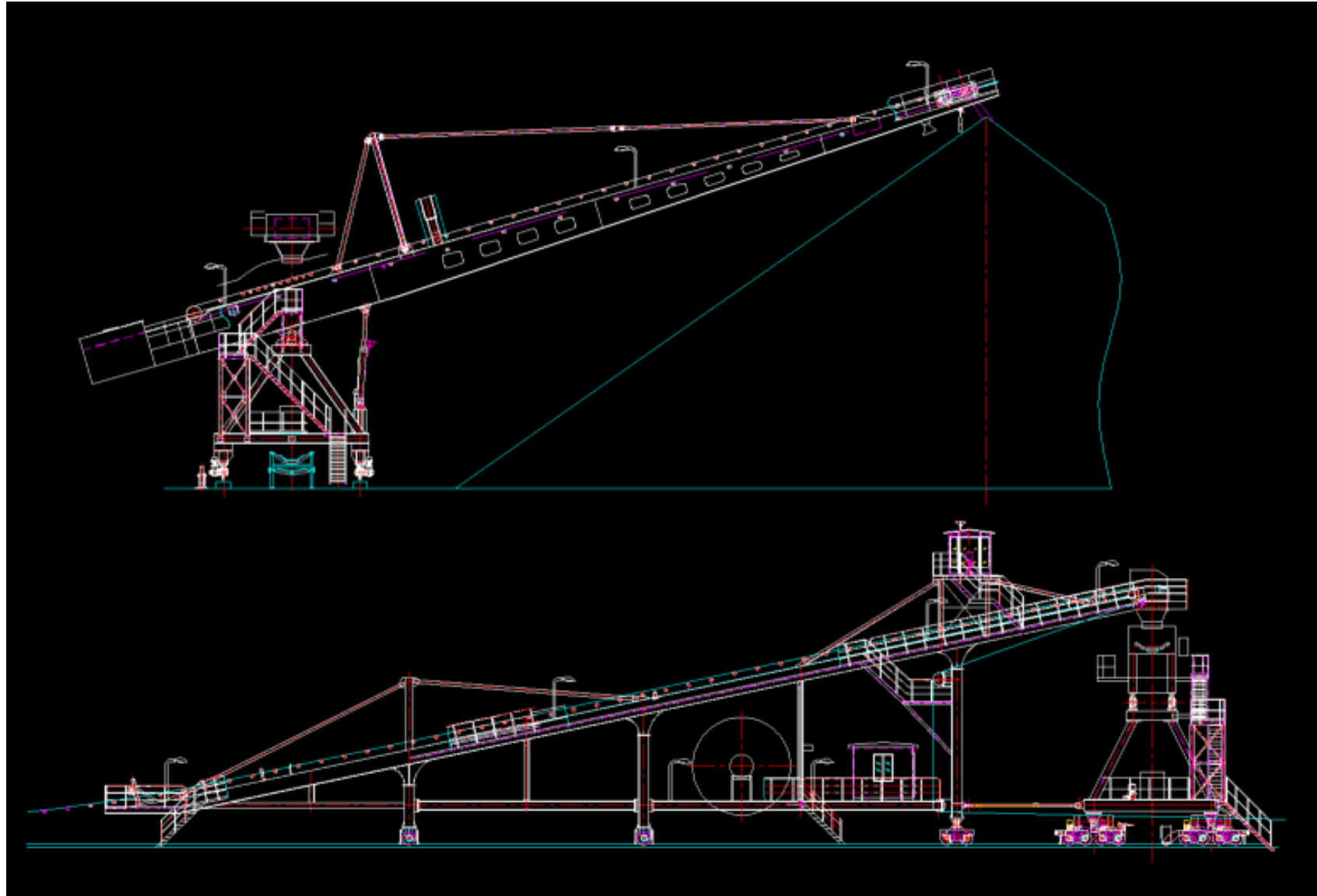
二、composition and working principle

The side cantilever stacker is mainly composed of traveling mechanism, luffing mechanism, cantilever frame, cantilever belt conveyor, feeding system, control room, electrical control system and other components

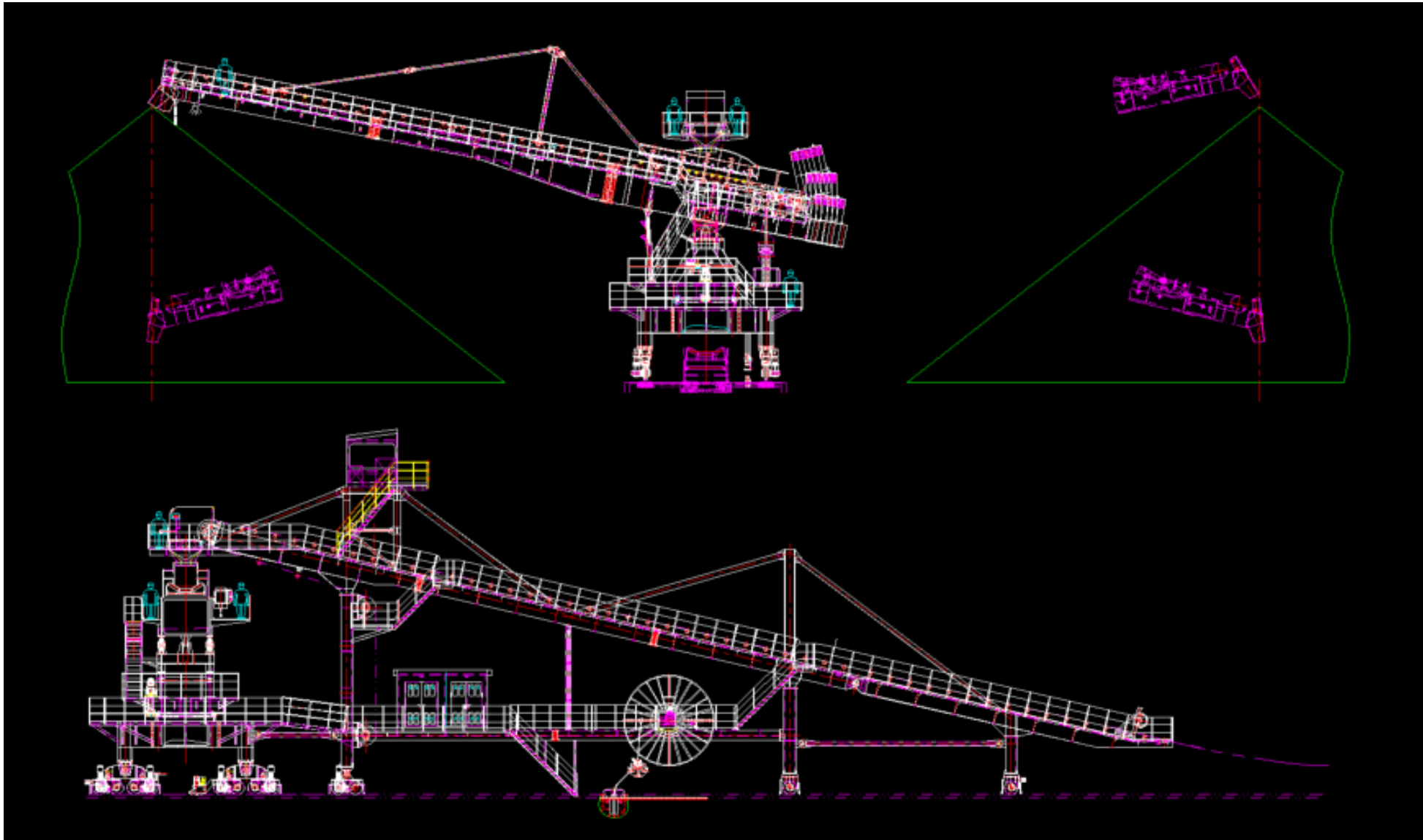
The bulk materials are unloaded to the cantilever belt conveyor via the feeding belt conveyor and feeding system of stacker. And then transferred to the stockyard by the cantilever belt conveyor

The side cantilever stacker moves back and forth along the rail in the stockyard. The bulk materials are stacked one layer at a time. During the formation of the pile, with the detected of the material level sensor, the cantilever belt conveyor is driven by the luffing mechanism and material rises with the change of the pile height until it reaches the set pile height. The materials are naturally stacked to form a Longitudinal pile with herringbone cross section

General arrange(no slewing)



General arrange (with slewing)



三、Main features and introduction

1. traveling mechanism

- (1) The traveling mechanism is composed of a triangular gantry and a traveling driving device. The triangular portal frame is hinged with the upper cantilever through a ball joint, and all the weight of the stacking arm is pressed on the triangular portal frame
- (2) The traveling device is composed of four groups of trolleys. The driving form is driven by "three in one" reduction motor. The reducer is connected with the wheel in the form of hollow shaft locking disc, which has compact structure and convenient disassembly and assembly
- (3) There are two kinds of running speeds, i.e. normal working running speed and high-speed running speed of non working shunting. AC frequency conversion speed regulation is adopted to avoid the impact of equipment starting and stopping
- (4) The machine is equipped with anchoring device and rail clamp. The anchoring device is interlocked with the driving device. When the traveling driving device is started, the rail clamp can automatically loosen the clamp. When the power is off, the rail clamp can still act.。
- (5) Track sweeper, travel limit switch, terminal buffer, etc. are set, and walking audible and visual alarm device is equipped



2. Slewing mechanism

- (1) The slewing mechanism is composed of slewing bearing and slewing driver. The slewing bearing is three row roller bearing or cross roller bearing, which has large bearing capacity, small rotation resistance and long service life
- (2) The slewing driver is driven by AC variable frequency motor, and the pinion of the output shaft of the vertical planetary reducer engage with the big gear on the slewing bearing fixed on the gate base frame, so as to complete the slewing movement in the process of stacking
- (3) A safety coupling is set between the motor and the reducer. When the boom slewing and accidentally touches other objects, the slewing torque is separated from the boom through the safety coupling to ensure the safety of the whole machine



3. Luffing mechanism

- (1) The luffing mechanism is hydraulic powered. The cylinder is hinged with gantry and boom to make the boom luffing.
- (2) There is a safety valve to ensure the balance of the boom in case of a sudden pressure drop.
- (3) When the cylinder keeps staying, the extension of the cylinder within 5mm, there will be no any leakage for the hydraulic system and cylinder.
- (4) There is limit switch on cylinder when the cylinder at end positions.



4. cantilever beam

The cantilever beam is the component supporting the cantilever belt conveyor. It is composed of two I-section main beams and horizontal lattice boom. The I-section main beam is a plate welding structure. The horizontal lattice boom is composed of channel steel and angle steel. The hinge point at the tail of the cantilever beam is supported by sliding bearing and equipped with lubricating nozzle



5. Blet conveyor

(1) The cantilever belt conveyor runs in one way to meet the needs of stacking process. During stacking, the materials are transferred to the cantilever belt conveyor through the tail end through the discharge chute, and the cantilever belt conveyor transports the materials to the stockyard. The cantilever belt conveyor is mainly composed of driving device, idler set, roller set, heavy hammer tensioning device, etc

(2) Buffer idler is set at the discharge place for buffering and improve the service life of idler and belt. The cantilever belt conveyor is equipped with deviation switch, emergency rope pulling switch and other switches, and the middle part is equipped with slip detection device. Equipped with self-aligning idler set, the spacing between upper idler and lower idler shall not be greater than 1000mm and 3000mm. The brake ensures the full load braking torque of the tape at the maximum inclination angle. The driving drum has a rubber coated surface; The rubber casting surface of the reversing drum is flat. Each material receiving point is equipped with a material chute device to ensure no material scattering

(3) The loading surface and no-load surface are equipped with cleaner, and the loading surface cleaner adopts polyurethane composite rubber. The empty section sweeper is set at a proper position in front of the drum in front of the driving device and the vertical tensioning device

(4) A cleaner is set at the discharge drum of the cantilever belt conveyor. The cleaner has the function of automatic compensation, It`s safe and easy to adjust, so as to always maintain a constant contact pressure, ensure the continuous contact between the cleaning blade and the belt, and effectively remove the materials adhered to the belt surface. All cleaned materials should fall into the hopper or chute



6. Tripper car



(1) Rear station is a discharge station, where the feeding conveyor belt pass through, and discharge the material to the cantilever belt conveyor.

(2) The rear station is composed of unloading hopper, inclined beam, column, etc. The discharge hopper is hung at the front end of the inclined beam to unload the materials to the tape surface of the cantilever through the discharge hopper. The inclined beam is composed of two welded I-beams, which are supported laterally by columns. The large columns are connected by I-beam. The inclined beam is provided with a belt conveyor idler, the front end is provided with a discharge diversion drum, and the tail is provided with a pressure roller to prevent belt floating when the vehicle is empty. Wheels are installed at the lower end of the large column. The cab platform pull rod device is arranged on the upper part of the inclined beam to eliminate the deflection caused by the inclined beam

(3) The king column at the front end of the rear station is connected with the lower rotary platform of the traveling mechanism through the traction rod, so that the rear station can travel synchronously with the traveling mechanism

(4) An adjustable baffle is set at the unloading drum, and the discharging point can be adjusted by adjusting the baffle angle and position according to the actual discharging location on site.

8. lubrication system

There are lubrication points for all the rotate movements. The slewing mechanism and traveling mechanism are electrically centralized lubrication, and the other lubrication points are decentralized lubrication to ensure convenient refueling.



9. safety protection measures

- (1) emergency stop
- (2) Short circuit, overload , protection for all electric motor.
- (3) End position protection device for Slewing mechanism, luffing mechanism, travel mechanism.
- (4) safety protection for belt conveyor
- (5) anti-maloperation
- (6) strong wind alarm system
- (7) Interlock protection etc.

10. Power supply system

High voltage or low voltage power supply is adopted; Power is supplied by cable reel or cable drag chain



11. Control system

The control system is generally controlled by PLC, and the operation mode is manual control and automatic control. The operation mode depends more on the man-machine interface on the programmable terminal for setting, recording and observation

四、technical specification

Length of cantilever (m)	Staking capacity(t/ h)	Rail span (m)	material	density (t/m ³)	granulari ty (mm)	moisture (%)
16	100~800	4	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<70	<2
20	100~1200	4	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<70	<2
25	400~2000	5	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<150	<2
30	500~3000	6	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<150	<2
35	800~4000	6~7	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<150	<2
40	1000~5000	7~8	Limestone, raw coal, iron ore, sandstone etc	0.8~2.5	<150	<2