

About Pile Machinery

桩工机械

- Rotary Drilling Rig
- Diaphragm Wall
- GrabDouble wheel milling machine
- Multifunctional rotary drilling rig
- Trenchless Products

Rotary Drilling Rig (Rotary Drilling Rig) is a kind of pile construction machinery equipment (Piling Rigs). It is mainly used in the drilling construction of pile foundation (Piling Foundation). Therefore, many companies related to the rotary excavator industry will be related to the Piling foundation.

- Pile machinery usage

They're used for the construction of various pile foundations, foundation improvement and reinforcement, underground retaining diaphragm walls, underground anti-seepage diaphragm walls and other special foundation foundations. Its function is to bury various piles in the soil to improve the strength of the foundation Carrying capacity.

- There are two basic types of foundation piles: prefabricated piles and cast-in-situ piles

1. Prefabricated piles: buried in the soil with various pile drivers
2. Cast-in-situ pile: A deep hole is drilled with a drilling machine to pour concrete.

Classification and main products of pile machinery and equipment

Prefabricated Pile Construction Machinery

pile driver

Vibrating pile sinking and pulling machine

Static pile driver

Cast-in-situ pile construction machinery (the key is drilling)

Rotary drilling machine

Impact Drilling Machine

punching drill

Punch grab drill sleeve

pipe rig

diving rig

	Advantages	Disadvantages
Cast-in-place pile	high efficiency, environmental protection, relatively less affected by geological conditions	high equipment cost
Long Auger Drilling Rig	high efficiency and low cost	severely restricted by geological conditions, the size of piles is severely limited (diameter below 800mm, pile depth below 30m)
engineering drilling rig	large-diameter, ultra-deep piles are still practical, and the cost is low	low efficiency, serious pollution
Static pile driver	no vibration, no pollution, no noise, good pile quality	restricted by geological conditions, bulky equipment and inconvenient transfer
pile hammer	mature technology	loud noise, serious pollution
Ground to wall hydraulic grab	high groove forming precision, high construction efficiency, large wall thickness, less restricted by geological conditions	high equipment cost
Multi-spindle drilling machine	fast construction speed, good water stop effect, low project cost, no pollution	inconvenient transition, limited geological conditions

Functions of rotary drilling equipment in the international market

All in one machine

Computer control system with remote control function

The display function of the meshing condition of the drill pipe jaw and the power head and the state of the drill pipe

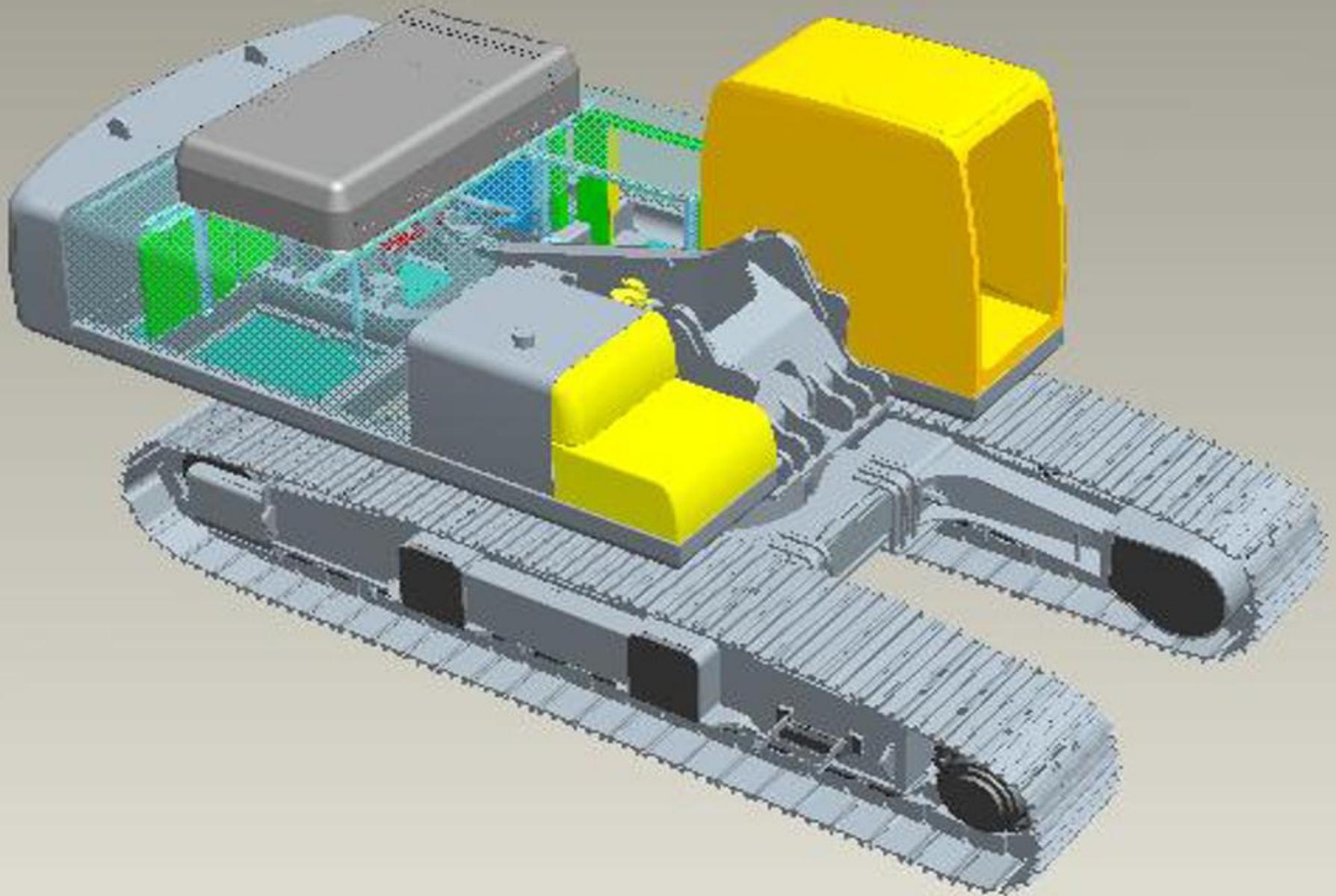
A variety of working devices can be mounted

long screw working device

Hydraulic Vibratory Pile Hammer

hydraulic pile hammer

Full casing joint construction



Chassis	The chassis mainly includes the frame and the traveling device. The frame adopts a box-shaped main structure, the upper part is arranged with a slewing support, and the front and rear parts are provided with a crawler telescopic box-shaped frame mechanism; the traveling device mainly includes a crawler tensioning device, a crawler assembly, drive wheel, guide wheel, load-bearing wheel, supporting sprocket wheel and travel reducer. The crawler belt is widened during work, providing lower grounding specific pressure, improving the stability and adaptability of the whole machine during construction; the crawler belt is retracted during loading, which is convenient for transportation
Luffing mechanism (mast-moving mechanism)	The luffing mechanism is the mounting part of the mast. The mast is installed on it, and the mast is connected with the slewing mechanism on the chassis of the drilling rig. Through the action of the luffing cylinder and the mast cylinder, the mast can be kept away from or close to the chassis and the forward and backward inclination angle of the mast can be changed to adjust the working range of the mast or the position of the transportation state. Machine height.
Mast	The mast assembly consists of a mast and a pulley frame. The mast is a three-section foldable type, which is divided into upper section, middle section and lower section. In the transportation state, the upper section and the lower section are folded and installed to reduce the length of the whole machine in the transportation state. The pulley frame is installed on the top of the mast and is connected with the mast during work. The main hoisting pulley and auxiliary hoisting pulley on the pulley frame are used to change the movement direction of the hoisting wire rope, and are important supporting components for lifting and lowering drill pipes and lifting objects. The pulley frame is foldable, and it is hingedly connected with the mast during transportation to reduce the height of the whole machine during transportation
Rotary Drive	The power head is the most important working part of the drilling rig. It consists of a hydraulic motor, a reducer, a power box, a buffer device, a sliding frame, a connecting plate, and a pressure plate. There is a set of ring gears fixed together with the slewing bearing in the power box, the ring gears are fixed with the hub, and there are three sets of driving keys on the inner wall of the hub. After the high-speed rotation of the hydraulic motor is decelerated by the reducer, the power of the reducer is input to the gear shaft in the power box, and the pinion of the gear shaft meshes with the ring gear to form the last stage of deceleration. The ring gear fixed with the hub is driven to rotate under the support of the slewing bearing, and the key on the hub drives the drill rod to rotate to realize the rotary motion of the drilling rig.
Drill pipe (Kelly Bar)	The drill pipes used in rotary drilling rigs are mainly "Kay-style" round drill pipes, which are divided into friction drill pipes and machine-lock drill pipes. Friction-type drill pipe without "pressurization point" The pressure required for the drilling tool to enter the soil mainly depends on the friction force between the outer key of the drill pipe and the inner key of the hub of the power head and the pressure transmitted by its own weight. It can drill relatively soft geological layers such as clay layers and sandy soil layers. It has the advantages of high construction efficiency and simple structure, but the rock penetration ability is not strong. The machine-lock drill pipe has a pressure point, and the pressure required for the drilling tool to enter the soil mainly depends on the downforce and self-weight transmission between the inner key of the power head hub and the pressure groove of the outer key of the drill pipe. Maximum performance can drill into rock formations and has the advantage of being able to transmit greater pressurized pressure. But the structure is complex and needs to be unlocked.

- Rotary drilling rig operation mode: cycle operation mode

Drill down → drill in → close the bucket door → raise the drill → turn to the discharge position → open the bucket door to discharge → close the bucket door → turn to the orifice

- Restrictions on the use of rotary drilling rig projects

Geological constraints (mountains, granite formations) Design Requirements Restrictions (Popular Construction Methods) Restrictions on operator operation (operator proficiency)

- The main application occasions of rotary drilling rig

1. Rotary drilling rigs can be used in bridge construction projects:

such as high-speed railways, expressways, viaducts, flyovers, and river-crossing (river, sea, etc.) bridge projects.

2. Rotary drilling rigs can be used in engineering projects that require high pile foundation loads:

such as nuclear power plants or nuclear power plant construction, sports venue construction, large airport construction, high-rise building construction, etc.)

Who may need the rotary drilling rig series equipment?

Mechanical equipment manufacturers without the ability to develop and produce rotary drilling rigs

general contractor of the project

engineering subcontractor

construction company

Construction Machinery Trader

equipment lessor

Domestic foreign aid/foreign engineering companies (involving bridges, railways, power plants, etc.)

About

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