



Hebei Moran Environmental Protection Technology Corp.



# About Moran

Hebei Moran Environmental Protection Technology Corp., is one of the high-tech enterprises in China. We are committed to Turnkey solutions of design, manufacturing, installation and commissioning of cold rolling mill and related equipment packages.

Moran has a strong technical team including 2 professor-level engineers, 4 senior engineers, 10 more mechanical engineers, electrical and hydraulic specialties, and 30 more installation and commissioning technicians.

In addition to designing and manufacturing new equipment, we can also provide equipment maintenance, repair, upgrade part of the existing equipment to increase the annual production capacity and other services. With the advantages of our own research and development center and construction team, our company has achieved many successful projects in Vietnam, Uzbekistan, Iran, Indonesia, China and other countries and regions.

Our company adhere to the principles of integrity of management, compliance operation, customer-centric service to cooperate with friends all over the world. Moran team sincerely look forward to working with you.



### Customized Production

Moran is an integrated company with turnkey solution offered: cold rolling design, equipment manufacturing, installation and commissioning. Moran gathered excellent talents of cold rolling industry to specialize in the design and manufacturing of metallurgical equipments. Besides, Moran also has many independent intellectual property rights, which has been put into use on the market, and the parameters completely satisfy the design requirements, leading to stable equipment operation. we can offer different type of cold rolling mill, and we can also customized as you required.

### High cost-effective product

The series of products from Moran have a high cost performance featured by high-end quality and intermediate price. Moran has not only absorbed the advanced design ideas and technical information at home and abroad, but also preferred the domestically mature and stable suppliers with high unit configuration and moderated price.

### All-around pre-sales & after-sales services

Moran provides customers with a full range of high value-added pre-sales & after-sales services. It can not only provide free factory design, public auxiliary facilities selection, unit process layout, civil engineering foundation design reference, but also provide free training on the combination of theory and machine operation of production line operation and maintenance workers.

### Independent intellectual property rights

Moran is unique in the design and development of large cold rolling equipment and environmental protection equipment. Moran has dozens of technical patents, and these patents are applied in the design of various models.

### Technical talent advantage

Moran gathered the outstanding talents in this industry and specialized in the design and manufacture of metallurgical equipment. Our technical team has four levels of talent echelons, including skilled and experienced professor-level engineers, senior engineers with outstanding practical experience and outstanding performance, excellent engineers who pay attention to field practice and combine theoretical application, and young technicians with potential for further development and progress, to provide professional technical support for all our projects both in China and abroad.



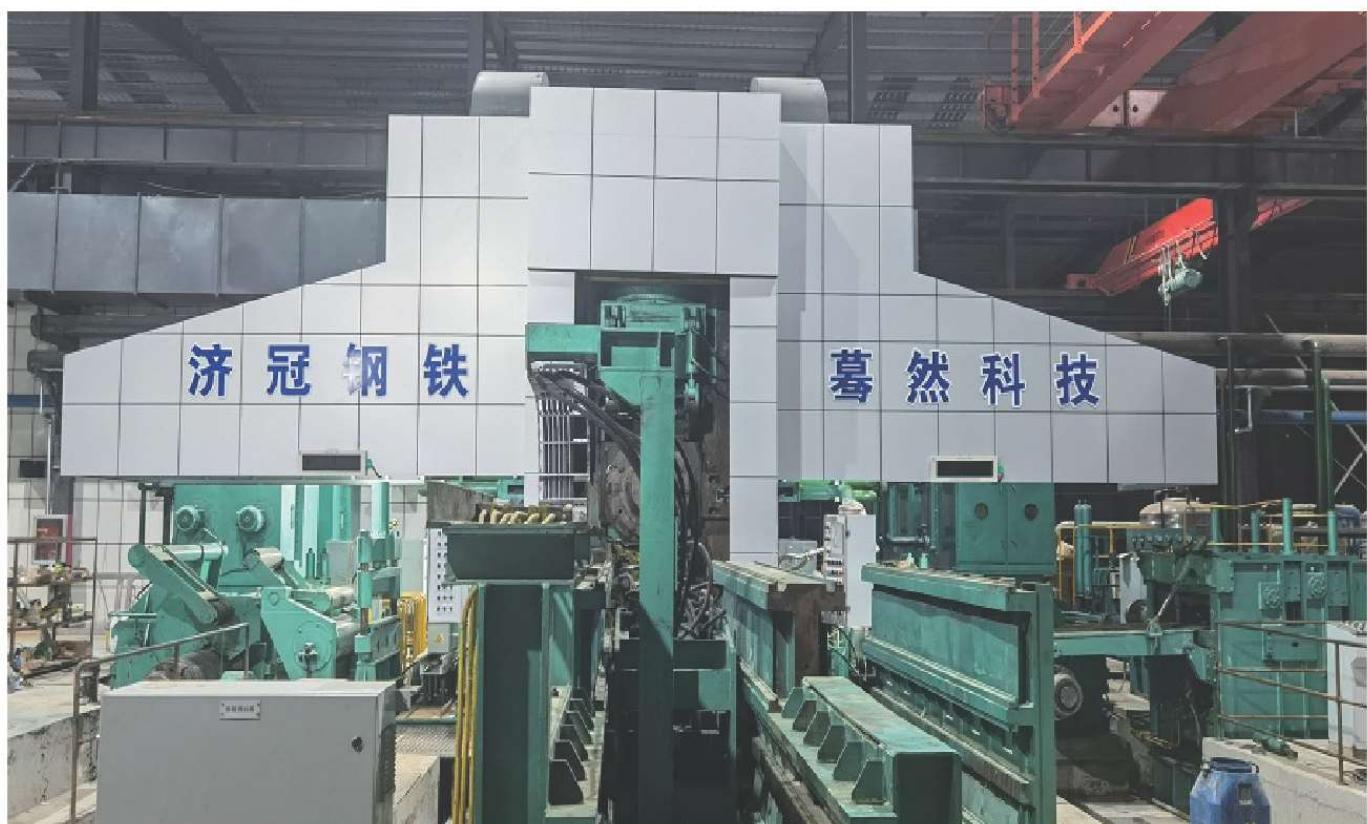
## 4Hi Cold Rolling Mill

The 4Hi cold rolling mill of Moran, can be used in single stand reversible high-precision configuration or in multi-stand tandem rolling high-capacity configuration. The 4Hi cold rolling mill is an universal model in strip steel cold rolling mills, easy to operate and widely used. Four-high cold rolling mill is a horizontal roll set composed of two smaller work rolls and two larger support rolls in the same vertical plane, and its rolling process is carried out in the middle of two work rolls. This type of mill adopts closed-end stand, usually used in plate and strip mill with high requirements of strength and rigidity, and adopts prefabricated convexity of working rolls and positive and negative bending rolls to achieve strong control of plate shape; its product range can reach 0.3-3.0mm\*350-1450mm. This equipment is extremely cost effective, is a mature equipment of our company.



## 6Hi Cold Rolling Mill

The 6 Hi cold rolling mill is based on the four-high cold rolling mill with adding a pair of intermediate rollers which can move in the axial direction, eliminating the harmful contact of the strip edge in the four-high mill, increasing the control means of the plate shape, and reducing the roll consumption. The combination of roll transverse movement and positive and negative bending makes the machine have excellent profile and plate convex control ability, so that the plate shape control technology has entered a new era. 6 Hi cold rolling mill has become the main model of cold rolled plate production, is also the main product of our company, its technical level and function has reached the international advanced equipment level. The machine includes 650mm-1,450mm and other models, rolling speed can achieve 1,500 meters/min, rolling force can be 2,000T, it can rolls low carbon steel, alloy steel and other varieties. At present, our 6-high reversible cold mill has broken through the design limits, and can achieve six passes from 3.0 mm single rolling to 0.10 mm rolling capacity. The performance of the equipment has been widely praised by users.



## 8Hi Cold Rolling Mill

Off-set 8 Hi cold rolling mill (MKW) is an extension of four-high rolling mill. The diameter of the work roll is 1/6 of the backup roll, and the relative offset is to prevent the horizontal bending of the work roll. The rolling force is half of that of the four-high rolling mill. The work roll has good stability and high horizontal stiffness, and can be used to roll part of the products rolled by the 20-high mill, but the structure and adjustment of the eight-high mill is much simpler than that of the 20-high mill. This kind of partial eight high cold rolling machine can be converted into two, four, eight, sixteen high concentric type, suitable for the needs of multi-medium products, so it is also called multi-purpose rolling mill, and used for cold rolling stainless steel, silicon steel and non-ferrous metal strip which is difficult to deform. The 1,450 series eight-high rolling mill developed by our company can reach the speed of 480 m/min, which is in the leading position in China among the same models. The specification of stainless steel products can reach 0.15\*1,450mm.



## 20Hi Cold Rolling Mill

20 Hi reversible cold rolling mill has the advantages of small diameter of work roll and high rigidity of mill stand. The equipment has been widely used in cold rolling fields such as stainless steel, silicon steel, alloy steel and alloy materials. 20 Hi reversible cold rolling mill is used for high - precision production of electrode strips. Our 20 Hi reversible cold rolling mill can produce stainless steel products up to 0.05mm series and silicon steel products up to 0.1-0.3mm at a design speed of 900m/min. Our 20-high rolling mill is divided into two types: integral stand and open roll box, which can meet the needs of various products.



## Tandem Cold Rolling Mill

This unit is a continuous cold rolling unit formed by free combination of 3-8 rolling stands. It is a kind of model with high production capacity, low cost and high production efficiency. This unit can adopt four rolls, six rolls, multi rolls configuration or combination, maximize the realization of rolling, and it's applied to the production of carbon steel, stainless steel. The coil width covers 400-1,450mm and the maximum rolling speed is 900m/min.



## Skin Pass Mill

The unit has dry and wet two leveling functions. "S" roller can be in vertical or horizontal configuration as required. Maximum speed 1000m/min, maximum tension 20 tons. The equipment is equipped with welding machine, roll cleaning device, roller bearing oil and gas lubrication, laser velometer, tension meter, thickness gauge and other equipment for choice. The electric transmission system adopts Siemens PLC as the main controller; AGC system uses Siemens controller. The key components are imported from abroad, such as servo valve from MOOG, magnetic scale from SONHY, laser velocity measurement from POLYTEC, tensimeter from Dr-Brandt, etc.



## Tension Leveler

Tension leveler is a mechanical equipment which uses high tension to stretch the heat-treated plate to make it flat. Its elongation can be controlled within the range of 1-3%, and the maximum speed is 300m/min. The unit is applicable with various models with coil width 650-1,450mm. Our company provides double bending double straightening, three bending three straightening, two or more sets of tension roller configuration. Equipment products are used in general carbon steel, stainless steel, alloy steel fields.



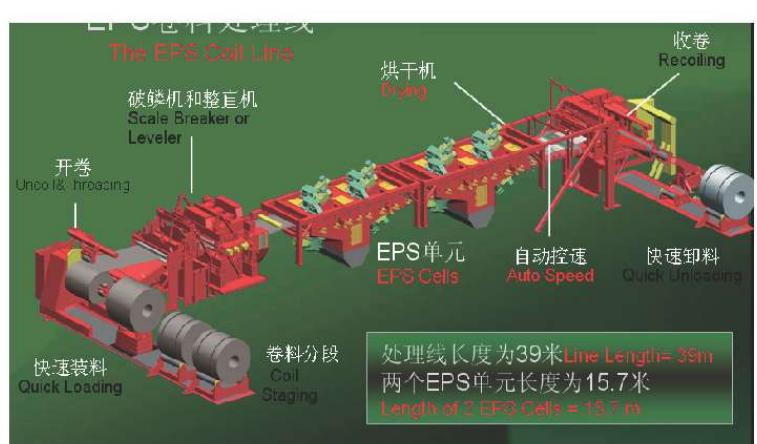
## Pickling Line

Pickling line plays a key role in metallurgical industry before cold rolling process. Its main function is to remove the oxide and dirt on the surface of hot rolled strip steel coil by means of mechanical and chemical action, so as to obtain the surface clean strip steel.

Our company can provide continuous, semi-continuous, push-pull and other types of pickling production lines. It's used for common carbon steel, stainless steel, silicon steel, alloy steel and other varieties of pickling process, involving models including bandwidth range: 650-1650mm.

## High pressure water treatment equipment

With the development of cold rolling industry, the problem of pickling pollution is becoming more and more prominent, which has caused serious impact on the development of the whole industry, so how to deal with the pollution of cold rolling pickling has become a thorny problem in the cold rolling industry. The metal surface cleaning technology developed by our company can effectively remove the oxide layer on the strip surface and meet the requirements of cold rolling industry for pickling plate. This technology draws on the advanced concept of EPS from abroad. The steel coil treated by this technology has obvious advantages compared with the traditional pickling coil, with good surface quality and low manufacturing cost. The most important thing is that the technology has no pollution to the environment. It is a clean and environmental protection new technology and has a very broad market prospect.



## Galvanizing Line

Galvanizing production line is a complete set of equipment for hot dipping zinc alloy layer on both sides of steel coils. The production line consists of un-coiling machine, welding machine, material storage machine, degreasing cleaning unit, continuous annealing furnace, zinc pot, air knife, polishing machine, tension leveler, oiling machine, shearing machine, winding machine and other equipment. Our galvanizing production line uses electrolytic degreasing and chemical degreasing to clean the strip surface; Heating furnace adopts electric heating or gas heating two forms for choice, and equipped with protective gas full recovery and reuse system; It can produce aluminized zinc, zinc aluminum magnesium, zinc and other products. Unit specification: 0.15-2.5\*650\*1450mm.



## Color Coating Line

This unit is an automatic strip color coating unit, with functions of degreasing cleaning, chemical coating, two coating and two drying, etc. Product quality refer to the national standard (color: GB/T 12754-2006).

The technological process is as follows:

Feeding Coils → uncoiling → cutting → welding → inlet looper → degreasing (alkali spray + alkali scrub + water wash 1 ~ 2+ fresh water spray) → Hot air drying → chemical coating → chemical coating drying → primary coating → coating curing → water-cooled air drying → fine coating → coating curing → water-cooled air drying → outlet looper → inspection table → coiling → discharging coils → packing.



## Annealing Furnace



Bright annealing, commonly known as brilliant annealing, is mainly heated in a closed space, so that the temperature in a closed space slowly cooling at least 500 degrees below the natural cooling will have brilliance and not cause decarbonization. Ordinary annealing heating and cooling will occur oxidation and decarbonization, so the heat-treated steel after additional processing will increase the loss of metal and cost, so bright annealing is widely used.

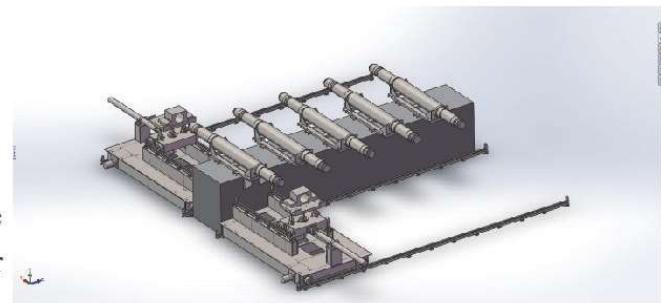
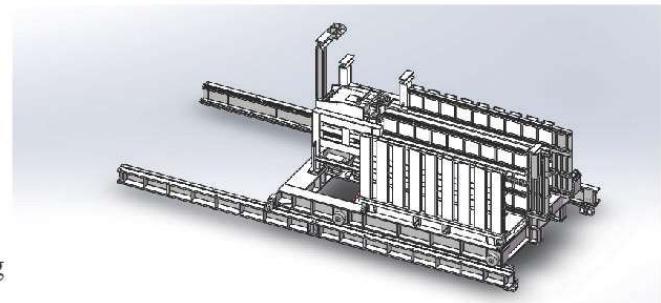
Black annealing is not strictly normal annealing, but the process is similar to annealing. The black skin of the black steel pipe is oxide skin! Annealing process: Annealing is a heat treatment process in which metals and alloys are heated to the appropriate temperature and held for a certain time, and then cooled slowly. Annealed eutectoid steel is composed of ferrite and flake pearlite. Eutectoid or eutectoid steels are granular pearlite.

Annual Capacity:  $\geq 40,000\text{T/Y}$  Heating method: Natural Gas



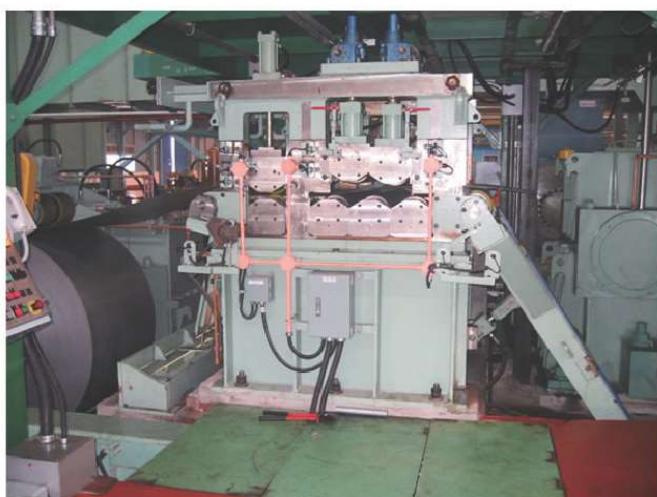
## Roll-changing Device

The roll change car is divided into: single and double station roll changer, lift type roll change car, open type roll change car and so on. Our company can provide roller changers of various forms and specifications, and tailor-made for customers according to the site conditions. The roll-removing car is divided into: a work roll detaching roller and a backup roller detaching roller. The work roll detaching roller can realize multiple positions for disassembling the roller bearing housing, which can be used to disassemble the working roller and intermediate roller bearing seat of 500 to 1750 4 Hi and 6 Hi rolling mill; the supporting roller detaching roller can be used to disassemble 500 to 1750 Rolling mill and leveling machine support roller bearing housing. Both products belong to our patented products.



## Straightener

Our company provides three-roller, five-roller, seven-roller 650, 1750 straightening machine. The straightener and the un-coiler unroll the coil, straighten the coil and cut the head and tail of the unqualified strip.



## Cross-over

Our company provides low-voltage safe transportation trolleys (Cross-train) with a load capacity of 2-50 tons.



## Customized Spare Parts

Moran provides spare parts for old customers to ensure future supports according to their production outline; If you are a new customer, we can also tailor spare parts to match your existing equipment according to your needs.

**Roller**



 Hebei Moran Machinery

**Rolling Reel**



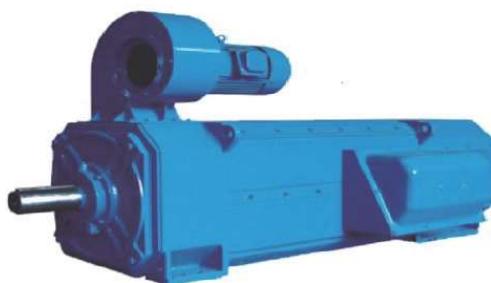
 Hebei Moran Machinery

**Roller Bearing Base**



 Hebei Moran Machinery

**Motor**



Hebei Moran Machinery

**Cardon Shaft**



 Hebei Moran Machinery

**Rolling Oil**



 Hebei Moran Machinery

**Shaft Coupling**



 Hebei Moran Machinery

**Thickness Gauge**



 Hebei Moran Machinery



What other services does Moran offer in addition to the manufacture of new machine?

## The Installation And Commissioning Of Production Line

- 1、When the production line completed manufacturing, after all the careful acceptance and testing. The production line will be transported to the user's site in the form of parts. Installation and commissioning on the already made reinforced concrete foundation, this is a key step for the production line to achieve the design requirements, and is also the touchstone to test the design and manufacturing level.
- 2、Moran has professional technical team for installation and commissioning, include mechanical engineer, hydraulic engineer, electrical engineer, all kinds of engineers and technicians. Under the leadership of the chief process engineer, we have successfully completed the installation and commissioning of many units of various cold rolling production lines and related production lines at domestic and foreign. It has important role to our production line to be put into production and reaching production, achieving the design goal, and is well received by our clients.
- 3、In recent years, our company has developed the business of providing professional installation and commissioning services for domestic and foreign clients. While using our expertise to serve more clients, our team's creativity has been improved.



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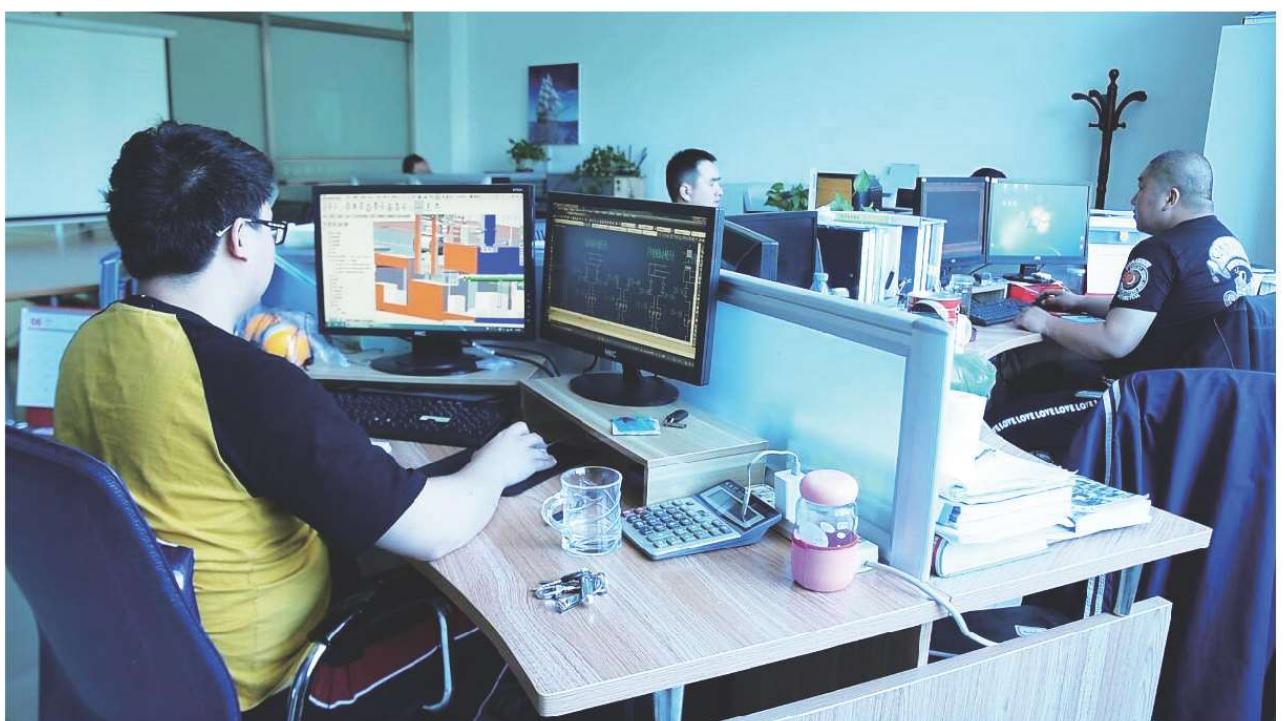
## Technical Service Of Moran

### Design service

1. The design and development of cold-rolling production line is the core technology of our company. Over the years, our company has obtained dozens of national technology patents. The company has a strong design team, and the domestic major professional schools to establish cooperation, for the company to continue to transport professional and technical personnel.
- 2, customized design for users, including parts design, automatic control selection, hydraulic fluid equipment, equipment layout, civil design and so on.
3. Design factory layout for users, and provide the selection and design of public facilities such as power, water supply, gas supply, auxiliary equipment, spare parts, transportation and workshop.

### Training services

1. Our company provides management training and consulting cooperation to users : production process and technology management, product quality and cost control, production line upgrade and transformation services, etc.
2. Our company provides users with a large number of training projects: including equipment operation procedures, repair and maintenance, safe use specifications and so on.





What other services does Moran offer in addition to the manufacture of new machine?

## Repair and Maintenance Service

1. Our company has a professional technical construction team, which can provide maintenance services for users' new and old equipment.

2. After the production line is put into operation, according to the operation specifications, medium maintenance should be carried out every 3 months (working time: 3 days), and thorough maintenance should be done every year (working time: 10 days), to repair and replace the worn and aging parts in production, restore the accuracy, and maintain the optimal state of the production line.

## Equipment Upgrading And Modification Services

1. With the development of market diversification, the upgrading of old equipment has gradually become a popular industry among users. Its advantages include low entry threshold, short construction cycle, rapid production and saving investment.

2. Our company provides old equipment dismounting, survey and drawing, design, upgrade, transformation, installation, debugging and other one-stop services to make old machine reach the technical level of the new machine, to help users create economic benefits in the short term.

3. At present, our company has many successful cases in this field, and has been widely recognized by users. Looking forward to cooperating with more domestic and foreign users.



## PERFORMANCE TABLE

No.	Project name	User
1	1450mm 6 Hi Cold Rolling Mil Production Line	Enterprise 'MEHNAT HALOL'
2	1450 mm M.K.W stainless steel mill	Guangdong Runxin Industrial Investment Co., Ltd.
3	1450mm 4Hi Stainless Steel High Speed Skin Pass Mill	Jiangsu Suhong New Materials Co.,Ltd
4	1450mm 6 Hi Reversible Cold Rolling Mill Production Line	Shandong DongeYK Plate Co., Ltd.
5	1450mm 20Hi Reversible Cold Rolling Mill Production Line	ZheJiang Huzhou New Material Co., Ltd
6	1422mm 6Hi Reversible Cold Rolling Mill	Hu Chi Minh City, Vietnam
7	1450mm 4Hi Stainless Steel Reversible Skin Pass Mill	Guangdong RX Industrial Investment Co., Ltd.
8	1450mm Reversible Rolling+Skin Pass Mill Unit	Shanghai Hebaifu Metal Material Co., Ltd
9	1150mm 6Hi Reversible Cold Rolling Mill Production Line	Shandong JG steel Co., Ltd
10	1150mm 6Hi Five Tandem Mil	Shandong Zhenye Metal Material Co., Ltd
11	1150mm 8Hi Stainless Steel Reversible Cold Rolling Mill	Guangdong Jieyang TS Stainless Steel Co.,Ltd.
12	1200mm 4Hi Skin Pass Mill+Tension Leveler	Hebei Handan Jingtai Packing Material Co.,Ltd
13	950mm 20Hi Stainless Steel Reversible Cold Rolling Mill	Guangxi Jinkaixin Co., Ltd
14	900mm 4 Hi Stainless Steel Reversible Cold Rolling Mill	Jieyang KL Stainless Steel Co.,Ltd.
15	1150mm 4Hi Two Stand Skin Pass Mill Production Line	Shandong Zhenye Metal Material Co., Ltd
16	650mm 4Hi/ 6Hi Five tandem production Line	Guangdong Jieyang Hengsheng Industrial Co., Ltd.
17	1450mm Push Pull Pickling Line	Hebei Baosheng Steel Products Co., Ltd.
18	1750mm Stainless Steel Continuous Pickling Line	Jieyang KL Stainless Steel Co.,Ltd.
19	1050mm Skin Pass Mill+ Tension Leveler Production Line	Shandong Zhenye Metal Material Co., Ltd
20	1200mm Five Tandem Upgrade	Steel Coil Co., Ltd.
21	1450mm 6Hi Reversible Cold Rolling Mill Upgrade	Yunnan Yuxi Tianlong Industry and Trade Co., Ltd
22	850mm Four Tandem Mill Upgrade	Shengfang Zhuocheng Hardware Co., Ltd
23	850mm Six Tandem Mill Design, Installation And Commissioning	Steel Coil Co., Ltd
24	1450mm 6Hi Reversible Cold Rolling Mill Modification	A.M.K Metal Fzco
25	1200mm Copper Rolling Mill Modification	Indonesia

Cases are not fully listed