



TECHNICAL SPECIFICATION
FOR
HIGH PRECISION STEEL SLITTING LINE

Model: **HYS-0.65-1250S**

(0.1~0.65mm x 1250W x 150m/min)



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1. General

In conformity with your Purchase Specification, this proposal has been designed to meet Buyer's requirements and defines the scope of supply of the design work, equipment and material which are to be supplied by Shanghai Hoyo Industries Co., Ltd. (hereinafter called as HOYO, The Supplier or "The Seller") for followings;

The Slitter line described in this technical specification will be invested and established by Buyer.

The purpose of this technical specification is to describe the basic condition and requirement of this Slitter line with relating provision equipment for **YOUNG JIN STEEL Co., Ltd.** and define the scope of supply and service between the Buyer and the Supplier.

The design and engineering to be performed by the Supplier will be the latest and contemporary in technology and standards and in conformity with "Technical Common Specification and Design Standards",

The supplier shall be fully responsible for supplementing in its specification all the required technology.

The technical specification should be involved in supplier's proposal for Buyer approve, which have to be detail and acceptable.

Sub-vendors of this project have to be approved by the Buyer and the supplier should supply sub-vendor list in proposal for approval.

Detail engineering shall be carried out by Supplier and the supplier performs the detail engineering in accordance with basic engineering.



2. Main Parameters

2.1 Material and product condition

2.1.1 Raw material

- | | |
|---------------------|--|
| 1) Material | : Non-Oriented Electrical Steel (NGO) Grain-Oriented Electrical Steel (GO) |
| 2) Tension strength | : 650Mpa Max. |
| 3) Yield strength | : 550Mpa Max. |
| 4) Thickness | : 0.1~ 0.65mm |
| 5) Width | : 1250 mm |
| 6) Inner dia | : Φ508mm/Φ610 mm (with rubber sleeve) |
| 7) Outer dia | : Φ900 mm ~ Φ1800 mm Max. |
| 8) Coil weight | : Max.15 tons |

2.1.2 Product

- | | |
|-------------------------|--|
| 1) Min. slitting width | : 30 mm |
| 2) No. of slitting | : 12 strips |
| 3) ID of recoiling | : Φ508mm |
| 4) OD of recoiling | : Φ800 mm ~ Φ1800 mm Max. |
| 5) Weight of recoiling | : Max.15 tons |
| 6) Tolerances on width | : ±0.05mm (width less than 400mm) |
| 7) Tolerances on Camber | : Within 0.3mm per length 2,000mm |
| 8) Edge burr | : Max. 3% of strip thickness |
| 9) Telescopic | : ±1.0mm Wrap to wrap; ±3.0mm Over all |
- Note: Except 5 wraps of initial & final wraps

2.1.3 Line Parameters

- | | |
|---------------------|---|
| ➤ Line speed | |
| 1) Threading speed | : Approx. 20 m/min |
| 2) Line speed | : Running speed 120 m/min (thickness 0.15~0.3mm)
Running speed 80 m/min (thickness 0.3~0.65mm) |
| ➤ Line direction | : To be adviced |
| ➤ Pass line height | : 1,000 mm |
| ➤ Land occupation | : about 30 m(L) x 13 m(W) x 3 m(H) |
| ➤ Performance table | |



2.2 Utility Condition

2.2.1 Power supply

- Medium & small capacity : AC 380V±5%, 3Φ, 50Hz
For load center (3P +E)
- Control and general lighting : AC 220V, 1Φ, 50Hz
 - : 24V DC for machine sensors and I/Os
 - : 24V DC for solenoid control
 - : 24V DC for MV/LV switchgear control

2.2.2 Compressed air

- Pressure : 4 ~ 7 kg/cm² at the takeover point
- Consumption : Nm³/hr



3. Detailed specifications

3.1 Line Configuration

- 1) Coil Skid
- 2) Entry coil car
- 3) Uncoiler with outboard support & snubber roll
- 4) Peeler table & breaker roll
- 5) Pinch rolls & Entry flattener (2-Hi 5 rolls)
- 6) Entry Crop shear with scrap chart
- 7) Entry Loop table
- 8) Side guide & Pinch rolls
- 9) Slitter Head
- 10) Dual Scrap winders
- 11) Threading table with End pad
- 12) Exit loop table
- 13) Separators and Belt bridle tension unit
- 14) Pinch rolls & Exit crop shear
- 15) Deflector roll with guide table
- 16) Recoiler with Drum support, coil pusher & Separator
- 17) Exit coil car
- 18) Hydraulic equipment
- 19) Pneumatic equipment
- 20) Electrical control system



3.2 Detail specifications of each machine

3.2.1 Coil skid

The coil skids are to receive and support One (1) coil for storage prior to loading on the uncoiler.

Coils will be positioned on the skids from the overhead crane.

Band groove is provided on the "v-shape type" to remove the cut band.

✧ Construction

Type	: Fixed "V" type saddles.
Number of coils	: One (1) coil/skid to store
Number of skids	: One (1)
Coil weight	: 15,000Kg
Coil width	: 1250mm
Liner material	: Nylon pads with groove, 30mm thick

3.2.2 Entry Coil car

The equipment is to receive the coil from coil skid, and transfer it to the uncoiler and to fit to the mandrel. This equipment consists of the lifter with cradle skid which receives the coil and car for motor traverse and floor plate.

Band groove is provided on the "v-shape type" to remove the cut band.

The coil car will be hydraulically actuated. Track mounted pit type car. Hydraulic lift

✧ Construction

Type	: Pit mounted car and cradle skid type with shift able floor plate
Lifting capacity	: 15,000 kg
Guide frame	: Fabricated frame with guide rod bush to guide lifting frame. hydraulic lifting cylinder and lift frame, travels on wheels.
Lifting frame	: Four (4) Guide rods type frame. Attached fixed bar frame
Lifting	: Hydraulic cylinder lifting.
Wheels	: Four (4) 200mm diameter steel wheels. Wheel axle mounted on anti-friction bearings. Wheels ride on rails.
Traverse	: By hydraulic motor, Travel speed max. 6m/min
Floor plates	: Sliding floor plate at both sides of coil car. (in/out)
Pipe traveling	: guide by metallic chains

3.2.3 Uncoiler with Pay-off reel mandrel, Snubber Roll & Drum support

Uncoiler is to uncoil the strip continuously.



Drum, reducer and drive motor are mounted on the fixed common base, and whole assembly is shifted on the common base to match up the coil center to pass line. The uncoiler will receive coils from the entry coil car, support coil and feed the coil end to the rough leveler. The uncoiler will also provide strip back tension during line operation.

✧ Construction

Type	: Overhung mandrel type with totally enclosed drive box Expanding mandrel for over & under uncoiling
Expansion stroke	: 470mm to 525mm for 610 mm I.D with rubber sleeve
Stationary sub-base	: Fabricated plate and structural steel, supports sliding base
Sliding base	: Fabricated plate and structural steel supports reducer, sliding base sits in linear bearings
Centering	: Automatically by hydraulic cylinder (+/- 100mm) by CPC device
Mandrel shaft	: 42CrMo Forged steel, mounted in anti-friction bearings housing.
Bearings	: Anti-friction roller type
Reducer	: helical gears mounted on roller, Bearing supported shafts. Tooth profile by gear grinding.
Gears	: 42CrMo/20CrMnTi, forging, quenching, carburization, Cam grinding
Drive	: AC motor 30Kw with air brake
Brake	: Air Disk type and installed at motor load side.
Drum support	: Support lifting type
Hold down roll	: One set · Up/down by hydraulic cylinder
Speed reducer lubrication	: Re-circulating oil system with separate motor driven pump and filter.
	Grease lube point connected to centralized distributor block
Other Lubrications	: Manual grease gun

a) Pay-off reel mandrel

The mandrel will be provided to grip the inside wraps on the coil.
Four (4) segments, sliding wedge type, hydraulically actuated.

✧ Construction

Expansion shaft	: Rotating hydraulic cylinder operating through pull rod in head
Segment	: Actuated by sliding wedges. 4 Segments
Mandrel shaft material	: 42CrMo forged steel, heat treated.
Segment material	: Steel #45, Q + T & Cr-coated
Sleeve material	: Cast steel #45, heat treated
Liner material	: ductile steel



Face width : Approximately 1,650mm (including nose)

b) Hold down roll

The hold down roll will operate with the payoff reel drive and coil opener to feed up the coil end.

The roll will bear on the top of the coil, restraining the outer wrap and driving it forward.

Positioned to back end strip lead end with coil opener for easy threading into leveler pinch roll.

✧ Construction

General	: Consists of snubber roll positioning cylinder and support frame.
Mounting	: Guide rod shaft mounted in bronze bushings in support frame.
Roll position	: Hydraulic cylinder.
Roll rotating	: by hydraulic motor with free turning control in valves
Roll size	: One (1) 200mm diameter by 300mm face, tubular steel covered with
	20mm thick polyurethane, 80~90 shore with a banding groove
Support frame	: Steel structure welded
Lubrication	: Manual grease gun

c) Drum support

The drum support will be provided to support the outboard end of the reel overhung mandrel.

Designed to accommodate payoff reel shift. Retracts by hydraulic cylinder to allow coil car to load coil on mandrel and removal mill sleeve.

✧ Construction

Type	: Hinge support by hydraulic cylinder 2 supporting rolls
Frame	: Steel structure welded
Bearing for supporting	: Rounded oilless bush

3.2.4 Peeler table & Breaker roll

The peeler table is mounted in entry side frame, the coil opener will bear against the coil outer diameter to peel the strip end from the coil and guide it to the entry part of pinch roll. The unit will operate for over payoff and retract clear during line operation.

✧ Construction

General	: Pivot mounted from structure of pinch roll. Telescoping, peeler blade positioned by hydraulic cylinder.
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Blade mounting	: Replaceable blade, bolted in pivoted welded steel opener frame
Blade positioning	: Hydraulic cylinders arranged to compensate for varying coil outer diameters and for blade retraction.
Guide surface	: Chroming surface
Blade up/down	: By hydraulic cylinder

Breaker roll

The breaker roll is mounted in entry top side of pinch rolls frame, once the entry end of the coil bended, the breaker roll press down against with the peeler table to make the end flat for easy feeding

✧ Construction

General	: consist of one hard chromed roll with two guide bars
Blade material	: Hardened special steel and chromed
Up/down	: by Hydraulic cylinder
Breaker roll size	: Φ100 x 800mm (L) x 1 PC

3.2.5 Pinch rolls & Entry flattener (2-Hi 5 rolls)

Pinch rolls

General	: Consists of two pinch roll and driving system
Construction	: Fabricated steel base, supports roll housings, reducer and drive motor.
Housing & drive base	: Heavy welded steel base, supports roll housings
Pinch roll drive	: Driven by common gearbox & motor of Leveler with universal joints
Roll bearing lubrication	: Manual grease gun
Pinch roll up/down	: Hydraulic cylinder with equalizing system, up/down distance 200mm
Pinch roll size	: 220mm diameter x 1,400mm face Urethane rubber coated
Pinch roll equalizer	: Rack and pinion gear
Lubrication	: Gear reducer - Oil bath, others - Manual grease gun

Entry 5 rolls flattener

Five (5) rolls leveler will be used to rough flatting the steel strip entry end for easy feeding and rough flatting the strip for easy slitting & cutting.

✧ Construction

General	: 2-Hi 5 leveler rolls
Construction	: Fabricated steel base, supports roll housings, reducer and drive motor.



Housing & drive base	: Heavy welded steel base, supports roll housings
Roll bearings	: Anti-friction roller type for all rolls
Leveler rolls drive	: AC45Kw motor with gear reducer and universal joints
Leveler roll material	: Hardened and grind to finish dimension
Roll bearing lubrication	: manually by grease gun
Leveler roll size	: 150mm diameter x 1,400mm face, hard chroming surface
Leveler roll up/down	: By AC reducer motor through worm-gear system
Lubrication	: Gear reducer - Oil bath, others - Manual grease gun

3.2.6 Crop shear with scrap cart

Crop shear is to cut the strip leading and tail end. This consists of shear, scrap car and scrap box.

This scrap box is to store the cut strip. Scrap box for suitable mounting on a trolley is to store the cut strip. The clearance of shear knife is to be adjusted by handle with scale

✧ Construction

General	: Down cut shear type, stationary bottom knife, moving upper knife
Thickness range	: 0.1~ 0.65 mm
Actuation	: Actuated by hydraulic cylinders with rack and pinion mechanism
Force control	: Cylinders controlled by solenoid valves for shear cycle.
Knife holders	: Upper knife holder adjustable for knife clearance. Bottom knife holder mounted in ways, Single rake 3°.
Knives	: Alloy steel with four cutting edges. Two knives with same sizes Sizes: 20mmT x 80mmH x 1,400mmL x 2PCS
Knife clearance	: Knife clearance adjustment by handle by dial gauge.

■ Scrap car

The scrap car will receive scrap from the shear and convey it out from the line and removal by the overhead crane.

Type	: Consists of a scrap box mounted on a wheel cart
Scrap length	: Max 500mm
Car wheels	: Four (4) steel wheels. Wheels mounted in anti-friction bearings.
Car Drive	: 0.4Kw AC geared motor, Travel by manual controlled
Scrap box	: Steel fabricated box
Box size	: Approx. 1,600mmW x 500mmL x 350mmH
Loading capacity	: 1,500kg

■ Threading table

The threading table will lead the strip from crop shear to loop table

General	: Consists of an entry swing table and apron roll
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Swing table	: Free roll conveyor type, Entry side provided
Table up/down	: Pneumatic cylinder operated
Apron roll	: 70mm diameter x 1,400mm face, pitch of 300mm tubular steel roll Urethane rubber coated
Guide plate	: Bakelite plate
End pad	: felt pad with pneumatic cylinders actuation

3.2.7 Entry loop table

The loop table will be compensating the speed variation between pinch rolls and slitter, besides the loop will provide the strip cutting through slitter without tension and allows the side guide centering the strip without damage the edge of think steel strip.

General	: Consists of a swing table and free apron roll
Swing table	: Free roll conveyor type
Table up/down	: Hydraulic cylinder operated
Loop depth	: Approx 3,500mm
Apron roll	: 70mm diameter x 1,400mm face, pitch of 300mm tubular steel roll Urethane rubber coated
Guide radius	: R 1,000mm
Guide plate	: Bakelite plate
Loop control	: Photoelectric sensor

3.2.8 Side guide & Pinch rolls

Side guide

The side guide will center and guide the strip going into the Pinch roll for slitter

✧ Construction

Design	: Roller type side guides, three rollers each side Side guides will shift laterally on machined ways simultaneously. Motorized adjustment.
Width adjustment	: 0.4Kw cyclo reducer
Centering	: By handle (+/- 50mm)
Rolls	: 70mm diameter by 150mm face, 42CrMo material, hardened surface
Roll opening	: 1250mm
Housing	: Housing supports three (3) vertical guide rollers per side.
Travel	: Guide assemblies traversed by counter-threaded screw.
Base assemblies.	: Fabricated steel with machined ways for supporting guide



Pinch rolls

The Pinch roll will be used to feed-up the strip during operation to slitter

✧ Construction

General	: Consist of driving bottom and upper roll
Construction	: Fabricated steel base, supports roll housings, pinion gear and AC reducer motor drive system
Housing & drive base	: Heavy welded steel base, supports roll housings, top roll no driven
Bottom Roll drive	: Bottom roll driven by AC reducer motor 2.2Kw with clutch
Roll bearings	: Anti-friction roller type for all rolls, chock mounted.
Pinch roll up/down	: Pneumatic cylinder with Rack and pinion gear equalizing system
Pinch roll size	: 180mm diameter x 1,700mm face, tubular steel, PU coated
Lubrication	: Manual grease gun

3.2.9 Slitter (Twin heads)

The slitter will be a heavy-duty design with two arbors mounted on sliding base. The arbors will be cantilevered and supported by movable stand and bearing housing. The slitter will continuously slit the strip to a predetermined width in accordance with the line data.

The unit consists of Two Slitter heads, by DC Drive through reducer, with movable type outboard support arrangement and quick head changing system with provision for switching two slitter heads.

✧ Construction

Design	: The slitter will be a heavy-duty design with two (2) arbors mounted on sliding bases. Slitter heads will be supported, stub design driven through arbors coupled to gear reducer, Side sliding bearing housing
Slitter stand	: 1 stand
Bearings	: Precision tapered roller bearing and roller bearing
Vertical arbor adjusts	: AC0. 4Kw geared motor through worm reducer
Stand clamping	: Hydraulic cylinder
Stand lifting	: Hydraulic cylinder
Drive	: Both arbors driven through a totally enclosed changing type gearbox. Clutch connect with main gear reducer and motor
Arbors	: Steel stub arbors, hardened, chromed and ground 230mm diameter x 1,400mm faces
Shaft tolerance	: 3/1000mm
Stand housing in/out	: by AC0. 75Kw geared motor
Stand open / close	: By AC 0. 4Kw geared motor operating type
Blades	: Hardened steel and grinded, 350mm outer diameter x 15mm(T),
Spacer	: Ø230(I.D) x Ø270(O.D) x various thickness
Rubber ring	: Ø270.5(I. D) x Ø347~ 351(O.D) x various thickness



	(Bakelite finger for thin gauge)
Gears	: Alloy steel, dive oil lubricated
Lubrication	: Manual grease gun
Electric supply	: Cable quick connection type
Knife changing system	: Manual setting with thickness gauge
Driving motor	: AC 110Kw Motor with air brake
Wagon traverse	: Hydraulic cylinder

3.2.10 Dual Scrap Winders (Horizontal) with scrap guiding

Winder will be used to winds the scrap with tension during the line running
The edges will be led into the mandrel shaft, and then they will be wounded to mandrel of the baller by using of transverse guiding device, so the scrap can be winded in tidy form. When the mandrel collapse, the scrap coil can pull out.

✧ Construction

Type	: Dual scrap winder, Horizontal type
Winding capacity	: Max 400Kg
Winding inner diameter	: Ø400mm
Winding outer diameter	: Ø750mm
Winding width	: 400mm
Drum open & close	: By hydraulic cylinder
Drive motor	: AC5.5Kw motor x 2 through gear reducer system
Scrap guides	: guide rolls cycling transverse left/right without driven
Scrap width	: 5 ~ 20 mm
Lubrication	: Manual grease gun
Main body	: Steel structure welded

3.2.11 Threading table with end pad

Threading Table

The threading table will lead the strip from slitter to loop table

✧ Construction

General	: Consists of an entry swing table and apron roll Idle roll type
Swing table	: Free roll conveyor type
Table swing	: Pneumatic cylinder operated
Table length	: Approx 1,500mm
Apron roll	: 70mm diameter x 1,500mm face, tubular steel roll PU coated
Guide plate	: Bakelite plate

End pad

Type	: Direct felt pressing type
Pad up/down	: Pneumatic cylinder



Pad material	: Felt
Lubrication	: Manual grease gun
Main body	: Steel structure welded

3.2.12 Exit loop table

The loop table will be compensating the speed variation between slitter and tension unit

✧ Construction

General	: Consists of a swing table and apron roll
Swing table	: Free roll conveyor type, exit side provided
Table up/down	: Hydraulic cylinder operated
Loop depth	: Approx 7,000mm
Apron roll	: 70mm diameter x 1,500mm face, tubular steel roll PU coated
Guide plate	: Bakelite plate

3.2.13 Separators & Pad tension unit

Entry guide part

Entry of tension unit consisting of No.1,2 separator, entry guide roller and restrainer roller for divide the strips go through tension unit and avoid overlap in loop pit.

✧ Construction

Entry guide roller	: 70Ø x 1,500mm idle roller equipped on the no1 separator
No1 separator	: Up and down by hydraulic cylinder with guide bar
No2 separator	: Fixed pass line and equipped after restrainer
Separator drum	: Ø100mm x 1,500mmL x 2pcs
Separating disk	: Ø100 x Ø200 x 5mmT
Restrainer	: free roller x 1set, pressing by hydraulic cylinder

Pad tension unit

The pad-type tension station supplies back tension for steel strip winding, ensuring tight, non-loose winding. Tension is regulated by hydraulic cylinders, with pressure controlled by adjusting the hydraulic pressure reducing valve. The equipment mainly consists of a stand, tension plates, synchronizing shaft, cylinder, and base.

✧ Construction

Type	: Pad type with woolen felts
Material of coil	: Non-oily/oily material
Max. available width	: 1,450mm Strip edge to edge, based on 5mm thick, separator disc
Strip thickness	: 0.1 ~ 0.65mm
Strip width after slitting	: Min. 22mm
Number of slits	: Max. 12 strips



Recoiling speed : **Max. 150m/min**
Generated tension : Max.3,500 kg
Hydraulic power source : To use line hydraulic source

3.2.14 Pinch rolls & Exit crop shear

Pinch rolls

The Pinch roll will be used to feed-up the strips into crop shear and recoiler

✧ Construction

General : Consist of driving bottom and upper roll
Construction : Fabricated steel base, supports roll housings, pinion gear and AC reducer motor drive system
Housing & drive base : Heavy welded steel base, supports roll housings, top roll no driven
Bottom Roll drive : Bottom roll driven by AC reducer motor 2.2Kw with clutch
Roll bearings : Anti-friction roller type for all rolls, chock mounted.
Pinch roll up/down : Pneumatic cylinder with Rack and pinion gear equalizing system
Pinch roll size : 180mm diameter x 1,700mm face, tubular steel, PU coated
Lubrication : Manual grease gun

Exit crop shear

The exit shear will be used for dividing the slitted coils

✧ Construction

General : Down cut shear type, stationary bottom knife, moving upper knife
Thickness range : **0.1~ 0.65 mm**
Actuation : Actuated by hydraulic cylinders with rack and pinion mechanism
Force control : Cylinders controlled by solenoid valves for shear cycle.
Knife holders : Upper knife holder adjustable for knife clearance.
Bottom knife holder mounted in ways, Single rake 3°.
Knives : Alloy steel with four cutting edges. Two knives with same sizes
Sizes:20mmTx80mmH x 1,500mmL x 2PCS
Knife clearance : Knife clearance adjustment by handle by dial gauge.
Hydraulic power : Provided from system hydraulic power unit

3.2.15 Deflector roll with guide table

The deflector roll will feed-up and deflect the strip to the rewind reel for over winding only.

✧ Construction

General : One (1) roll type
Bridle roll : Ø400mm x 1,500mmL x 1 pc, Hardened, chromed and ground roll
Length measuring : Pulse generator



Lubrication : Manual grease gun
Main body and base : Steel plate welded

Guide table

✧ Construction

Type : Telescopic Single Arm Type
Guide Table Up & Down: By Hydraulic Cylinder
Table Surface Hard : Chromium Coated
Lubrication : Manual grease gun
Main body and base : Steel plate welded

3.2.16 Recoiler with Separator, Pusher, drum support

Recoiler is for winding the slit cut coil strips around mandrel and make coiling with specified tension controlling. Separator will be provided to help wind the slit coil properly.

Coil pusher will be provided to help exit recoiling skelp from recoiler drum.

✧ Construction

General : Overhung expanding mandrel mounted in reducer housing.
Hydraulic mandrel expansion.
Mandrel shaft : 42CrMo Forged steel, mounted with anti-friction bearing
Bearings : Anti-friction roller type
Coil pusher : Fabricated steel. Two steel rods support and guide plate during travel.
Plate positioned by a hydraulic cylinder
Reducer : Enclosed helical gears mounted on roller bearing supported shafts.
Tooth profile by gear grinding.
Drive : AC motor 132Kw with brake
Reducer lubrication : Dive lubrication
Loading capacity : 15,000Kg (max)

Mandrel for Recoiler

The mandrel will grip the inside wrap of the coil

General : Four segments, sliding wedge type. Provided with automatic gripper.
Mandrel hydraulically expanded. Mark-less type
Expansion : Rotating hydraulic cylinder operating through pull rod in shaft
Segments : Actuated by sliding wedges.
Gripper : Arranged for over winding. Hardened steel serrated gripper face.
Segments material : Cast steel, hardened
Wedge material : Cast steel, quenched and tempered



Gripper material : Cast steel, quenched and tempered
Expansion range : 485mm to 508mm for 508mm I.D coil
Face width : **1,400mm approximately**

Over-arm Separator

General : Consists of a separator shaft, separating disk, spacer positioning cylinder and support arm, and off-line quick change separator arms
Mounting : Arm keyed to steel shaft mounted in bronze bushings on recoiler housing. Pivot mounted.
Separator shaft position : Hydraulic cylinder

Recoiler Drum Support

The drum support will be provided to support the outboard end of the reel overhung mandrel.

Design : Designed to accommodate recoiler drum. opened by hydraulic Cylinder to allow coil car to take out the coil from mandrel
Type : full engaged support by hydraulic cylinder, pivot door open type
Frame : Steel structure welded
Bearing for supporting : Rounded oilless bush
Support engagement : sealed type

3.2.17 Exit coil car

The coil car will be hydraulically actuated. It will be used to take out 30,000 kg slitte d coils on the recoiler. Coils will be received from the recoiler, traversed and placed o n the coil skid.

✧ Construction

Design : Track mounted pit type car. Hydraulic lift type V-skid equipped with replaceable liner
Guide frame : Fabricated frame with bronze bushes to guide rod.Supports hydraulic lift cylinder and lift frame. Travels on wheels.
Lift : Hydraulic cylinder lift.
Wheels : Four (4) 220mm diameter steel wheels. Wheel axle mounted on anti-friction bearings. Wheels ride on rails.
Traverse : By hydraulic motor
Protection bar : Manual hinge type
Floor plates : Sliding floor plates at both sides of coil car
Hoses and power track : Hydraulic supply hoses carried in a power track



Skid surface : Polyurethane pad

3.2.18 Hydraulic equipment

This hydraulic system will be furnished to supply hydraulic power to hydraulic cylinders for slitting line. The system will consist of a main hydraulic power unit and valve stands.

Circulation unit will be applied to filter oil

➤ Power unit

The power unit will be complete with reservoir tank, hydraulic pumps, strainers, filters, relief valve, check valves, unloading valve, etc.

- Standard Carbon steel reservoir.
- Variable volume pressure compensated pump set.
- High pressure and return filtration
- High efficiency off line filtration and cooling unit
- Pump overload protection

➤ Tank

- Number : One system pump set
- Net oil volume : 400 liters
- Pipe material : Carbon steel & fitting (precision) pipe

➤ Pump set

- Number : Two (2) set (One as stand-by) for Systems pump
- Type : Variable volume pressure compensated
- System flow : 38liters/min
- Working pressure : 100kg/cm²
- System pressure : 140kg/cm²
- High pressure filter : 10 Micron with bypass
- Filter clogging indicator : Visual electrical
- Pump motors : AC11Kw x 1450rpm

3.2.19 Pneumatic Equipment

Source : Supplied by customer

Normal working pressure : 4Kg/cm²

Max working pressure : 6Kg/cm²

Consist of:

- Solenoid valve
- Oiler
- Filter
- Flow control valve
- Gate valves and other control equipment



3.2.20 Electric specifications

Chapter 1. General Conditions

This specification is prepared for the electrical equipment for the High Precision Slitter line.

1) Work included in this specification

This specification covers for the all-engineering work, supply of materials, fabrication, assembly inspection and testing of the specified electrical equipment in the item list of this specification.

2) Work and equipment excluded from this specification

This items of work and equipment not written in the item list of this specification are out of our supplying scope. Following are main items below.

- (1) The main structural building and its foundations, switch rooms, motor rooms, and transformer fence
- (2) Site clearing and excavations.
- (3) Cast-in foundation bolts, embedded steel works, embedded conduit and floor plates.
- (4) Foundations, concrete floors, concrete trenches, tunnels and grouting of plant and machinery.
- (5) Supply of water and electric power for construction purposes
- (6) All electrical houses, rooms and pulpit
- (7) Fire extinguishes
- (8) Public telephone system
- (9) Electric cables

3) Other conditions

- (1) Accessories, which are assembled on shaft of rotating machine, such as key, will be Included, unless specified in the specification, foundation bolts and base, coupling between machine and electrical rotating machine and pulley are included.
- (2) Rules and standards to be applied

The quoted electric equipment and material is designed, manufactured and tested by conformity with following standards, unless otherwise specified.

- IEC (International Electro-technical Commission)



- BS (Chinese standards)
- ISO (International Organization for Standardization)

4) Unit to used

Metric system will be applied

- (1) mm or m in length
- (2) Ton/kg in weight
- (3) Centigrade in temperature
- (4) Pascal in pressure

5) Voltage levels

Low voltage : 380Vac $\pm 5\%$ - 3 phases – 60Hz

Controls : 24Vdc 1 phase - 50Hz (General)

Solenoid valves : 24Vdc 1 phase - 50Hz

Chapter 2. Motor and Drive system

1) Main motors

For the main motors, the following type will be applied

Application	Qty	Power	Type	Remarks
Uncoiler	1	20Kw	AC vector motor	Mandrel FWD/REV
Entry leveler	1	45Kw	AC vector motor	Leveler Rolls FWD/REV
	1	0.75Kw	Reducing motor	Roll up/down
Side Guide	2	0.4Kw	Reducing motor	Roll up/down
Pinch rolls	1	0.75Kw	Reducing motor	Roll up/down
Slitter heads	1	110Kw	AC vector motor	Slitter cutting
	2	0.75Kw	Reducing motor	Stand housing in/out
	2	1.5Kw	Reducing motor	For up/down of top arbor
	2	0.4Kw	Reducing motor	Stands in/out
Scrap winders	2	5.5Kw	AC vector motor	For winding scraps



Pinch rolls	1	0.37Kw	Reducing motor	Feeder roll FWD/REV
Recoiler	1	110Kw	AC vector motor	Recoiling
Hydraulic system	1	11Kw	AC motor	Standard

4. Supply Scope of

SELLER supply design and equipment in accordance with the scope of supply hereinafter.

4.1 Definition

a) Basic Engineering (abbreviated as BE)

Shall mean the design work determine in accordance with the basic plan the general specification which shall be fundamental for the basic design and detail design work.

b) Basic data shall mean all the necessary data, prerequisite for design load condition, approximate list of materials, list of construction equipment, specification of equipment, its required space and quantity, pilot plan etc.

c) Basic design (abbreviated as BD)

Shall mean the design work to determine in accordance with the basic plan or eventually the basic engineering the specifications and basic drawings (including design of layout, outline drawings, schematic diagrams, calculation sheets, approximate list of materials if necessary) which shall be fundamental for the design and shop drawings as well as for the purchasing of equipment and machinery, concerning engineering for architectural, civil and piping work.

d) Detail Design (abbreviated as DD)

Detail Design means the design work to determine in accordance with the basic design, the whole design works including general arrangement drawings, detail drawing and bill of materials, which will provide all the necessary information for manufacturing, installation, purchasing, transportation and making additional shop drawings by the manufacturer.

e) SUP means supply of the described item.

SUP means performing manufacture, inspection, packing, transportation to specified place at Buyer premises based upon the detail design.

4.2 Scope of Supply

The general scope of supply should cover the design and manufacture of facilities and equipment given below.

Division of Scope of Supply List for Mechanical Definition

- BD : Basic design
- DD : Detail design
- SUP : Supply of material and equipment
- S : SELLER's scope



- B : BUYER's scope

I t e m. No	Description	Q'ty	Scope			Remarks
			BD	DD	SUP	
1	Mechanical Equipment					
-1	Entry coil skid	1set	S	S	S	
-2	Entry coil car	1set	S	S	S	
-3	Uncoiler	1set	S	S	S	
	Snubber roll	1set	S	S	S	
	Drum support	1set	S	S	S	
-4	Coil opener with peeler & breaker	1set	S	S	S	
-5	Pinch roll	1set	S	S	S	
-6	5 Rolls leveler with gearbox	1set	S	S	S	
-7	Crop shear with scrap chart	1set	S	S	S	
-8	Entry loop table	1set	S	S	S	
-9	Side guide & pinch rolls	1set	S	S	S	
-10	Slitter head (single head)	1set	S	S		
-11	Dual Scrap winders	2sets	S	S		
-12	Threading table & end pad	1set	S	S	S	
-13	Exit loop table	1set	S	S	S	
-14	Separators & Pad tension unit	1set	S	S	S	
-15	Pinch rolls & Exit crop shear	1set	S	S	S	
-16	Deflector roll & guide table	1set	S	S	S	
-17	Recoiler	1set	S	S	S	
	Pusher & separator	1set	S	S	S	
	Drum support	1set	S	S	S	
-18	Exit coil car	1set	S	S	S	
-19	Hydraulic System	1set	S	S	S	
-20	Pneumatic System	1set	S	S	S	
-21	Electrical Equipment	1set	S	S	S	



I t e m. No	Description	Q'ty	Scope			Remarks
			BD	DD	SUP	



4.3 Scope of Supply List for the Construction Material

S/SF: SELLER Local/Foreign; B: BUYER

Item No.	Description	Scope of Supply				Remarks
		BE	BD	DD	SUP	
1	Liner (Taper, Temporary)	S	S	S	B	
2	Stopper, dowel pin after aligning	S	S	S	S	
3	Lifting rig for general use such as wire, chain, etc	S	S	B	B	
4	Checkered plate	S	S	B	B	
5	Expanded metal	S	S	B	B	
7	Chemical anchor	S	S	S	B	
8	Insulating materials for piping, duct, tanks	S	S	B	B	
9	Tar, PE coated water pipe	S	S	B	B	
10	Hydrant system					
	- Equipment	S	S	B	B	
	- Pump	S	S	B	B	
	- Piping	S	S	B	B	
11	Flushing oil	S	S	B	B	
12	Rope	S	S	B	B	
13	Early curing cement	S	S	B	B	
14	Non-shrink agent (Pre-mix type)	S	S	B	B	
15	Service stairs, decks, over bridge and hand rails for building	S	S	B	B	
16	Pit cover for opening area	S	S	B	B	
17	Materials for support, template etc.	S	B	B	B	
18	Lubrication oil	S	S	B	B	
29	Grease	S	S	B	B	
20	Hydraulic oil	S	S	B	B	
21	Support for sensors, local panel, limit switch	S	S	S	S	
22	Civil	S	S	B	B	
23	Architecture	S	B	B	B	
24	Initial filling oil	S	S	B	B	
25	Inter connecting pipes	S	S	B	B	
26	Inter connecting cables	S	S	B	B	

*Initial filling oil for the equipment which should be tested in work shop will be supplied by SELLER (Maker) according to the specification submitted by BUYER.

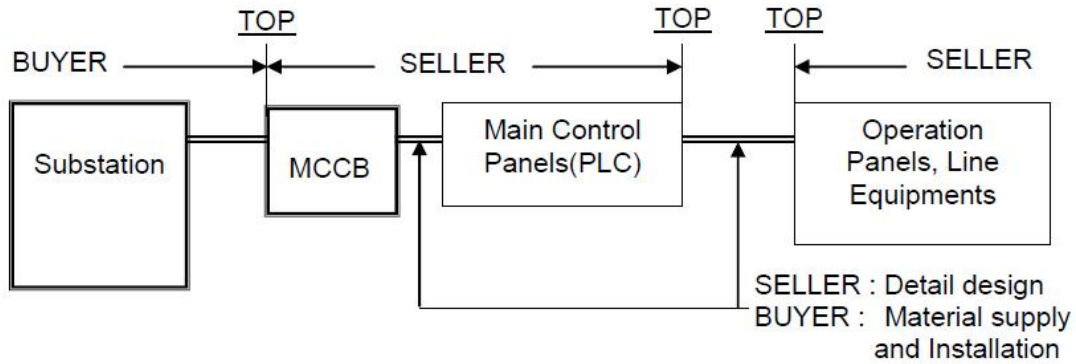


4.4 Take Over Point (T.O.P)

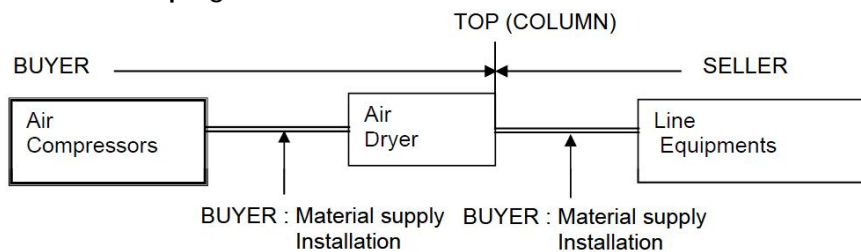
Take Over Point (T.O.P) for piping

Take Over Point (T.O.P) for Utilities

Electrical Cabling



Pneumatic Piping





4.5 Sub-Vendor List

■ Mechanical Part:

No	Part Name	Supplier / Brand
1	Critical parts Bearings	NACHI/NTN /NSK (Slitter head arbor)
2	Non-Critical Part Bearings	HRB, ZWZ, LYC
3	Hydraulic Cylinders	NAIZHONG
4	Hydraulic Valves	SUNBANG
5	Pneumatic Cylinders	AIRTAC
6	Pneumatic Valves	AIRTAC
7	Universal Connector	RONGHAN, YUQING
8	Linear Guide (HIWIN)	HIWAN

■ Electric part

No	Part Name	Supplier / Brand
1	Gear Reducer with Motor	MENCE
2	AC Varied Frequency Motor	HENGLI
3	AC VF Drive	INNOVANCE
4	PLC	SIEMENS
5	Touch-screen Panel	MCGS
6	Electrical Assorted Switches	Schneider
7	Main switch (Electrical operated type)	CHNT
8	Contactor, heat relay	Schneider
	Intermediate relay	Schneider/Omron
9	Controller system and remote IO system	Siemens
10	Operating elements (buttons, selector switches, etc.)	Schneider/ IDEC
11	Proximate switch	CHNT
12	Travel switch	CHNT
13	Photo electric censor	Omron
14	Terminals	Phoenix