

World Class Metallurgical Equipments Manufacturer



STEEL MELTTM
INDUSTRIES

Continuous
Casting Machine



www.steel melt.in





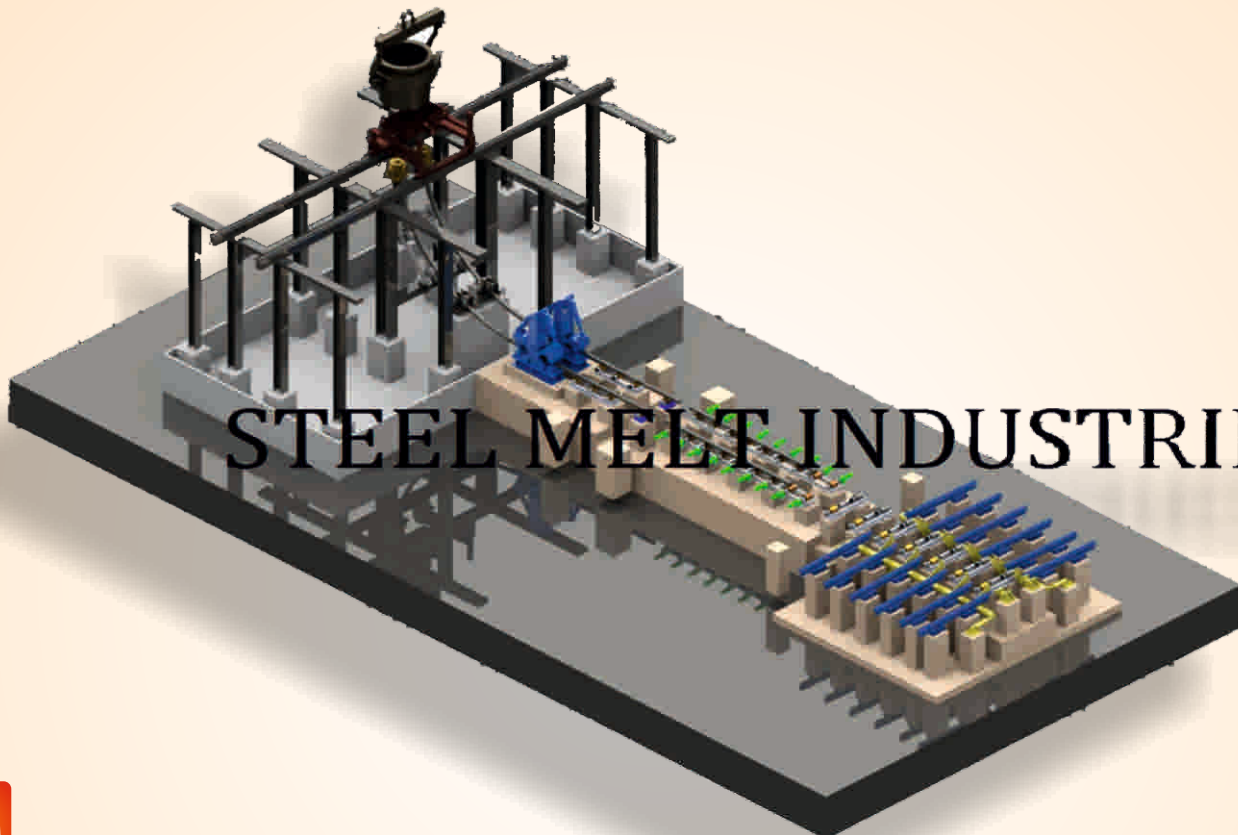
Steel Melt Industries has vast experience of design and supply of **Continuous Casting Machine** including process technology for **Steelmaking, Secondary Metallurgy and Metallurgical Plant Equipment**. **Steel Melt Industries** has become a key player offering **Products** and **Engineering Services** for the **Steel Industry**, while providing **Innovative and Integrated** solutions for complete process areas, including complete **Turnkey Supply**.

We have personally conducted business in Domestic as well as international market around the globe and we continue to expand our reach and success with every opportunity we encounter. It is our mission to create the highest possible value for our customers and our partners.

The aim of **Steel Melt Industries** is to evaluate and recognize every aspect of our Customer's needs: from the concept phase through the erection of the equipment including the development of layout, definition of processes, engineering and fabrication of equipments. Each **Continuous Casting Machine** is built to the customer's requirements. The machine range indicates the 'standard' machines available but we will manufacture machine that the **Customer Requires**.

Our accomplished workforce adapt themselves with the latest trends and demands of the market to carry out the manufacturing process in an appropriate manner so as to satisfy our clients with unique and **Precised Equipment**. We owe our success to our **R&D Department** where in our professionals keep on carrying experiments in accordance with the changes of the market and have successfully hauled projects for various companies and clients.

We will listen to a customer's 'requirements' or 'Desire' and design a machine to meet those requirements. We have a dedicated team who are fully involved in the **Development, Construction, Installation and Servicing of our Continuous Casting Machines**.



CONTINUOUS CASTING MACHINE



Multi Radial Bow Type Casting Machine

Continuous Casting is the process by which molten metal is transformed to a solidified state of semi finished Billet, Bloom, or Slab. Molten Metal from the Electric Arc Furnace / Induction Furnace is tapped into a ladle, and then from bottom of the ladle molten metal is poured into the Tundish of Continuous Casting Machine.

Continuous Casting has evolved from a batch process into a sophisticated continuous process. This transformation has occurred through understanding principles of mechanical design, heat-transfer, steel metallurgical properties and stress-strain relationships, to produce a product with excellent shape and quality.

In recent years, the process has been optimized through careful integration of electro-mechanical sensors, computer-control, and production planning to provide a highly automated system.

Through our expertise and design Steel Melt Industries manufactures various types of **Continuous Casting Machines** as per customers' needs. Our various types of Continuous Casting Machines are capable of casting sections 80mmx 80mm to 200mmx 200mm.

» 3-6 Radius Continuous Casting Machine

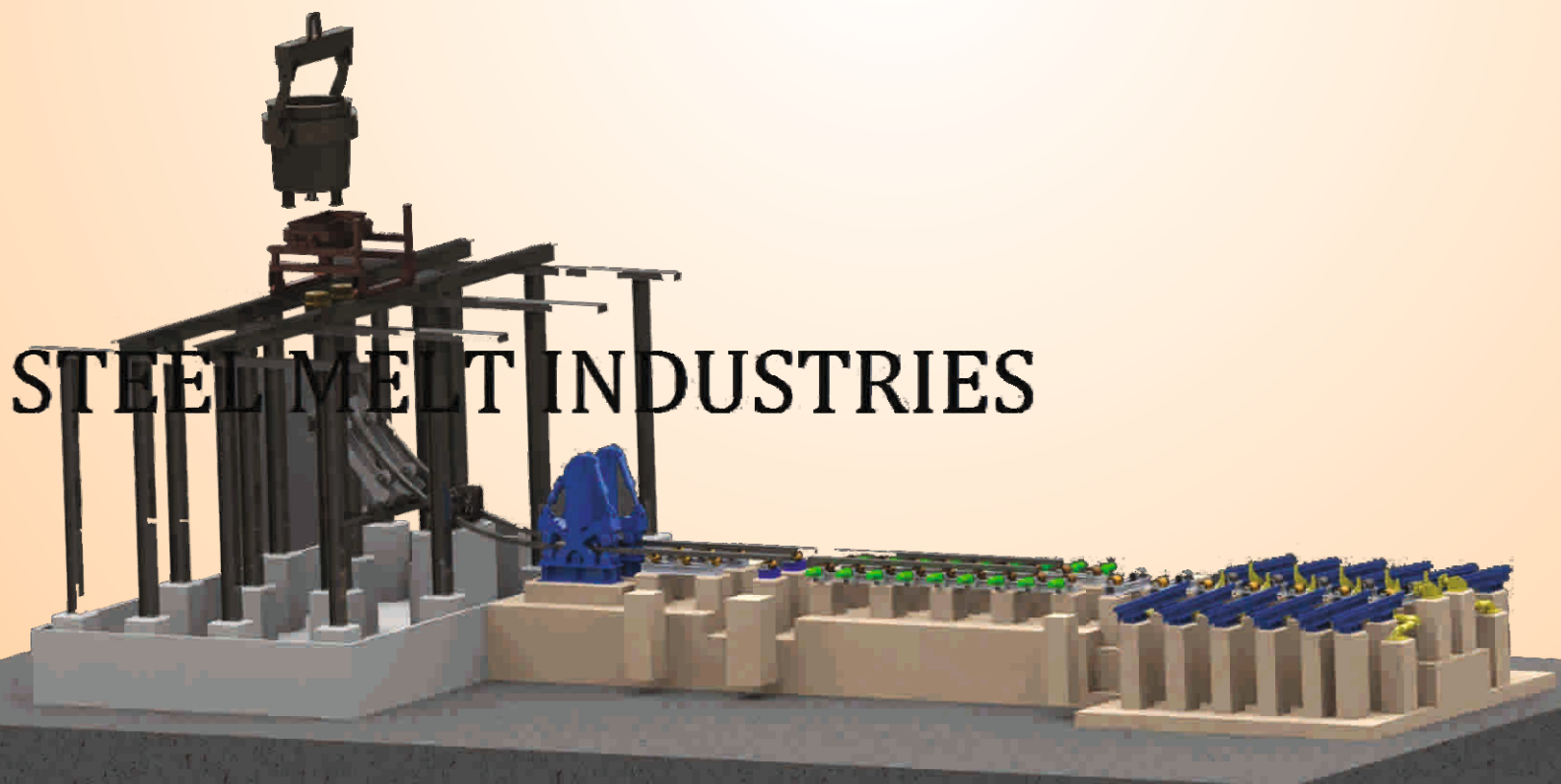
RADIUS OF MACHINE	R1:3 Meter, R2:6 Meter
CASTING RANGE	Width:80mm To 110mm, Height:80mm To 110mm, Length:3 - 6 Meter
CASTING MATERIAL	Mild Steel Alloy Constructional Steel

» 4-7 Radius Continuous Casting Machine

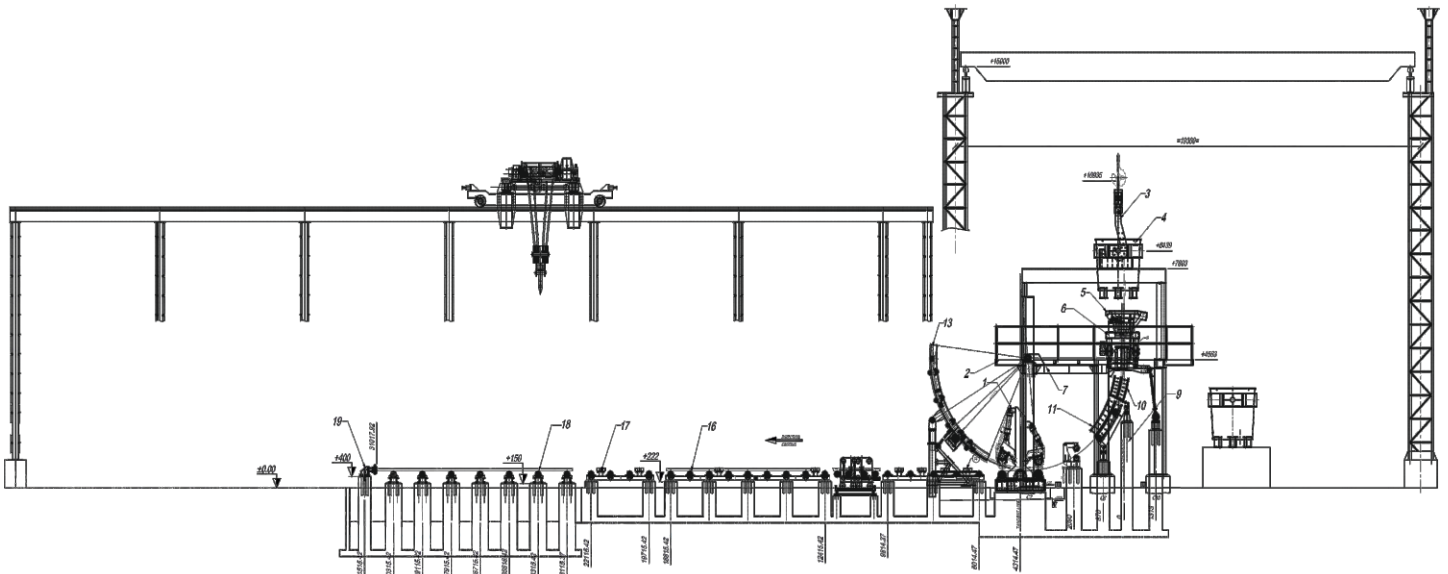
RADIUS OF MACHINE	R1:4 Meter, R2:7 Meter
CASTING RANGE	Width:80mm To 150mm, Height:100mm To 200mm, Length:3 - 6 Meter
CASTING MATERIAL	Mild Steel Alloy Constructional Steel

» 6-11 Radius Continuous Casting Machine

RADIUS OF MACHINE	R1:6 Meter, R2:11 Meter
CASTING RANGE	Width:100mm To 200mm, Height:100mm To 200mm, Length:3 - 12 Meter
CASTING MATERIAL	Mild Steel Alloy Constructional Steel



Process Flow Chart Of Continuous Casting Machine



Major Equipment of CCM Machine

CCM Machine Structure

LADLE STAND : M S fabricated box beam with mounting facility for ladle. Ladle locating stoppers and markings are provided for easy placement of ladle.

LADLE MAN'S PLATFORM : A structural platform supported with Ladle stand is provided to operate ladle slide gate mechanism and other operations like controlling level of metal in tundish. One of the slide gate power pack is located on this platform.

MAIN OPERATING PLATFORM : Main operating platform is a structural platform lined with fireclay bricks. Tundish car rail beams and emergency slag box is provided on this platform. Mould operators electrical pendants, tundish car, Man cooler fans, primary water and emergency water heater, flow meters, Measure Alarm Board, O2 gas manifold, are provided on this platform. Consumables like lancing pipes, radex powder, gases, chiller material required for running heat is stored on this platform by production people. Machine is operated from this platform. This is a workstation for Mould operators, Shift incharge, and their helpers.



RAILING : These are provided all over the platforms and staircases to avoid accidents.

INTERMEDIATE PLATFORM : This is a structural fabricated platform provided at an intermediate level of machine to perform operations of cooling chamber and maintenance strand guide and oscillation unit. This platform has an inspection door from which running billet can be viewed during casting and cooling parameters can be controlled.

STAIRCASE, LADDER, WALKWAYS : Staircases are provided from both the sides of the platforms. Main staircase has a landing on intermediate platform along with a walkway to access the inspection door and secondary water control station.

SKID BANK : Skid bank rail beams are fabricated assemblies of beams, channels, and rail. These are located in skid bank area where billets are stored. They are mounted on civil foundation with mounting brackets. Dummy bar holder and pusher cylinders also are mounted in this area with the help of brackets.

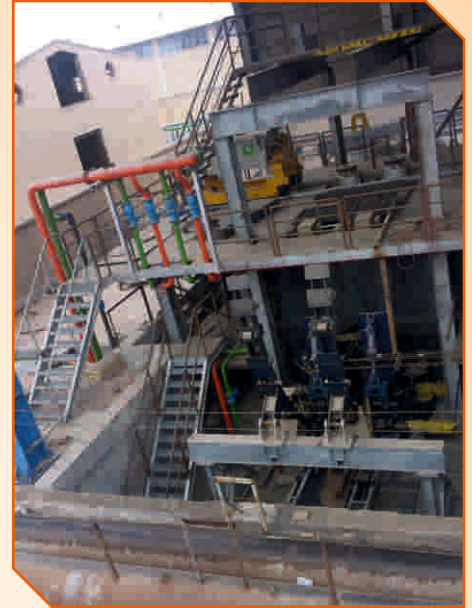
ALL STEEL STRUCTURAL : These include connecting channels, beams, covering plates, DRT roller frames, Fasteners etc.

STRAND GUIDE ASSEMBLY : Strand guide is a radial MS fabricated frame assembled with ap1, ap2 & ap3 rollers to guide billet during casting and dummy bar during inserting while resetting the machine for next cast.

CONVEYER ROLLER TABLE : Conveyor roller tables consist of fabricated frames, billet and dummy bar guides, driven roller assemblies, and Cardan shafts etc. Frames are designed as per billet size i.e. section and length.

CARDAN SHAFTS : Cardan shafts are universal couplings fitted to shafts driving the rollers and connected to Gear motors.

DUMMY BAR HOLDING SYSTEM : This is a parking system for dummy bars from the apron roller into a storing position.



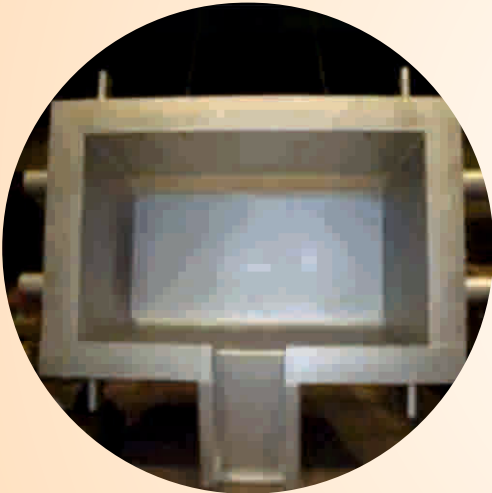


Withdrawal & Straightening Machine

This is an important equipment of the machine. It is fabricated with heavy plates and precisely machined to match the radius of the machine. It is located next to strand guide assembly. One hydraulically operated driven roller, one fixed driven roller, three idler rollers are the main parts of this machine. With this unit withdrawal of billet and insertion of dummy bar is done. Speed of the rollers is synchronized with mould oscillator by VVF A.C Drives.

Mould Oscillator

Mould Oscillation Mechanism consists of Mould table fitted with mould, securing bolts for quick and easy removal of mould and two turnious for the rocking levers. Inlet and outlet hose and pipe connections are provided for cooling water and mould lubrication system Long Lever arm carrying the mould table supported by a fabricated bracket mounted on the machine structure. Oscillation Drive is connected by Push rod connection to the lever system; the push rod length is adjustable. Oscillation stroke length is adjusted by cam shaft assembly. This mechanism oscillates and avoids sticking of mould with strand.



Tundish

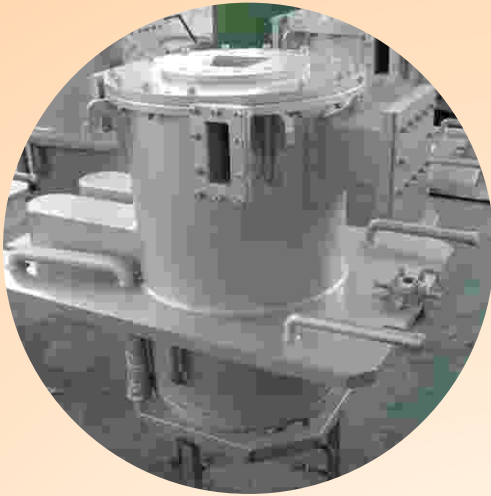
Tundish body in rigid welded steel construction suitable for lining, either with standard refractory bricks with a minimum of cutting or garnex tundish boards. Tundish Car is provided for support of Tundish.

Under-carriage is in fabricated steel construction. Four robust wheels mounted on steel axles. Two wheels on one end of the car being chain driven. Manual transverse adjustment of the tundish is provided. Pivoted launders for diversion of the steel stream into the slag box. Protection of mechanical equipment against steel splash and heat. Electro-mechanical lift and lower facility on the tundish car is provided In case of close casting practice. In open casting only long travel is electrically motorized.

Rigid / Flexible Dummy Bar

Dummy bar is an assembly of links made up of EN-8 Forged material, connected to each other by hardened and ground pins and bushes. Reusable head with a screw type threading is provided. To cast various sections transition links are added after the full section at the end. Overall length of dummy bar (including head) will be as per machine radius.





Mould Jacket

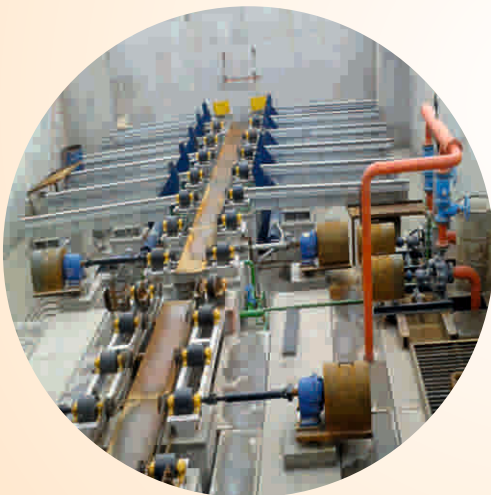
It is a pressure tested MS fabricated, machined and sealed jacket. An tapered, chromium plated, high conductivity copper tube , Fitted into fabricated steel water jacket with mould Cooling water inlet and outlet passages in the mould support seating, thus eliminating the need to disconnect water pipe fittings when changing the mould. Mould lubricating plate assembly fitted on top with the hose pipes connection on mould table. Strand face guide (foot) rolls, bracketed from the bottom flange of the mould water jacket for alignment of the strand.

Template (Aluminum)

Template is an LM-6 aluminum casting. Aluminum bar, accurately machined to nominal billet size. It is used for Alignment of mould and foot roll assembly. Otherwise stored in mould repair shop

Ladle

The steel teeming ladle shall be of circular design with all welded construction. The material for the ladle shell and bottom shell shall be ST-42 W as per IS: 2062-1992, Gr-b. The trunion material will be EN-8 forged. The ladle bottom shall be suitable to install ladle slide gate assembly and porous plug. Protective stand shall be provided at the bottom of the ladle to avoid damage to the slide gate assembly. The ladle shell and bottom shell shall be designed for a maximum operating temperature of 350o C. After complete welding, the ladle shall be stress-relieved before delivery.



Roller Table

DRT are primarily used for transporting and guiding the hot billets from cutting area up to cross transfer area. They are located between cutting units and cross transfer area. Their construction involves roller tables with individually driven common rollers. They incur low maintenance costs due to individual drives without chains and offer good heat protection due to cover plates for each drive and bearing.

Pusher

Pusher is used in transferring of billets from the roller table onto the cooling bed. Located in roller table and cooling bank area. Constructed by fixing Levers on a common hollow water-cooled pipe, operating at right angles to the roller table. Hydraulic cylinders are coupled to each end of the lever of pipe & controlled by limit switches.



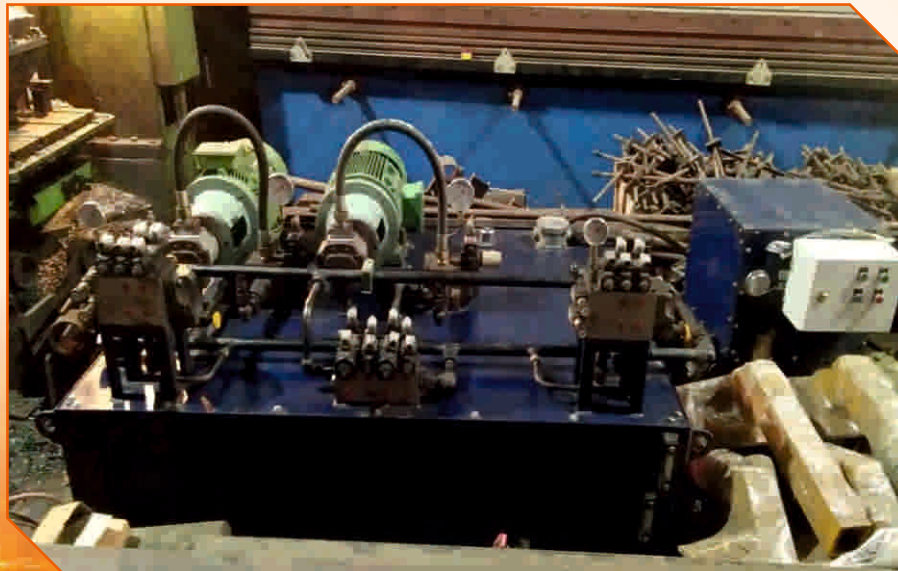
Hydraulic Power Pack System



Mounted with a Panel fitted with Solenoid valves, Flow Control valves, NRVs, Tie valves, and other accessories as per the circuit required to operate Pusher, Withdrawal of strands. Pump of adequate flow and pressure are used. Pumps are driven by electrical motor.

Other Details

Function	Servicing the hydraulic systems of: • Withdrawal & Straightener • Rigid dummy bar storage • Pusher mechanism
Location	Hydraulic room
Construction	Hydraulic power station. Logically divided into individual systems.
Fluid	Safe and reliable system with individual strand or equipment related groups. Mineral oil ISO VG 68 / HVLP according to DIN 51'524



The Panel floor / wall mounting dust and vermin proof construction with bottom cable entries. The Panel is fabricated from CRCA sheet steel in 14/16 SWG and sufficient stiffeners will be provided wherever requires. Non-deteriorating gasket is provided between all adjacent units and between all covers and doors. Top of the Control Desk and Mould Operator Pendant are fabricated in stainless Steel.

PAINTING

All metal works and metal parts are treated with suitable anti-corrosion treatment, such as phosphate to be given to metal works by seven tank process. Panel is powder coated with RAL 7032 (Siemens Grey) paint shade as per IS-5. Earthing and Bus Bar are provided as per machine design and requirement.

WIRING

All wiring with proper current rating capacity with copper wire and ISI marks. All wiring terminals will be brought out at the bottom side of the panel.

NAME PLATES

Name and designation of each equipment will be provided with front engraved on black anodize aluminum plate.





MAJOR COMPONENTS

MCC Panel

- » Hydraulic Pump Motor
- » Pusher Hydraulic Pump Motor
- » Discharge Roller Table
- » Logic for Hydraulic Control

Secondary Water Automation

- » Flow Meters
- » Flow Control Valves
- » Pressure Switches
- » FRL Unit
- » PLC Panel with Computer

AC Drive Panel

- » Withdrawal Drive
- » Mould Oscillation Drive
- » Rigid Dummy Bar Drive
- » A.W.F Drive
- » Brake Supply to Withdrawal Drive
- » Main Alarm Board
- » Main Control Desk
- » Mould Operator's Pendant
- » Intermediate Operating Station
- » Junction Box for MOP

Primary Flow Meter

Water Complex Pump Panel

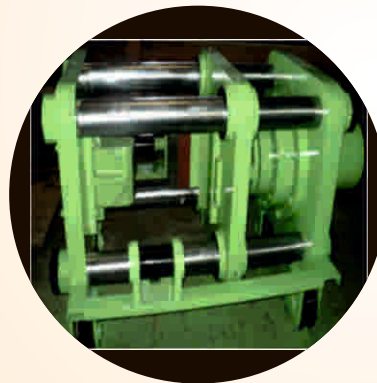
- » Primary Pump Motor
- » Secondary Pump Motor
- » Scale Pit Pump Motor
- » Cooling Fan



CCM OTHER MAJOR EQUIPMENTS



Ladle Pre Heater



Hydraulic Billet Shearing Machine



Cooling Bed



Auto Torch Billet Cutter



Tundish Transfer Car



Turnover Cooling Bed



Steel Melt Industries

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