

# Steel Melt-Shop Continuous Casting Line



A typical steel re-bar (billet) plant comprises the following major equipment:

- One or multiple electric arc furnaces (EAF).
- One or multiple ladle refining furnaces (LF).
- A multiple (2 to 8) strands continuous casting line.
- A bar (billet) cutting unit.
- All optional auxiliary equipment and infrastructure.

Such steel re-bar mill plants have the annual production capacity between 250,000 to 1,000,000 tons of molten steel out put of, or roughly the daily production capacity of 850 to 3,300 tons (estimated as 300 production days per annum). The cross-section specifications of the continuous casted square bars (billets) are from the smaller size of 80 x 80 mm<sup>2</sup> to the maximum size of 200 x 200 mm<sup>2</sup>.

The most important piece of equipment within a continuous casting steel re-bar plant is the rolling mill, which is the heart of the plant. Thus, the proposed and offered rolling mill in this documentation is the well proven products from our manufacturing plant. The products have been used in no less than ten different steel bar plants.

## Electric Arc Furnace (EAF)

The referred AC UHP electric arc furnaces have the following advanced techniques and support equipment:

- Tubular type water cooled furnace walls and water cooled covers;
- Cage type split furnace casings;
- Full hydraulic drive;
- EBT and EAP techniques;
- Furnace door carbon powder sprayer, water cooled carbon-oxygen Injecting lance mechanical hand, foaming slag submerged arc smelting techniques;
- Electrode spray cooling;
- Cover fourth hole or seal hood and/or roof hood primary and secondary fume collection and cleaning devices;
- Cover fifth hole and ladle mechanical chargers;
- Computer process control;
- Consideration for reactive power dynamic compensation and filtering devices based on grid.

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## Ladle Refining Furnaces (LF)

The referred ladle refining furnaces (LF) are equipment for heating molten steel, adjusting molten steel temperature, making alloying adjustment, reducing and refining of realizing de-oxidation, de-sulfurization, and impurity removal; and homogenizing molten steel temperature and composition by arc air stirring, buffering and coordinating role between electric furnaces and continuous casting; ensuring multi-furnace continuous casting and improving economic efficiency of the production.

## Continuous Caster

Currently, most of the bar (billet) casters adopt the design of the full arc rigid dummy bar continuous casters. Their guide sections are relatively simple, providing such advantages of simple processing of bleed-out accidents and high operating efficiency. In this proposal, we select the full arc continuous caster. the caster could be equipped with multiple strands (2, 4, 6 and 8).

Based upon the technical calculation and engineering experience, the straightening and continuous caster is proposed and referred. Its strain rates of its surface and internal two-phase field is far lower than the allowable rate, so it is a relatively appropriate and well-proven piece of equipment.

Continuous Caster in Operation



Electric Arc Furnace



Ladle Furnace