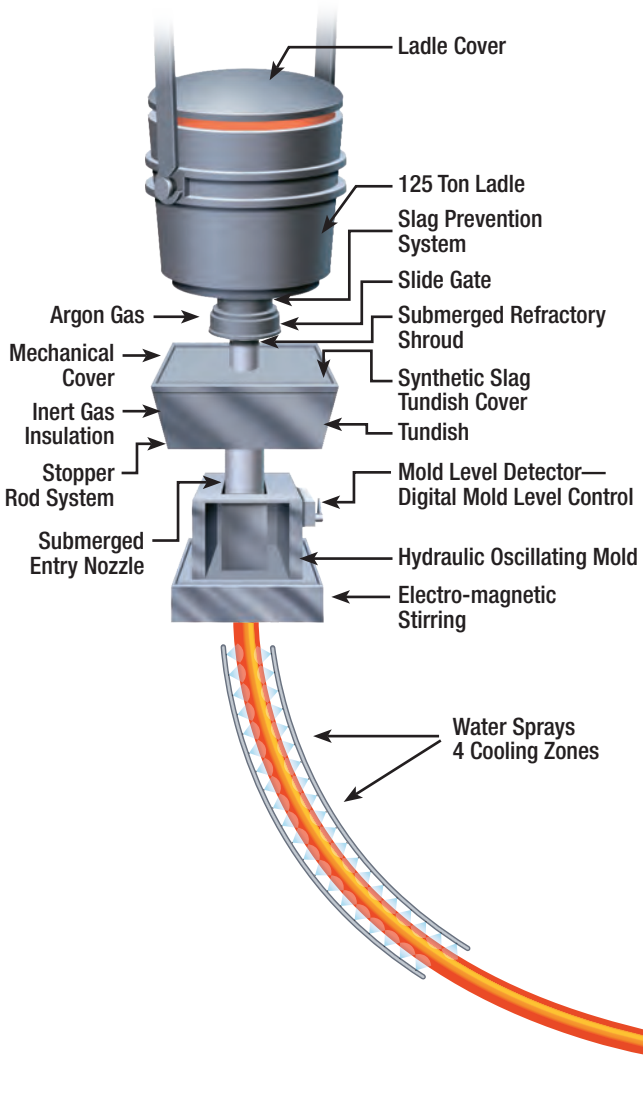
STRAND CASTING

GERDAU

NO OTHER STEELMAKER IN THE WORLD HAS THE TECHNOLOGY, THE EQUIPMENT OR THE EXPERTISE TO MAKE BARS THAT SURPASS THE QUALITY OF GERDAU.

STRAND CASTER

Simplified diagram of our caster showing primary components.



Our strand caster uses advanced technologies to produce clean steel with a homogenous internal structure.

It begins with a refractory shroud from the ladle that is submerged in the liquid steel in the tundish. The joint and slide gate above the shroud is surrounded by argon gas to prevent any possible oxidation of the steel. There is a special slag detection system above the slide gate that automatically ends flow from the ladle to prevent slag carry over into the tundish. The tundish is specifically designed with flow controls to prevent any contaminants from entering the casting mold. The liquid steel in the tundish is covered with a controlled slag designed to promote clean steel.

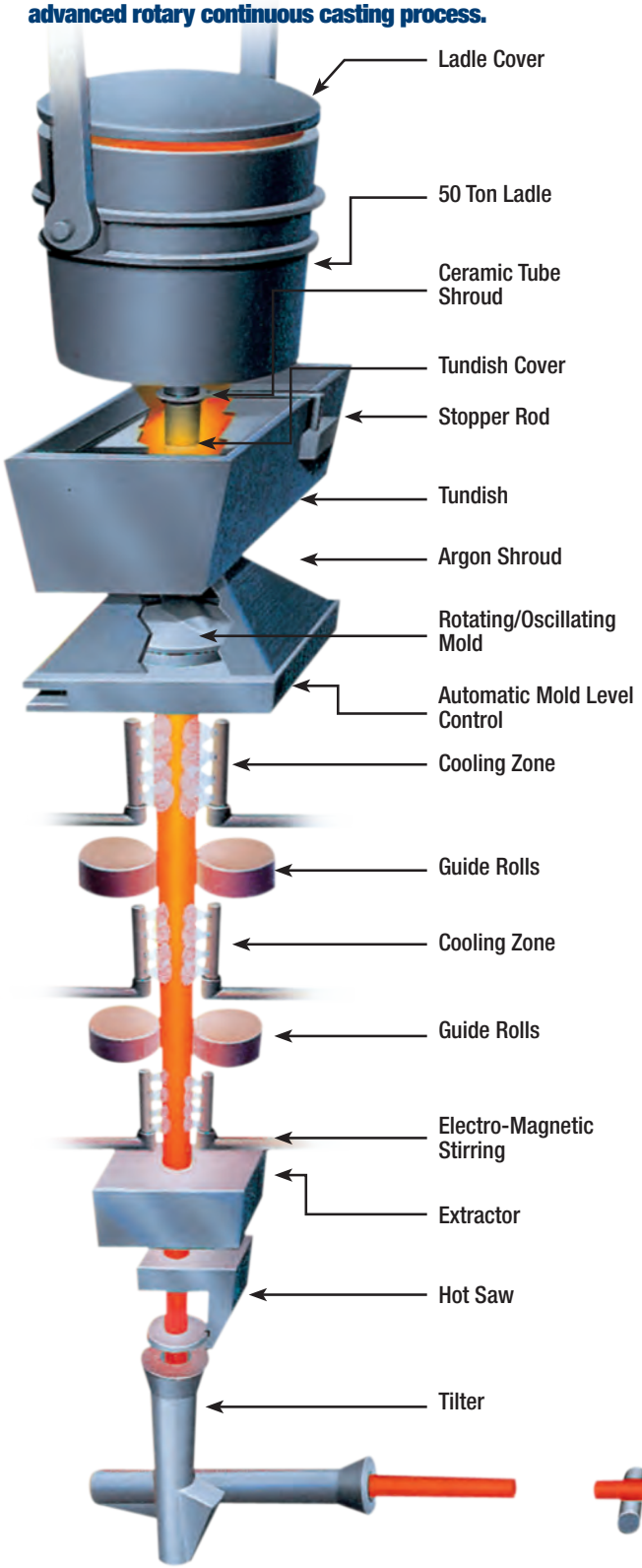
Steel from the tundish is controlled by stopper rods. The steel is completely protected from oxidation by a submerged refractory shroud surrounded by nitrogen gas and a protective powder that is automatically applied at the steel surface in the mold. The steel level in the mold is precisely controlled by a digital controller that receives a mold level signal from a gamma radiation detector and rapidly adjusts the stopper rod position to keep the mold level constant.

ROTARY CASTING

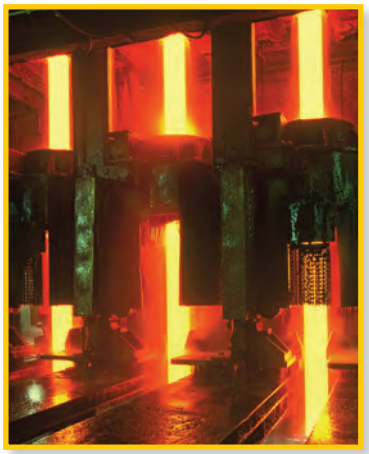
GERDAU

ROTARY CASTER

Simplified diagram of our advanced rotary continuous casting process.



ADVANCED ROTARY CONTINUOUS CASTING IS JUST ONE OF THE UNIQUE PROCESSES THAT GIVES GERDAU SUPERIOR PRODUCT QUALITY.



The rotary caster is one of Gerdau's most sophisticated processes. It begins with molten steel from the ladle teemed through a ceramic shroud into the tundish. From the tundish, steel enters the rotating mold through a pouring nozzle and is shrouded with an inert gas to maintain the steel's microcleanliness by avoiding reoxidation.

As the steel is delivered to the rotating mold it is centrifugally forced against the mold wall and a thin layer of steel immediately solidifies. This layer of steel forms so rapidly that it contains no inclusions or seams and has excellent ductility for hot and cold forming applications.

As the round bar leaves the mold it continues to rotate through air/water spray mist cooling zones. In these zones, water temperature, pressure, and volume are monitored and controlled so that solidification continues at the desired rate. Continual rotation of the steel bar as it passes through the water spray zones assures uniform cooling and the formation of a sound center. This rotating action is supplemented with electro-magnetic stirring. This allows the steel to form a uniform dendritic pattern, free of segregation. The solidified round bar is uniform around the entire circumference thus eliminating the micro-segregation.

Finally, round billets are saw cut to length and tilted horizontal to be direct rolled.