

Martensitic stainless steel as coatings for continuous caster rolls

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In a continuous slab casting machine (CCM), rolls support the solid skin of the slab during casting. They are subjected to high corrosive and abrasive conditions and cyclic thermomechanical loading, caused by repeated contact with the hot metal (1100–1200 °C) and cooling in a water steam atmosphere. The combination of these effects leads to surface degradation. To limit the surface cracking phenomena, carbon steel rolls are coated with a hard facing material. Martensitic stainless steel is a widely used solution for this application. Anyway, the target is to further improve the coating performances and extend roll's life, since each time the rolls reach the end of their life the segment must be removed from the machine for maintenance, leading to a decrease in the production and higher operational cost.

In this paper an example of coating degradation phenomenon will be analyzed to study the mechanism of damage. Then, a changing in the coating deposition process will be proposed to improve the microstructure of the coating, increasing in this way the working life of the component.

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