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Sustainable repairs of machine parts in rolling mills by advanced coating technologies

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Machine parts, like chocks, rollers, HGC cylinders or gearbox housings, are the backbone of every rolling operation for section and flat rolling mills. They are essential for the delicate production process and ensure perfect product quality, tolerances and dimensions. However, rough operating conditions, such as elevated temperatures, corrosive media, high static/cyclic loads and abrasion, lead to significant wear during rolling or strip processing. Proper maintenance can prolong the service life, but these harsh conditions will lead to a decrease in product quality over time and ultimately, the failure of every component. The production process of new parts, especially for heavy machine parts like chocks, is often very energy intensive. Multiple tons of grey cast iron have to be molten, poured and fully machined. Additionally, the lead-time of single components or fully assemblies can be multiple months up to years. This is where repair solutions by coatings are a sustainable and economic alternative to the procurement of new parts. Worn out areas can be geometrically restored, functional areas can be restored and protected against abrasion and corrosion, hard chroming can be replaced by REACH compliant alternatives. Additionally, repair solutions by coatings offer a significant reduction in lead-time. This paper gives an overview of industry trends and recent developments within the SMS group, utilizing advanced coating technologies like High-Velocity Oxygen Fuel spraying (HVOF), High Velocity Air Fuel spraying (HVAF), Extreme High Speed Laser Application (EHLA), Laser Metal Deposition (LMD) and high speed Arc Wire Spraying (AWS) in combination with state of the art global machining capabilities.

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