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AI-BASED SURFACE INSPECTION AND 3D PROFILING FOR QUALITY ASSURANCE IN STEEL PRODUCT GRINDING

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High pressure grinding is gaining popularity and becoming the preferred method to remove surface defects from carbon steel semi-products. Reasons for selecting grinding over scarfing include for example higher flexibility of operations, optimized yield, easier and higher value recycling of the swarf, lower energy consumption and reduced carbon footprint. To ensure that ground semi-products meet the stringent industry standards there is a need to apply automated analysis and measurement technologies.

This paper will present how an AI-based surface inspection system with advanced machine learning algorithms is used to identify surface anomalies in real time. This enables early detection and corrective actions, reducing material waste and improving overall process efficiency. Additionally, the integration of 3D profiling technology enhances quality control by accurately measuring the slab's geometry. By using laser-based scanning, the system captures the slab's profile with high precision, detecting deviations in thickness, flatness, and other critical dimensions.

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