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## Optimized availability of a mechanical drive system through holistic predictive maintenance approach

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Predictive maintenance is often seen as an add-on for predicting failures. This viewpoint limits the real-life results of predictive maintenance solutions. To truly maximize drive system availability, decisions must support this goal throughout the entire lifecycle, akin to the continuous use of smart devices for personal health monitoring.

Optimizing drive system availability begins at the project specification phase and continues until the drive package is decommissioned. This holistic approach applies to both mechanical and electrical drive technologies, ensuring that every stage contributes to the overall reliability and efficiency of the system.

This paper presents a predictive maintenance system for hot long rolling mill gearboxes, incorporating vibration and oil system sensors. The results and experiences from implementing this system are mapped within the holistic approach. The paper discusses the influence of various factors, including drive package specification, supplier assessment, purchase decision, engineering, manufacturing, assembly, testing, commissioning, operation, maintenance, and repair. Each of these stages plays a role in determining how high benefits can be reached through a predictive maintenance solution.

This paper provides valuable insights for decision-makers and offers practical guidelines for engineers to enhance drive system availability. By adopting a proactive and holistic approach, organizations can significantly improve the reliability and longevity of their mechanical drive systems, ultimately leading to increased productivity and reduced downtime.

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