

Advanced Guiding: How to Concurrently Improve Safety, Efficiency and Profitability



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Improving production, yield and quality is a clear primary objective in the steel industry. Recently, however, additional primary objectives have emerged. Notably, safety and hands-off rolling have become high priorities for many mills. This production trend has inspired a suite of advanced solutions that is helping producers achieve new goals and improve traditional objectives. The latest technology for roller, twist, slitting, and specialty guides includes integrated electronics, remote adjustability, wireless communication and failure predicting software. This article describes how long products producers can use such advanced guiding solutions to improve safety, efficiency and profitability.

Safety is currently a number-one priority for many steel producers worldwide. While injury rates in steel plants are low on a historical basis, many producers are striving to further improve and ultimately achieve a zero-injury rate. To help reach this goal, certain hands-on tasks must be eliminated or reduced, and further improvements in process and material control must be achieved. Traditional long rolling mill operations and maintenance require extensive hands-on activities and have dangerous failures that unfortunately lead to injuries each year. Implementing equipment that can reduce hands-on requirements and increase equipment reliability leads to a safer and more productive working environment. This article describes some of the safety, efficiency and profitability enhancements that can be realized by implementing an advanced guiding system.

Discussion

Within a long rolling mill, some of the more regular interactions with the rolling line are related to guiding equipment. Guiding equipment requires consistent checks, upkeep and maintenance to operate efficiently. Typical daily operational activities with guides include off-line buildup and teardown of equipment,

visual or physical check of the on-line operating condition, on-line adjustment, and changeover of new and worn equipment onto the rolling mill due to failure and routine maintenance. While it is not yet possible to eliminate all risks associated with guiding equipment, an advanced guiding system can help to reduce the exposure levels of several of these activities.

Advanced guiding systems are generally characterized as systems that utilize a type of guiding equipment that incorporates sensors, motors, human-machine interfaces, and control logic to enhance functionality and reliability. They can be of any variety of guide including roller entry, delivery, twist, slitting, edging, angle, etc., and are not limited to any set of functional abilities. Most currently available systems are focused on roller entry guides, with various sizes available for use throughout a long rolling mill. Typical functionality of these systems includes measurement of section size, measurement of roller load, section and roller speed measurement, remote adjustment of the guide rollers and/or inserts, roller and bearing failure identification, predictive analysis, internal condition monitoring, automated corrections, etc. The functions, feedback, and predictive nature of these