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Hot strip surface quality improvements by: Work roll lubrication and cooling package for hot strip mills with a new special feature for a continuous lubrication

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Improving energy efficiency and product quality in hot strip mills is essential to meet the increasing demands for modern production facilities. Primetals Technologies developed an advanced work roll lubrication and cooling package, including the innovative Power Work-Roll Cooling system. This integrated solution combines energy efficient dynamic work roll cooling, advanced roll-gap lubrication, and an innovative work roll cleaning system to deliver superior performance, reduced costs, and enhanced energy efficiency.

The Power Work-Roll Cooling system can achieve up to 70% energy savings compared to conventional cooling methods by operating at significantly lower operation pressure (4 bar vs. 13 bar) while maintaining high cooling efficiency. Solidjet nozzles are providing a concentrated coolant flow that enhances heat transfer and overcomes the “pool effect,” which may reduce cooling efficiency of traditional systems. Additionally, the dynamic cooling enables a flexible and precise thermal crown control by adjusting flow rates across the entire length of the roll barrel, ensuring optimal strip contour and flatness. An additional key feature is the new “WRL NC: Work Roll Lubrication Non-Cooling” solution to reduce roll forces by up to 20%, achieving further energy reduction, excellent strip surface quality and reduced work roll wear.

The package also includes a unique feature: an innovative work roll cleaning solution, that removes residual oil on the work roll surface between strips, enabling work roll lubrication over the whole strip length. This synergy of the sophisticated cooling, lubrication, and cleaning arrangement ensures consistent quality over the entire strip, reduced operational costs, and enhanced sustainability for modern hot rolling mills.

These developments represent a major jump forward for hot strip mills, combining energy efficiency with exceptional operational performance to address the evolving challenges of both high-quality and high-capacity steel production.

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