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The Steel Industry –Setting the Standard for the Twin Transition

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The steel industry is integral to society, supplying the necessary materials for infrastructure and technologies, from renewable energy systems to the electrification of transportation. As a key part of our world, the steel industry is not immune to the dramatic transformations impacting multiple sectors, namely sustainable and digital transformations, the “twin transition.” Today, the steel industry alone is responsible for nearly 10% of global carbon emissions. Sustainable production methods, including the global adoption of direct reduction technologies to replace the carbon-intensive blast furnace process and increased focus on electric arc furnace-based steel production, reflect changes across heavy industry as the path forward in the “twin transition.” Simultaneously, new and existing systems are achieving new levels of efficiency and production quality thanks to advanced digital systems. With artificial intelligence driving technological advancement, automation systems combine with the latest data analytics and monitoring to realize a fully autonomous operation capability.

Primetals Technologies is bringing the steel industry through these transformations via two intertwined concepts: the sustainable steel plant and the fully autonomous plant. The sustainable steel plant produces “green steel” by leveraging carbon direct avoidance technologies, such as hydrogen-based direct reduction and electric arc furnaces powered by renewable energy sources. Moreover, additional technologies, such as dedusting systems, capture and recycle unused raw materials. In parallel, the fully autonomous plant integrates sensors, robotics, and virtual tools to simulate, optimize, and adjust production routes to meet ever-changing market demands for high-quality steel. With decades of experience in the industry, the experts and specialists of Primetals Technologies are charting the path toward the future of steel production, and producers worldwide are laying the foundation for groundbreaking projects. The steel industry is a frontrunner for global heavy industry, setting the standard in the “twin transition,” transforming existing production routes and investing in sustainable digital innovations.

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