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Transforming Underperforming Steel Plants into Industry Leaders Using State-of-the-art Sustainable Technologies

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The steel industry contributes to 7-8% of the global greenhouse gas emissions*, necessitating a shift towards more sustainable practices and technologies. This paper explores the transformation of an underperforming steel plant into a state-of-the-art facility using products and technologies dedicated to the decarbonization of the steel industry. The focus is on implementing sustainable practices and advanced technologies to achieve significant improvements in efficiency, productivity, and environmental impact.

Underperforming steel plants often face issues such as high energy consumption, low production efficiency, and significant environmental impact. These challenges can be addressed through the adoption of advanced technologies and sustainable practices. Such suboptimal operation not only poses a great concern for the environment, but also results in an uneconomic and unsustainable plant operation.

There are several key technologies available in the market enabling the reduction of environmental footprint and increase the operational efficiency of steel production. These include direct reduction of iron ore pellets, hydrogen-based technologies, electric arc furnaces (EAF), smelters, digital tools, advanced rolling and processing solutions.

In this paper, the authors conduct a comprehensive assessment of the plant's current performance, identifying key areas for improvement expressed by the effect of the OPEX and on the net CO2 footprint of the steel plant. Subsequently, they offer an action plan outlining the steps required to implement these technologies and best practices.

The benefits of such a transformation can be measured by the increase of production efficiency and a strong reduction in the environmental impact, without impairing the product quality.

*Our World in Data , 2020 (https://ourworldindata.org/ghg-emissions-by-sector)

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