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Improvement on energy efficiency systems under volatile production scenarios

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Steel production in Europe is facing several challenges nowadays. The remaining high prices for energy and the demand on steel are some of the most pressing topics for steel producing companies. Energy efficiency technologies on the production site play an important role to improve the cost structure and the CO2 footprint to keep the competitiveness in the world market alive. Waste heat usage with ORC systems is a proven solution on gas fired ovens that uses the energy from exhaust gases to produce electricity for the factory and additionally hot water if applicable.

As the volatility of the steel production volume increased significantly in the last years, also the waste heat amount is hereby strongly affected. Energy efficiency technologies like ORC must keep track with these changes to secure the profitability of their usage under the new conditions. Hereby it is relevant to improve the operating flexibility and extend the uptime to ensure cash flows.

To improve the operating flexibility of energy efficiency technologies, technical measures need to be implemented. On the example of an ORC system installed at a German steel factory, the lecture will present the executed system modifications in the last years with a significant improvement on the uptime and the output of the system.

This exemplary ORC-system is installed at a walking beam furnace and utilizes the exhaust gases send to the stack directly in the ORC system. The presentation will explain the technical improvements and will show the effectiveness of these measures based on the operational data. Moreover, the increased economic value of these measures will be highlighted by analyzing the modified limit values and the increased production feasibility. The findings of this specific example can help other steel factories on their way to reduce their CO2 footprint and increase their competitiveness.

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