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From Fossil Dependence to Energy Resilience: Biosyngas for Low-Carbon Steelmaking

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The steel industry faces increasing pressure to decarbonize while maintaining reliability, cost competitiveness, and product quality. While electrification and hydrogen play important long-term roles, many steel plants still depend on high-temperature thermal processes where fossil natural gas remains dominant. This creates an urgent need for scalable, renewable alternatives that can be deployed within existing infrastructure.

This presentation introduces biosyngas as a practical and industrially proven solution for reducing fossil fuel use in steel production. Produced on-site from renewable biomass residues, biosyngas can directly replace natural gas in high-temperature applications such as reheating furnaces, annealing lines, ladle preheating, and other thermal processes critical to steelmaking.

Meva Energy's gasification technology enables continuous, stable biosyngas production tailored to industrial requirements. The talk will cover how biosyngas integrates with conventional steel plant operations, including burner compatibility, control systems, and safety considerations. Special focus will be placed on operational reliability, fuel flexibility, and how steel producers can decarbonize without compromising uptime or product quality.

Real-world project examples and performance data will illustrate achievable CO_2 reductions, typical substitution rates of fossil gas, and the role of locally available biomass in strengthening energy security. The presentation will also address key decision factors for steel producers, including CAPEX/OPEX trade-offs, regulatory drivers, and pathways toward net-zero strategies that combine immediate emissions reductions with long-term transformation.

By sharing concrete lessons learned from industrial deployments, this session aims to move the discussion from future concepts to actionable solutions—showing how biosyngas can serve as a bridge technology enabling the steel industry to decarbonize today, using proven technology and existing assets.

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