

London, June 24, 2025

EAF Quantum Supplied by Primetals Technologies Sets World Record at Hubei Shunle

- **Most heats per day for an electric arc furnace**
- **Remarkably low tap-to-tap and consumption figures drive substantial cost reductions**
- **Technological innovations, such as scrap preheating and Furnace Advanced Slag-free Tapping (FAST) enable highly efficient production**

Chinese steel producer Hubei Shunle has successfully implemented two EAF Quantum electric arc furnaces from Primetals Technologies at its site in Hubei Province. These furnaces deliver exceptional operational performance, resulting in significant cost savings. The plant produces two million tons of high-strength seismic rebars annually.

Record-Breaking Performance

Primetals Technologies and Hubei Shunle have now revealed key performance figures for the two EAF Quantums. The furnaces regularly accomplish 50 heats per day, setting a new world record in electric steelmaking. Both EAFs consistently achieve tap-to-tap times of less than 28 minutes. During 48 to 50 heats per day, power-on and power-off times are approximately 25 and 3 minutes, respectively. The EAF Quantum's efficiency is further demonstrated by its low consumption figures, power consumption of less than 312 kilowatt-hours per ton and oxygen consumption below 24 cubic meters per ton.

Technological Innovations

The EAF Quantum is characterized by several technological innovations that contribute to its strong performance. An off-gas utilization system preheats the scrap using waste heat from the production process, significantly reducing energy consumption during melting. The scrap preheating feature also shortens power-on times compared to other electric arc furnace technologies. These solutions lead to lower operating costs and reduced CO₂ emissions. Another key feature is the FAST system, which allows for tapping and tap-hole filling under power-on conditions, significantly reducing tap-to-tap times.

Primetals Technologies holds several patents related to the EAF Quantum, including those for its unique shaft design and automatic tap-hole sand-filling system. Currently, 15 EAF Quantum plants are in operation across the globe, with more installations underway.

Close Collaboration on Further Technological Developments

Hubei Shunle placed the order for two EAF Quantum furnaces and two twin ladle furnaces with Primetals Technologies in 2018. The scope of supply included mechanical and electrical equipment, Level 1 and

Level 2 automation systems, automated scrap yard management, automated charging processes, and systems for oxygen injection and sand refilling.

Hubei Shunle produces a wide range of steel products, including screw thread steels, steel wires, steel tubes, carbon steel, alloy steel, and stainless steel. Together with Primetals Technologies, the company is exploring opportunities to expand their partnerships, focusing on innovative technology applications, the implementation of “green steel” technologies, and the integration of smart manufacturing solutions.

Primetals Technologies continues to provide full support for Hubei Shunle’s ongoing development of its electric arc furnace facilities. This collaboration strengthens the steelmaker’s competitiveness in challenging market conditions and positions the facility as a global leader in efficient, EAF-based minimill production.

Key facts: Hubei Shunle’s EAF Quantums

Tap-to-tap times: less than 28 minutes

Power-on times: 25 minutes

Power-off times: 3 minutes

Power consumption: less than 312 kilowatt-hours per ton

Oxygen consumption: less than 24 cubic meters per ton

Electrode consumption: less than 0.7 kilograms per ton (for 100 percent scrap as raw material input)

Yield: more than 95.6 percent

Dust emissions: less than 5 milligrams per cubic meter



Two EAF Quantum electric arc furnaces from Primetals Technologies in operation at Hubei Shunle have set a world record for number of heats per day.

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