

Advancing Steelmaking through Metallurgical Process Optimization

Tailored consulting services for process optimization
and metallurgical expertise

 oncept

expertise tailored to your goals

Steel production is evolving, with a focus on EAF-based methods, scrap melting, DRI utilization, and process efficiency. At **qoncept**, we align our diverse expertise with your specific needs to improve key areas of steelmaking.

Our consulting combines metallurgy, mechanical engineering, and process automation in a cross-process approach to optimize production, boost efficiency, and ensure sustainability. We provide tailored, data-driven solutions that address unique challenges and deliver measurable results.

Steelmaking, as a complex blend of engineering disciplines, aligns perfectly with our approach. Challenge us and experience the tangible benefits of our solutions.

” **qoncept** drives steelmaking evolution by blending engineering disciplines for efficiency and sustainability.

Why Choose Us

- **Characterization and Classification of Scrap**

Enhanced master data (analyses and properties) of raw materials for better steel analysis prediction, compliance with required steel analyses, and cost-optimized charge calculation.

- **Raw Material Yield**

Maximized metal yield through optimized oxidation and reduction reactions and improved control of residuals (Cu, Sn, Pb) to ensure steel purity and balance scrap and DRI input.

- **EAF Performance and Overall Furnace Efficiency**

Improved understanding through identification of cost drivers to reduce energy consumption by optimizing energy input, power-on times, DRI ratio, and foamy slag practices.

- **Entire Steelmaking Process**

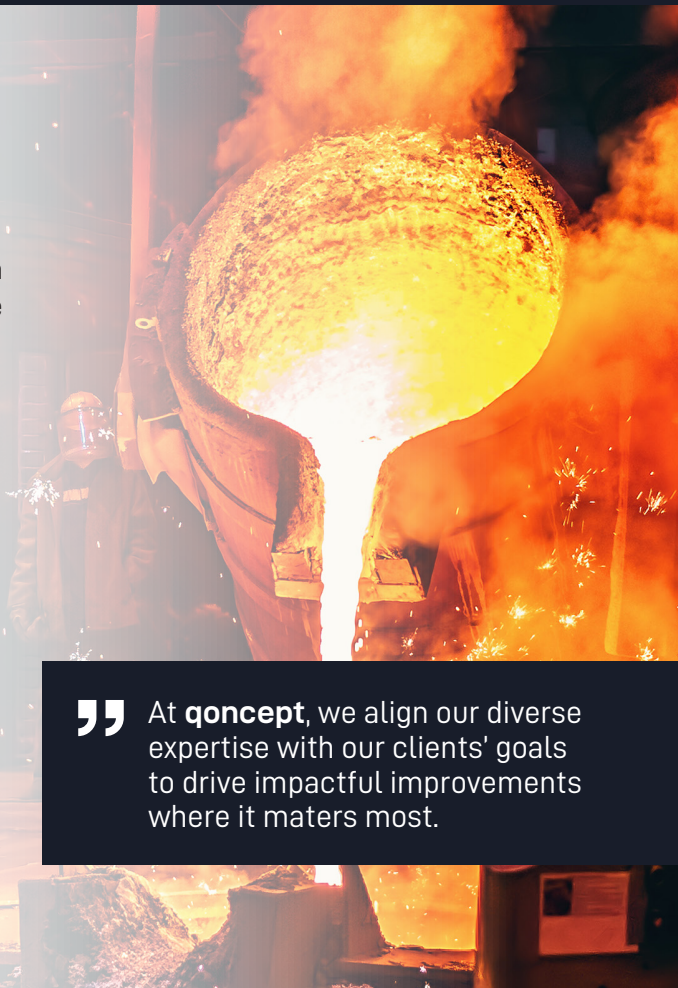
Optimized temperature control, refining processes and targeted material additions from scrap yard to casting for greater process stability, steel quality, and efficiency.

- **Sustainable Steelmaking**

Better understanding of direct and indirect CO₂ emissions to develop targeted measures for low-carbon steel production.



At **qoncept**, we align our diverse expertise with our clients' goals to drive impactful improvements where it matters most.



Key Services

1 EAF-Based Steelmaking & Process Optimization

- Scrap melting, charge mix optimization, and DRI/HBI integration for stable operations.
- Enhanced foaming slag practices and oxygen injection to improve furnace performance.
- Energy efficiency to maximize output and reduce operational costs.

2 Slag Metallurgy

- Slag fluidity and foamy slag control in EAF operations.
- Slag chemistry and basicity optimization and control across all process steps.

3 Secondary Metallurgy & Refining

- Desulfurization, deoxidation, reduction, and alloying strategies.
- Degassing (VD/RH) and decarburization of high-alloy and stainless steels (VOD/AOD).

4 Continuous Casting & Solidification Calculation

- Mold flow, EMS positioning, secondary cooling, and soft reduction optimization for defect-free steel.
- Proprietary solidification model for process analysis & caster design.

5 Sustainability & CO₂ Reduction Strategies

- Transition support from BF-BOF to EAF focusing on scrap and DRI feedstocks.
- CO₂ reduction via energy efficiency, alternative carbon and raw material strategies.

6 Data-Driven Process Optimization & Digitalization

- Real-time insight & predictive control with modeling, AI, and automation.
- Enhanced control & efficiency through monitoring, analysis, and machine learning.



PERFORMANCE

Boost furnace and process efficiency with expert melting, refining, and casting strategies.



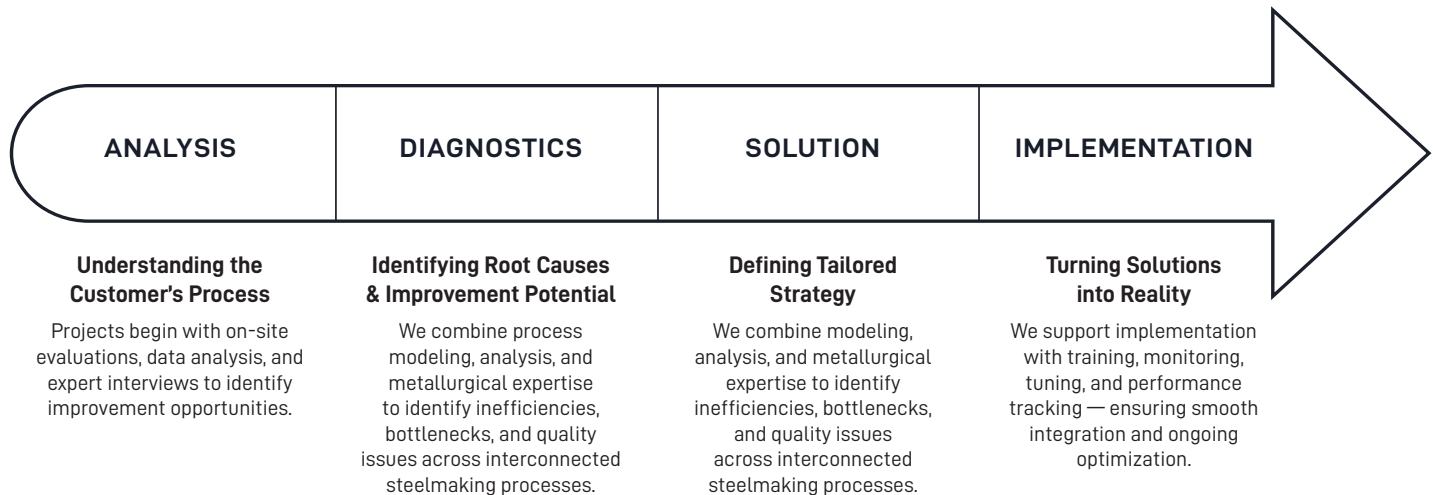
QUALITY

Enhance steel quality through precise control of slag, chemistry, and solidification models.

How We Support You

every plant is different

that's why we combine structure with flexibility to deliver solutions that fit.



SUSTAINABILITY

Reduce CO₂ emissions through process and resource optimization.



INSIGHT

Gain real-time visibility and predictive control through modeling, AI, and data analysis.



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