Increased Productivity Using Flexible Hearth Melting Configurations

Nathaniel Slinkert
Retech Systems, LLC
Ukiah, CA USA
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Flexible Ti Hearth Configurations

Increasing productivity and product flexibility

Single-Target

Multi-Cast

Multi-Strand
Process Conditions that Limit Productivity in Ti Hearth Melting

Feed & withdrawal rates

Hearth residence time

Ingot cooling and stripping
Single Mold Systems

Single mold with single ingot/slab withdrawal chamber

Long turn-around time:
- cool & strip ingot/slab
- prep withdrawal puller
- vacuum pump down
Single Mold Systems

Single mold with dual ingot/slub withdrawal chambers

Offline ingot/slub cooling & stripping

Significant reduction in turnaround time
Multicast Hearth Systems

Maximized Productivity: Eliminates ingot cooling/stripping turnaround time

Dual Molds

Dual Isolated Withdrawal Systems
Multicast Hearth Systems

Maximized Product Flexibility:
Can produce rounds and slabs in a single campaign without breaking vacuum.

Rounds
Slabs
Multicast Hearth Systems

Retech’s recent acquisition of a family of patents from Ajax TOCCO Magnethermic (originally filed by Lectrotherm Inc.)
Multicast Hearth Systems

• Approximately 19% improvement in cycle time relative to a single withdrawal system

• Approximately 4% improvement in cycle time relative to a dual withdrawal system
Multi-Strand Casting
Multi-Strand Casting Benefits

• Flexible product shapes
  – Applicable for CP & single-melt alloys
  – Near net shape product

• Increased Productivity
  – Simultaneous withdrawal of multiple product strands
  – Estimated 3.5% milling yield improvement
    • Can eliminate blooming step in rolling mill production
Summary

• Multi-cast hearth systems
  – Increase productivity
    • Eliminate ingot/slab cooling/stripping turnaround
    • Eliminate withdrawal chamber change out
  – Product flexibility
    • Rounds, slabs, and multi-strand during single campaign without breaking vacuum

• Multi-strand hearth systems
  – Flexible product shaping
  – Multiple product withdrawal
  – Eliminates blooming stage in rolling mill production
Thank You

Rettech Systems LLC
Design, Manufacturing and Test Facility
100 Henry Station Road
Ukiah, CA 95482 USA
www.retechsystemsllc.com

Nathaniel Slinkert – Director of Sales
Phone: +1 (707) 462-6522 Ext. 135
Email: enslinkert@retechsystemsllc.com