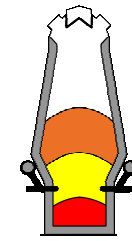


Allied Mineral Technical Services, Inc.



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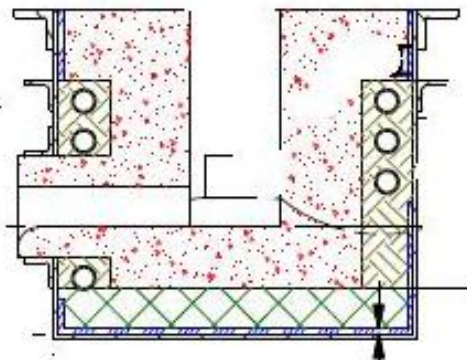
Technological Applications

➔ Passive Cooled Taphole

➔ Forced Air Cooled Separator

➔ Passive Cooled Well

➔ Forced Air Cooled Bottom



Air cooled engineering drawing



Taphole after 21,250 metric tons of hot metal

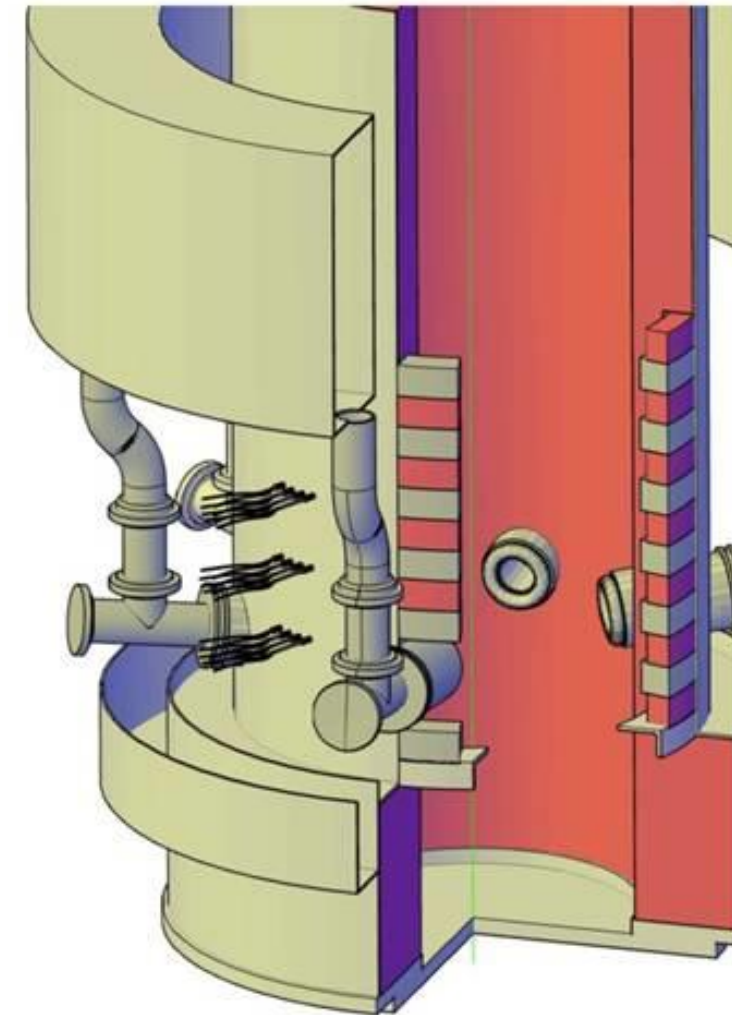


Separator after 19,800 metric tons of hot metal

Refractory consumption can be reduce by 35%!

Allied Mineral **Technical Services**, Inc.

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AMTS@alliedmin.com • alliedmineraltechnicalservices.com



Cupola Durameltz[®] Technology

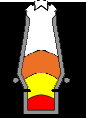
Refractory support from Allied Mineral Products



alliedmineraltechnicalservices.com

Refractory support from Allied Mineral Products





About AMTS:

Allied Mineral Technical Services, Inc. (AMTS) offers technical assistance in the critical areas of Blast Furnaces, Hot Blast Stoves and Cupolas. The AMTS team has decades of experience in the industry and is supported by Allied Mineral Products, a worldwide leader in refractory technology and production.

Technology Benefits

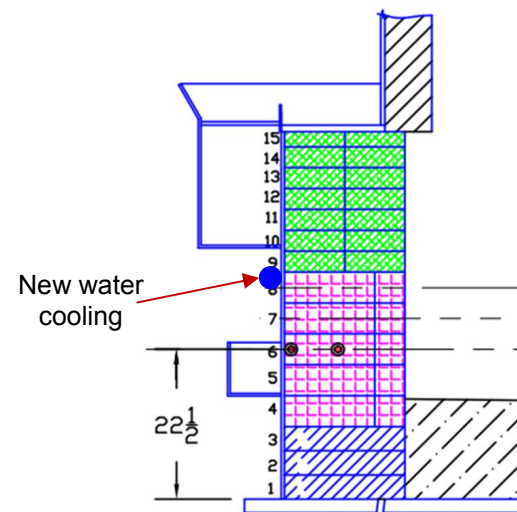
- **Savings** - AMTS melt zone technology reduces the amount of refractory lining material and improves your maintenance schedule.
- **Real time analysis** - Data allows you to track refractory performance and the energy balance in the melt zone.
- **Coke reduction** - A stable melt zone diameter will reduce coke requirements and provide a more consistent melt process.
- **Increased production rate** - A balanced cupola operates more efficiently and produces iron at a consistent temperature and chemistry.

AMTS Engineering and Design Services

- Data collection and analysis
- Melt Zone monitoring and modeling
- Failure diagnostics of melt zone
- Problem analysis and integrated solutions
- Comprehensive engineering design capability
- Advanced refractory and cooling systems
- On-site supervision and assistance
- Refractory properties and behavior

Key Products

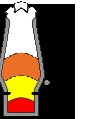
Area	Products	Comments
Well and Taphole	DURAMELTZ	High conductivity, carbon-based material Various grades and sizes available



Cupola well with Durameltz and added water cooling

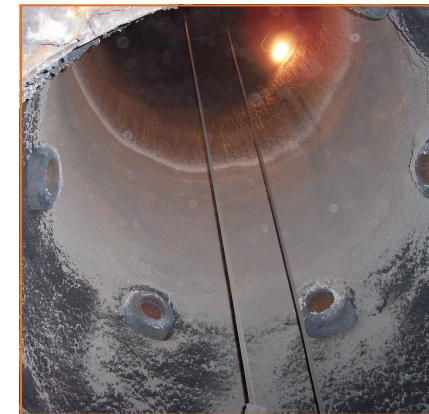


Cupola taphole with Durameltz



Key Products

Area	Products	Comments
Meltzone	STACKCRETE G	High conductivity, carbon-based shotcrete
	STACKGUN 90	High alumina, low-clay gun refractory
	STACKGUN 85 SiC	85% silicon-carbide, low-clay gun refractory
	CW GUN 519	Silicon-carbide based gun refractory



Cupola melt zone shotcreted by AMTS with Allied product



Melt zone after 400,000 tons

Key Products

Area	Products	Comments
Preheat Zone	STACKCRETE® 608	Mullite based, silicon-carbide shotcrete
	STACKCRETE 65	Alumina based, abrasion resistant shotcrete
	GUNCAST 28 LI	Abrasion resistant gun mix
Separator	V-CAST® 400 SERIES	Alumina based shotcrete with additions of SiC and C
	V-CAST 700 SERIES	Fused alumina based castable or shotcrete, large aggregate
Bottom	HI AL RAM G	High alumina graphitic ramming mix
	LADLE RAM	High alumina ramming mix



Melt zone monitoring



Tuyere ring