

AME: Blast Furnace Tap Bit Design: Phase III
Sponsor: ArcelorMittal



ArcelorMittal

Tapping a blast furnace at ArcelorMittal's steel plant in East Chicago, IN requires the use of single-use tap bits. As these bits bore through tap holes filled with refractory clay they experience significant stress and wear due to intense heat and pressure. As a consequence of this operation bits can break within the tap hole before the hot metal is reached. Currently several rock drill bit designs are used to tap the furnace and the bit performance is based on operator perception. The goals of this project are to:



- Design a tap bit geometry specifically for drilling into blast furnace tap hole clay.
- Select a material and manufacturing method for the tap bit.
- Manufacture the tap bit.
- Optimize current tap bit test rig hardware and controls to assess tap bit performance.

Earlier phases of the project demonstrated that a ductile iron bit with a chilled white iron cutting surface was castable. A test rig has been fabricated and tested, but much work remains on test procedure and controls.

