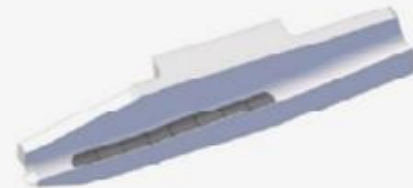
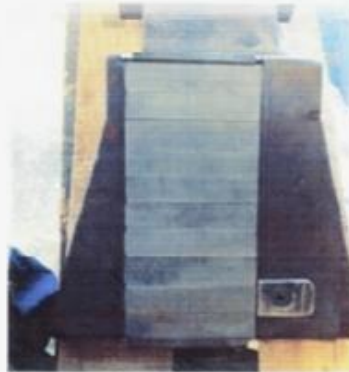
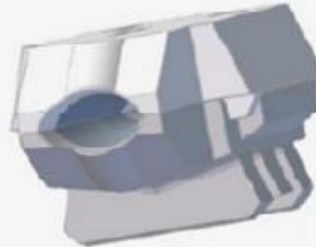
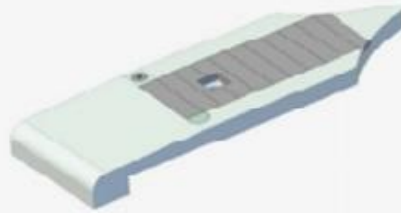
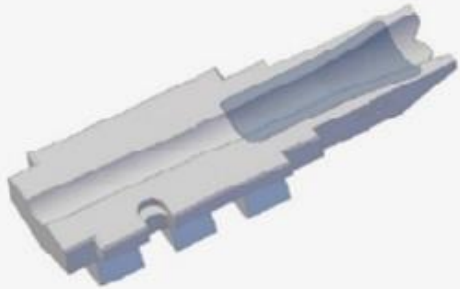


Molded Carbide Inserts for the Repair of High
Wear Areas in a Rolling Mill Environment
- A Follow Up

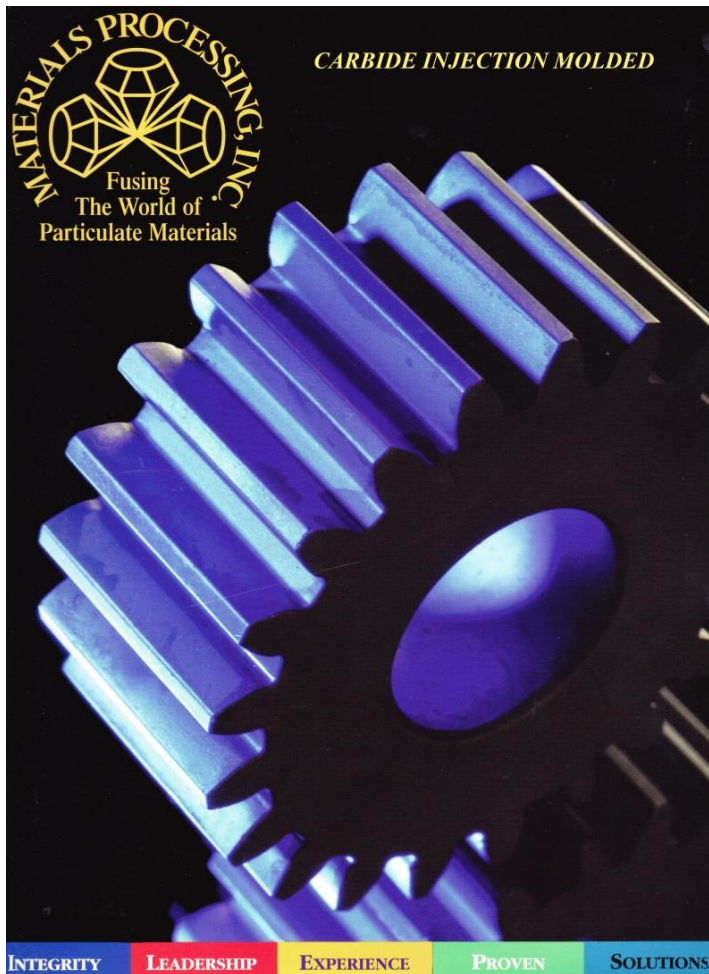
Presented to the Institute of Roll Design Long Products
Committee Fall 2017

Presented by Bob Guinn, FG Quality

SEVERAL APPLICATIONS ARE ALREADY DESIGNED AND IN PROCESS



CARBIDE GRADE EXPERTISE



Carbide comes with varying grain sizes and binders which determine the suitability to a particular application.

We have years of expertise in analyzing the challenges and prescribing the best carbide for a given application.

Most consider wear factors first and foremost, but equally important are thermal and traumatic shock resistances.

We can formulate the ideal carbide.

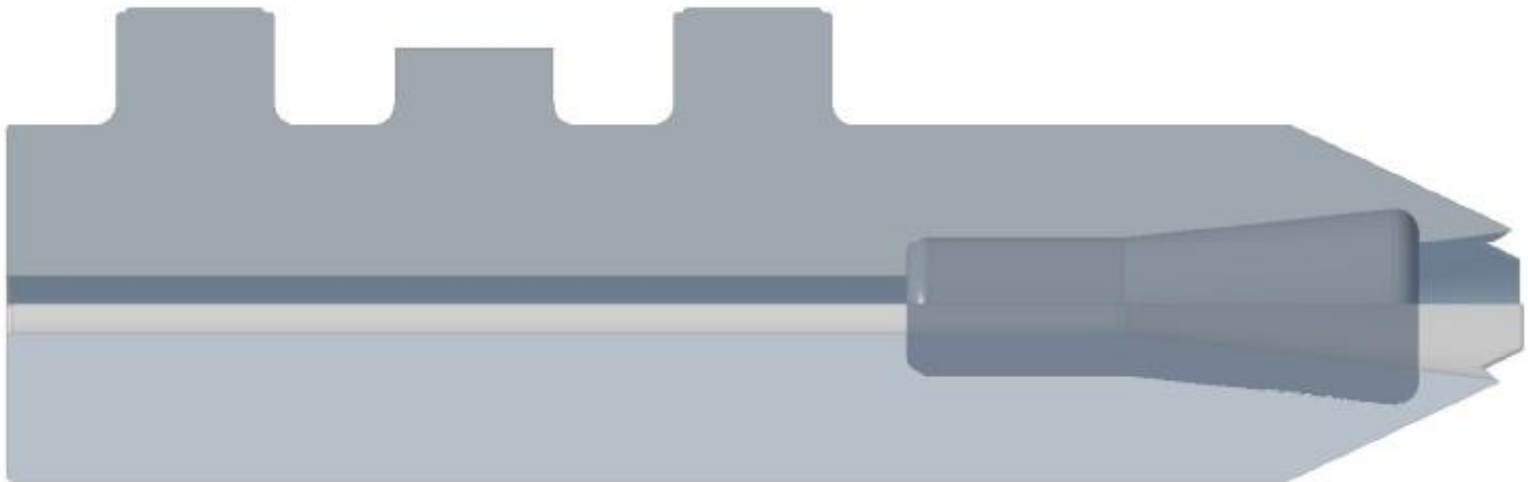
FAILURE AREAS ADDRESSED

CROSS SECTION VIEW

By identifying and addressing the wear area(s) only, part life is extended to at least five times normal, with minimal cost incurred.

Part cost becomes the lesser consideration when you factor the up-time gained as well as reduced maintenance costs for changeovers.

Quality is now predictable over a full run, or a designated time period much longer than ever experienced and/or expected. Virtually no wear to erode quality in comparison to parts without carbide wear shields.





18 Stand & 24 Stand Delivery Guides



18 Stand & 24 Stand Delivery Guides



18 Stand Delivery Guides – 48,000 tons



18 Stand Delivery Guides – 108,000 tons



24 Stand Delivery Guides – 166,000 tons



24 Stand Delivery Guides – 201,000 tons

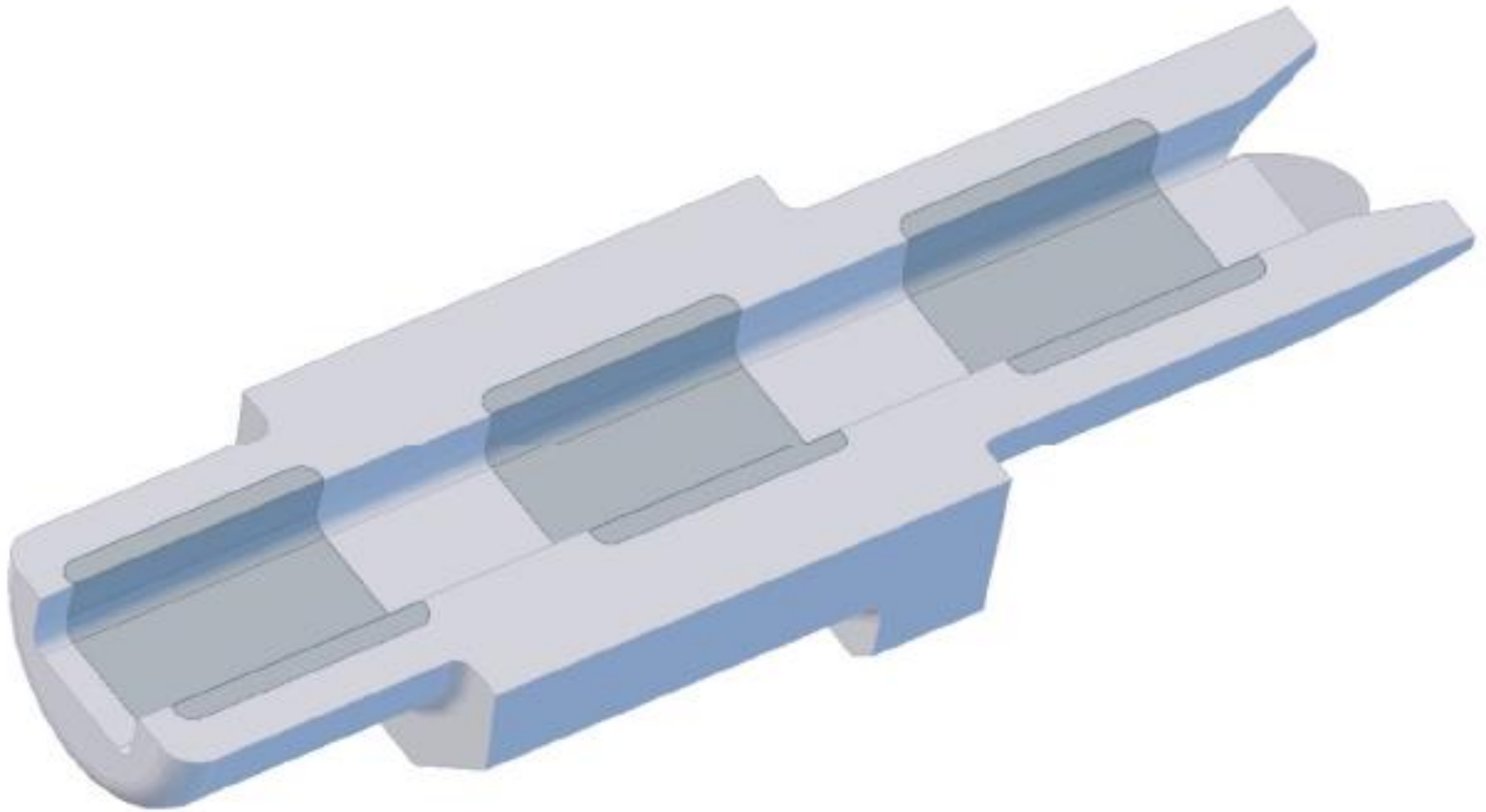


Pinch Roll Guides at Charter Cleveland - 60,000 tons



Carbide broke due to cobble at 205,000 tons but the carbide was still in good enough condition to have been used further.

PROPOSED ENTRY GUIDE



IN SUMMARY

- **We cooperate with our customers and potential customers to learn where their greatest challenges lie, and together we formulate a design, engineer it to a workable part or assembly, build it, and prove it.**
- **Even with a successful 'out-of-the-gate' part, we often learn how to extend life and improve quality so successive iterations are better yet.**

TOGETHER WE ACHIEVE OPTIMAL RESULTS BY INTERACTIVE DESIGNING

