

## ToughMet® Alloys

### SURFACE MINING: *Bucyrus International*

Bucyrus International, Inc. is a world leader in the design and manufacture of high productivity mining equipment for the surface and underground mining industries. Bucyrus equipment is used for mining coal, copper, iron ore, oil sands and other minerals.

**PROFILE:** Bucyrus International, Inc.

1.800.375.4205 | [materion.com/toughmet](http://materion.com/toughmet)



#### CHALLENGE

To gain competitive advantages for its customers, Bucyrus looked to extend the bushing life in the take-up idlers on their electric mining shovels. The idler, a non-powered roller at the end of the crawlers, sees ground reaction, as well as steering loads. It takes up slack in the track to prevent slipping. Under demanding conditions, the idler's bushings are subject to abrasive wear, contamination, deformation under severe loads and galling.

#### SOLUTION

Bucyrus sought a high-performance material to replace the manganese bronze used in their take-up idler bushings. They chose ToughMet alloys from Materion Performance Alloys and Composites because of its high tensile strength and low friction. ToughMet alloy also offers a significantly higher yield strength and hardness than manganese bronze. A typical manganese bronze take-up idler bushing can be expected to yield a service life of about 7,000 hours, or approximately one year. ToughMet bushings, on the other hand, can often last two to three times longer, depending upon the service environment.

ToughMet material was used initially on a Bucyrus 495HF shovel in a demanding tar sands application in northern Alberta. After 10,000 hours of service, the Tough-Met take-up idler bushing was removed for inspection. It showed only about 50 percent wear – far exceeding the performance of manganese bronze. As a result, ToughMet alloy is now standard in the take-up idler bushings for all large shovels manufactured by Bucyrus.



ToughMet is used in the take-up idler bushing.