

GBI Truck and Loader Modelling (Dipper & Trays)

Many mines use the wrong size dippers for the type of truck or truck tray they are loading as well as the machine utilising the dipper. This can lead to the dipper being either too big, causing excessive and costly damage to the Truck due to overloading, or too small, a major loss in productivity and efficiency. If the truck tray is not correctly matched to the dipper size, there will also be a significant loss in productivity or increase in damage.

Modelling is the only validated way of accurately determining correct dipper capacity to meet tray types and truck types. Results are normally within the stated accuracy of loader and truck monitoring systems. GBI as an independent 3rd party tests different dipper and tray types, from diverse manufactures.

We obtain the specific type of spoil in which the new dipper will dig on the mine-site, and have it delivered to the GO4 mining facility in Brisbane (ideally needed is 100t of dry spoil). This gives the best visual and practical indication how the dipper will perform onsite as well as the best cycle by cycle data results. Testing is conducted with one or more operators from site. All results are included in the analysis as the averages are normalised to field performance. Each cycle involves filling the dipper, swinging, loading the tray, and return. The analysis is conducted in such a way so that, initially, the modelling can be compared to real results from the field. GBI has a formula for determining optimum dipper capacity to achieve target load.

The testing for 4-5 dippers and trays takes approximately 3 days.



Figure 1: GO4 mining 1:7 scale dragline convertible into a UDD or conventional dragline

WHAT MODELLING HAS GBI DONE?

GBI has carried out modelling on many different loader dippers and truck tray configurations. The results are illustrated in the bar chart in the following figure. It provides a useful comparison of the payload carrying efficiency between dippers of different capacity. This is not in itself enough justification to purchase one specific dipper as can be seen in Figure 2 which is some recent results from field data.

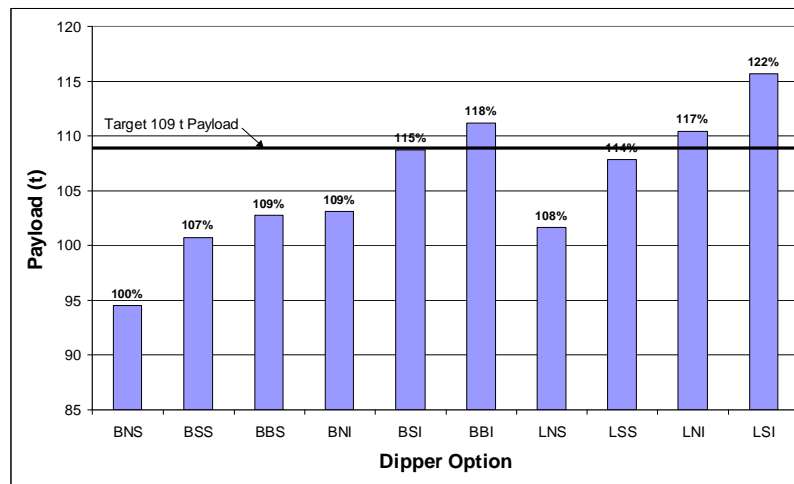
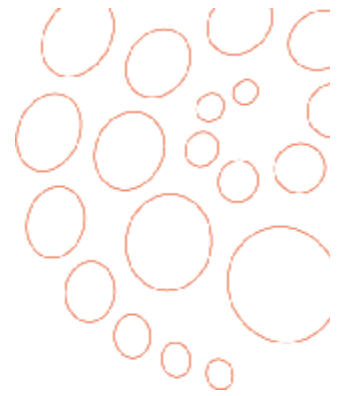


Figure 1 Bucket Comparison from Physical Modelling

WHO USES MODELLING?

The following mines have had physical modelling performed by GBI or GBI employees prior to 1999.

- Newlands
- Hail Creek
- Blair Athol
- Coppabella
- Goonyella / Riverside
- Peak Downs
- Saraji
- German Creek
- Oaky Creek
- Curragh
- Blackwater
- South Blackwater
- Callide
- Tarong
- Howick
- Bulga
- Mount Thorley Warkworth
- Hunter Valley Mine
- Ravensworth
- Narama
- Drayton
- Bengalla
- Ulan
- Sabine (US)
- Cordero Rojo (US)

In addition, two industry wide projects on dragline buckets and rigging, using physical modelling, have been conducted.

BUT MY OPERATION IS DIFFERENT?

We understand that every operation has different requirements. The GBI testing program combines information from mine site monitors and that collected from modelling to arrive at the recommended capacities for each dipper and the projected productivity of each dipper, enabling us to assist you in choosing the right dipper with the right capacity for your operation.

THE GBI DIFFERENCE

gbi
Mining
Intelligence



With almost 20 years of experience, GBI has more expertise in physical modelling than any other business. As leaders in the field, GBI continues to refine its methods to incorporate monitor data into the process of testing and analysis.

For more information on bucket and rigging modelling please contact Lea Andlovec on 07 31478300 or email lea.andlovec@gbimining.com

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