

# bulletin

CASE STUDY NO.27  
MARCH 2004

## Bisplate – takes a bucketing

It's not often that you're happy when your product gets a total bucketing, but in this case, Bisalloy Steels is more than delighted.

The reason?

Well, it's big, it's green, it looks mean – and . . . oh heck.

Meet the Earth Eater.

It's a mining bucket with attitude – and a significantly bigger appetite than its rivals.

And the Earth Eater's success, first in Australia, and now overseas, is all thanks to the efforts of an innovative Queensland mining company, a talented Australian design engineer – and the application of the unique qualities of Bisalloy's BISPLATE 80 quenched and tempered plate steel, the only steel used throughout the Earth Eater's construction.

The company making a success of the Earth Eater, is Central Queensland Mining Supplies, in Mackay, and the design engineer is Bruce Leslie, of Leslie Consulting, in Brisbane.

Between them, they have taken the mining bucket – something which has been largely taken for granted up till now – and, if not revolutionised, then certainly optimised, the

design in such a way that it has meant a 10 per cent increase in capacity and efficiency, yet with significantly less weight.

In an industry like mining, where greater volume and speed of extraction equals greater profit, that's a mighty breakthrough.

It's not surprising then, that, apart from already being widely accepted in the Queensland mining industry as a better bucket, the Earth Eater is now also sinking its teeth into tough new export markets – including the USA.

It also shouldn't surprise that this success came from hard work – not guesswork.



*A ten per cent increase in capacity and efficiency – who could ask for more? And, thanks to BISPLATE, the one thing that Queensland Mining Services can be sure of is that the greater speed and efficiency of this mean, green, eating machine equals greater customer satisfaction.*



And, likewise, while Bisalloy is unique in being Australia's only manufacturer of quenched and tempered steel, BISPLATE 80 wasn't blindly chosen for the Earth Eater out of patriotism.

It had to prove itself against rival products, and against verifiable and quantifiable criteria.

Bruce Leslie We researched the available quenched and tempered plates. This included Welten, Weldom, and BISPLATE 80. We assessed all suppliers on the basis of detailed material properties – especially fatigue when welded. We also took into account stock sizes, availability, accessibility to the manufacturer for sorting out any issues with the product weld procedures, preheats, and the extent of testing for fatigue, among other factors.

In the end, BISPLATE 80 was selected due to its material properties being at least the equivalent of other plates. Plus, we had better access to manufacturing in the event of any problems, a better range of plate sizes, and better stock levels.

So, what improvements did using BISPLATE 80 allow in the design of the Earth Eater?

Previously, traditional buckets were made with a combination of basket plates, with strips of wear plate added. These were expensive to build and maintain, and were very heavy.

Also, the wear bars inside the buckets reduced efficiency by causing significant obstacles to filling. The bars tended to bulldoze the material at the front of the bucket, rather than allowing it to fill smoothly to the rear.

BISPLATE 80's combination of strength and lightness, however, has allowed us to merge the functions of wear resistance and structure in the overall design. The result is, we're able to use single thickness plate throughout the Earth Eater – floor and sides. Eliminating the wear bar approach has meant lighter weight, and much faster filling, with less fill energy required.

Can you quantify the contribution BISPLATE made in terms of weight savings, increased capacity, life of the bucket and so on?

The BISPLATE 80 quenched and tempered plate has allowed us to trim 10% off the bucket mass, while maintaining the necessary strength and service life. Manufacturers who have tried to use harder plates have struck problems with short life due to cracking. The poorer weldability of the harder plates also doesn't allow the extra wear life from the harder plate to be delivered. But BISPLATE 80 provides excellent weldability – we can bend 10mm plate over 1m width. Simply, BISPLATE 80 has proven itself to be the best possible compromise.

In business these days, you hear a lot about raising the bar in product design, quality, delivery and customer satisfaction.

Well, here's an example of a mining company which not only raised the bar, but eliminated it completely – and is deservedly reaping the profits, both here and overseas, as a result.

Proof once again that BISPLATE has remarkable properties it can not only strengthen a product like the Earth Eater, but the company that makes it, too.



#### Bisalloy Steels Pty Ltd

ABN 001 111 111 111

Resolution Drive P O Box 1  
Unanderra Delivery Centre  
NSW Australia

Telephone 1 800 000 000

Facsimile 1 800 000 000

Web Site [www.bisalloy.com.au](http://www.bisalloy.com.au)