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CASE STUDY NO.26
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Bisplate ... protecting the bottom (line)

First law for boat people: make sure you always look after your bottom.

Or, to put it another way: whether it's keeping a high-speed jetboat's hull safe from destruction while rocketing along shallow river beds in New Zealand, or meeting the high-tech demands of yacht design in IRC ocean racing, you need a very special brand of steel in your keel.

Here's two prime examples of companies designing and making totally different types of boats, with each making totally different types of demands for quenched and tempered steel in their design and construction – yet both ending up with one thing in common:

Both found that, for high performance, BISPLATE is not only best for their bottoms – but, ultimately, their bottom line, too.

You want to do what?

In 1982, Kiwi Neil Ross decided there must be more to life than farming. His alternative? Exploring the concept of using jet-propelled boats (what else!) to allow tourists to see and experience (and experience is the word!) the rivers of New Zealand like never before.

In the six years it took to bring the concept to life, some people reckoned he had rocks in his head. But Neil knew he had the opposite problem: rocks in his bottom.

When Dart River Safaris began operating in Queenstown, in 1988, Neil not only had the challenge of starting up a unique, fledgling business. He also had to deal with an equally unique technical challenge – one posed by the conditions his boats would be operating in, namely: how to overcome the damage being done



When you're travelling at speeds of up to 160km/hour, sometimes in less than 25mm of water, you really need to protect your ah . . . bottom. Neil Ross found the light weight and abrasion resistance qualities of Bisplate gave his boats the protection they needed, extending their life and protecting his bottom (line).

to the aluminium hulls of the high-speed jetboats day after day, resulting from swerving and scything over ultra-shallow shingle river beds, and constantly being battered by stones up to 30mm in diameter.

Adding to the problem was that these weren't small craft.

6.5 tonnes of jetboat, 33 passengers, at 50-80km/hour – in only 100mm of water.

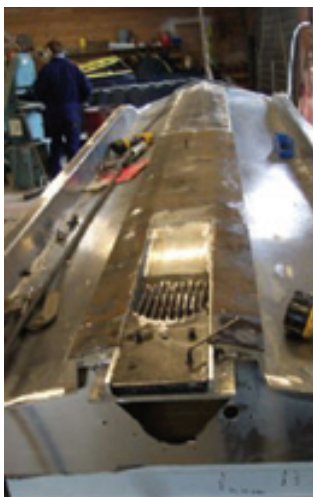
Not surprisingly, the hulls of the boats took an incredible beating, to the point where the impact and abrasion caused by the stones eventually would tear the bottoms out.

It was the sort of problem that, unsolved, could have caused any company to go bottom-up.

Until . . .

In 1990 Neil was introduced to the unique qualities of what would be the "saviour" (his words) for his boats – BISPLATE.

At the time, the use of quenched and tempered plate was almost unknown in this type of application, but when his local steel merchant recommended a new type of steel plate, Neil decided that it would be definitely worth a try.



He had already tried mild steel, but with the need for light weight also a critical factor, along with the need for greater strength, ordinary steel simply wasn't up to the job.

BISPLATE's thin 6-8mm sections, however, combined with its far greater impact and abrasion resistance, proved to be the answer.

And the benefits kept stacking up, both in usage and in the design of the boats.

For instance, the plate's flatness, strength and rigidity not only saved the hulls of the jetboats, but also allowed for thinner aluminium sections to be used throughout the entire frame of the craft – again meaning significant weight-savings, without compromising the safety of the passengers.

BISPLATE even added to the thrill quality of the ride, providing a wonderful "skidding" platform for the



BIS 400 provided a simple but effective solution to the wear and tear on the hull of his boats. The plate was simply bolted to the bottom of the boat.

boats, allowing them to skim off the shallow, shingle river bottoms even more spectacularly.

Later, when Neil began making his racing boats, the performance-enhancing qualities of BISPLATE would become even more critical, with the racing craft having to negotiate the twists and turns of the river in water barely 25mm deep – at speeds of up to 160km/hour.

Ned Kelly would have approved.

Another benefit for Neil was that adopting BISPLATE into his manufacturing process couldn't have been simpler: the BISPLATE 400 plate was simply bolted to the bottom of the boat, where it acted like a suit of armour.

The rivers, being fresh water, presented no problem in terms of corrosion.

And the result overall in terms of Neil's business?

As he himself, says, "The fact is, BISPLATE literally doubled the life of the boats. And gave us a far greater margin of safety."

Without BISPLATE, Neil would still be facing the problem of regularly having to replace large sections of his all-aluminium boats destroyed by the rigours of the river.

So, it comes as no surprise that he continues to use Bisplate in both his safari and racing boats, plus the custom-designed cruising boats he builds for customers.

"There is an extra cost for BISPLATE," Neil says. "But then, it's more than offset by the sheer value it represents in saving us both in construction, and in the life of the boats."



The Keel Hall of Fame.

Bakewell-White Yacht Design, is a designer of custom and production yachts of all styles – power and sail.

The company's philosophy is simple and uncompromising: there is no excuse for poor performance, whether it be a hi-tech racing yacht, cruising yacht, super yacht or power boat.

With that background, it's perhaps not surprising that, in 2000, internationally renowned yachtsman Ludde Ingvall approached Bakewell-White to perform optimisation work on his equally famous IRC ocean racing yacht, Nicorette.

This included fitting a new rudder, and more advanced keel and bulb.



In fact, Nicorette became the first IRC yacht to have its keel fitted with a trim tab.

Now, of course, there's a lot more to winning an ocean race than a new keel. The skipper, crew, hull design, sails – all play an enormous part in bringing home a yacht first in such a demanding event.

However, BISPLATE's unique combination of light weight with great strength played a decisive part in allowing alterations to the keel that made the boat decidedly quicker through the water.

The result: Nicorette went on to win the Sydney-Hobart that year.

Nicorette's keel comprises a solid BISPLATE spar with a composite fairing. Without resorting to a cast and milled fin, this was a simple method of producing a thin, low drag section – the key to greater boat speed.

Alex Nolan, naval architect for Bakewell-White: "What we're looking for is high tensile and shear strengths and lighter weight. Bisalloy's quenched and tempered steel allows us to produce a smaller, narrower keel spar. It is also cheaper than casting and milling a billet of high strength steel."

Apart from cost, the main benefit in racing?

BISPLATE's unique qualities reflect the uncompromising standards of performance required to be a success in any field. This is no more evident than in the keel design of the Bakewell-White ocean racing boats.



The high strength and narrow profile of BISPLATE are employed with great success in the fabricated box-section keels of the Bakewell-White designed boats.

Alex Nolan: "In simple terms, it is clearly faster than a fatter keel."

The success of Bisalloy steel in this application encouraged Bakewell-White to employ it in new, more advanced keel designs since 2000. For instance, the company has used BISPLATE to produce fabricated box sections which offer much the same properties as a solid billet, but lighter (this method was not available at the time of fitting

out Nicorette). Boats to benefit from Bakewell-White's design, and BISPLATE's combination of greater strength/lighter construction for their keels include:

El Toro

– 67ft Lifting Keel. Solid Slab

Braveheart

– Transpac 52. Solid Slab

Starlight Express

– Davidson 55, Retrofit keel. Fabricated

Australia's unique steel, meeting unique challenges

As Australia's only manufacturer of quenched and tempered steel, Bisalloy is proud to continue to answer the many demanding design and manufacturing challenges from many diverse industries.

From high-speed jet-boats traversing shallow river beds, to IRC maxi-yachts competing in the world's toughest ocean races, BISPLATE proves, time and again, it is never out of its depth in protecting top shelf products – and bottom lines.



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