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New Zealand gear maker helps deep-sea trawlers slash fuel costs and boost productivity

For single and twin-rig set-ups, Motueka gear made with Dyneema® deliver significant results

New Zealand's deep-water fishing fleet is arguably one of the most modern in the world. Over the years, New Zealand fishermen have had to rely on their resourcefulness, innovation and tenacity to make a success of catching fish in some of the most inhospitable oceans of the world.

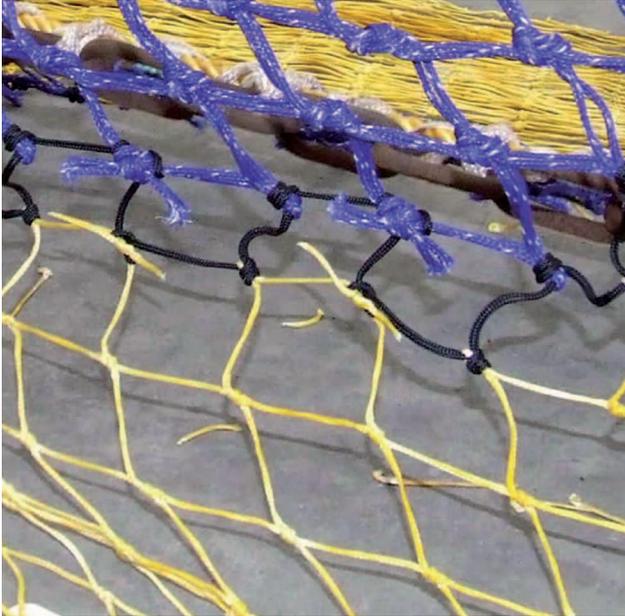
Now they can start relying on another innovation: nets made with Dyneema®, the world's strongest fiber™. Read here how several Kiwi trawlers – especially Talley's Deep Sea Fishing – equipped their vessels with nets and gear made with Dyneema®. The nets were supplied by Motueka Nets, a prominent net maker in New Zealand. The net was manufactured by van Beelen Industry & Trade, a Dutch firm

located in Ijmuiden, the Netherlands, and one of the first users of Dyneema® fibers for the commercial fishing industry.

Running a more efficient operation: the issues

To improve catch performance and to mitigate the effects of high fuel prices, many fishing operators worldwide are considering converting from single-rig trawls to twin-rig trawling. The twin-rigging presents a wider, lower frontal net shape which can deliver the same level of catch as a single-rig trawl, but with less drag, which reduces operating costs, especially for fuel. There is also the option of increasing the catch level at the same level of operating costs.





The technical advantages of a twin-rig trawl, however, do not always translate into financial advantages. The key issue facing operators is to determine whether the new operating costs and catch rates justify the cost of conversion. One way of making this decision easier is to convert to trawling equipment that not only is lighter (to help reduce drag and fuel costs) but also is more durable (to cut repair and maintenance costs). That's exactly what Talley's Deep Sea Fishing (and others) did... using lightweight nets and gear made with Dyneema®, supplied by Motueka Nets.

Overview: gear made with Dyneema®

For many years already, Dyneema® high performance polyethylene fiber has proven valuable in nets and ropes on modern fishing vessels. In the ropes, strong, lightweight Dyneema® fibers are used in the bridles, Gilson lines and rib lines..

In the nets, Dyneema® is used in the upper part, as well as in the belly, wings and cod ends, where they substantially reduce drag.

Talley's fleet facts

Three vessels from Talley's fleet (the Amaltal Columbia, the Amaltal Atlantis and the Amaltal Enterprise) were fitted with rigging made with Dyneema®. In general, each vessel would twin-rig in good fishing conditions. In bad weather, they reverted to a larger, single-rig trawl.

The results: Less fuel costs using gear made with Dyneema®

The following results are reported by Owan Hoggard, chief designer of trawls at Motueka Nets.



The Amaltal Atlantis (2475kw) – converted to a twin trawl net system, the first in New Zealand.

What happened aboard the Amaltal Atlantis:

The vessel was first fitted with fuel flow meters to measure actual fuel usage when using twin-rig trawls with traditional materials. Once they knew the usage, they put on the new Dyneema® twin-rig trawls. The saving was immediate: For the rest of the trip with the new trawls they saved on average of one (1) ton of fuel per day. To put this into context, in general the vessel will make a 42-day trip. Given that the price of fuel has fluctuated greatly, this could represent a saving of \$60,000 - \$70,000 per trip. For the six trips they do per year that adds up to over \$360,000 - \$420,000. In addition, because the gear is so much easier to tow, they have installed a smaller set of Morgerere trawl doors. This has further reduced the cost of fuel.



The Amaltal Columbia (2475kw), one of the most technically advanced fishing vessels in the world.

What happened aboard the Amaltal Columbia:

Although on its last trip it did not have the twin-rig trawls, the Columbia did operate with the larger single-rig trawl made with Dyneema®. Because this trawl was so easy to tow and to maneuver, they were able to use less trawl line and, therefore, much less power (and fuel!). This single-rig trawl was used for the entire trip. How efficient was the rigging? Previously, the vessel would return to port with an empty fuel tank. At the completion of this trip (same distance), the Columbia still had 18 days' worth of fuel onboard – approximately 216,000 liters. Figured over six trips a year, that represents an annual saving of over 1.2 million liters of fuel.



The Amaltal Enterprise, (3000kw), enables Talley's to venture further into the southern oceans.

What happened aboard the Amaltal Enterprise:

Soon this vessel will be using a large single trawl made with Dyneema®. They plan to stop using twin rigging, as the single trawl is so easy to tow. The catch rates have been the same as with the former twin-rig gear, but they have used much less fuel with the new gear made with Dyneema®.

Saving fuel on other vessels

In addition to serving Talley's fleet, Motueka has made trawling equipment for smaller vessels (250-550 hp). One specific example is the Frontier, a 550hp trawler built by Starks. The Frontier was equipped with a fuel flow meter. Using a standard 4mm PE (polyethylene) trawl, the vessel used 60 liters per hour when towing. When the vessel was outfitted with 1.5mm trawl made with Dyneema® - built to the exact specifications of the 4mm PE trawl – it used only 45 liters of fuel... a 25% saving.

Saving on maintenance, as well

The Dyneema® fiber is extremely wear and tear resistant, increasing the durability of the nets and ropes made with it. It is resistant to abrasion, most chemicals and salt. This means the gear – whether for single-rig or twin-rig operations – will last substantially longer, exceeding traditional material by a factor up to three. This durability also contributes to less downtime due to net and rope breakage.

Dirk van Beelen, president of van Beelen Industry & Trade, said: "It's clear that the twin-trawls made with Dyneema® showed much less wear and tear than those trawls made with polyethylene."

In addition, because the lines and netting are so much lighter, they are easier for the crew to handle and present less of a hazard to safety. This also helps minimize injury-related costs.

Lower costs overall for shorter payback and more options

In every case, using gear made with Dyneema® helped cut major operating costs. Especially those for fuel and

maintenance. This saving can be applied directly to shorten the payback time. In addition, by operating with lines made with Dyneema®, the skipper has the option of extending the trip on the same amount of fuel to improve catch performance.

Why convert to gear made with Dyneema®?

For many vessels operating in the rough New Zealand waters, the conclusion was clear: Trawling gear made with Dyneema® can contribute to a better, more profitable operation for the following reasons:

- Improved fuel economy, due to significantly less drag as a result of the smaller twines as well as the lighter weight of the nets and ropes.
- Higher catch performance on same amount of fuel, due to longer trips.
- Lower maintenance costs, due to high durability of Dyneema® fiber.
- Fast payback of conversion costs.
- Enhanced safety onboard, due to light weight and soft texture of ropes and nets.
- Lower costs from breakdowns or replacement.

Find out what nets and ropes made with Dyneema® can do for your operation. Visit www.dyneema.com

Profile: Motueka Nets.

Motueka Nets design fishing nets, manufacture fishing nets and supply fishing nets that have proven to be of a superior quality. They are renowned for their innovative design and unheralded results, not just within the demanding New Zealand fisheries but are also by the international fishing market. The company remains closely involved from the outset in the development, design and production of the gear demanded by fishing operators worldwide.

Profile: van Beelen Industry & Trade.

Van Beelen manufactures high performance netting, ropes and twines made with Dyneema® and other high performance materials. The head office is in IJmuiden, the largest fishing port of Holland. Daily contact with many users of its products provides information necessary to timely anticipate the wishes and requirements of users. Its customers are trawl makers, wholesalers and distributors from all over the world. Van Beelen was one of the first people who recognized the added value of Dyneema® fibers in commercial fishing gear.