

### Why cage nets made with Dyneema®?

To sum up, the key advantages of netting made with Dyneema® for aquaculture include:

- *Lighter weight, yet strong.* This reduces antifouling costs while enabling easier, faster installation and handling. It also can improve worker safety, and allows the fish farmers to use bigger cage nets with existing equipment.
- *Thinner twines:* Twines can be made thinner, for equal strength compared to traditional materials. This improves the flow through the cage and boosts the net shape stability and therefore lets in more oxygenated water overall for improved fish health.
- *Better protection:* Dyneema® fibers are extremely wear and tear resistant. This extends the life span of nets, including those used at high-energy sites. Furthermore, the extreme bite and cut resistance ensures protection of the farmer's most valuable asset: the fish.
- *More durable:* Dyneema® fibers are extremely wear and tear resistant, providing a longer service life for the netting they are used in.

*"Starting this year, we have begun to switch not only our 150-meter nets, but also our 100-meter nets destined for high-energy sites to Dyneema®," says Ray Acebedo of GMG. "I would recommend (nets made with) Dyneema® to any salmon farmer."*

Cage nets made with Dyneema® have clearly proven successful for Cooke Aquaculture. Find out what they can do for your operation. For more information, visit [www.dyneema.com](http://www.dyneema.com)

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# Major Canadian aquaculture player thinks big with larger, more productive cage nets.

Cooke Aquaculture overcomes technical limitations with 20 cage nets made with Dyneema<sup>®</sup>.

**To satisfy a hungry world, the trend for the aquaculture industry is towards larger cage nets. This is certainly a response to the ever-growing appetite of the world market for high-quality fish such as salmon. It also is a prudent business move, as larger nets help ensure that fixed costs such as labor, equipment and repairs can be spread over a greater volume.**

Cooke Aquaculture, a Canadian leader in salmon farming with operations worldwide, was facing limited access to new sites and cost efficiency challenges. The company's growth strategy, therefore, included the expansion of their current sites with larger cages, which would also be placed at high-energy sites.

But larger doesn't always mean better. Especially if the cage nets are made of traditional nylon. They can become much heavier and hard to handle thereby requiring additional equipment and personnel. Larger cage nets - up to 150m in circumference - when made of traditional nylon, can weigh up to four/five tons. They also have more surface area that is susceptible to fouling and traditionally require more inspections and repairs.

Facing these challenges, Cooke found a way to increase cage net size without exposing itself to the extra risks and expenses typically associated with such an upgrade. Their solution lay in cage nets made with Dyneema<sup>®</sup>, the world's strongest fiber<sup>™</sup>.



### Going bigger – and lighter – with Dyneema®

After initial trials with DSM Dyneema, in which the performance of nets with Dyneema® were evaluated and compared to traditional nylon, Cooke Aquaculture was assured of the benefits of the new material. As a result in 2007, Cold Ocean Salmon, a division of Cooke Aquaculture, ordered twenty 150-meter containment nets made with Dyneema® for installation on farms off the south coast of Newfoundland. The nets were manufactured by Badinotti (Italy) and constructed in Canada by GMG Fish Services, the manufacturing division of Cooke.

This purchase marked the first major deployment of netting made with Dyneema® in the salmon farming industry. It builds upon the product's success with the farming of sea bream in the Mediterranean and of cod in northern Europe. Cooke chose to go with cage nets made with Dyneema®, the ultra high modulus polyethylene fiber from DSM Dyneema, for many reasons. "We wanted to be sure we installed the best netting technology available on these farms," says Ted Weaire, General Manager of GMG.

When used in netting twines, for the same mesh breaking strength of nylon twines, it will only have up to a third of the weight. This unique strength-to-weight ratio enables nets to be extremely lightweight. The other fiber properties make the netting tough and extremely durable. So the nets last longer and are much easier and safer to handle. This level of performance is exactly what Cooke needed. According to Ray Acebedo, production manager, GMG Fish Services, "Handling wise, each 100-meter cage (made of nylon) required six people to put it in the farm. The nets made with Dyneema®... just two people can easily place them in the water."

"In addition, tests have shown that nets with Dyneema® retain the strength better than traditional nylon," says Acebedo.

### Made for the long haul

Nets made with Dyneema® are also extremely durable. The fiber has minimal elongation and outperforms traditional materials regarding resistance to exposure to UV rays and chemicals including salt and water.



The reduced weight of the nets not only improves handling, it also reduces the use of antifouling agents. This helps improve the environment in which the fish are growing.

Finally, nets made with Dyneema® have thinner twines. This means nets retain their shape in the most hostile conditions (including strong currents) and require fewer repairs. They can also be used for a longer period of time on high-energy sites before they are de-rated to medium or low-energy sites. Thinner twines improve oxygenation and flow through the cage thereby contributing to healthier fish and a more productive harvest. Thinner twines also reduce the surface available for fouling growth.

### A safe investment in many ways

For Cooke, the new containment nets made with Dyneema® clearly enabled the company to execute its growth strategy... to think big without encountering the many issues associated with larger cage nets.

In addition, it allows them to optimize operations be prepared for the future. The light weight of the nets reduces wear and tear on the boats used to place the nets. It also makes it safer and easier for workers to handle these very large cage nets. Due to the reduction in weight, there is significantly less strain on the system holding the cage nets in place.



### It all adds up to good business

“We believe nets made with Dyneema® will help us grow our business in a profitable way,” says Weaire. “If all goes according to plan, Cold Ocean Salmon will keep on ordering nets in the coming years.” DSM Dyneema is equally positive about the role Dyneema® fiber can play in the aquaculture industry.

### About Cooke Aquaculture Inc.

Cooke Aquaculture is a fully integrated family company with operations in Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, the State of Maine as well as in Chile. The company started in 1985 with a single marine cage contained 5,000 salmon. It currently operates over 100 fish farms. With annual sales of approximately \$270 million, Cooke Aquaculture provides year-round, full-time employment for approximately 1500 people.

### About Badinotti Group.

Badinotti is the global leader in netting for the fish farming industry with production facilities in Europe, Peru and Chile. The company was one of the first to introduce nets made with Dyneema® in 1996. Badinotti nets featuring Dyneema® fiber have delivered high performance and economic benefits for aquaculture companies around the world.

Referring to the nets made with Dyneema® used to contain biting fish, André van Wageningen, marketing manager Commercial Fishing for DSM Dyneema says, “Netting made with Dyneema® has proven highly effective for farming biting fish such as sea bream and cod. However, there are also many benefits for farming non-biting fish, such as salmon.

The superior properties of our unique fiber helped to grow and protect Cooke’s investment in Newfoundland in a profitable way.”

