



A SERCEL COMPANY

How fairing solutions can improve your cable performance

# 6 fairing solutions for deeper and faster towing

Any object that moves through liquid is subject to hydrodynamic forces. When towing, these forces will exert themselves on ropes and cables, as well as the towed body itself.

The hydrodynamic forces on towed cables can be altered by changing the geometry of the cable, typically its cross-sectional shape. This white paper offers a brief introduction into these “fairing” methods, which allow for deeper and faster towing.

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## Effects of “fairing” cables

The principal reason for fairing a cable is to reduce the total hydrodynamic drag and thereby to increase the effective towing depth for any given cable length. As the drag increases exponentially with the velocity, drag reduction is most important where towing speeds are high.

Another reason for fairing a cable is to prevent or reduce “strumming”, which increases the effective cable drag and produces tension cycling in the cable and load cycling on the deployment gear. Cable performance and life can be greatly increased by reducing or eliminating these effects.

**DeRegt offers different fairing solutions for different applications. These fairings are:**

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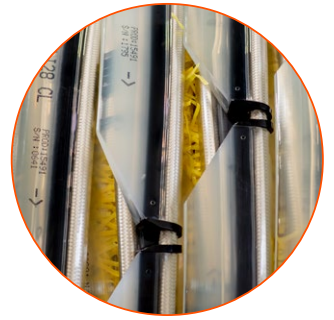
# 1

## **Extruded Shape Fairings**

Useful advantages of extruded shape fairings include:

- A desired aeronautical fairing shape can be extruded, within set limitations
- The cable and fairing form an integral unit, eliminating the need for clips and spacers
- The faired cable is robust, meaning the required maintenance is minimal.

The disadvantages of extruded fairings are principally in deployment, operation and manufacture. This type of fairing is not removable and therefore storage on the winch can present operational challenges. Torsional rigidity limits the fairings' ability to align with the water flow.



# 2

## **“Wrap Round” Fairings**

Wrap round fairings may be one or two-part and are generally threaded onto the cable. This type of fairing produces a low coefficient of drag values and low drag forces- a primary aim of deep tow systems. However, the side effects such as tow off, may be more undesirable when compared to long tow lengths of bare cables, where positional control of the tow body is paramount. A few factors to consider for wrap round fairings are:

- The initial ongoing costs are high, particularly where special winch units are required to accommodate long faired cable lengths.
- Handling the cable onto winch gear requires time and expertise, and repair/replacement of damaged fairings can be expensive.

# 3

## **“Clip-on” Vanes**

The difference between clip on and wrap round fairings is essentially a gap between cable and fairing vane. These type of fairings consist of two parts; one around the cable, the “clip”, and the fairing vane. A major advantage of clip-on fairings is that each part can be designed with greater freedom than, for instance, wrap-round fairings. As with wrap-round fairings, a rigid construction results in relatively short vanes to allow for it to bend over sheaves and winches.



# 4

## **“Hairy” Fairings**

Hairy fairings greatly reduce strumming effects and improve performance where strumming is a problem. The main advantages of this type of fairing are:

- They can be applied over an existing cable, requiring no redesign or repackaging of the core.
- Fine hair fairings are extremely good at packing into the gaps between cable rings on the winching drum. Hair fairings are by far the most compatible with existing winch systems.

A main disadvantage with the hairy fairings is that the braid increases the diameter of the cable and may increase the surface roughness, which leads to a higher drag performance compared to a non-strumming bare cable.



# 5

## “Zip-on” Fairings

These are typically ‘haired’ or ‘ribbon’ type fairings and offer all the advantages and disadvantages associated with those types of fairing. The main advantage of zip-on fairing is the ability to “zip-on” and “zip-off” the fairing, even during deployment operations. This allows separate storage of the fairing and removes much of the damage caused by winching. As the fairing is stored separately, greater scope is available in the design of fairing shape. The type and length of the fairing can also be adjusted in accordance with the application or depth. Zip-on fairings which are winchable offer no performance improvement over haired or ribbon cables; however service repair is made much simpler, as new replacement sections can be zipped on quickly and easily. The critical feature on zipper fairing is the mechanical zip. Once the zip fails, the fairing must be replaced.

# 6

## “Slip-on” Fairings

These types of fairings are generally continuous fairings which are sewn or slipped over the ‘as manufactured’ cable. They are usually a ribbon type fairing as this tends to be the easiest to manufacture. A strip of material is cut into ribbons along one edge while the other edge is folded around the cable and sewn, welded or glued onto itself. Shorter lengths of fairing can be made for ‘slipping’ onto a previously manufactured cable. Its main advantage over braided hair fairings is the smoother nature of the bluff face and a small teardrop shape behind the cable giving a slightly lower drag coefficient; however, the poorer self-alignment to flow will give practical results similar to those for braided hair fairings.

In conclusion, no one single fairing method is best. The choice for a type of fairing should always present the best compromise for the particular application, available equipment and budget.

Evaluation of the following parameters will determine the correct type of fairing for your application:

- ✓ Performance gains (drag coefficient, towing depth, etc.)
- ✓ System cost
- ✓ Maintainability
- ✓ Failure modes & repairability
- ✓ Through life cost and affordability
- ✓ Deployment system consequences.

**Looking for a fairing solution for your system?**  
**Our engineers are always happy to advise on the benefits of adding fairings to your cable and to discuss the best options for you.**



## About DeRegt Cables

DeRegt delivers the best possible solution for any given situation. We provide custom-engineered cable solutions that are built to last to all markets, ensuring maximum performance over many years. Our products range from umbilical subsea cables to tethers for balloons.



Would you like more information?

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