



# Fibrøn

## SEISMIC

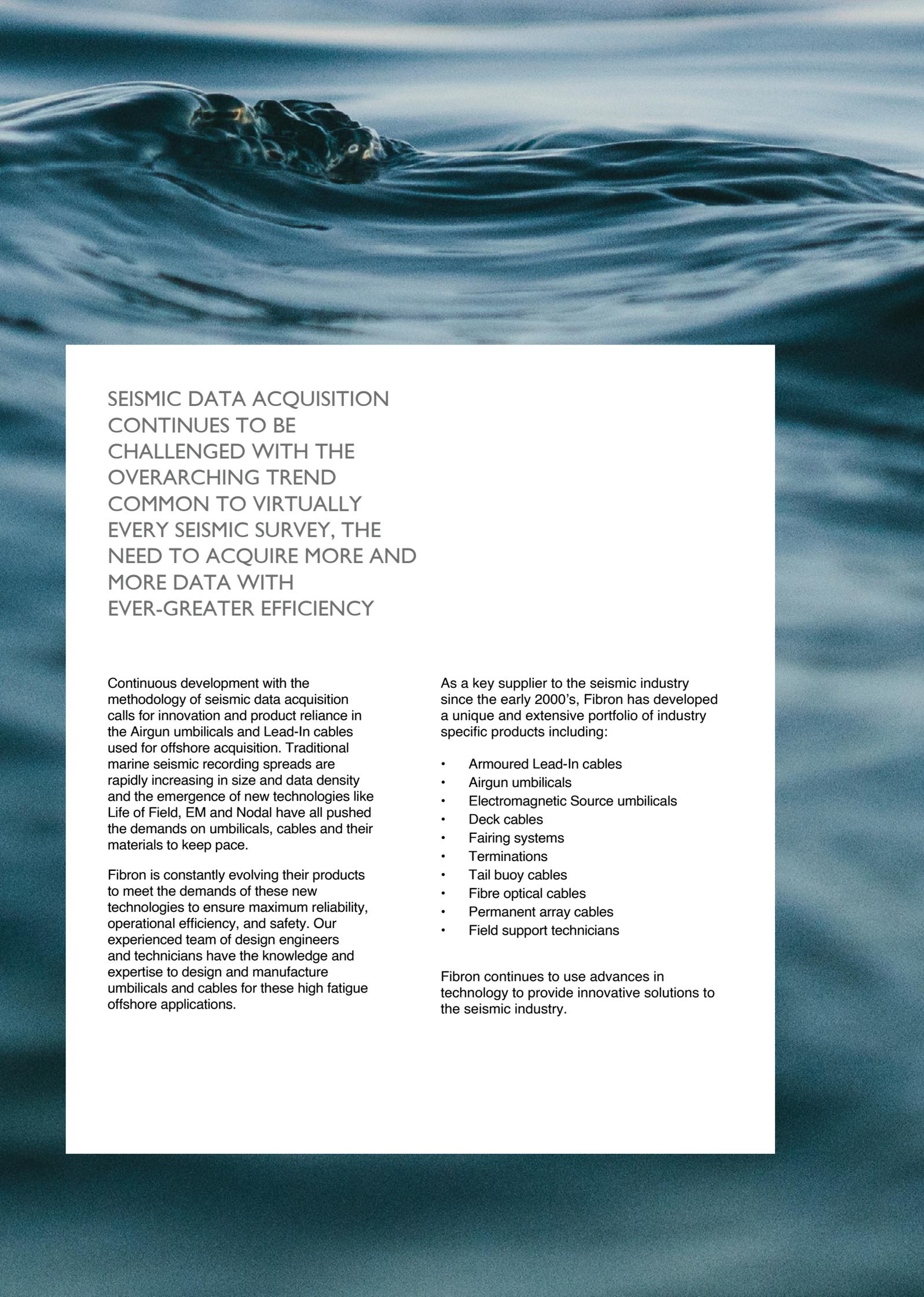
Lead-In cables

Airgun umbilicals

Electromagnetic Source umbilicals

Fairing systems

Full terminations and testing



SEISMIC DATA ACQUISITION  
CONTINUES TO BE  
CHALLENGED WITH THE  
OVERARCHING TREND  
COMMON TO VIRTUALLY  
EVERY SEISMIC SURVEY, THE  
NEED TO ACQUIRE MORE AND  
MORE DATA WITH  
EVER-GREATER EFFICIENCY

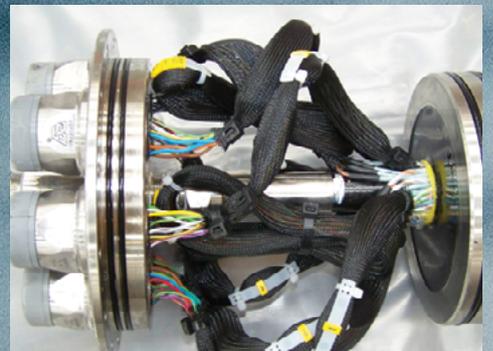
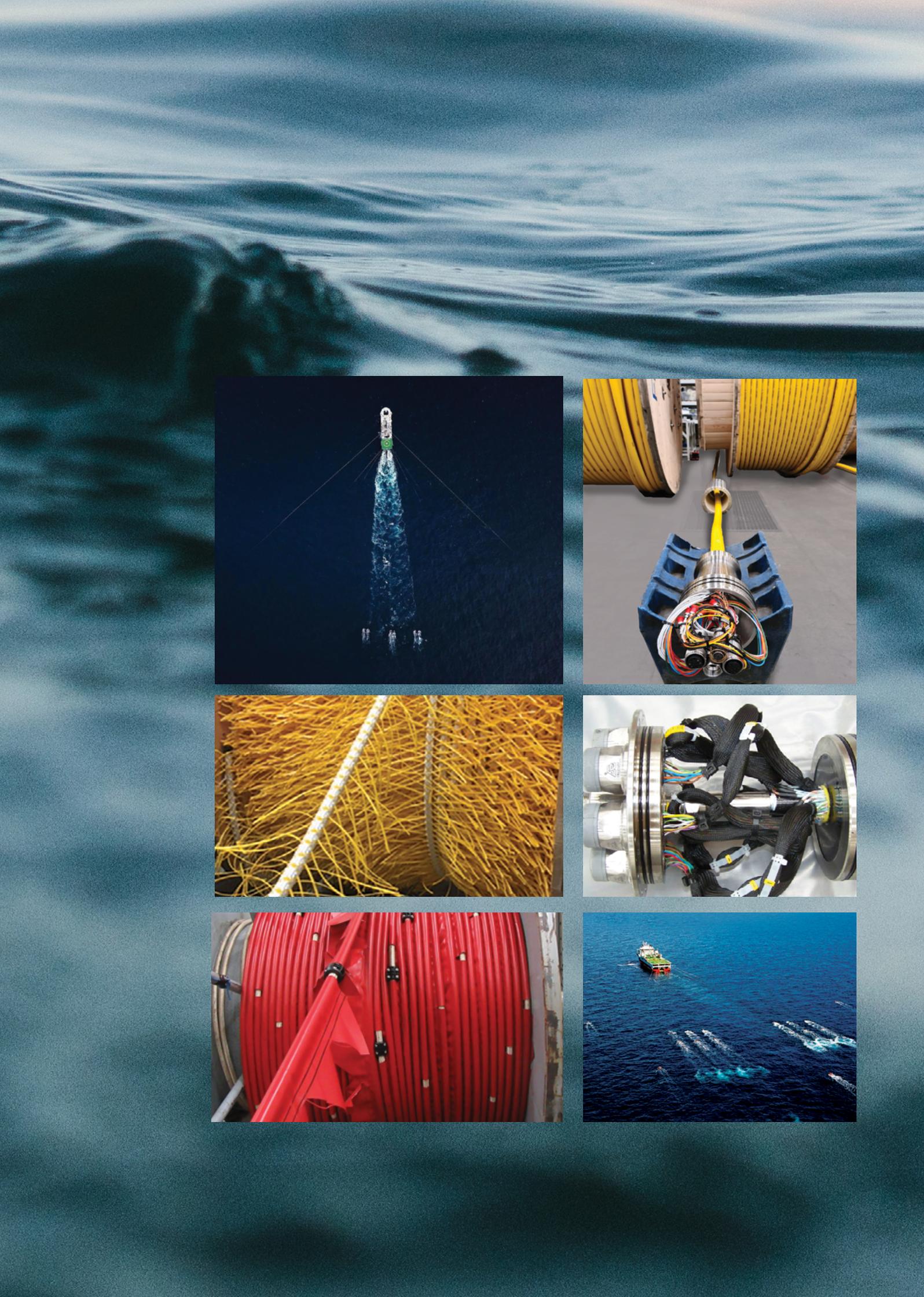
Continuous development with the methodology of seismic data acquisition calls for innovation and product reliance in the Airgun umbilicals and Lead-In cables used for offshore acquisition. Traditional marine seismic recording spreads are rapidly increasing in size and data density and the emergence of new technologies like Life of Field, EM and Nodal have all pushed the demands on umbilicals, cables and their materials to keep pace.

Fibron is constantly evolving their products to meet the demands of these new technologies to ensure maximum reliability, operational efficiency, and safety. Our experienced team of design engineers and technicians have the knowledge and expertise to design and manufacture umbilicals and cables for these high fatigue offshore applications.

As a key supplier to the seismic industry since the early 2000's, Fibron has developed a unique and extensive portfolio of industry specific products including:

- Armoured Lead-In cables
- Airgun umbilicals
- Electromagnetic Source umbilicals
- Deck cables
- Fairing systems
- Terminations
- Tail buoy cables
- Fibre optical cables
- Permanent array cables
- Field support technicians

Fibron continues to use advances in technology to provide innovative solutions to the seismic industry.



# INCREASING VESSEL SPEEDS, WIDER TOWING SPREADS AND CHALLENGING DEMANDS FOR SOURCE OFFSETS, ARE ALL CRITICAL ELEMENTS TO SUCCESSFUL MODERN SEISMIC OPERATIONS, AND FIBRON HAS THE EXPERIENCE AND EXPERTISE TO OFFER THE RIGHT SOLUTIONS

## ARMoured LEAD-IN/TOW CABLES

In 2001 Fibron was approached by a major seismic contractor to develop the next generation of armoured Lead-In cable with the aim to reduce the diameter significantly whilst maintaining the required tensile strength and electrical/optical fatigue performance. Using thin wall insulation technology for the electrical cores, steel tube fibre optics, and a high tensile steel armour package, we reduced the diameter by 27%. This was a substantial improvement upon the existing design, and which had a real impact on the performance of the vessel, by reducing the overall in water drag characteristics, resulting in lower fuel consumption; and allowing operation in shallower waters, as the cable catenary is considerably less. In addition, seismic vessels need to tow many streamers, to be as efficient as possible, and this is a key differentiator for efficient collection of high-quality seismic data and operational efficiency such as fuel consumption. This requires wide tow angles and higher towing forces, putting additional strain on the Lead-In cable. Fibron's product has survived very well in these arduous conditions, and with hundreds of kilometres of this cable deployed, Fibron's Armoured Lead-In Cable product is now the standard design and sets the global standard for lead-in cables.

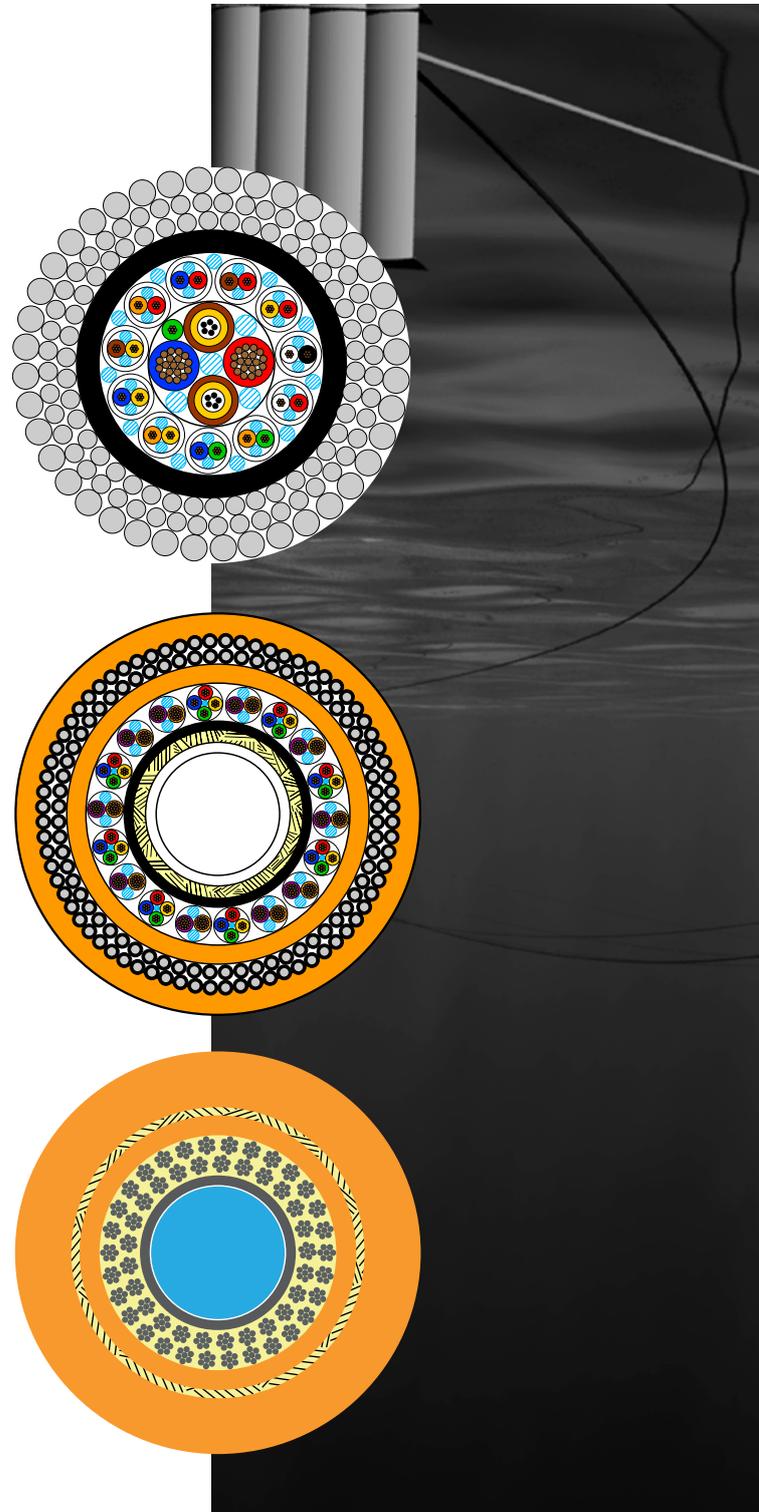
## AIRGUN UMBILICALS

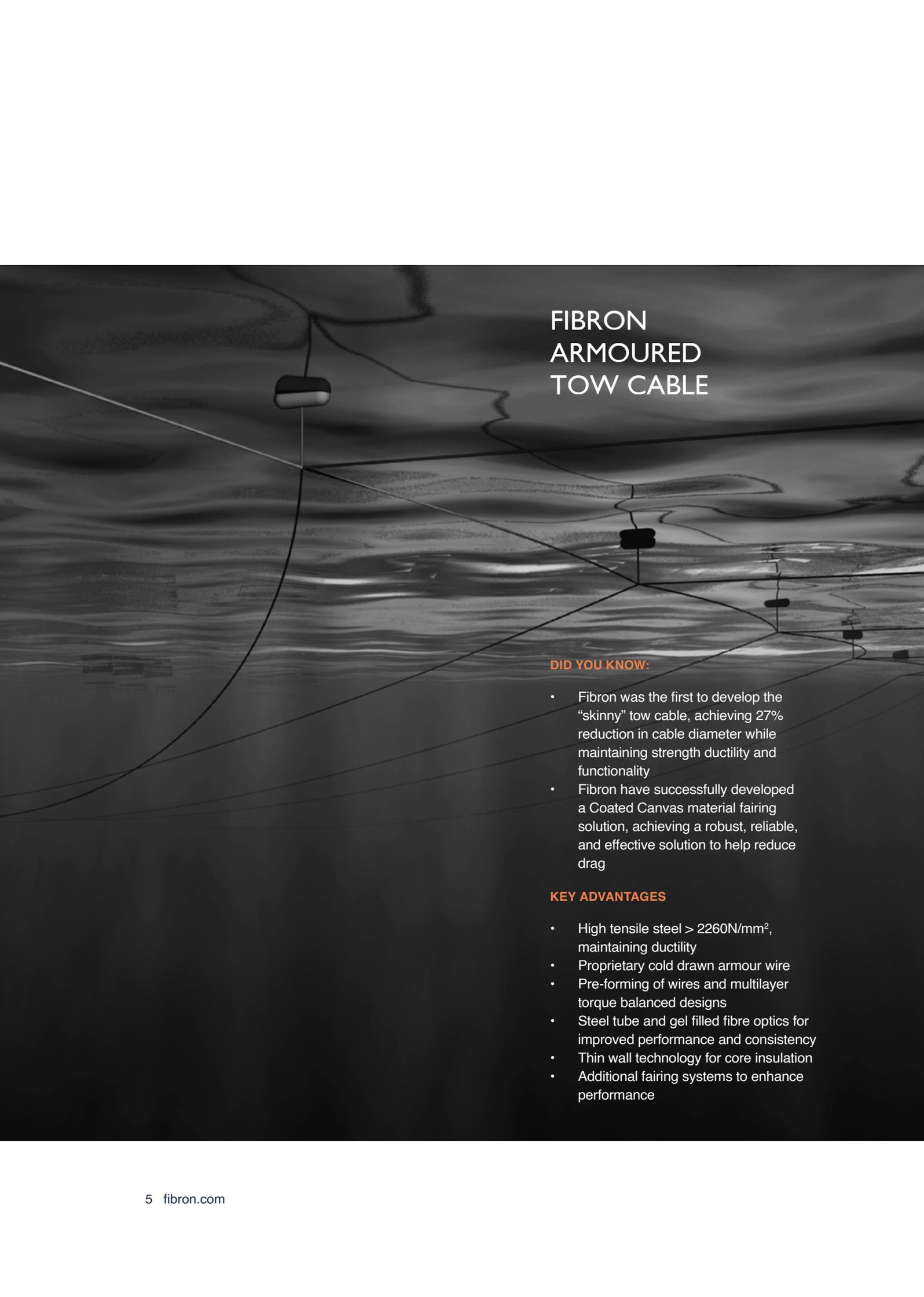
Safe and reliable deployment, equipment durability and transfer of both pressurised energy and signal are all critical elements to successful seismic operations for airgun umbilical operations.

Fibron undertook an in-depth study of our Airgun Umbilical designs to meet the needs of modern-day standards. This study included choice of extrusion materials, component lay angles, and other proprietary detailed design and manufacturing solutions that improve product performance in this harsh environment. These improvements have increased product performance and can include a wide range of standard 7/8", 1" and 1-1/4" aramid reinforced hoses or a selection of multiple high collapse resistant hose variants.

## ELECTROMAGNETIC SOURCE UMBILICALS

Fibron has been at the forefront of this technology, and has worked with several customers, designing and building a number of umbilicals for use in both deep and shallow water applications. The emphasis was to provide an umbilical capable of supplying high electrical current, whilst achieving a very light weight design. This required the careful selection and combination of materials, with innovation, to achieve the required result.





## FIBRON ARMOURED TOW CABLE

### DID YOU KNOW:

- Fibron was the first to develop the “skinny” tow cable, achieving 27% reduction in cable diameter while maintaining strength ductility and functionality
- Fibron have successfully developed a Coated Canvas material fairing solution, achieving a robust, reliable, and effective solution to help reduce drag

### KEY ADVANTAGES

- High tensile steel > 2260N/mm<sup>2</sup>, maintaining ductility
- Proprietary cold drawn armour wire
- Pre-forming of wires and multilayer torque balanced designs
- Steel tube and gel filled fibre optics for improved performance and consistency
- Thin wall technology for core insulation
- Additional fairing systems to enhance performance

# THE SEISMIC INDUSTRY IS ONE OF THE HARSHTEST WORKING ENVIRONMENTS AND THEREFORE RELIABILITY OF CONNECTOR SYSTEMS, TERMINATIONS, AND ACCESSORIES IS CRITICAL

Fibron understands the demanding nature of the offshore seismic environment and has been offering connector systems and terminations for Lead-In cables and Airgun Umbilicals for nearly 20 years.

Connector choice and termination design are a critical factor in the successful deployment of the product we offer for this market, and Fibron have offered a wide range of umbilical solutions to a wide range of customers, which includes termination design, manufacture, and installation, with full testing.

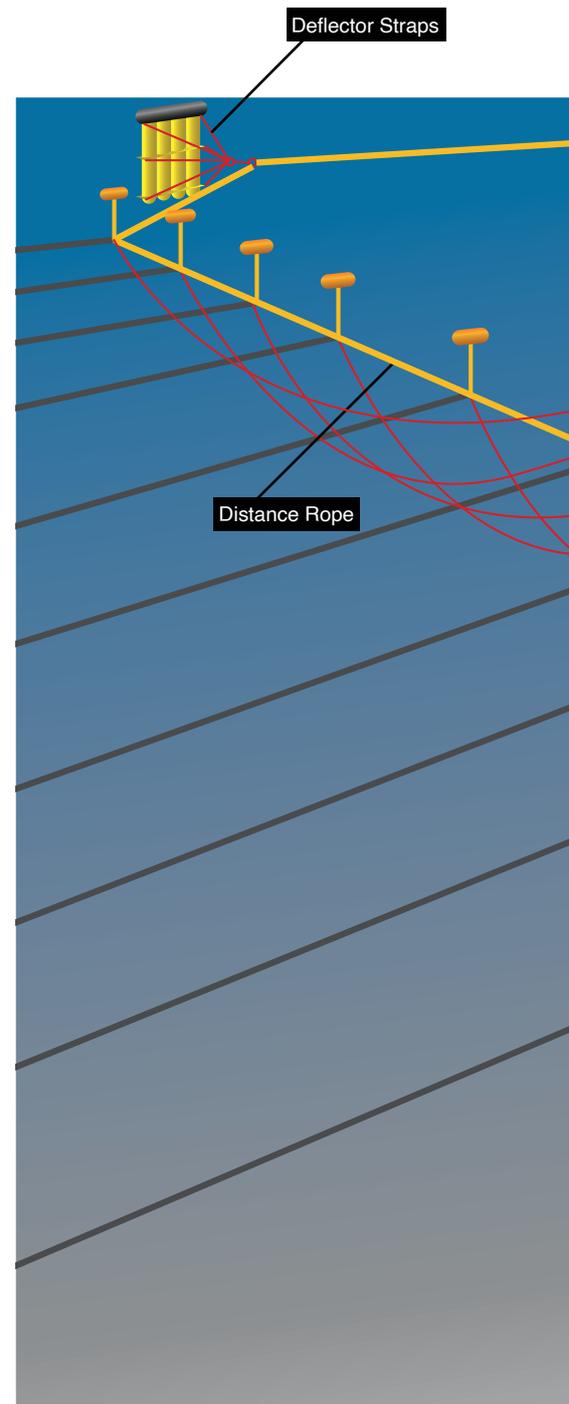
Fibron have also developed and offer several different fairing systems, which complement the Lead-In cable, and further enhance the performance of the product. These include:

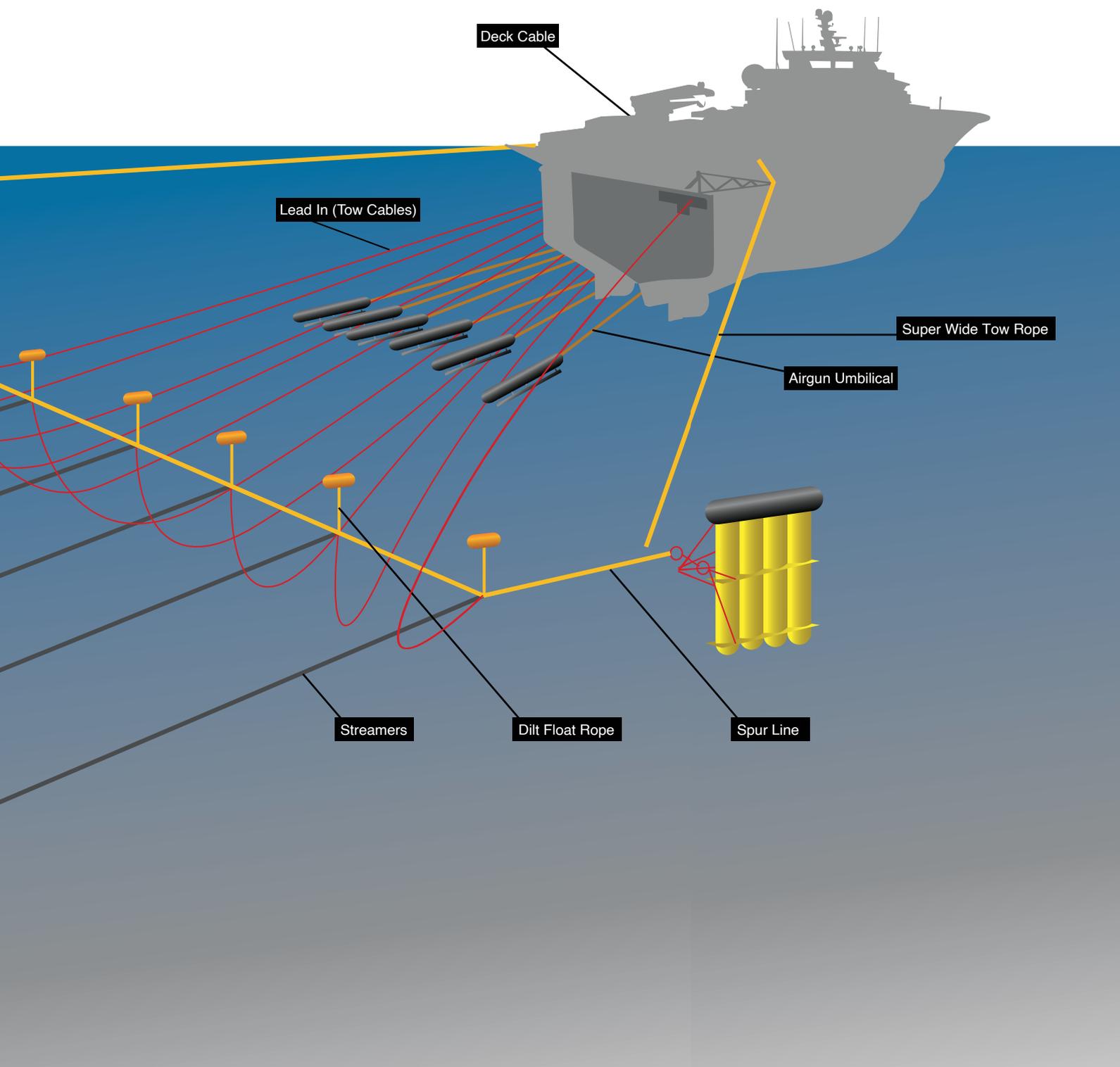
- ParmaFairing® - developed and patented by Parma Plast AS
- Coated Canvas Fairing – developed and manufactured by Fibron
- Ribbon Fairing - manufactured by Fibron
- Hairy Fairing - manufactured by Fibron

We can also install, and fit other fairing systems as required.

Repair and refurbishment of Lead-In cables and Airgun Umbilicals is also a valuable and important service we offer our customers. This includes a full test and inspection programme, and then based on these results a fully costed refurbishment plan, which can include repair to the cable and umbilical, and recovery of the termination and re-termination, etc.

Fibron have a dedicated team of qualified offshore technicians that can be deployed at short notice to assist our customers with repairs and reterminations at any offshore and onshore locations.







We design and implement umbilical and cable solutions from the surface to the seabed for the Seismic, Energy (Oil & Gas), ROV, Diving and Defence industries.

We use a keen knowledge of our environment, combined with innovative thinking, materials testing and analysis to provide products that meet any challenge.

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