



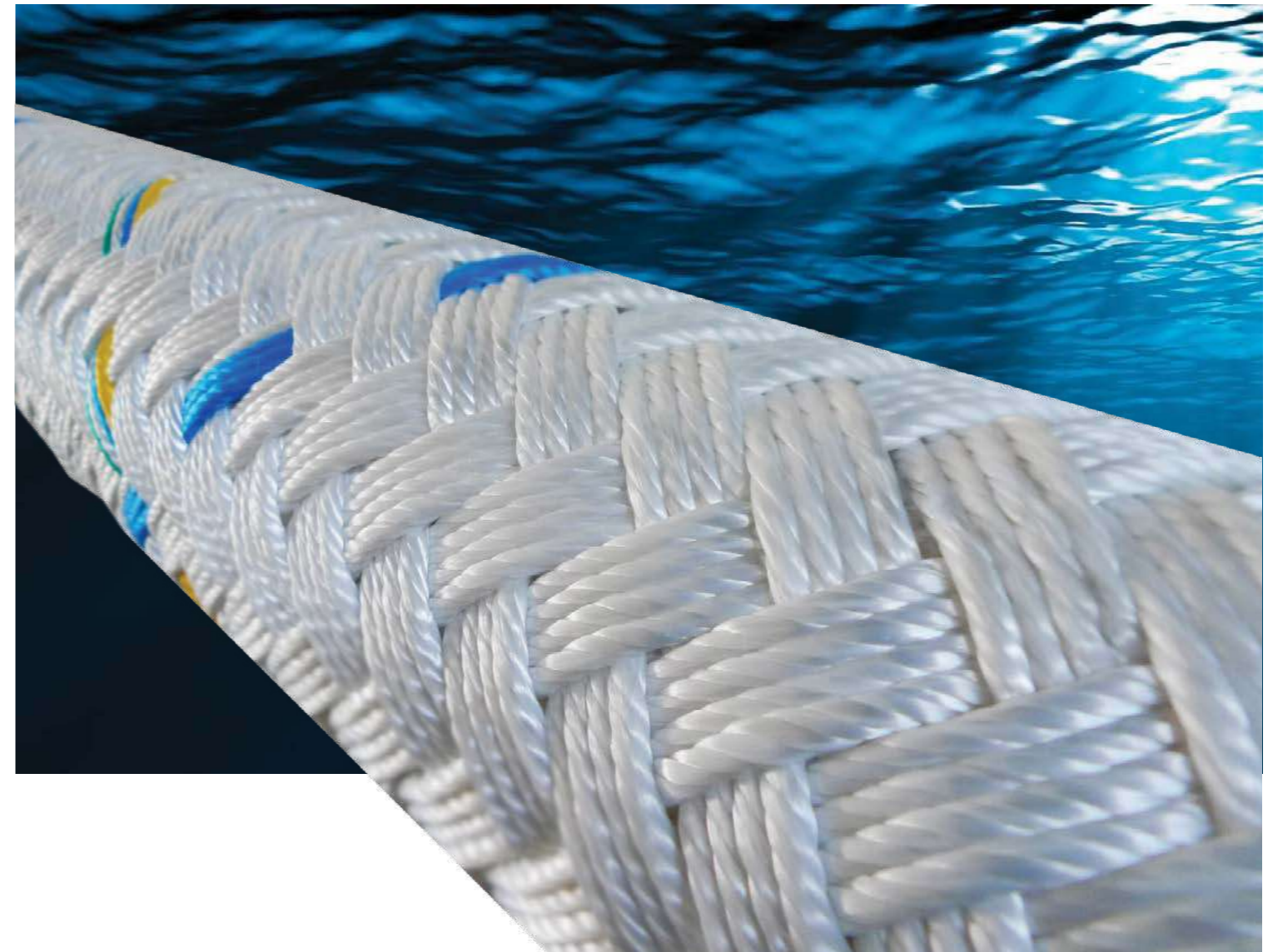
Ropes for deep and ultra-deepwater mooring



MOORING ROPES

Linking Culture and Vision

Lupatech Ropes have kept up with the evolution of marine and offshore industries worldwide. Anchored in its tradition, experience and driven by new technologies, Lupatech Ropes walks towards the future, investing in the continuous improvement of its production line and new services in order to meet the increasing and challenging demands of the world market.





COMPANY HISTORY

Lupatech Ropes pioneered the introduction of synthetic fiber ropes for deepwater mooring, which was developed in collaboration with Petrobras.

Our products were used in the very first tension-leg mooring system ever moored with the technology back in 1996.

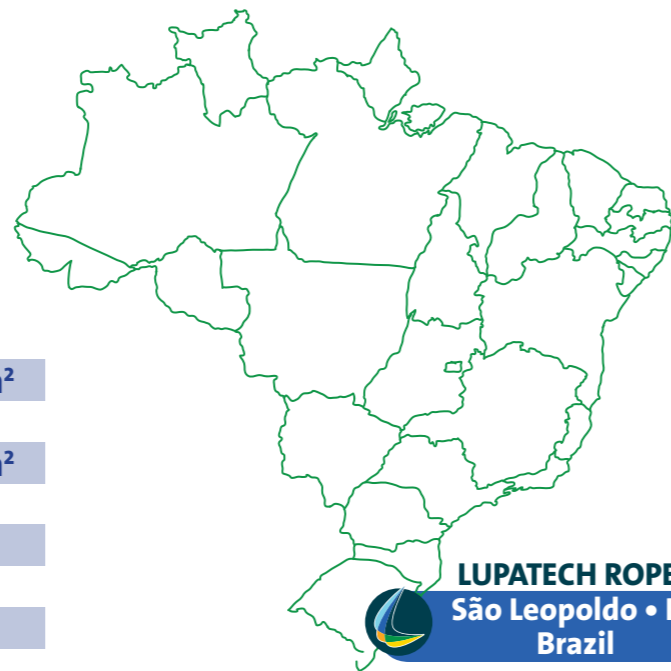
Over the last 25 years, Lupatech Ropes has furnished over 145 mooring projects with over 1.6 million meters of ropes installed. We are the absolute leader of this segment of the industry, with over 50% more deliveries than our closest competitor.

From our production facility in Brazil, we have supplied mooring ropes for most of

the key players of the offshore industry, not only for Brazilian waters, but also to the Gulf of Mexico, Asia and West Africa.

We dare stating that no other deepwater mooring ropes have been more proven.

Our long lasting footprint in the industry is the result of our ability to meet customer demands for fast delivery and solid technical solutions. Our factory has a capacity to process 7000 tons of fiber per year, one of the largest in the industry, enabling us to respond quickly to customer demands. Lupatech Ropes has a unique “in-house” testing facility, that enables not only swift product certification but also a tremendous R&D responsiveness.



LUPATECH ROPES
São Leopoldo • RS
Brazil

Company total area	19,000 m²
Shop floor total area	11,000 m²
Distance up to Porto Alegre Port	30 km
Distance up to Rio Grande Port	350 km



ON PREMISES TESTING FACILITY

MT 17MN machine main specifications :



Maximum tensile strength	17 MN
Fatigue tensile strength	9 MN
Prototype rope length	up to 17 meters
Stroke	2.5 meters

SAFETY AND RELIABILITY

Lupatech Ropes is the only manufacturer who counts on its own dedicated 1700-ton test machine. The equipment was developed in collaboration with Petrobras, designed and built by Lupatech Ropes with the specific purpose of enabling the development and continuous improvement of synthetic fiber ropes.

Its hydraulic systems, assembled on a gigantic 120 ton steel structure, fully equipped with gauges, load cells and data collection

devices, allow the performance not only of the usual rupture tests but also of a range of cyclic load tests that yield unique knowledge about fatigue and hysteresis behavior.

Some of today’s most relevant knowledge about the behavior of synthetic fiber ropes for offshore application came from research done in our machine. This technological drive runs deep in our veins and we make it available to our clients by assisting them in overcoming their challenges.

CASE STUDY AND JOINT INDUSTRY PROJECTS

Lupatech Ropes own testing machine put the company on the forefront of several joint industry projects and enabled the development of customized simulations to assist in the improvement of the ropes themselves and of other equipment, as much as to enhance engineering knowledge by means of nearly realistic scenarios.

- Investigation of damage patterns versus polyester rope residual strength
- Long term fatigue effects in chains, wires, sockets, marine hoses and shackles
- Feasibility of re-certification of used mooring lines
- Certification of long term wet storage of rope filter system
- Polyester Rope elongation under specific installation cyclic procedures

TRACEABILITY AND ASSURANCE

Lupatech Ropes uses the best identification and traceability system of the offshore rope industry. No other system has been more widely used and proven, offering a secure, reliable and long lasting identification, capable of surviving decades under the harshness of deepwaters and cyclical loads.



CONTROL AND TESTING

The quality of our products is meticulously checked, measured and recorded in every step of the manufacturing process.

All fibers used in production are submitted to standardized quality tests.

The performance of the ropes is assured to comply with the strictest international specifications through strength and fatigue tests that measure breaking strength and performance in dynamic conditions.

Our integrated in-house testing facility uniquely ensures the most accurate load capacity specifications in the industry, and so the safest possible application by our customers.

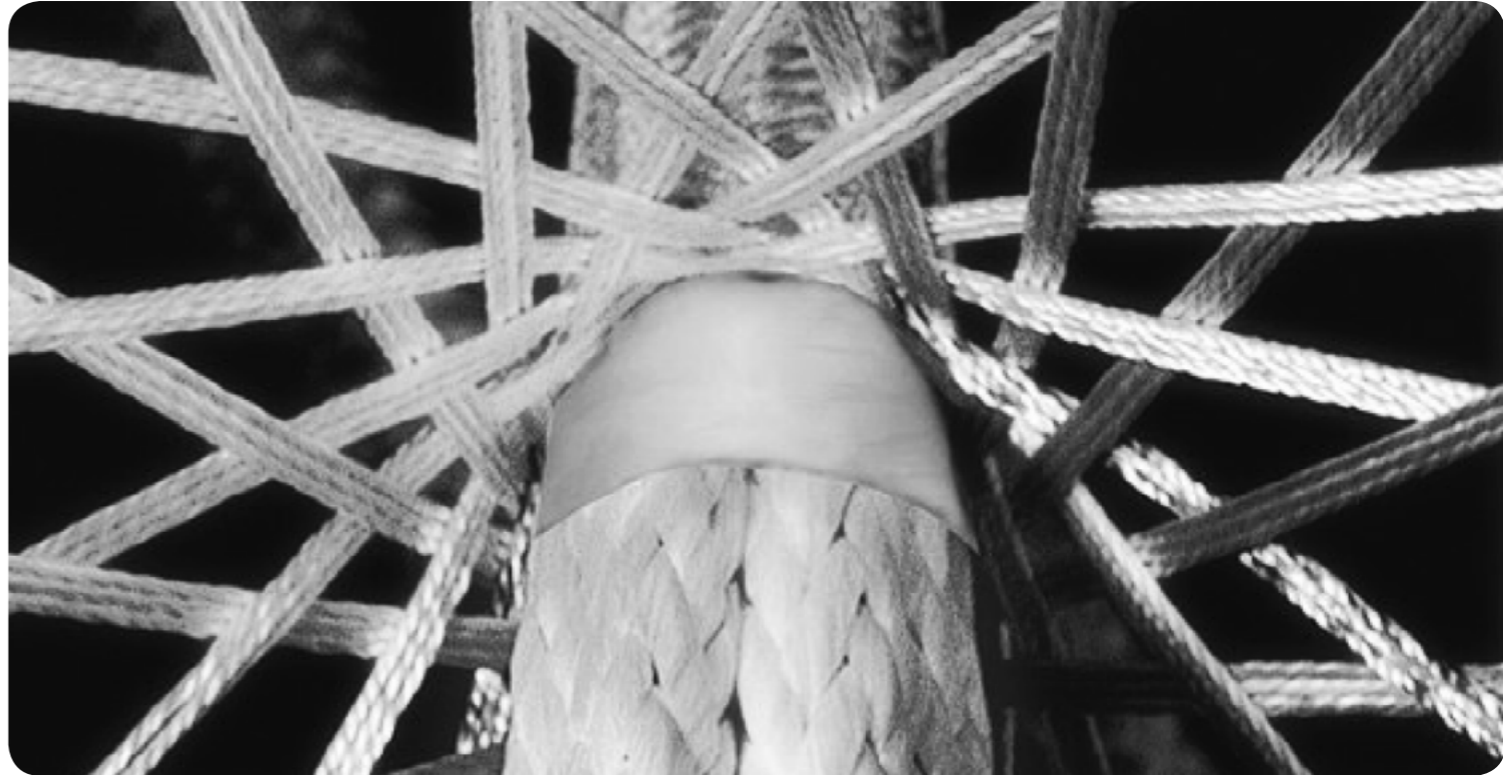
Indeed, our track record boasts an impeccable track record of ZERO PRODUCT FAILURE EVENTS. Not something to be taken lightly when you are the longest standing player with the largest amount of ropes delivered in the world!



ULTRASEVEN POLYESTER ROPES

Born 1996, the UltraSeven Polyester Rope for platforms, monobuoys and deepwater FPSO mooring pioneered the industry. This product is manufactured with high quality yarns that receive special finishing for seawater applications. This exclusive treatment reduces abrasion between fibers and improves overall rope resistance and efficiency.

The UltraSeven rope has parallelly distributed braided cores protected by a braided jacket. Its long pitch parallel braided core construction provides an intrinsically balanced torque with mechanical features suitable to mooring applications, such as high resilience modulus and resistance. In our design, the core bears 100% of the rope tensile strength, in such manner that the jacket tackles the challenge of handling abrasion and contact with the metallic components of the mooring solution without sacrificing or risking the much desired performance and safety.



ULTRASEVEN POLYESTER ROPES DATASHEET

• HIGH MODULUS • HIGH RESISTANCE AND FATIGUE PERFORMANCES • HIGH UV RESISTANCE

The decades-long technological cooperation between Lupatech Ropes, suppliers and customers took the ULTRASEVEN POLYESTER ROPES to an outstanding position worldwide. Compared to the conventional systems, our polyester rope anchoring technology has a series of technical, operational and handling advantages, while keeping an excellent cost-benefit ratio.

Nominal Diameter	Circumference at load	Reference load (2% of MBS)	Nominal mass at load	Minimum breaking strength	Average breaking strength
<i>mm</i>	<i>Inches</i>	<i>Kgf</i>	<i>Kg/100m</i>	<i>Tonnes</i>	<i>Tonnes</i>
104	13	7 400	870	370	390
112	14	8 600	990	430	450
120	15	10 000	1 170	500	530
128	16	11 200	1 280	560	590
136	17	12 600	1 440	630	700
144	18	14 200	1 670	710	750
152	19	15 200	1 910	760	810
160	20	16 000	2 040	800	850
168	21	17 000	2 150	850	900
176	22	18 000	2 250	900	950
192	24	20 000	2 400	1 000	1 090
200	25	22 400	2 695	1 120	1 220
208	26	25 000	2 940	1 250	1 360
216	27	28 000	3 290	1 400	1 450
232	29	30 000	3 560	1 500	1 640
248	31	35 000	4 170	1 800	1 900
264	33	40 000	4 780	2 000	2 170

NOTES

- a. Tensile strength values report minimum average performance of new ropes when undergoing nearly static tests at Lupatech Ropes laboratories. Technical specifications are subjected to changes due to new technological advances.
- b. The above average breaking strength values were obtained in accordance with ISO 18692: Fibre ropes for offshore station keeping - Polyester.
- c. Upon request ropes can be supplied with spliced eyes plus thimbles and shackles or special terminations.
- d. Density: 1.38 Kg/cu.dm.
- e. Dimensional tolerance: +/-5% to circumference. The finished length can vary +/-1 %.
- f. All data subject to change without notice.

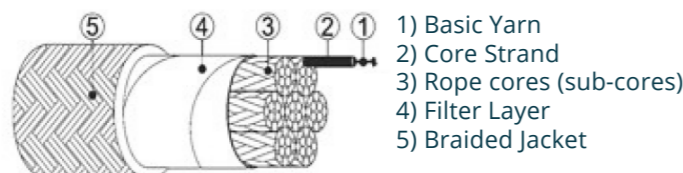


Diagram of the Lupatech Ropes • UltraSeven Rope

MOORING ROPE CONNECTORS

Lupatech Ropes also supply a wide range of accessories for mooring ropes, such as roulette thimbles, combined thimble-shackles, heavy duty shackles and connectors. Our designs are manufactured and strictly tested under the latest requirements of classifying societies. Special grades of steel are employed in accordance with both standard criteria and mooring system designer recommendations.

The Lupatech Group has a worldwide reputation in the manufacturing of Valves, high end Oil & Gas equipment and other metal products. Our expertise and continuous investment in research and development enables Lupatech Ropes to offer the best connection solutions in terms of weight reduction, corrosion protection, handling, reliability, resistance and fatigue life.

CRAFTSMANSHIP MEETS SCIENCE

The best rope in the world is worthless if it is not properly attached to its accessories. Lupatech Ropes has a team of true artists, that have worked for decades with our engineers to improve the designs and techniques of our connection methods. Using our in-house testing facility, we can both improve our attachments and certify the required craftsmanship on a continuous fashion.



RESEARCH AND DEVELOPMENT, IN THE LAB AND ON THE FIELD

The history of Lupatech Ropes is marked by the passionate pursuit of technological innovation. Our laboratories carry out research and development of new materials through chemical, physical, thermal and mechanical analyses.

Lupatech Ropes thrives to exceed the expectations of our demanding customers. Our R&D team develops solutions for rope designs through innovative processes. But Design Thinking cannot rely only on scientific paperwork and hearsay - boots on the ground, or better, offshore, are the cornerstone of our success.

Our engineering team has taken part on the installation of countless projects, and contributed for the good of the whole industry by incorporating their firsthand knowledge to ISO 18692 (Annex D) which contains recommendations for inspection and appropriate handling of polyester ropes.

Our technical services are available upon request and always ready in special circumstances. Lupatech Ropes has a team of highly qualified and seasoned technicians who are prepared to face the most challenging working conditions offshore.

QUALITY SYSTEM CERTIFICATION



Over the last 22 years we have deployed Quality Assurance programs, whereby we exceeded the requirements to obtain the following certificates.

October 1998 - ISO 9002:

Bureau Veritas Quality International

October 2001- ISO 9001: 1994

Bureau Veritas Quality International

November 2003 - ISO 9001: 2000

Bureau Veritas Quality International

October 2007 - ISO 9001:2000

Bureau Veritas Quality International

December 2008 - ISO 14001: 2004

Bureau Veritas

September 2010 - ISO 9001: 2008

Bureau Veritas

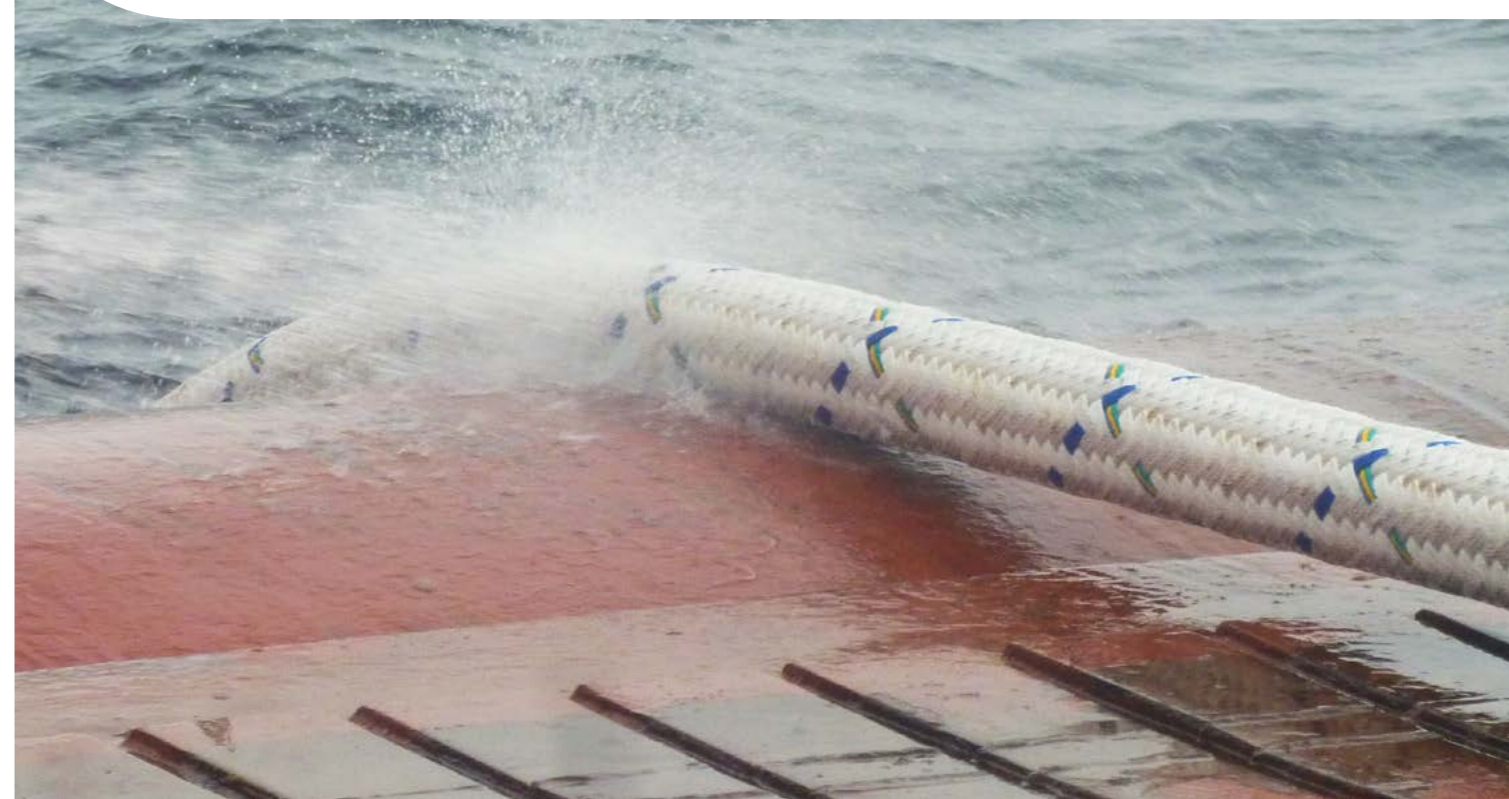
October 2011 - Manufacturer Approval for OFFSHORE MOORING FIBRE ROPES ASSEMBLIES, Det Norske Veritas

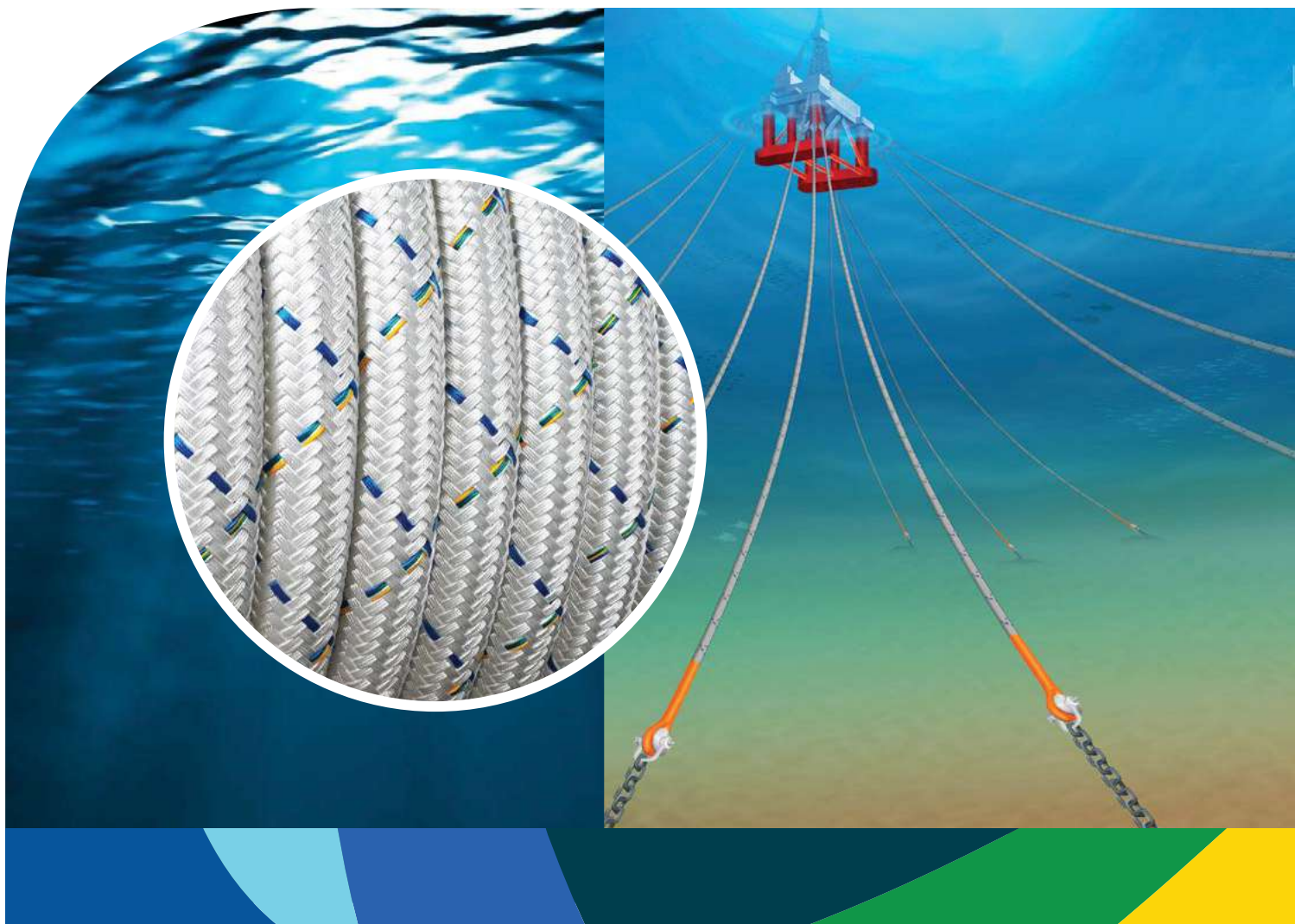
March 2012 - ISO 14001: 2004

Bureau Veritas

July 2020 - ISO 9001: 2015

ABS Quality Evaluations, Inc.





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