



HELLENIC
CABLES

Member of CENERGY HOLDINGS



Submarine cable systems

Who we are

Tracing its industrial roots back to 1950, Hellenic Cables has evolved into a leading provider of reliable and sustainable cable solutions. With four manufacturing plants across two countries, Hellenic Cables designs and produces high and extra-high voltage AC and DC submarine cables, delivering advanced underground and subsea cable solutions for demanding energy transmission projects worldwide.

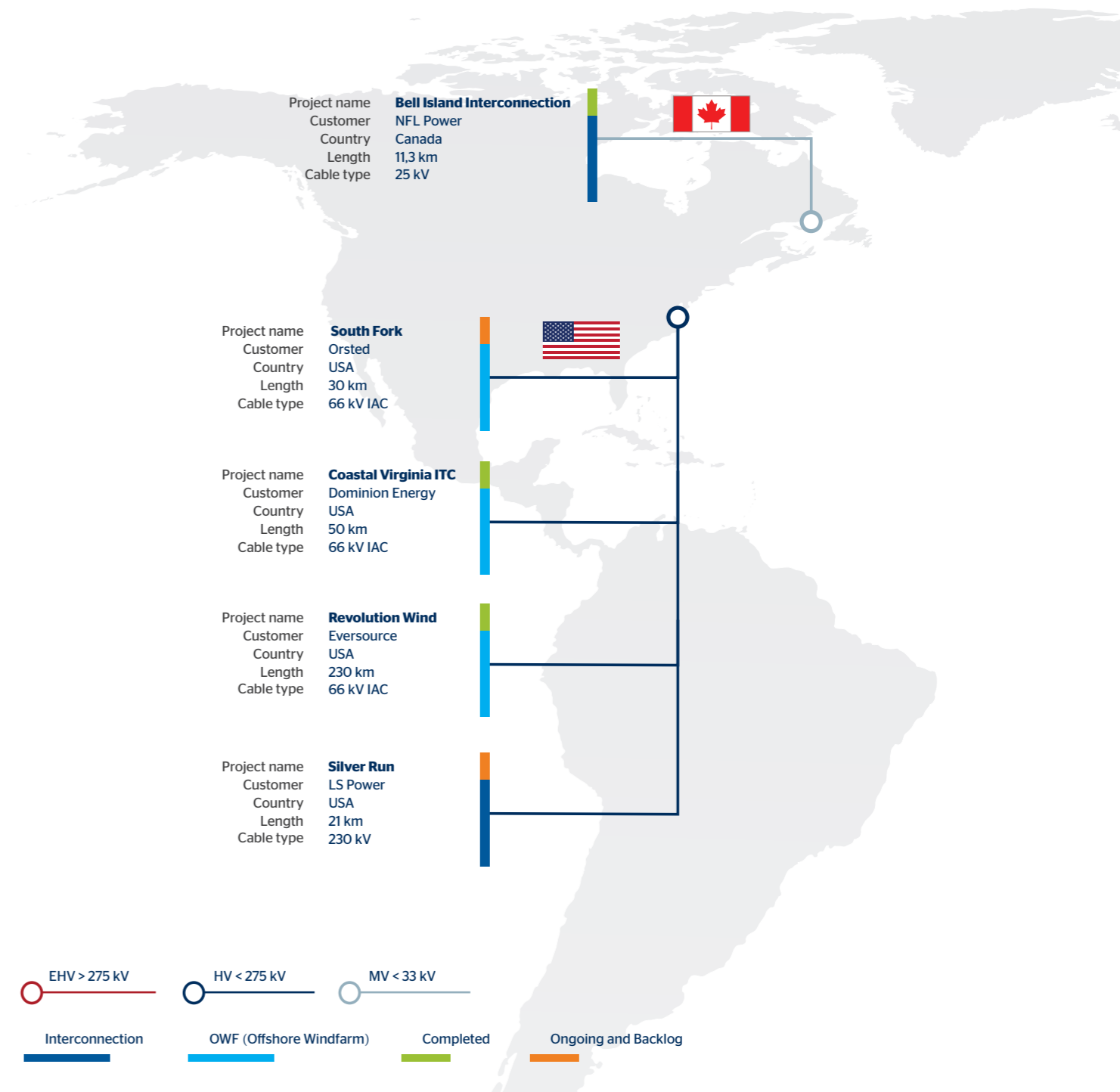
In addition, a new state-of-the-art facility in the United States for onshore applications is currently under development. The Company also provides a full suite of services and turnkey solutions which includes cable installation. The Company applies strict quality standards, certified systems and has a strong focus on R&D&I ensuring the high quality of products produced and the services provided.

The worldwide need for dependable and effective energy delivery is on the rise at a rapid pace. Hellenic Cables plays a crucial role in this by developing high-value-added products and solutions. With its extensive experience and expertise, the company is well-equipped to bolster and extend global energy transmission and distribution networks. Furthermore, it is committed to embracing green energy solutions to combat climate change. Our overarching goal is to facilitate the shift towards a carbon-neutral economy by providing cutting-edge products and services.

 **>800 EUR million**
average total investments
(since 2011)

“ **In Hellenic Cables, investments of over EUR 800 million** since 2011 were made for the production of high and extra-high voltage submarine and underground cables. ”

Submarine Projects



Sales in more than
50 countries



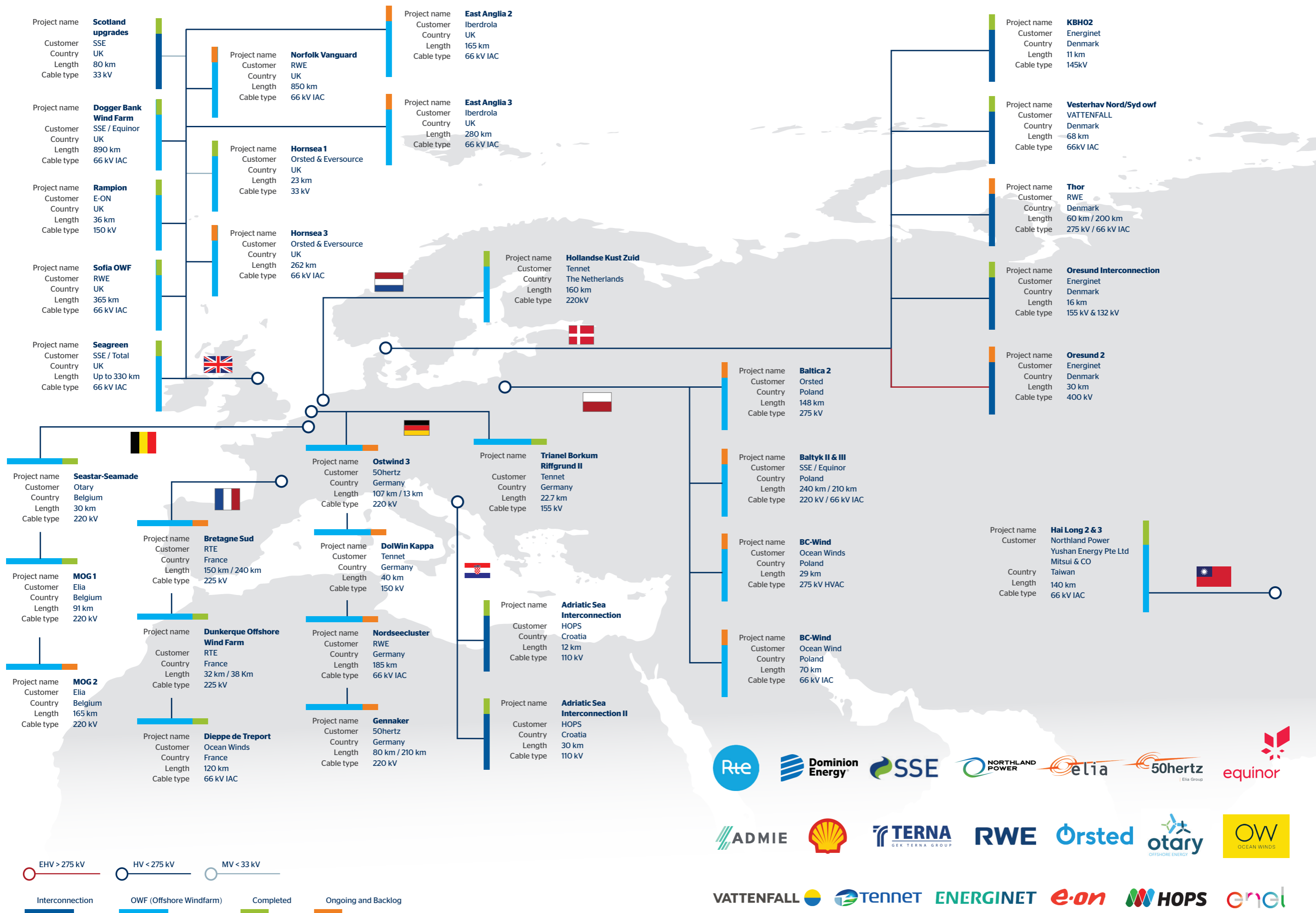
Established
1950

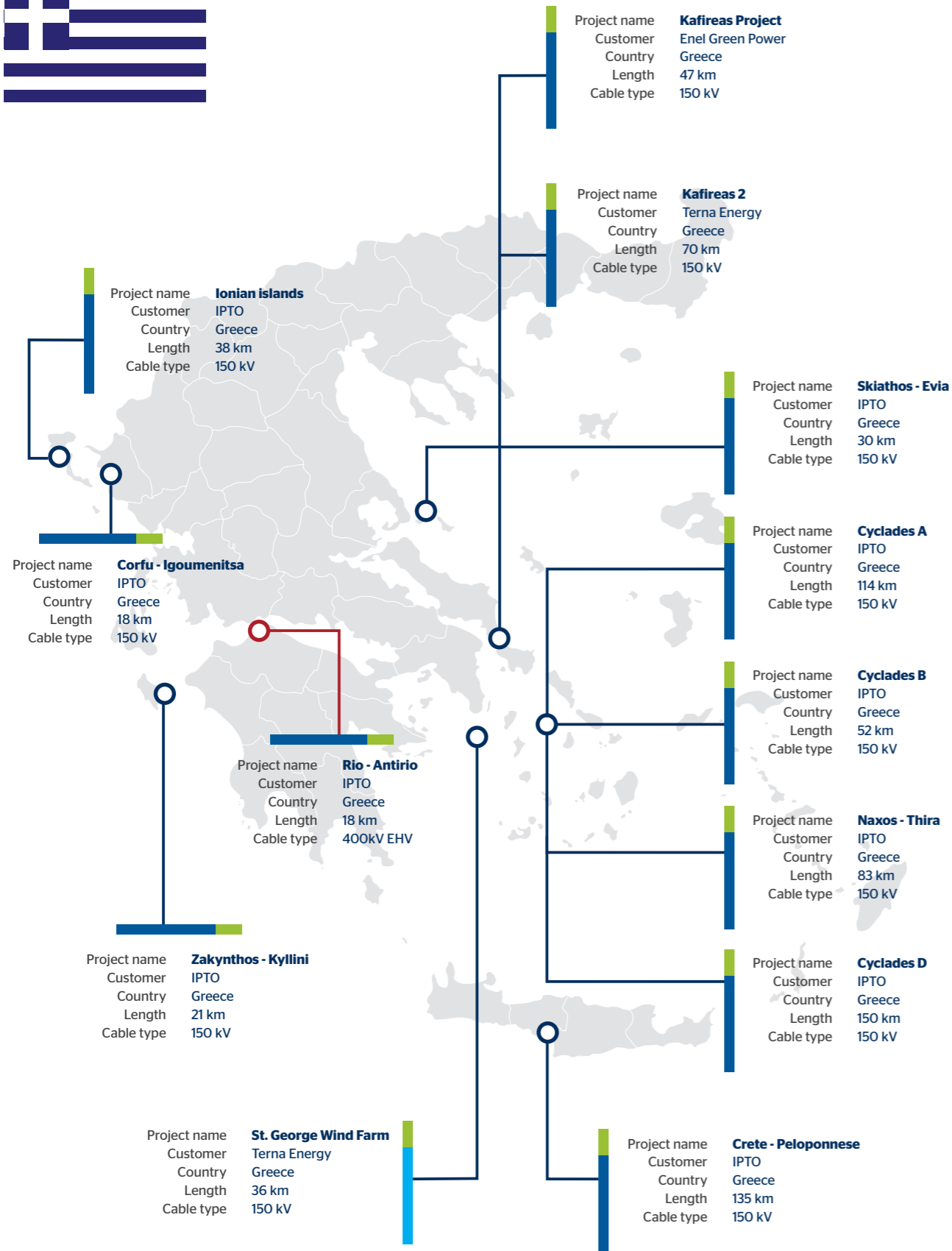


5 manufacturing plants in 3 countries



State of the art
facilities





High & extra high voltage

AC cables for various applications

Subsea interconnectors

High Voltage AC submarine cables are 3-core or single core armoured, with copper or aluminium conductors, XLPE insulation and lead sheath over each insulated core as a radial metallic water barrier. Available voltage ratings range from 150 kV to 400 kV.

Standard HV submarine cable designs typically include one or more optical units. Optical units are stranded during manufacturing between the outer interstices created by the insulated conductors.

Export cables for offshore wind farms

Increasing size of individual turbines as well as overall wind farm sizes, naturally leads to continuously increasing requirements for power transmission capacities of export cables. This in turn translates to increasing voltage levels, from 150 kV, to 220 kV, 275 kV, or even higher.

HVDC XLPE cables

AC transmission is used in distances typically in the range of 120 km. As distances increase however, significant decrease in performance is unavoidable, due to the increase of absorbed reactive power. Thus for longer distances, DC transmission is used instead, supported by the evolution of power electronics and typologies of AC-DC converters.

We offer HVDC cables with XLPE insulation. The use of an extruded insulation offers several mechanical and electrical advantages, such as lighter, easier-to-handle cables, which can operate at high temperatures and at high electrical stresses.

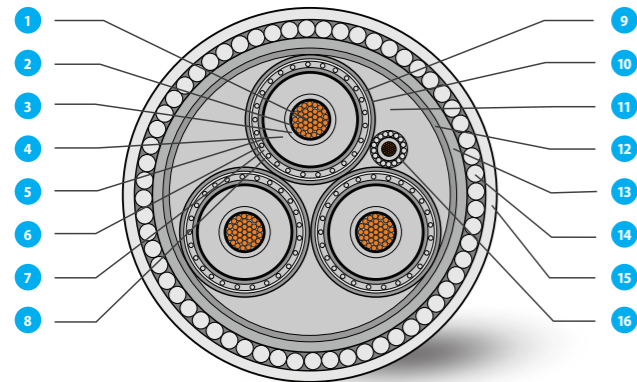


Market leading capabilities for risk mitigation

Hellenic Cables, with its vertically integrated approach, has a unique advantage in the market due to its recent investments in high-capacity, state-of-the-art production equipment and storage facilities. All submarine cables can be manufactured in very long continuous lengths, minimizing the need of factory joints which reduces risks and facilitates installation. Factory joints are flexible splices performed on each core under the continuous protective layers of the cable and constitute an integral part of the cable itself. Minimizing the number of factory joints greatly reduces the risk of cable faults.

Optical fiber submarine cables for repeaterless links

We offer Light Weight (LW), Single Armoured (SA) and Double Armoured (DA) designs that include an optical core made of a sealed stainless steel tube containing the optical fibers. The optical fibers are placed loosely inside the tube with excess length and surrounded by a filling compound (jelly) containing a hydrogen scavenger. Over the optical core, successive protective layers are applied.

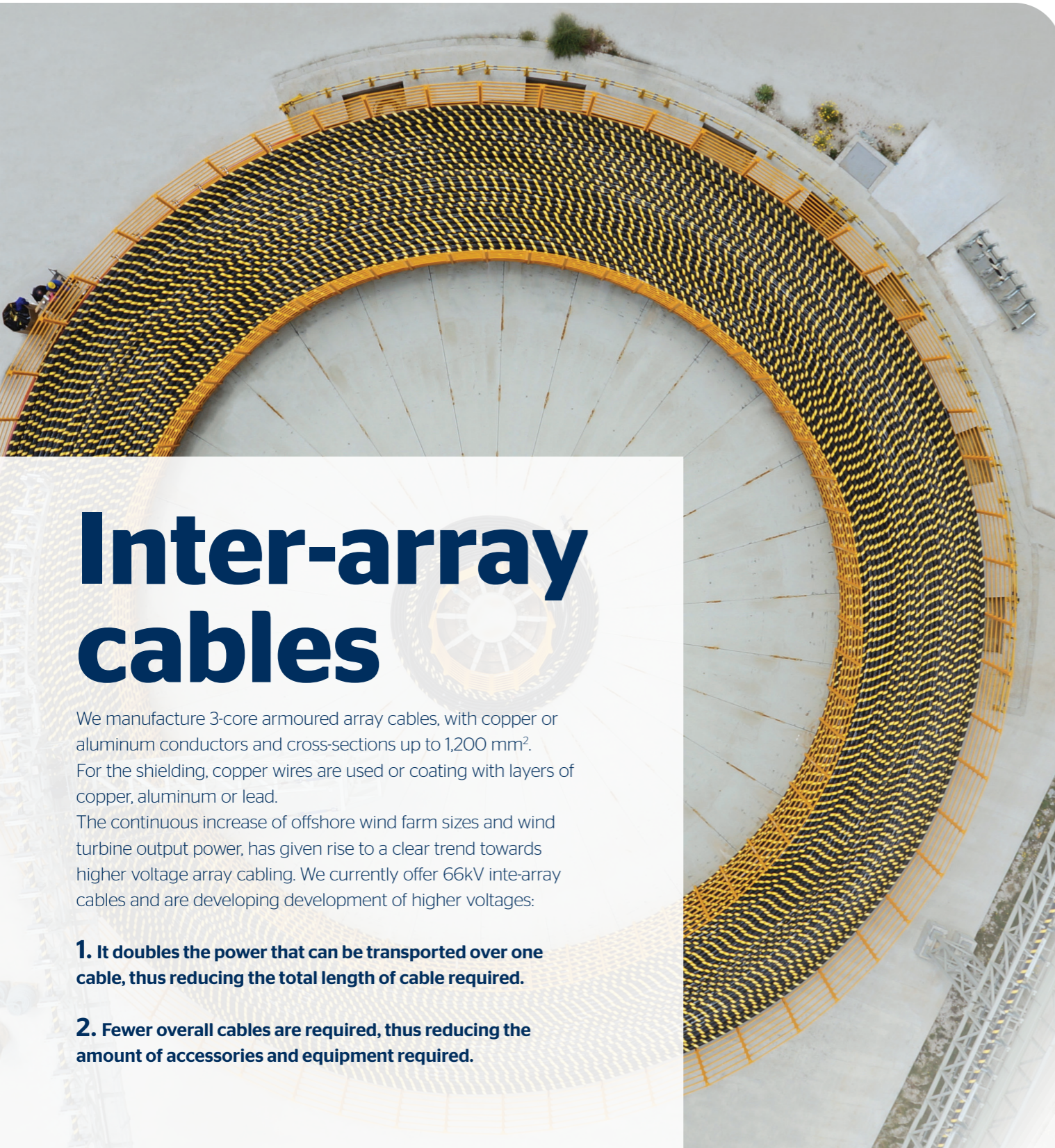


66 kV AC Composite submarine cable design

1. Conductor: Al or Cu round stranded
2. Semiconducting tape
3. Conductor non-metallic extruded screencompound
4. Insulation: XLPE water-tree retardant
5. Core non-metallic extruded screen
6. Semiconducting waterblocking tape(s)
7. Metallic screen: Copper wires
8. Semiconducting waterblocking tape(s)
9. Radial watertightness: AL/PE laminated tape or CU/PE
10. Sheath: HDPE and extruded semiconducting compound
11. Extruded profile fillers
12. Binding tape(s) with overlap
13. Polypropylene yarns, one layer/strip
14. Armouring: helically applied bitumen compound coated galvanized round steel wires
15. Polypropylene yarns, two layers

- Armoured optical unit:

stainless steel tube, PE inner sheath, galvanized steel wire armour and PE oversheath



Inter-array cables

We manufacture 3-core armoured array cables, with copper or aluminum conductors and cross-sections up to 1,200 mm². For the shielding, copper wires are used or coating with layers of copper, aluminum or lead.

The continuous increase of offshore wind farm sizes and wind turbine output power, has given rise to a clear trend towards higher voltage array cabling. We currently offer 66kV inte-array cables and are developing development of higher voltages:

- 1. It doubles the power that can be transported over one cable, thus reducing the total length of cable required.**
- 2. Fewer overall cables are required, thus reducing the amount of accessories and equipment required.**

Dynamic cables

As near-shore, shallow water areas become saturated, especially in mature markets, further offshore wind development will move further offshore or in deeper waters. Far-shore sites pose additional challenges for installation, O&M, and higher foundation costs moving into deeper water. Floating offshore wind would circumvent a number of these challenges, unlocking deep-water sites. This requires a new generation of cables, called "dynamic", specifically designed to withstand the additional stresses. Hellenic Cables develops intensively its offer of Dynamic Cables, both through extensive in-house R&D&I and participation in Development Programs. Hellenic Cables has achieved qualification of 66 kV dynamic cable system.

Trieres Project

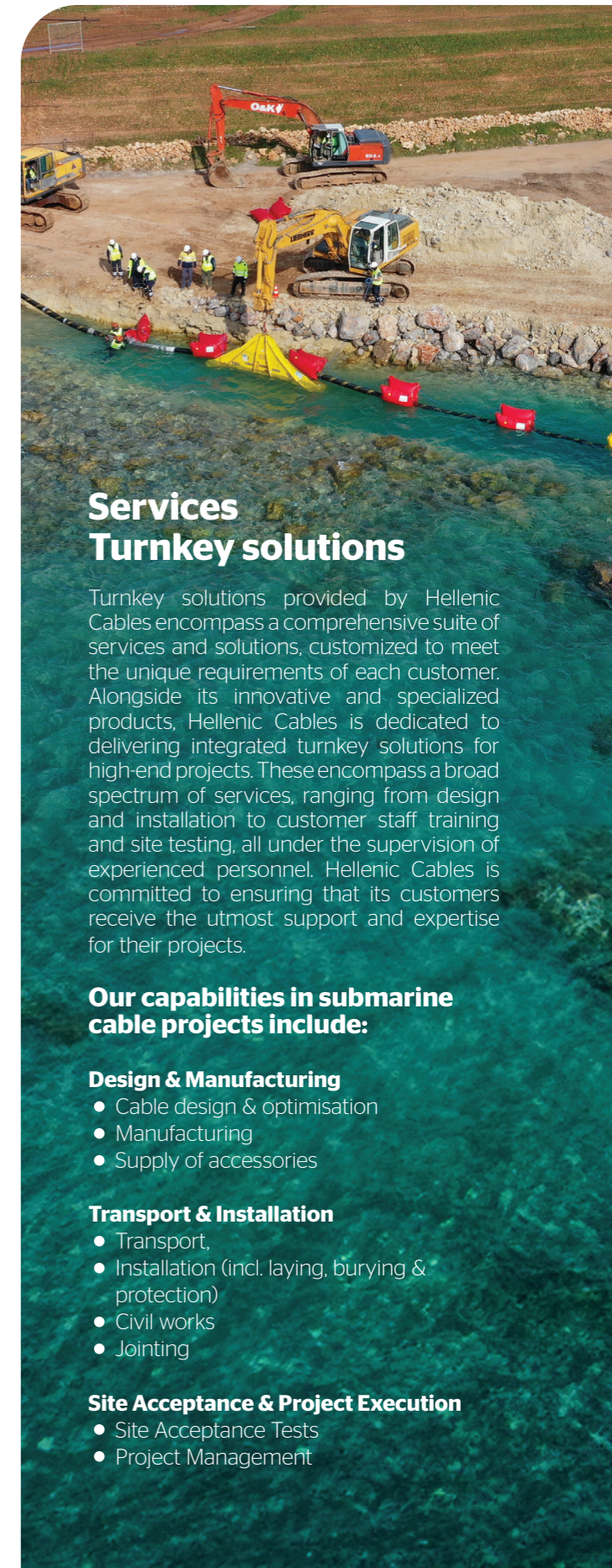
Development of combined transmission of hydrogen and electricity is an unexploited opportunity to make at-turbine electrolysis, a cost competitive alternative to its onshore counterpart. The offshore energy hub research project for Hellenic Cables concerns the investigation of technological and economic feasibility for the construction and installation of a 66 kV umbilical static submarine cable with integrated pipes suitable for H2 gas transmission to achieve combined transmission of electric power and hydrogen gas through platforms in inter-array wind farms. Hellenic Cables will develop a combined H2 and power cable which improves the flexibility and business case for at-turbine or at-hub hydrogen production. The solution is delivered at only a 2% increase over an installed power cable.

Infinite Project

The project will lead to the deployment of an offshore wind platform, designed for 6-10MW, at the PLEMCAAT test site in the Gulf of Roses, within the future commercial zone LEBA 1, north of Catalonia, Spain. In parallel, the project includes the design of a 14MW fully integrated system, with a strong focus on optimizing technological solutions for deep-water conditions and ensuring suitability for various offshore sites across the European Union.

Musica Project

The overall aim of MUSICA is to accelerate the roadmap to commercialization of its Multi-Use Platform (MUP) and Multi-use of Space (MUS) combination for the small island market, and de-risk for future operators and investors, by validation to TRL7 and providing real plans to move to mass market commercialization. The MUSICA solution will be a decarbonizing one-stop shop for small islands, including their marine initiatives (Blue Growth) and ecosystems.



Services Turnkey solutions

Turnkey solutions provided by Hellenic Cables encompass a comprehensive suite of services and solutions, customized to meet the unique requirements of each customer. Alongside its innovative and specialized products, Hellenic Cables is dedicated to delivering integrated turnkey solutions for high-end projects. These encompass a broad spectrum of services, ranging from design and installation to customer staff training and site testing, all under the supervision of experienced personnel. Hellenic Cables is committed to ensuring that its customers receive the utmost support and expertise for their projects.

Our capabilities in submarine cable projects include:

Design & Manufacturing

- Cable design & optimisation
- Manufacturing
- Supply of accessories

Transport & Installation

- Transport,
- Installation (incl. laying, burying & protection)
- Civil works
- Joining

Site Acceptance & Project Execution

- Site Acceptance Tests
- Project Management



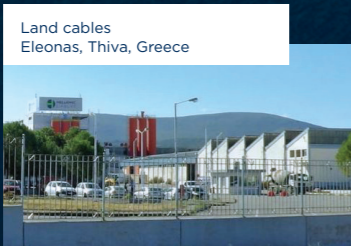
Submarine cables plant
Corinth, Greece

- State of the art manufacturing
- Vertically integrated
- Long production lengths without joints
- 3 vessels load out simultaneously
- Significant Storage Capacity

○ All in one location



Land cables
Thiva, Greece



Land cables
Eleonas, Thiva, Greece



Land cables
Icmecab, Romania



Future medium and high-voltage
land cables
Baltimore, Maryland

The production facilities are certified according to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2011, ISO 22301:2012, and ISO 27001:2013.



In-house testing facilities

Hellenic Cables' lab features state-of-the-art equipment to carry out development tests, type tests and qualification tests for AC cable systems up to 500kV and DC cable systems up to +/- 600kV. In addition, an upgrade of the existing facilities was carried out to conduct electric series tests on long submarine cable lengths.

The facility can apply maximum voltage of 450kV and will be used to carry-out tests on cable lengths up to 60 km with a rated operating voltage of 220kV.

Quality

Hellenic Cables applies strict quality standards and certified management systems that ensure high quality of their products and services while setting the framework for continuous improvement. Products bear compliance markings and quality labels by internationally recognised certification houses, confirming the continuous controls carried out during the production process and the high standards on which they are produced. All Hellenic Cables' production facilities are certified according to EN ISO 9001:2015, EN ISO 14001:2015, and ISO 45001:2018.

Sustainability

Sustainability is an intimate part of Hellenic Cables' strategic planning, with key objectives to avoid widespread adverse impacts of climate change to promote responsible sourcing principles and to safeguard ethical business practices. To effectively tackle and abate indirect carbon emissions arising from the supply chain, Hellenic Cables is establishing a broader collaboration framework with its business partners, aiming to reduce embedded carbon emissions of its products. Reinforcing its diverse and inclusive culture, Hellenic Cables offers equal employment opportunities supports local communities, fosters wellbeing initiatives and promotes a safe working environment. Within its area of business influence, Hellenic Cables is committed to disseminate sustainability principles across the value chain, developing trust-oriented relationships with all its business partners.

Production plants:

Corinth

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Cables Plant

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Tel.: +30 22620 86616

Eleonas

Cables Plant

11th km National Road
Thiva - Chalkida
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